

# Appendix E

Signal Timing Plans





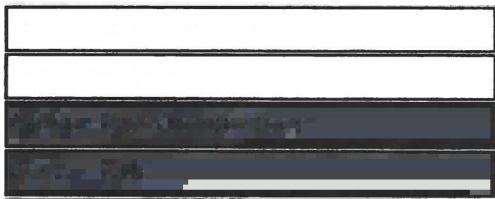
Informational Document

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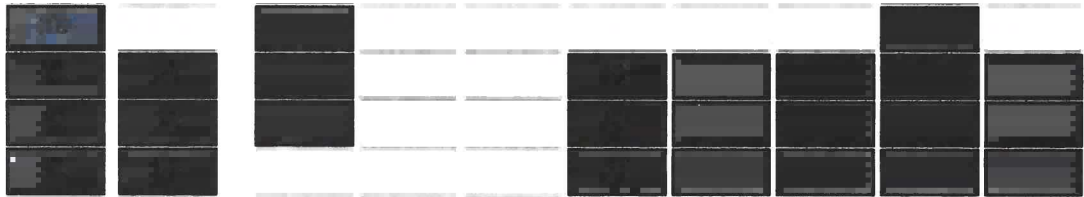
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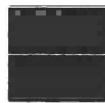
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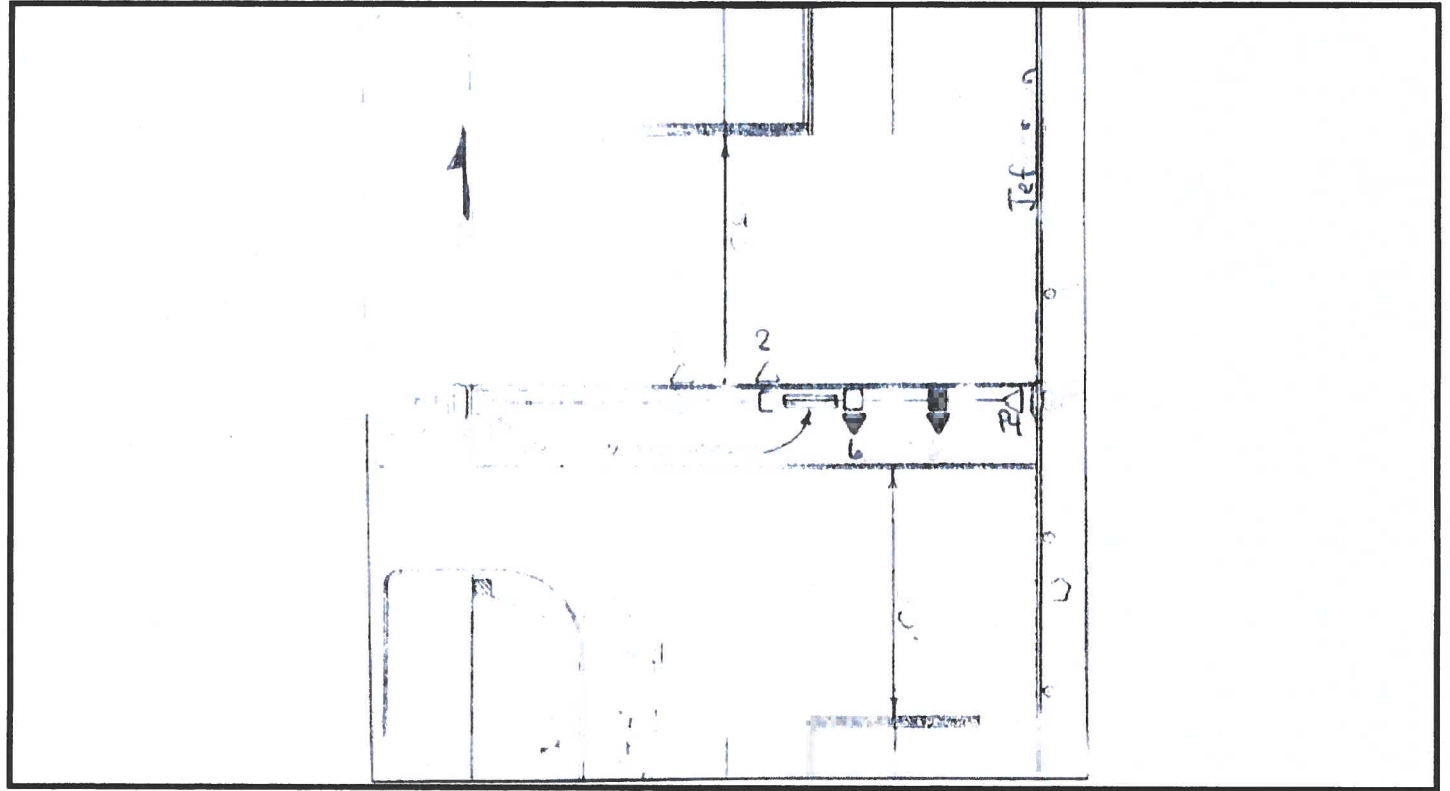
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# Timingsheet, Controller Operation and Load Switch Page

SECID: 75 Timing Date: 10/31/2017 Phasing Date: 10/31/2000 ARCGIS Node ID: Shop Number: 1746 Drop: 8

Major Street **JEFFERSON**

Orientation: North-South

Controller Type **COBALT**

Minor Street **KENNEDY**

Orientation: Westbound

Computer System **Cen**

Date Sen **5/6/2014**

Controller Timings (seconds)						
Controller Phase Number	2	4				
Direction	N/S	WB				
Minimum Green	10	10				
Vehicle Extension	3.0	3.0				
Yellow Clr/Alt Clr	3.7	3.7				
Red Clr/Alt Red Clr	2.2	2.0				
Max Green I	50	85				
Max Green II	50	85				
Walk	7	7				
Walk - XGuard	---	---				
FDW	13	13				
FDW - XGuard	---	---				
Detector Memory	---	---				
Phase Recall	MAX	MAX				
Ped Recall	ON	ON				
Flash Operation	RED	YEL				

Controller Operation	
RXR Preempt: No	FDOT SOP: 1 Mod
Fire Preempt: No	Backup Protection: N
Bridge Preempt: No	FDOT Walk Y
Transit Preempt: False	FDOT FDW: Y
Crossing Guard Times AM:	
Crossing Guard Times PM:	
Free Time Primary:	
Free Time Secondary:	
Flash Source- (C)omputer or (F)ield:	
Flash Times Primary	
Flash Times Secondary	
CNA Ø's	Ø2, Ø4

Cabinet Load Switch Assienments							
LS1:	LS2: Ø2	LS3:	LS4: Ø4	LS5:	LS6:	LS7: P2	LS8: P4
LS9:	LS10:	LS11:	LS12:	LS13:	LS14:	LS15:	LS16:

Phase Ring Assignments	
<b>Sequence 1</b>	Ring 1: 2   4 Ring 2:
<b>Sequence 2</b>	Ring 1: Ring 2:
<b>Sequence 3</b>	Ring 1: Ring 2:
<b>Sequence 5</b>	Ring 1: Ring 2:

Comments

UPDATED TIMINGS

ACTUATED PRETIMED OPERATION

Submitted By: *WJ* Date: 12-8-17 Review By: *CS* Date: 12-8-17 Approved By: *BY* Date: 12-8-17

Implemented By: *WJ* Date: 6-8-18 Notes:



# Coordination Pattern Page

Print Date: 12/8/2017

Major Street: JEFFERSON

Section Id: 75      Record Number: 560      Coord Date: 10/31/2017

Minor Street: KENNEDY

Free Time Primary:

Free Time Secondary:

- Day Plan #1 - Mon-Thr patt 1 - 7
- Day Plan #2 - Fri - patt 1 - 7 w/5 @ 14:45
- Day Plan #3 - Sat - patt 7, then patt 6 all other times
- Day Plan #4 - Sun - patt 7, then patt 6 all other times

Min Green:		10		10				
Yellow CLR:		3.7		3.7				
All Red CLR:		2.2		2.0				
Walk:		7		7				
FDW:		13		13				

Direction:		N/S		WB				
Ø Number:		2		4				

Patterns	Cycle	Offset							
1. 0615 - 0900 AM Peak	140	9		70		70			
2. 0900 - 1115 AM Off Peak	120	20		60		60			
3. 1115 - 1330 Noon	120	20		60		60			
4. 1330 - 1515 PM Off Peak	120	20		60		60			
5. 1515 - 1830 PM Peak	140	135		70		70			
6. 1830 - 2000 Evening	120	20		60		60			
7. 2000 - 0615 Late	120	20		60		60			
8.	120	20		60		60			
9. Convention Ctr - Outbound	120	30		40		80			
10. Arena - Inbound	120	30		40		80			
11. Arena - Out Fla Ave Closed	120	51		85		35			
12. Art Festival - Inbound	120	28		36		84			
13. Arena - Out Fla Ave Opened	120	51		80		40			
14. Straz - Outbound	120	5		54		66			
15. Arena Lg/Straz - Outbound	120	30		40		80			
16. Hurricane	100	1		40		60			

**City of Tampa Signal Timing Sheet**

Section ID: 76      Computer: M      CCU: 4      Drop: 4      Shop ID: 1636

Timing Date: 4/21/2014      Phase Date: 10/30/2000      Controller: ASC2S

Intersection: JEFFERSON / JACKSON

Phase Numbers	2	4
Direction	N/S	EB
Minimum Green	10	10
Walk	7	7
Flash Don't Walk	13	13
Vehicle Extension	3.0	3.0
Max. Green I	45	75
Max. Green II	45	75
Yellow Clearance	3.7	3.7
All Red Clearance	2.0	2.0
Phase Recall	MAX	MAX
Detector Memory	---	---
Ped. Recall	ON	ON
Flash Operation	RED	YEL

**Special Modes and Times of Operation:**

Surveillance Times:

Flash Source:      Flash Times:

C = Computer Flash    T = Time Clock/Controller

Special Functions:

**FDOT SOP:**

Backup Protection (Y/N): **N**

FDOT FDW (Y/N): **Y**

Please Implement Within :     1 Week       1 Month

**Comments:**

UPDATED TIMINGS  
ACTUATED PRETIMED OPERATION

Submitted By: WJ  
Date: 12/10/14

Reviewed By: JS  
Date: 2/27/15

Approved By: BA  
Date: 3/17/15

Signal Timing Implemented:     As sent       With the following revisions

Date: 05/12/15      By: JC/DW

Signal Timing Not Implemented:     Reasons: \_\_\_\_\_

Date: \_\_\_\_\_      By: \_\_\_\_\_

# 76 - JEFFERSON & JACKSON

ECONOLITE

Timing Date: 12/10/2014	MIN	10	10
MSX: M CCU: 4 Drop: 4	YEL	3.7	3.7
Structures: 1	RED	2	2
Lead / Lag:	WLK	7	7
	FDW	13	13
	Min - 42	26	16
Pat	CYC	OS	
			2 4
1 Am 0615 - 0900	140	22	46 94
2 Am off 0900 - 1115	120	32	50 70
3 Noon 1115 - 1330	120	32	50 70
4 Pm off 1330 - 1515	120	32	50 70
5 Pm 1515 - 1830	140	22	46 94
6 Evening 1830 - 2000	120	32	50 70
7 Late 2000 - 0615	120	65	35 85
8	120	65	35 85
9 Convention Ctr - Out	120	63	50 70
10 Arena-In	120	18	50 70
11 Arena-Out Fla Closed	120	46	80 40
12 Art Festival In	120	27	58 62
13 Arena-Out Fla Opened	120	34	60 60
14 P.A.C. - Out	120	5	31 89
15 Arena Lg/ P.A.C. Out	120	63	50 70
16 Hurricane	100	42	38 62

T.B.C. Day Plan 1: M-Th patt 1-7 Day Plan 2: Fri patt 1-7 w/5 @ 14:45  
 Day Plan 3: S-Su patt 7 and patt 2 all other times











# Coordination Pattern Page

Ver. E

Print Date: 8/20/2018

Major Street: JACKSON

Section Id: 77

Record Number:

Coord Date: 7/2/2018

Minor Street: GOVERNOR

Coord M-F:

Coord WkEnd:

Coord Free:

Coord Sp Ops:

Direction:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	EB	<input type="text"/>	SB
Ø Number:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	6	<input type="text"/>	8

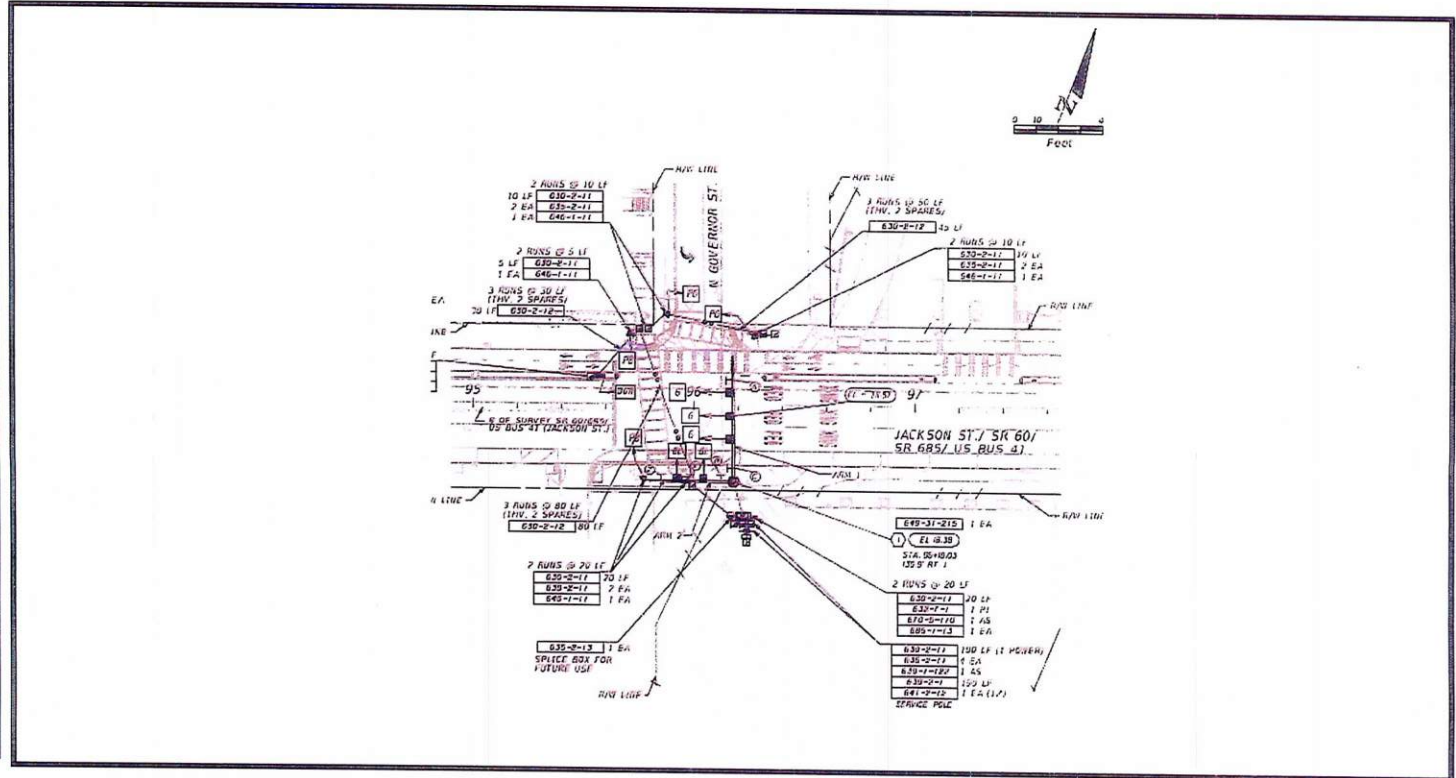
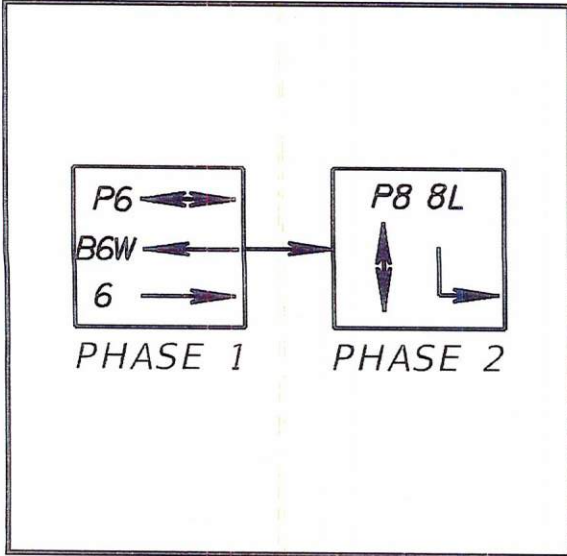
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1.	0615 - 0900 AM Peak	1	140	54	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	100	<input type="text"/>	40
2.	0900 - 1115 AM Off Peak	1	120	65	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	80	<input type="text"/>	40
3.	1115 - 1330 Noon	1	120	65	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	80	<input type="text"/>	40
4.	1330 - 1515 PM Off Peak	1	120	65	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	80	<input type="text"/>	40
5.	1515 - 1830 PM Peak	1	140	54	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	100	<input type="text"/>	40
6.	1830 - 2000 Evening	1	120	65	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	80	<input type="text"/>	40
7.	2000 - 0615 Late	1	120	65	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	80	<input type="text"/>	40
8.	<input type="text"/>	1	120	65	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	80	<input type="text"/>	40
9.	Convention Ctr - Outbound	1	120	67	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	90	<input type="text"/>	30
10.	Arena - Inbound	1	120	20	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	90	<input type="text"/>	30
11.	Arena - Outbound Fla Ave Closed	1	120	52	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	90	<input type="text"/>	30
12.	Art Festival - Inbound	1	120	33	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	90	<input type="text"/>	30
13.	Arena - Outbound Fla Ave Opened	1	120	52	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	90	<input type="text"/>	30
14.	Straz - Outbound	1	120	10	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	90	<input type="text"/>	30
15.	Arena Lg/Straz - Outbound	1	120	67	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	90	<input type="text"/>	30
16.	Hurricane	1	100	57	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	70	<input type="text"/>	30

Section Id 77 Controller Type Cobalt

Major Street JACKSON

Minor Street GOVERNOR

Coord Date 7/2/2018 FDOT SOP: 1 MOD



Ped 1 Selector 1ped-wlk-fdw-count PED Signal 1: P6, P8 	Sig 1 Selector 3-section-ball-vertica Signal Head 1: 6, 6BW 	Sig 2 Selector 3-section-gl-yl-rl-vert Signal Head 2: 8L 	Sig 3 Selector Signal Head 3:	Sig 4 Selector Signal Head 4:	Sig 5 Selector Signal Head 5:	Sig 6 Selector Signal Head 6:	Sig 7 Selector Signal Head 7:	Sig 8 Selector Signal Head 8:
Ped 2 Selector PED Signal 2:	Sig 9 Selector Signal Head 9:	Sig 10 Selector Signal Head 10:	Sig 11 Selector Signal Head 11:	Sig 12 Selector Signal Head 12:	Sig 13 Selector Signal Head 13:	Sig 14 Selector SIGNAL HEAD 14	Sig 15 Selector SIGNAL HEAD 15	Sig 16 Selector SIGNAL HEAD 16



# City of Tampa Signal Timing Sheet

Section ID: 80      Computer: M      CCU: 20      Drop: 9      Shop ID: 1465  
 Timing Date: 4/21/2014      Phase Date: 4/1/2013      Controller: Econo ASC3S  
 Intersection: NEBRASKA      / TWIGGS

Phase Numbers	2	5	6	<i>EW</i> 8
Direction	SB	SBLT	NB	<del>W/B</del>
Minimum Green	10	5	10	10
Walk	7	---	7	7
Flash Don't Walk	15	---	15	16
Vehicle Extension	3.0	2.0	3.0	3.0
Max. Green I	40	15	40	40
Max. Green II	40	15	40	40
Yellow Clearance	3.7	3.7	3.7	3.7
All Red Clearance	2.3	2.0	2.3	2.4
Phase Recall	MAX		MAX	MAX
Detector Memory	---	---	---	---
Ped. Recall	ON		ON	ON
Flash Operation	YEL		YEL	RED

**Special Modes and Times of Operation:**  
 Surveillance Times:  
 Flash Source:      Flash Times:  
 C = Computer Flash    T = Time Clock/Controller  
 Special Functions:

FDOT SOP: 11 MOD  
 Backup Protection (Y/N): Y  
 FDOT FDW (Y/N): Y

Please Implement Within :  1 Week      [ ] 1 Month

**Comments:**

ACTUATED PRE-TIMED OPERATION
TSP Location. IP 172.19.45.66

Submitted By: GT      Reviewed By: JS      Approved By: VB  
 Date: 4-22-14      Date: 4-22-14      Date: 4/22/14

Signal Timing Implemented:  As sent.      [ ] With the following revisions

Date: 2/26/15      By: M.C.

Signal Timing Not Implemented: [ ] Reasons: \_\_\_\_\_

Date: \_\_\_\_\_      By: \_\_\_\_\_

80  
CITY OF TAMPA COMPUTER PATTERN SHEET

80

# 80 - NEBRASKA & TWIGGS

ECONOLITE

Timing Date: 03/31/2017	MIN	10	10	5
MSX: M CCU: 14 Drop: 1	YEL	3.7	3.7	3.7
Structures: 1	RED	2.3	2.4	2
Lead / Lag:	WLK	7	7	
	FDW	15	16	
	Min - 57	29	17	11
Pat	CYC	OS	2/6	8 5
1 Am 0615 - 0900	140	119	33	95 12
2 Am off 0900 - 1115	120	114	40	68 12
3 Noon 1115 - 1330	120	60	40	68 12
4 Pm off 1330 - 1515	120	60	53	55 12
5 Pm 1515 - 1830	140	130	35	65 40
6 Evening 1830 - 2000	120	114	33	75 12
7 Late 2000 - 0615	120	60	33	75 12
8	120	114	33	75 12
9 Convention Ctr - Out	120	60	30	70 20
10 Arena-In	90	32	33	45 12
11 Arena-Out Fla Closed	240	92	193	35 12
12 Art Festival In	120	114	33	75 12
13 Arena-Out Fla Opened	120	92	33	75 12
14 P.A.C. - Out	90	32	33	45 12
15 Arena Lg/ P.A.C. Out	120	60	48	60 12
16 Hurricane	90	32	33	45 12

Call on 4 & 8 for Pattern 1

T.B.C. Day Plan 1: M-Th patt 1-7 Day Plan 2: Fri patt 1-7 w/5 @ 14:45  
Day Plan 3: S-Su patt 7 and patt 2 all other times





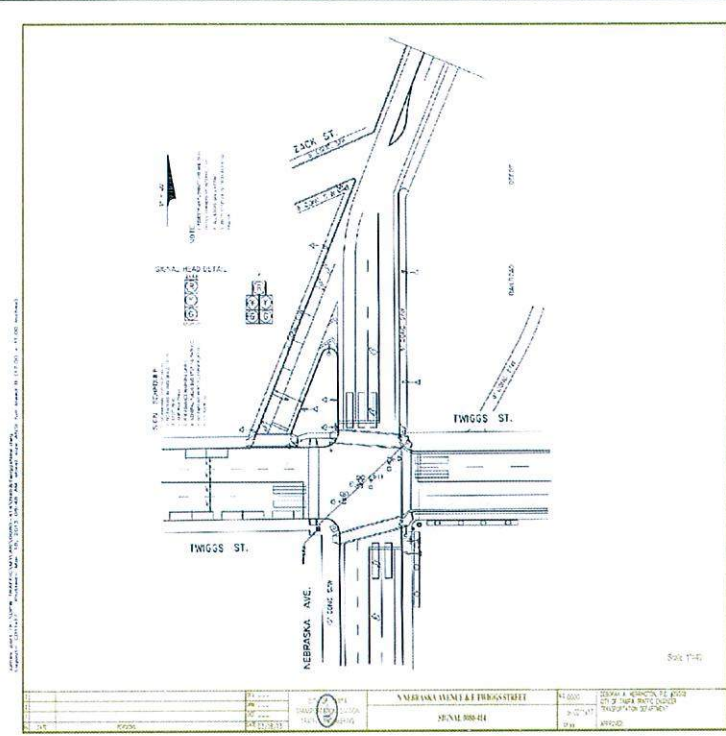
# City of Tampa - Phasing Diagram



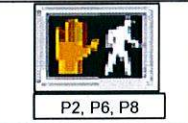
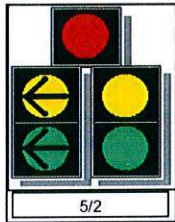
DWG 8/20/2013  
Vers. 2/15/2010

Pg: 1 of 1

Prepared by GT Reviewed by *[Signature]*



Sect. I.D.#	80														
Location:	NEBRASKA / TWIGGS														
Phasing Date:	5/15/2007														
Controller:	Econolite														
Vehicle Movements	Phase	Interval	2	6	8	5/2									
			Y	Y	R	Y									
			Display Sequence								P2	P4	P6	P8	
	Ø2 & Ø5	RW	G		R	R	←G	G				W		DW	DW
		Clear Ped	G		R	R	←G	G				FDW		DW	DW
		Clear to Ø2 & Ø6	G		R	R	←Y	G				DW		DW	DW
			G		R	R		G				DW		DW	DW
	Ø2 & Ø6	RW	G		G	R		G				W		W	DW
		Clear Ped	G		G	R		G				FDW		FDW	DW
		Clear to Ø4 & Ø8	Y		Y	R		Y				DW		DW	DW
			R		R	R		R				DW		DW	DW
	Ø8	RW	R		R	G		R				DW		DW	W
		Clear Ped	R		R	G		R				DW		DW	FDW
		Clear to	R		R	Y		R				DW		DW	DW
		All Other	R		R	R		R				DW		DW	DW
			Signal Head #	2	6	8	5/2								
			Econolite Overlaps												
			Load Switch #	LS2	LS6	LS8	LS5 LS2								
			Peek Overlaps												



8 phase controller in concurrent, semi-actuated 4 phase operation. CNA phases are Ø2 & Ø6. Backup Protection - 'ON'. Ped heads and buttons on P2, P6, and P8.

**FDOT SOP 11 MOD**



# Timingsheet, Controller Operation and Load Switch Page

SECID: 81    Timing Date: 6/20/2018    Phasing Date: 6/20/2018    Shop Number: 1769    Drop:  
 Major Street **NEBRASKA**    Orientation: North-South    Controller Type **COBALT**  
 Minor Street **KENNEDY**    Orientation: Westbound    Computer System **Cen**    Last Date Sent

### Controller Timings (seconds)

Controller Phase Number	Ø2	Ø4	Ø6
Direction	<b>SBRT</b>	<b>WB</b>	<b>NB</b>
Minimum Green	10	10	10
Vehicle Extension	3.0	3.0	3.0
Yellow Clr/Alt Clr	3.7	3.7	3.7
Red Clr/Alt Red Clr	2.2	2.1	2.2
Max Green I	25	25	25
Max Green II	25	55	25
Walk	7	7	7
Walk - XGuard	---	---	---
FDW	14	17	12
FDW - XGuard	---	---	---
Detector Memory	---	---	---
Phase Recall	MAX	MAX	MAX
Ped Recall	---	ON	ON
Flash Operation	RED	RED	RED

### Controller Operation

RXR Preempt: No    FDOT SOP: 13 MOD  
 Fire Preempt: No    Backup Protection: N  
 Bridge Preempt: No    LPI Location(Y/N): No  
 Transit Preempt: False    LPI Date:  
 Crossing Guard Times AM:  
 Crossing Guard Times PM:  
 Free Time Primary:  
 Free Time Secondary:  
 Flash Source- (C)omputer or (F)ield:  
 Flash Times Primary  
 Flash Times Secondary  
 CNA Ø's    **2+6**

### Phase Ring Assignments

**Sequence 1**    Ring 1: 1 2 | 3 4  
                     Ring 2: 5 6 | 7 8  
  
**Sequence 2**    Ring 1: \_\_\_\_\_  
                     Ring 2: \_\_\_\_\_  
  
**Sequence 3**    Ring 1: \_\_\_\_\_  
                     Ring 2: \_\_\_\_\_  
  
**Sequence 4**    Ring 1: \_\_\_\_\_  
                     Ring 2: \_\_\_\_\_

### Cabinet Load Switch Assignments

LS1: OLE    LS2: OLF    LS3:            LS4: Ø4    LS5:            LS6: Ø6    LS7:            LS8:  
 LS9: P2    LS10: P4    LS11: P6    LS12:            LS13:            LS14:            LS15:            LS16:

Ø2 is parent phase to OLF. OLF is also ped protected from Ø2.  
 Ø6 is parent phase to OLE 3 section flashing yellow arrow.

*OLE protect (PED) 2*

Comments

Submitted By: *M*    Date: *7-9-18*    Review By: *SS*    Date: *7/9/18*    Approved By: *BC*    Date: *07/09/2018*

Implemented By: *[Signature]*    Date: *7-16-18*    Notes: *ENS NITS LT W/ PUA HATS HATED W*

*[Handwritten signature]*

# Coordination Pattern Page

Print Date: 7/9/2018

Major Street: NEBRASKA

Minor Street: KENNEDY

Free Time Primary:

Free Time Secondary:

Section Id: 81

Record Number: 563

Coord Date: 10/24/2017

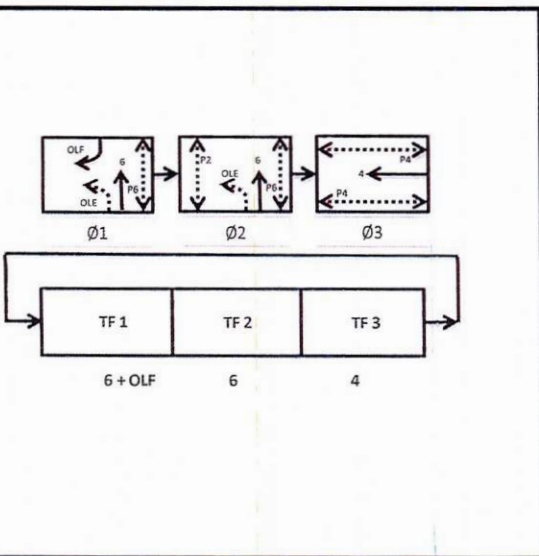
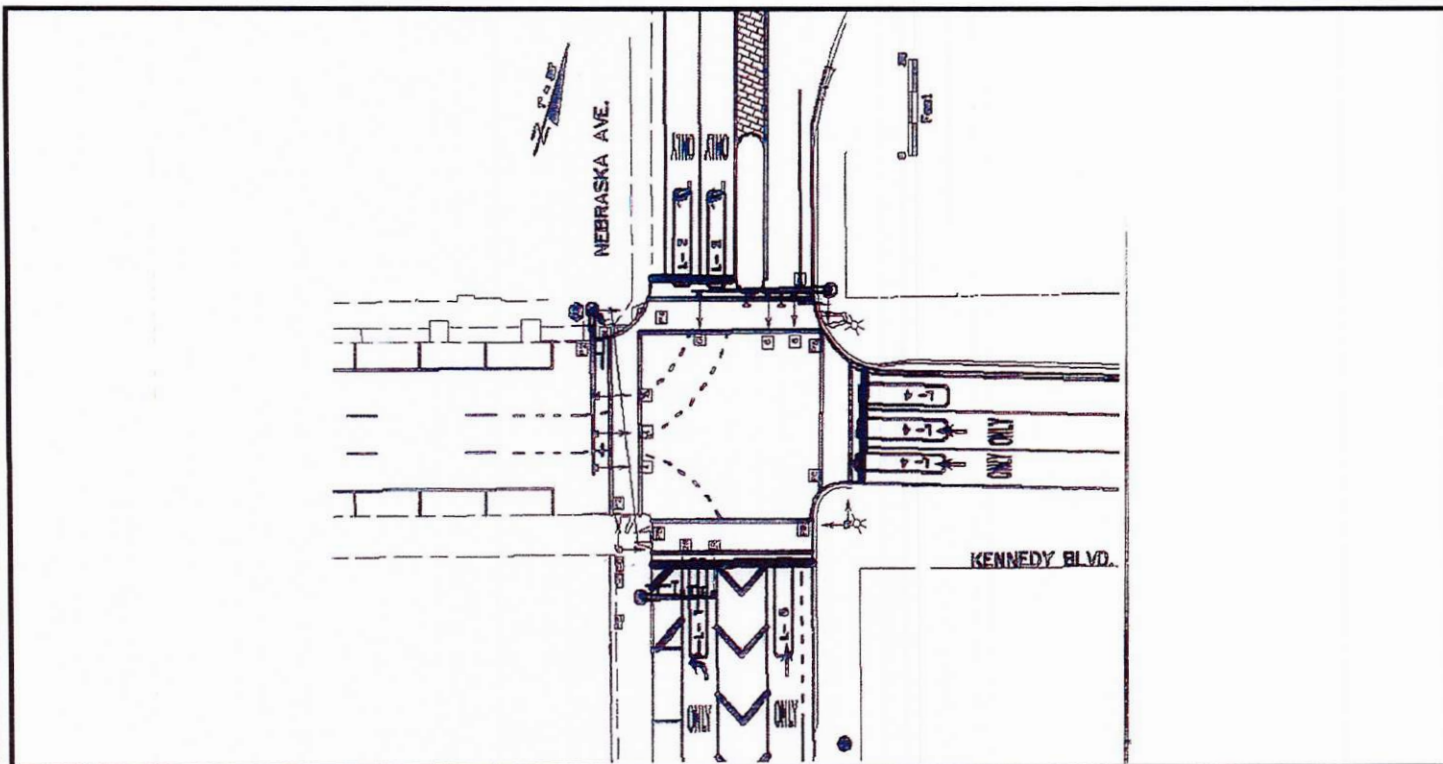
Min Green:		10		10		10		
Yellow CLR:		3.7		3.7		3.7		
All Red CLR:		2.2		2.1		2.2		
Walk:		7		7		7		
FDW:		14		17		12		

Direction:		SBRT		WB		NB		
Ø Number:		Ø2		Ø4		Ø6		

	Patterns	Cycle	Offset							
1.	0615 - 0900 AM Peak	140	15		50		90		50	
2.	0900 - 1115 AM Off Peak	120	86		60		60		60	
3.	1115 - 1330 Noon	120	86		60		60		60	
4.	1330 - 1515 PM Off Peak	120	86		60		60		60	
5.	1515 - 1830 PM Peak	140	60		50		90		50	
6.	1830 - 2000 Evening	120	86		60		60		60	
7.	2000 - 0615 Late	120	86		60		60		60	
8.		120	86		60		60		60	
9.	Convention Ctr - Outbound	120	86		30		90		30	
10.	Arena - Inbound	120	15		32		88		32	
11.	Arena - Out Fla Ave Closed	120	10		60		60		60	
12.	Art Festival Inbound	120	85		40		60		40	
13.	Arena - Out Fla Ave Opened	120	104		29		91		29	
14.	Straz - Outbound	120	80		32		88		32	
15.	Arena Lg/Straz Outbound	120	92		30		90		30	
16.	Hurricane	100	85		40		60		40	



Section Id 81 Controller Type COBALT  
 Major Street NEBRASKA  
 Minor Street KENNEDY  
 Coord Date 10/24/2017 FDOT SOP: 13 MOD



Ped 1 Selector 1ped-wlk-fdw-count PED Signal 1: P2, P4, P6 	Sig 1 Selector 3-section-ball-vertica Signal Head 1: 4, 6 	Sig 2 Selector 3-section-ylfl-yl-rl Signal Head 2: 6L 	Sig 3 Selector 3-section-gr-yr-rr-ver Signal Head 3: 2 	Sig 4 Selector Signal Head 4:	Sig 5 Selector Signal Head 5:	Sig 6 Selector Signal Head 6:	Sig 7 Selector Signal Head 7:	Sig 8 Selector Signal Head 8:
Ped 2 Selector PED Signal 2:	Sig 9 Selector Signal Head 9:	Sig 10 Selector Signal Head 10:	Sig 11 Selector Signal Head 11:	Sig 12 Selector Signal Head 12:	Sig 13 Selector Signal Head 13:	Sig 14 Selector SIGNAL HEAD 14	Sig 15 Selector SIGNAL HEAD 15	Sig 16 Selector SIGNA L HEAD 16

# Timingsheet, Controller Operation and Load Switch Page

SECID: 1201    Timing Date: 5/16/2018    Phasing Date: 5/16/2018    ARCGIS Node ID:    Shop Number: 1393    Drop: 3

Major Street **FLORIDA**

Orientation: Northbound

Controller Type **Cobalt**

Minor Street **WHITING**

Orientation: East-West

Computer System **Cen**

Date Sen **7/28/2014**

## Controller Timings (seconds)

Controller Phase Number	2	4				
Direction	NB	E/W				
Minimum Green	10	10				
Vehicle Extension	3.0	3.0				
Yellow Clr/Alt Clr	3.7	3.7				
Red Clr/Alt Red Clr	2	2.3				
Max Green I	60	50				
Max Green II	60	50				
Walk	7	7				
Walk - XGuard						
FDW	12	16				
FDW - XGuard						
Detector Memory	---	---				
Phase Recall	MAX	MAX				
Ped Recall	ON	ON				
Flash Operation	YEL	RED				

## Controller Operation

RXR Preempt: No                      FDOT SOP: 2 MOD  
 Fire Preempt: No                      Backup Protection: N  
 Bridge Preempt: No                      FDOT Walk  
 Transit Preempt: False                      FDOT FDW: Y  
 Crossing Guard Times AM:  
 Crossing Guard Times PM:  
 Free Time Primary:  
 Free Time Secondary:  
 Flash Source- (C)omputer or (F)ield:  
 Flash Times Primary  
 Flash Times Secondary  
 CNA Ø's                      Ø2, Ø4

## Cabinet Load Switch Assignments

LS1:            LS2: Ø2    LS3:            LS4: Ø4    LS5:            LS6:            LS7:            LS8:  
 LS9: P2    LS10: P4    LS11:            LS12:            LS13:            LS14:            LS15:            LS16:

## Phase Ring Assignments

**Sequence 1**    Ring 1: 1, 2 | 3 4  
                     Ring 2: 5 6 | 7 8

**Sequence 2**    Ring 1: \_\_\_\_\_  
                     Ring 2: \_\_\_\_\_

**Sequence 3**    Ring 1: \_\_\_\_\_  
                     Ring 2: \_\_\_\_\_

**Sequence 4**    Ring 1: \_\_\_\_\_  
                     Ring 2: \_\_\_\_\_

**Comments**  
 UPDATED TIMINGS  
 ACTUATED PRETIMED OPERATION  
 5 secs. Green Delay on Ø4. LPI implemented 5-16-2018

Submitted By: **GT**    Date: **6-11-18**    Review By: **CS**    Date: **6/11/18**    Approved By: **BC**    Date: **06/12/2018**  
 Implemented By: **RW**    Date: **6-14-18**    Notes:



# Coordination Pattern Page

Print Date: 6/1/2018

Major Street: FLORIDA

Section Id: 1201

Record Number: 147

Coord Date: 5/16/2018

Minor Street: WHITING

Free Time Primary:

Free Time Secondary:

Day Plan #1 - Mon-Thr patt 1 -7.

Day Plan #2 - Fri - patt 1 - 7 w/5 @ 14:45

Day Plan #3 - Sat - patt 7, then patt 2 all other times

Day Plan #4 - Sun - patt 7, then patt 2 all other times

Min Green:		10		10				
Yellow CLR:		3.7		3.7				
All Red CLR:		2		2.3				
Walk:		7		7				
FDW:		12		16				

Direction:		NB		E/W				
Ø Number:		2		4				

	Patterns	Cycle	Offset						
1.	0615 - 0900 AM Peak	140	121		70		70		
2.	0900 - 1115 AM Off	120	32		70		50		
3.	1115 - 1330 Noon	120	32		70		50		
4.	1330 - 1515 PM Off	120	32		70		50		
5.	1515 - 1830 PM Peak	140	121		80		60		
6.	1830 - 2000 Evening	120	32		70		50		
7.	2000 - 0615 Late	120	32		70		50		
8.		120	32		70		50		
9.	Convention Ctr - Outbound	120	32		70		50		
10.	Arena - Inbound	120	32		40		80		
11.	Arena - Outbound Fla Ave Closed	120	0		60		60		
12.	Marriott - Outbound PM	100	5		53		47		
13.	Arena - Outbound Fla Ave Opened	120	0		85		35		
14.	Arena - Inbound Flush	120	37		50		70		
15.	Arena Lg / Straz - Outbound	120	108		70		50		
16.	Hurricane	100	5		53		47		

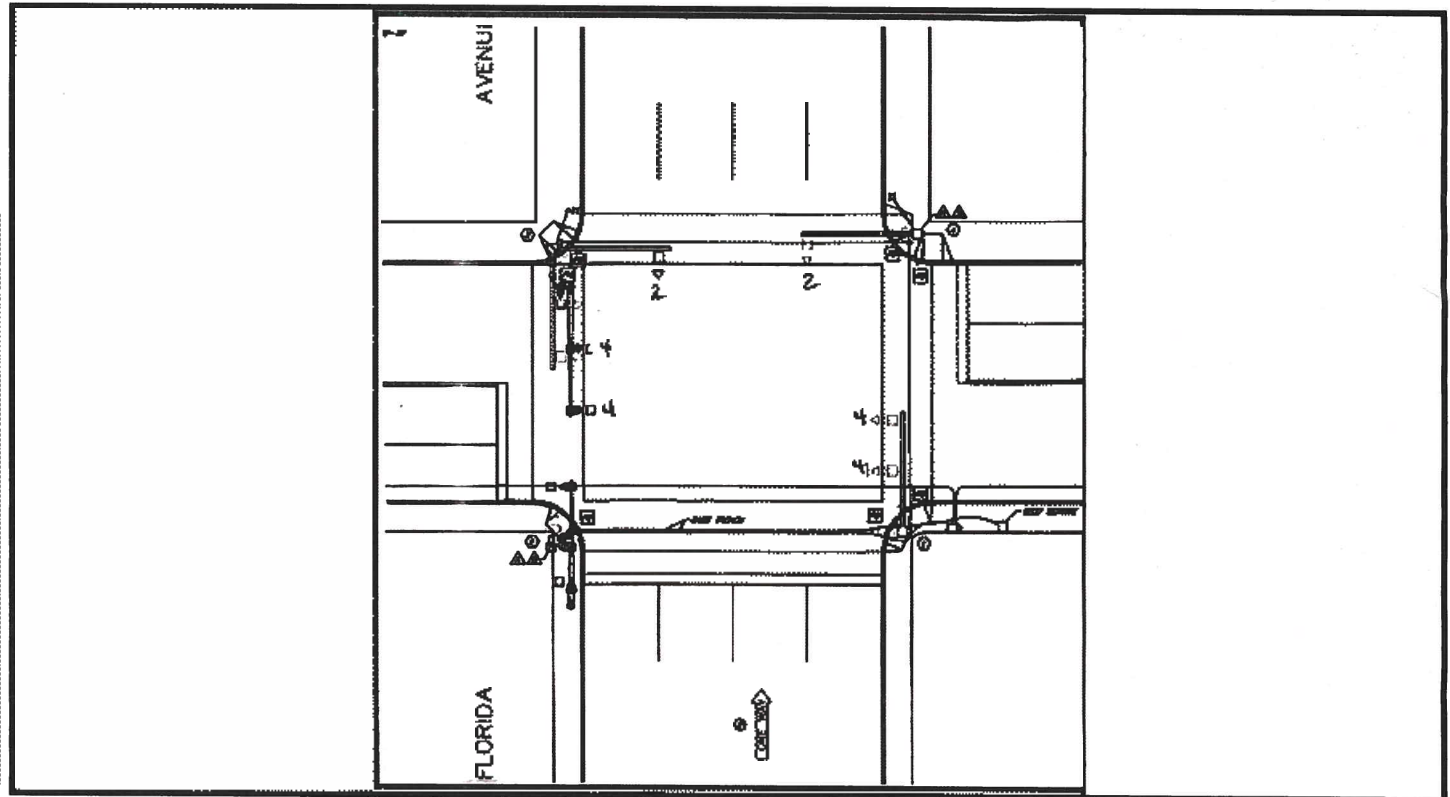
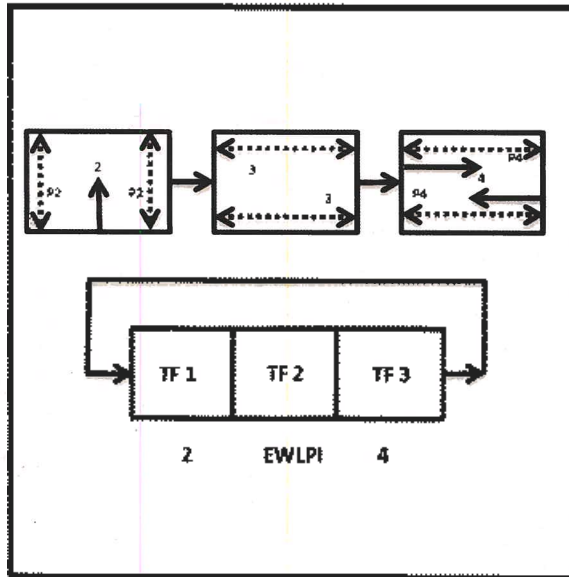




Section Id 1201 Controller Type Cobalt

Major Street FLORIDA

Minor Street WHITING

Coord Date 5/16/2018 FDOT SOP: 2 MOD



Ped 1 Selector Iped-wlk-fdw-count PED Signal 1: P2, POL4 	Sig 1 Selector 3-section-gb-yb-rb-h Signal Head 1: 2, 4 	Sig 2 Selector Signal Head 2:	Sig 3 Selector Signal Head 3:	Sig 4 Selector Signal Head 4:	Sig 5 Selector Signal Head 5:	Sig 6 Selector Signal Head 6:	Sig 7 Selector Signal Head 7:	Sig 8 Selector Signal Head 8:
Ped 2 Selector PED Signal 2:	Sig 9 Selector Signal Head 9:	Sig 10 Selector Signal Head 10:	Sig 11 Selector Signal Head 11:	Sig 12 Selector Signal Head 12:	Sig 13 Selector Signal Head 13:	Sig 14 Selector SIGNAL HEAD 14	Sig 15 Selector SIGNAL HEAD 15	Sig 16 Selector SIGNAL HEAD 16



# Timingsheet, Controller Operation and Load Switch Page

SECID: 1202 Timing Date: 5/25/2018 Phasing Date: 5/25/2018

Shop Number: 1349 Drop: 3

Major Street **MORGAN**  
Minor Street **WHITING**

Orientation: North-South  
Orientation: East-West

Controller Type **Cobalt**  
Computer System **Cen** Last Date Sent **12/5/2014**

### Controller Timings (seconds)

Controller Phase Number	2	3	4				
Direction	N/S	WBLT	E/W				
Minimum Green	10	5	10				
Vehicle Extention	3.0	3.0	3.0				
Yellow Clr/Alt Clr	3.7	3.7	3.7				
Red Clr/Alt Red Clr	2	2.1	2.1				
Max Green I	40	20	25				
Max Green II	40	20	25				
Walk	7		7				
Walk - XGuard							
FDW	12		14				
FDW - XGuard							
Detector Memory	---	---	---				
Phase Recall	MAX	MAX	MAX				
Ped Recall	ON	ON	ON				
Flash Operation	YEL	RED	RED				

### Controller Operation

RXR Preempt: No FDOT SOP: 11 MOD  
 Fire Preempt: No Backup Protection: N  
 Bridge Preempt: No LPI Location(Y/N): No  
 Transit Preempt: False LPI Date:  
 Crossing Guard Times AM:  
 Crossing Guard Times PM:  
 Free Time Primary:  
 Free Time Secondary:  
 Flash Source- (C)omputer or (F)ield:  
 Flash Times Primary C  
 Flash Times Secondary  
 CNA Ø's Ø2, Ø4

### Phase Ring Assignments

Sequence 1	Ring 1:	2 3 4
	Ring 2:	
Sequence 2	Ring 1:	
	Ring 2:	
Sequence 3	Ring 1:	
	Ring 2:	
Sequence 4	Ring 1:	
	Ring 2:	

### Cabinet Load Switch Assienments

LS1: OLB LS2: Ø2 LS3: Ø3 LS4: Ø4 LS5: POL3 LS6: LS7: LS8:  
 LS9: P2 LS10: P4 LS11: LS12: LS13: LS14: LS15: LS16:

Comments

\*UPDATED TIMING\*  
 \*SEQUENCE - Ø2, Ø3 (Ø3 + OLB-WB), Ø4 (Ø4 + OLB-WB). \*  
 \*PRE-TIMED OPERATION - CNA - Ø2 & Ø4. \*

Submitted By: *CB* Date: *10/29/18* Review By: *[Signature]* Date: *10-30-18* Approved By: *BC* Date: *10/31/2018*  
 Implemented By: *DW* Date: *11/13/18* Notes:



# Coordination Pattern Page

Ver. E

Print Date: 10/29/2018

Major Street: **MORGAN**

Section Id: 1202

Record Number: 148

Coord Date: 5/16/2018

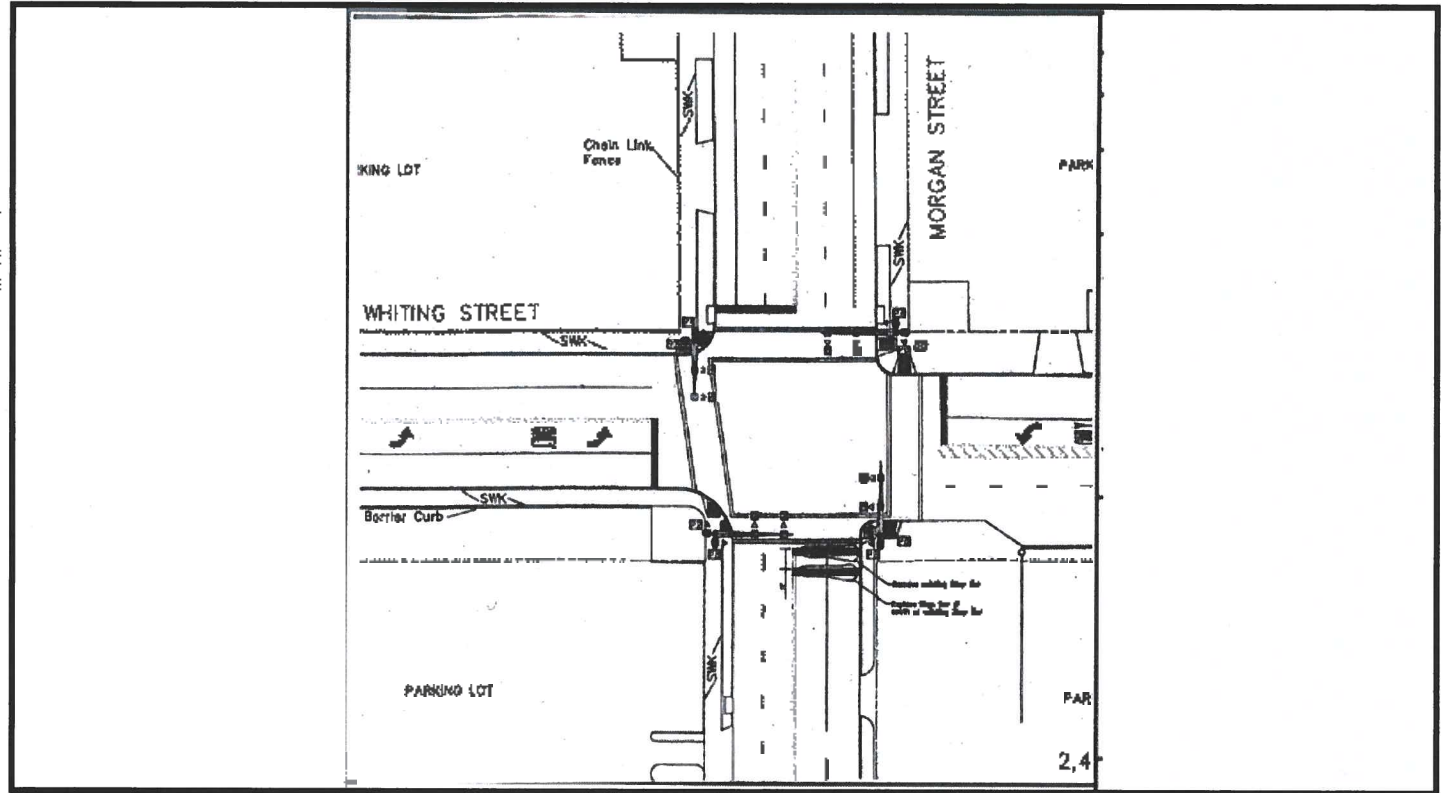
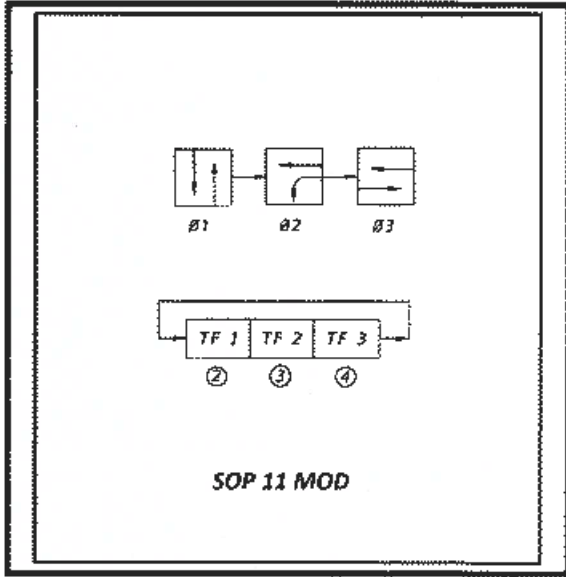
Minor Street: **WHITING**

Coord M-F:	Mon - Thur Patt 1-7, Fri Patt 1-7 w/5 @ 14:45
Coord WkEnd:	Patt 2, Patt 7 All Other Times
Coord Free:	
Coord Sp Ops:	

Direction:		N/S	WBLT	E/W				
Ø Number:		2	3	4				

	Patterns	Sequence	Cycle	Offset							
1.	0615 - 0900 AM Peak		70	0		27	15	28			
2.	0900 - 1115 AM Off Peak		60	38		30		30			
3.	1115 - 1330 Noon		60	38		30		30			
4.	1330 - 1515 PM Off Peak		60	38		30		30			
5.	1515 - 1830 PM Peak		70	30		35		35			
6.	1830 - 2000 Evening		60	38		30		30			
7.	2000 - 0615 Late		60	38		30		30			
8.											
9.	Convention Ctr - Outbound		120	6		80		40			
10.	Arena - Inbound		120	6		60	20	40			
11.	Arena - Outbound Fla Ave Closed		120	11		70		50			
12.	Marriott - Outbound PM		100	28		55		45			
13.	Arena - Outbound Fla Ave Opened		120	21		40		80			
14.	Arena - Inbound Flush		120	6		60		60			
15.	Arena Lg / Straz - Outbound		120	11		60		60			
16.	Hurricane		100	14		50		50			

Section Id 1202 Controller Type Cobalt  
 Major Street MORGAN  
 Minor Street WHITING  
 Coord Date 5/16/2018 FDOT SOP: 11 MOD



Ped 1 Selector 1ped-wlk-fdw-count PED Signal 1: P2, P4 	Sig 1 Selector 3-section-gb-yb-rb-h Signal Head 1: Ø2, Ø4 	Sig 2 Selector 5-section-gb-gi-yl-yb- Signal Head 2: Ø7/Ø4 	Sig 3 Selector Signal Head 3: 	Sig 4 Selector Signal Head 4: 	Sig 5 Selector Signal Head 5: 	Sig 6 Selector Signal Head 6: 	Sig 7 Selector Signal Head 7: 	Sig 8 Selector Signal Head 8: 
Ped 2 Selector PED Signal 2: 	Sig 9 Selector Signal Head 9: 	Sig 10 Selector Signal Head 10: 	Sig 11 Selector Signal Head 11: 	Sig 12 Selector Signal Head 12: 	Sig 13 Selector Signal Head 13: 	Sig 14 Selector SIGNAL HEAD 14: 	Sig 15 Selector SIGNAL HEAD 15: 	Sig 16 Selector SIGNAL HEAD 16: 





# Timingsheet, Controller Operation and Load Switch Page

SECID: 1203 Timing Date: 4/23/2014 Phasing Date: 10/9/2018

Shop Number: Drop:

Major Street **JEFFERSON**

Orientation: North - South

Controller Type Cobalt

Minor Street **WHITING**

Orientation: East West

Computer System Cent

Last Date Sent 8/26/2014

Controller Timings (seconds)						
Controller Phase Number	2	4	6	8		
Direction	SB	WB	NB	EB		
Minimum Green	10	10	10	10		
Vehicle Extension	3.0	3.0	3.0	3.0		
Yellow Clr/Alt Clr	3.7	3.7	3.7	3.7		
Red Clr/Alt Red Clr	2	2	2	2		
Max Green I	50	25	50	25		
Max Green II	60	35	60	35		
Walk	7	7	7	7		
Walk - XGuard						
FDW	12	13	12	13		
FDW - XGuard						
Detector Memory	---	---	---	---		
Phase Recall	MAX	---	MAX	---		
Ped Recall	ON		ON			
Flash Operation	YEL	RED	YEL	RED		

Controller Operation	
RXR Preempt:	No FDOT SOP: 1 MOD
Fire Preempt:	No Backup Protection: N
Bridge Preempt:	No LPI Location(Y/N): Yes
Transit Preempt:	False LPI Date: 10/9/2018
Crossing Guard Times AM:	
Crossing Guard Times PM:	
Free Time Primary:	
Free Time Secondary:	
Flash Source- (C)omputer or (F)ield:	
Flash Times Primary	
Flash Times Secondary	
CNA Ø's	2 & 6

Phase Ring Assignments	
Sequence 1	Ring 1: 2   4 Ring 2: 6   8
Sequence 2	Ring 1: _____ Ring 2: _____
Sequence 3	Ring 1: _____ Ring 2: _____
Sequence 4	Ring 1: _____ Ring 2: _____

Cabinet Load Switch Assignments									
LS1:	LS2: Ø2	LS3:	LS4: Ø4	LS5:	LS6: Ø6	LS7:	LS8: Ø8		
LS9: P2	LS10: P4	LS11: P6	LS12: P8	LS13:	LS14:	LS15:	LS16:		

5 sec LPI implemented 10-9-2018

Comments

Submitted By: *CYB* Date: *10-23-18* Review By: *[Signature]* Date: *10-23-18* Approved By: *BC* Date: *10/24/2018*  
 Implemented By: *DW* Date: *10/31/18* Notes:



# Coordination Pattern Page

Ver. E

Print Date: 10/23/2018

Major Street: JEFFERSON

Section Id: 1203

Record Number: 149

Coord Date: 10/9/2018

Minor Street: WHITING

Coord M-F: Patt 1-7

Coord WkEnd: S-Su patt 7 and patt 2 all other times

Coord Free:

Coord Sp Ops:

Direction:		SB		WB		NB		EB
Ø Number:		2		4		6		8

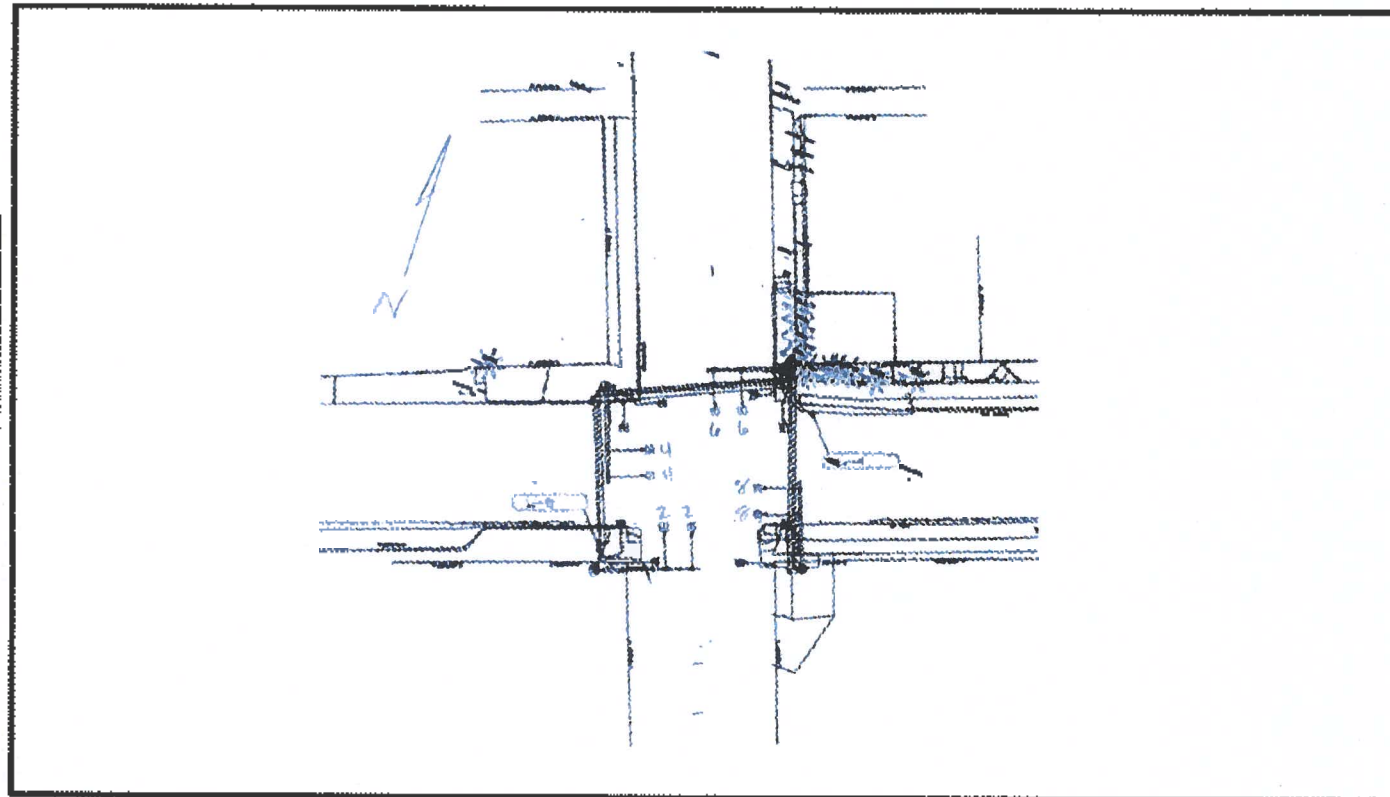
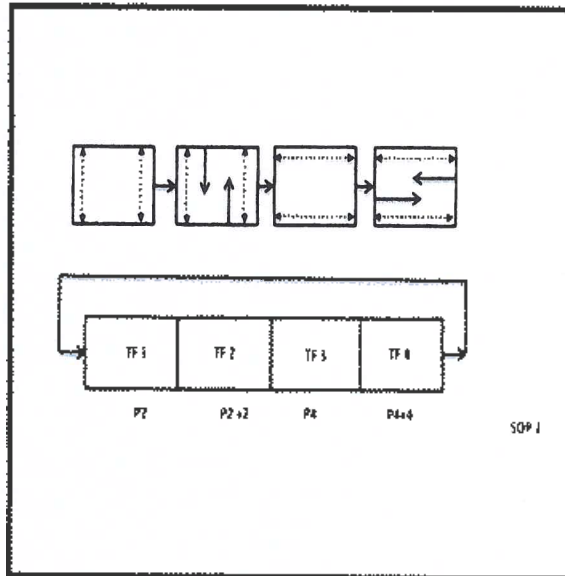
	Patterns	Sequence	Cycle	Offset								
1.	0615 - 0900 AM Peak	1	70	18		40		30		40		30
2.	0900 - 1115 AM Off Peak	1	60	30		30		30		30		30
3.	1115 - 1330 Noon	1	60	30		30		30		30		30
4.	1330 - 1515 PM Off Peak	1	60	30		30		30		30		30
5.	1515 - 1830 PM Peak	1	70	18		40		30		40		30
6.	1830 - 2000 Evening	1	60	30		30		30		30		30
7.	2000 - 0615 Late	1	60	30		30		30		30		30
8.												
9.	Convention Ctr - Outbound	1	120	30		40		80		40		80
10.	Arena - Inbound	1	120	30		40		80		40		80
11.	Arena - Outbound Fla Ave Closed	1	120	51		85		35		85		35
12.	Marriott - Outbound PM	1	100	1		40		60		40		60
13.	Arena - Outbound Fla Ave Opened	1	120	40		90		30		90		30
14.	Arena - Inbound Flush	1	120	5		54		66		54		66
15.	Arena Lg / Straz - Outbound	1	120	51		80		40		80		40
16.	Hurricane	1	100	1		40		60		40		60



Section Id 1203 Controller Type Cobalt

Major Street JEFFERSON

Minor Street WHITING

Coord Date 10/9/2018 FDOT SOP: 1



<p>Ped 1 Selector</p> <p>1ped-wlk-fdw-count</p> <p>PED Signal 1:</p> <p>P2, P4, P6, P8</p> 	<p>Sig 1 Selector</p> <p>3-section-ball-vertical</p> <p>Signal Head 1:</p> <p>2, 4, 6, 8</p> 	<p>Sig 2 Selector</p> <p>Signal Head 2:</p>	<p>Sig 3 Selector</p> <p>Signal Head 3:</p>	<p>Sig 4 Selector</p> <p>Signal Head 4:</p>	<p>Sig 5 Selector</p> <p>Signal Head 5:</p>	<p>Sig 6 Selector</p> <p>Signal Head 6:</p>	<p>Sig 7 Selector</p> <p>Signal Head 7:</p>	<p>Sig 8 Selector</p> <p>Signal Head 8:</p>
<p>Ped 2 Selector</p> <p>PED Signal 2:</p>	<p>Sig 9 Selector</p> <p>Signal Head 9:</p>	<p>Sig 10 Selector</p> <p>Signal Head 10:</p>	<p>Sig 11 Selector</p> <p>Signal Head 11:</p>	<p>Sig 12 Selector</p> <p>Signal Head 12:</p>	<p>Sig 13 Selector</p> <p>Signal Head 13:</p>	<p>Sig 14 Selector</p> <p>SIGNAL HEAD 14</p>	<p>Sig 15 Selector</p> <p>SIGNAL HEAD 15</p>	<p>Sig 16 Selector</p> <p>SIGNAL HEAD 16</p>



# Timingsheet, Controller Operation and Load Switch Page

SECID: 1207 Timing Date: 5/17/2018 Phasing Date: 5/17/2018

Shop Number: 1076 Drop:

Major Street **BROREIN**

Orientation: Westbound

Controller Type **COBALT**

Minor Street **FLORIDA**

Orientation: Northbound

Computer System **Cen**

Last Date Sent **8/26/2014**

## Controller Timings (seconds)

Controller Phase Number	2	4				
Direction	WB	NB				
Minimum Green	10	10				
Vehicle Extention	3.0	3.0				
Yellow Clr/Alt Clr	3.7	3.7				
Red Clr/Alt Red Clr	2.1	2.4				
Max Green I	50	70				
Max Green II	50	70				
Walk	7	7				
Walk - XGuard						
FDW	17	23				
FDW - XGuard						
Detector Memory	---	---				
Phase Recall	MAX	MAX				
Ped Recall	ON	ON				
Flash Operation	YEL	RED				

## Controller Operation

RXR Preempt: No FDOT SOP: 1 MOD  
 Fire Preempt: No Backup Protection: N  
 Bridge Preempt: No LPI Location(Y/N): Y  
 Transit Preempt: False LPI Date: 5/17/2018  
 Crossing Guard Times AM:  
 Crossing Guard Times PM:  
 Free Time Primary:  
 Free Time Secondary:  
 Flash Source- (C)omputer or (F)ield:  
 Flash Times Primary  
 Flash Times Secondary  
 CNA Ø's Ø2, Ø4

## Phase Ring Assignments

Sequence 1 Ring 1: 1 2 | 3 4  
 Ring 2: 5 6 | 7 8

Sequence 2 Ring 1: \_\_\_\_\_  
 Ring 2: \_\_\_\_\_

Sequence 3 Ring 1: \_\_\_\_\_  
 Ring 2: \_\_\_\_\_

Sequence 4 Ring 1: \_\_\_\_\_  
 Ring 2: \_\_\_\_\_

## Cabinet Load Switch Assignments

LS1: LS2: Ø2 LS3: LS4: Ø4 LS5: LS6: LS7: P2 LS8: P4  
 LS9: LS10: LS11: LS12: LS13: LS14: LS15: LS16:

Comments

UPDATED TIMINGS

ACTUATED PRETIMED OPERATION

LPI Location - 5sec green delay for Northbound.

Submitted By: *BT* Date: *5-31-18* Review By: *ES* Date: *6/11/18* Approved By: *BC* Date: *06/12/2018*  
 Implemented By: *DW* Date: *6-14-18* Notes:





# Coordination Pattern Page

Print Date: 6/1/2018

Major Street: **BROREIN**

Section Id: 1207

Record Number: 153

Coord Date: 7/12/2017

Minor Street: **FLORIDA**

Min Green:		10		10				
Yellow CLR:		3.7		3.7				
All Red CLR:		2.1		2.4				
Walk:		7		7				
FDW:		17		23				

Free Time Primary:

Free Time Secondary:

Day Plan #1 - Mon-Thr patt 1 -7.

Day Plan #2 - Fri - patt 1 - 7 w/5 @ 14:45

Day Plan #3 - Sat - patt 7, then patt 2 all other times

Day Plan #4 - Sun - patt 7, then patt 2 all other times

Direction:		WB		NB				
Ø Number:		2		4				

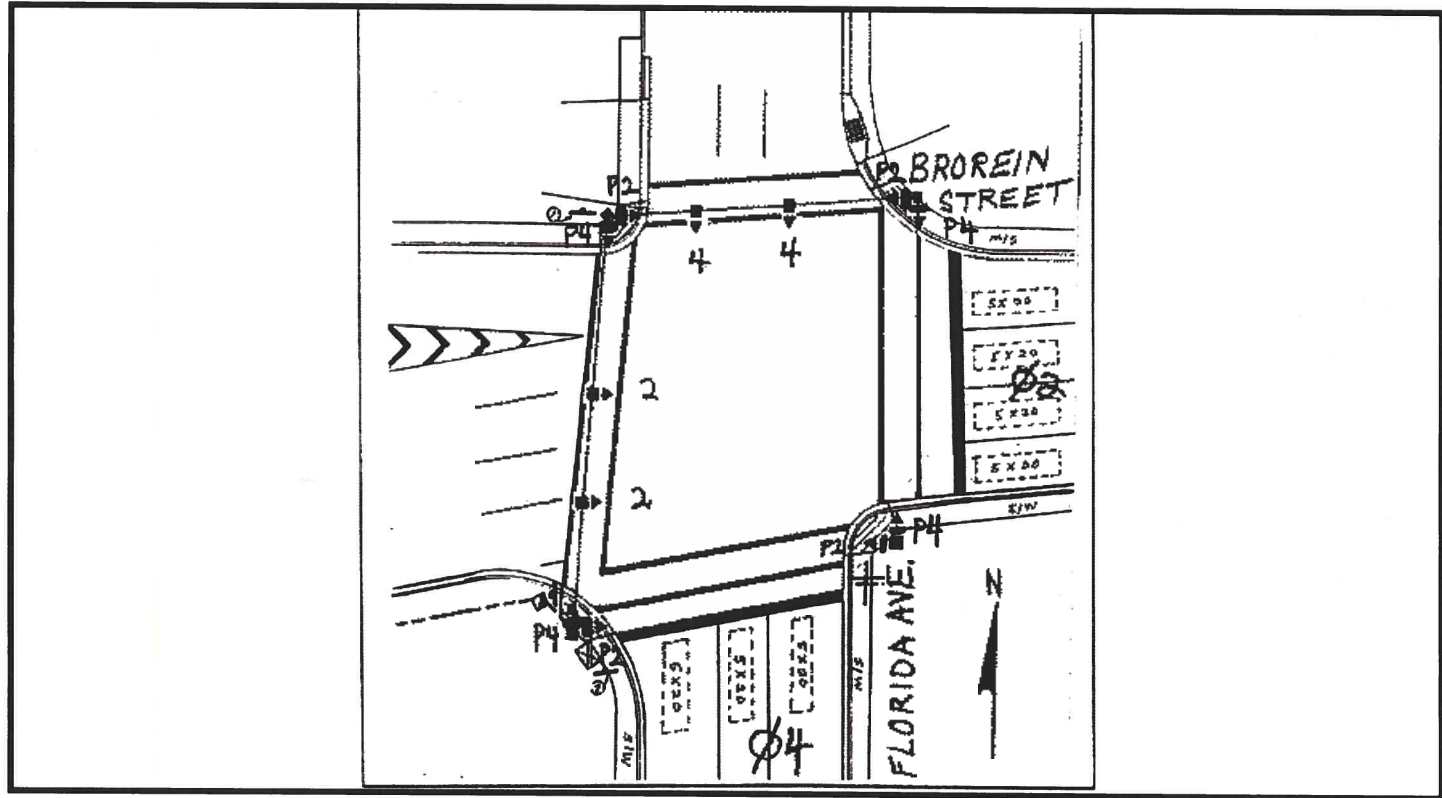
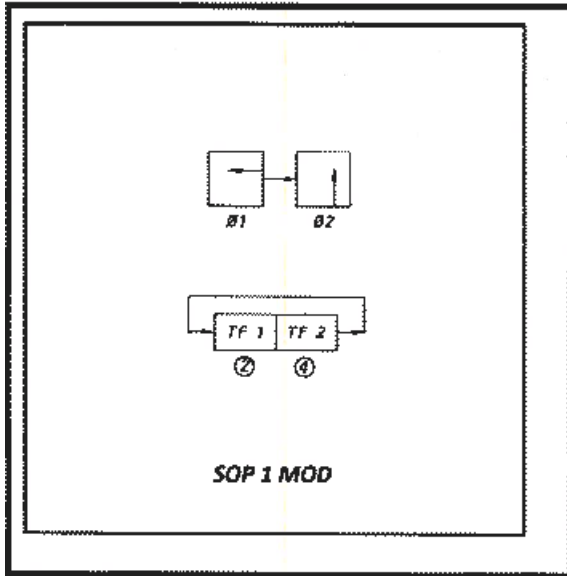
	Patterns	Cycle	Offset						
1.	0615 - 0900 AM Peak	140	43		60		80		
2.	0900 - 1115 AM Off Peak	120	84		50		70		
3.	1115 - 1330 Noon	120	84		50		70		
4.	1330 - 1515 PM Off Peak	120	84		50		70		
5.	1515 - 1830 PM Peak	140	46		60		80		
6.	1830 - 2000 Evening	120	84		50		70		
7.	2000 - 0615 Late	120	94		50		70		
8.		120	94		50		70		
9.	Convention Ctr - Outbound	120	94		50		70		
10.	Arena - Inbound	120	110		40		80		
11.	Arena - Outbound Fla Ave Closed	120	83		48		72		
12.	Marriott - Outbound PM	100	39		54		46		
13.	Arena - Outbound Fla Ave Opened	120	84		35		85		
14.	Arena - Inbound Flush	120	110		40		80		
15.	Arena Lg / Straz - Outbound	120	93		35		85		
16.	Hurricane	100	39		54		46		

Section Id 1207 Controller Type COBALT

Major Street BROREIN

Minor Street FLORIDA

Coord Date 7/12/2017 FDOT SOP: 1 MOD



Ped 1 Selector  
1ped-wlk-fdw-count  
PED Signal 1:



Ped 2 Selector

PED Signal 2:

Sig 1 Selector  
3-section-ball-vertica  
Signal Head 1:



Sig 9 Selector

Signal Head 9:

Sig 2 Selector  
Signal Head 2:

Sig 10 Selector

Signal Head 10:

Sig 3 Selector  
Signal Head 3:

Sig 11 Selector

Signal Head 11:

Sig 4 Selector  
Signal Head 4:

Sig 12 Selector

Signal Head 12:

Sig 5 Selector  
Signal Head 5:

Sig 13 Selector

Signal Head 13:

Sig 6 Selector  
Signal Head 6:

Sig 14 Selector

SIGNAL HEAD 14

Sig 7 Selector  
Signal Head 7:

Sig 15 Selector

SIGNAL HEAD 15

Sig 8 Selector  
Signal Head 8:

Sig 16 Selector

SIGNAL HEAD 16



# Timingsheet, Controller Operation and Load Switch Page

988

SECID: 1208 Timing Date: 5/17/2018 Phasing Date: 5/17/2018

Shop Number: 1469 Drop:

Major Street **BROREIN**

Orientation: Westbound

Controller Type **COBALT**

Minor Street **MORGAN**

Orientation: North-South

Computer System **Cen**

Last Date Sent 7/28/2014

## Controller Timings (seconds)

Controller Phase Number	2	4				
Direction	WB	N/S				
Minimum Green	10	10				
Vehicle Extention	3.0	3.0				
Yellow Clr/Alt Clr	3.7	3.7				
Red Clr/Alt Red Clr	2	2.3				
Max Green I	55	25				
Max Green II	80	35				
Walk	7	7				
Walk - XGuard						
FDW	12	19				
FDW - XGuard						
Detector Memory	---	---				
Phase Recall	MAX	MAX				
Ped Recall	ON	ON				
Flash Operation	YEL	RED				

## Controller Operation

RXR Preempt: No FDOT SOP: 1 MOD  
 Fire Preempt: No Backup Protection: N  
 Bridge Preempt: No LPI Location(Y/N): No  
 Transit Preempt: False LPI Date:  
 Crossing Guard Times AM:  
 Crossing Guard Times PM:  
 Free Time Primary:  
 Free Time Secondary:  
 Flash Source- (C)omputer or (F)ield:  
 Flash Times Primary  
 Flash Times Secondary  
 CNA Ø's Ø2, Ø4

## Phase Ring Assignments

Sequence 1 Ring 1: 1 2 | 3 4  
 Ring 2: 5 6 | 7 8  
 Sequence 2 Ring 1: \_\_\_\_\_  
 Ring 2: \_\_\_\_\_  
 Sequence 3 Ring 1: \_\_\_\_\_  
 Ring 2: \_\_\_\_\_  
 Sequence 4 Ring 1: \_\_\_\_\_  
 Ring 2: \_\_\_\_\_

## Cabinet Load Switch Assianments

LS1: LS2: Ø2 LS3: LS4: Ø4 LS5: LS6: LS7: LS8:  
 LS9: P2 LS10: P4 LS11: LS12: LS13: LS14: LS15: LS16:

Comments

MAX II: MONDAY THRU THURSDAY (06:15 - 09:00 & 15:15 - 18:30) / FRIDAY (06:15 - 09:00 & 14:45 - 18:30)  
 MAX I ALL OTHER TIMES  
 UPDATED TIMINGS  
 NOTE: APPLY ACTUATED PRE-TIMED OPERATION.

Submitted By: CMB Date: 10/30/18 Review By: [Signature] Date: 11-1-18 Approved By: BC Date: 11/01/2018  
 Implemented By: DW Date: 11/7/18 Notes:



# Coordination Pattern Page

Ver. E

Print Date: 10/30/2018

Major Street: BROREIN

Section Id: 1208

Record Number: 154

Coord Date: 6/4/2018

Minor Street: MORGAN

Coord M-F: Mon - Thur patt 1 - 7, Fri patt 1 - 7 w/5 @ 1445

Coord WkEnd: Sat - Sun patt 7 & patt 2 all other times

Coord Free:

Coord Sp Ops:

Direction:		WB		N/S				
Ø Number:		2		4				

	Patterns	Sequence	Cycle	Offset							
1.	0615 - 0900 AM Peak	1	140	35		94		46			
2.	0900 - 1115 AM Off Peak	1	120	75		80		40			
3.	1115 - 1330 Noon	1	120	75		80		40			
4.	1330 - 1515 PM Off Peak	1	120	75		80		40			
5.	1515 - 1830 PM Peak	1	140	29		94		46			
6.	1830 - 2000 Evening	1	120	75		80		40			
7.	2000 - 0615 Late	1	120	75		80		40			
8.		1	120	75		80		40			
9.	Convention Ctr - Outbound	1	120	75		80		40			
10.	Arena - Inbound	1	120	97		45		75			
11.	Arena - Outbound Fla Ave Closed	1	120	31		40		80			
12.	Marriott - Outbound PM	1	100	95		30		70			
13.	Arena - Outbound Fla Ave Opened	1	120	75		40		80			
14.	P.A.C. - Out	1	120	97		45		75			
15.	Arena Lg / P.A.C. - Outbound	1	120	32		60		60			
16.	Hurricane	1	100	32		66		34			

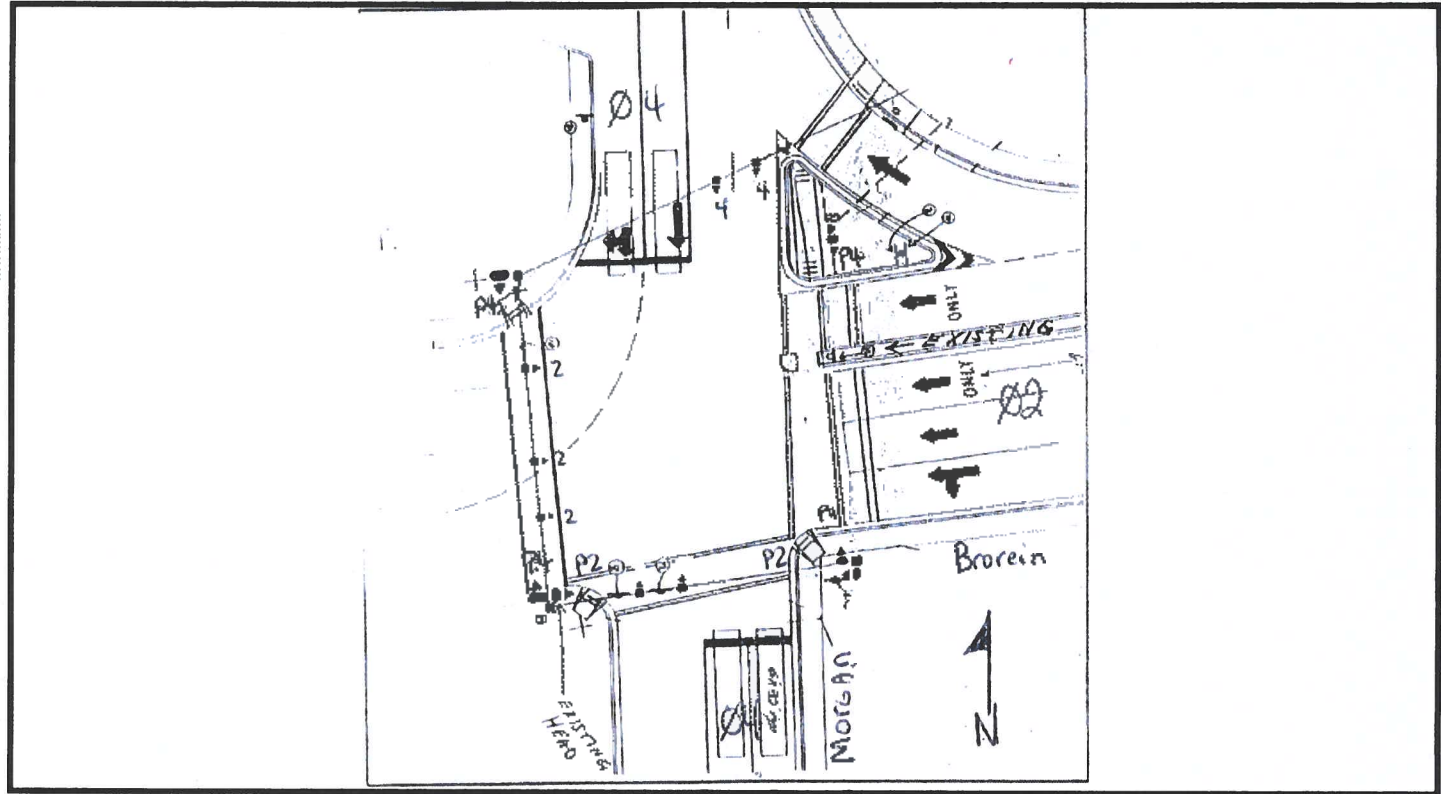
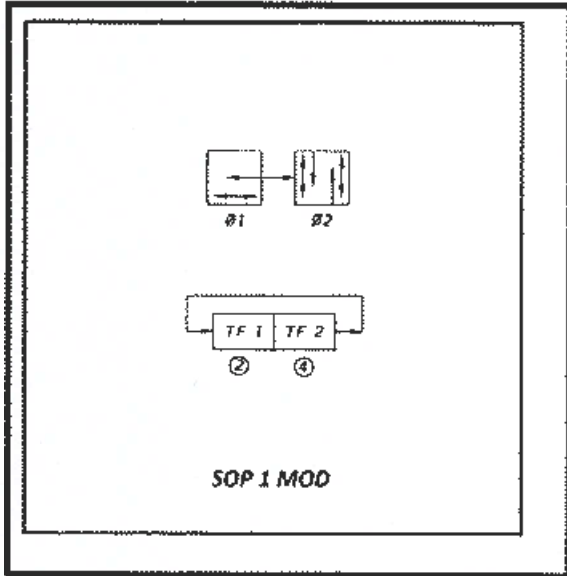


Section Id 1208 Controller Type COBALT

Major Street BROREIN

Minor Street MORGAN

Coord Date 6/4/2018 FDOT SOP: 1 MOD



Ped 1 Selector 1ped-wlk-fdw-count PED Signal 1: P2, P4 	Sig 1 Selector 3-section-ball-vertical Signal Head 1: 2, 4 	Sig 2 Selector Signal Head 2:	Sig 3 Selector Signal Head 3:	Sig 4 Selector Signal Head 4:	Sig 5 Selector Signal Head 5:	Sig 6 Selector Signal Head 6:	Sig 7 Selector Signal Head 7:	Sig 8 Selector Signal Head 8:
Ped 2 Selector PED Signal 2:	Sig 9 Selector Signal Head 9:	Sig 10 Selector Signal Head 10:	Sig 11 Selector Signal Head 11:	Sig 12 Selector Signal Head 12:	Sig 13 Selector Signal Head 13:	Sig 14 Selector SIGNAL HEAD 14	Sig 15 Selector SIGNAL HEAD 15	Sig 16 Selector SIGNAL HEAD 16



# Timingsheet, Controller Operation and Load Switch Page

SECID: 1209 Timing Date: 5/17/2018 Phasing Date: 5/17/2018

Shop Number: 1002 Drop:

Major Street **BROREIN**

Orientation: Westbound

Controller Type **COBALT**

Minor Street **JEFFERSON**

Orientation: North-South

Computer System **Cen**

Last Date Sent **2/26/2015**

Controller Timings (seconds)				
Controller Phase Number	2	4		
Direction	WB	NB		
Minimum Green	10	10		
Vehicle Extension	2.0	2.0		
Yellow Ctr/Alt Ctr	3.7	3.7		
Red Ctr/Alt Red Ctr	2	2		
Max Green I	80	60		
Max Green II	80	60		
Walk	7	7		
Walk - XGuard				
FDW	11	11		
FDW - XGuard				
Detector Memory	---	---		
Phase Recall	MAX	MAX		
Ped Recall	ON	ON		
Flash Operation	YEL	RED		

Controller Operation	
RXR Preempt:	No
Fire Preempt:	No
Bridge Preempt:	No
Transit Preempt:	False
Crossing Guard Times AM:	
Crossing Guard Times PM:	
Free Time Primary:	
Free Time Secondary:	
Flash Source- (C)omputer or (F)ield:	
Flash Times Primary	
Flash Times Secondary	
CNA Ø's	Ø2, Ø4

Cabinet Load Switch Assignments							
LS1:	LS2: Ø2	LS3:	LS4: Ø4	LS5:	LS6:	LS7:	LS8:
LS9: P2	LS10: P4	LS11:	LS12:	LS13:	LS14:	LS15:	LS16:

Phase Ring Assignments	
Sequence 1	Ring 1: 1 2   3 4 Ring 2: 5 6   7 8
Sequence 2	Ring 1: _____ Ring 2: _____
Sequence 3	Ring 1: _____ Ring 2: _____
Sequence 4	Ring 1: _____ Ring 2: _____

**Comments**

UPDATED TIMINGS

E.O.C. RESISTOR TO BE INSTALLED ON RECEIVE

ACTUATED PRETIMED OPERATION

Submitted By: *[Signature]* Date: 10/30/18 Review By: *[Signature]* Date: 10-31-18 Approved By: *[Signature]* Date: 11/6/2018

Implemented By: *[Signature]* Date: 11/8/18 Notes:



# Coordination Pattern Page

Ver. E

Print Date: 10/31/2018

Major Street: BROREIN

Section Id: 1209

Record Number: 155

Coord Date: 6/4/2018

Minor Street: JEFFERSON

Coord M-F: Day Plan 1 Mon - Thurs, Day Plan 2 Friday

Coord WkEnd: Day Plan 3 Saturday, Day Plan 4 Sunday

Coord Free:

Coord Sp Ops:

Direction:		WB		NB				
Ø Number:		2		4				

	Patterns	Sequence	Cycle	Offset						
1.	0615 - 0900 AM Peak	1	140	30		115		25		
2.	0900 - 1130 AM Off Peak	1	120	70		95		25		
3.	1130 - 1330 Noon	1	120	70		95		25		
4.	1330 - 1515 PM Off Peak	1	120	70		95		25		
5.	1515 - 1830 PM Peak	1	140	45		95		45		
6.	1830 - 2000 Evening	1	120	70		95		25		
7.	2000 - 0615 Late	1	120	70		95		25		
8.		1	120	70		95		25		
9.	Convention Ctr - Outbound	1	120	84		60		60		
10.	Arena - Inbound	1	120	84		85		35		
11.	Arena - Outbound Fla Ave Closed	1	120	21		90		30		
12.	Marriott - Outbound PM	1	100	95		65		35		
13.	Arena - Outbound Fla Ave Opened	1	120	71		40		80		
14.	Straz - Outbound	1	120	84		85		35		
15.	Arena lg / Straz - Outbound	1	120	22		80		40		
16.	Hurricane	1	100	23		60		40		



# Plan, SOP and Signal Heads Page

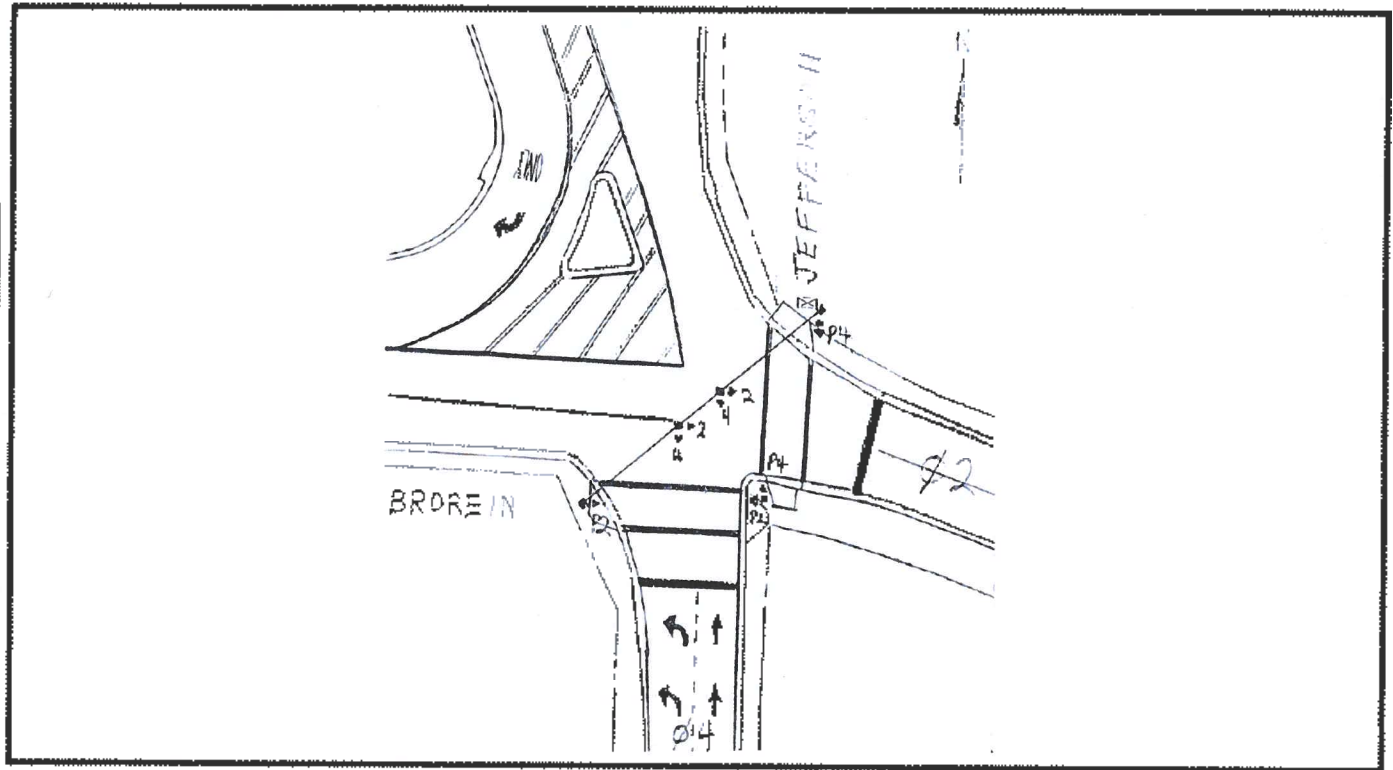
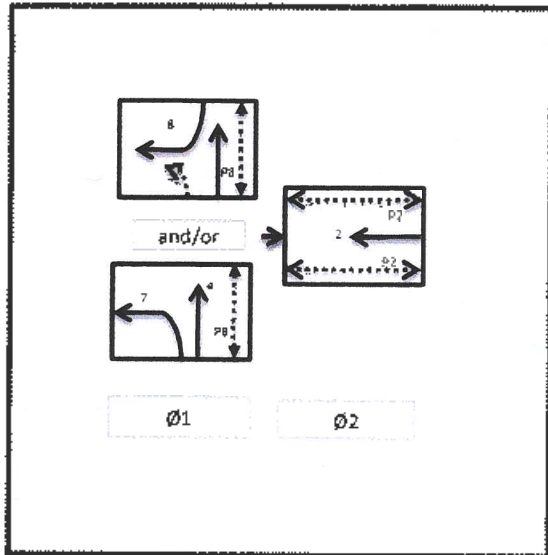
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Section Id 1209 Controller Type COBALT

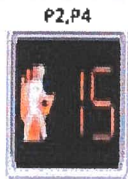
Major Street BRORÉIN

Minor Street JEFFERSON

Coord Date 6/4/2018 FDOT SOP: 1 MOD



Ped 1 Selector  
1ped-wlk-fdw-count  
PED Signal 1:



Ped 2 Selector

PED Signal 2:

Sig 1 Selector  
3-section-ball-vertica  
Signal Head 1:



Sig 9 Selector

Signal Head 9:

Sig 2 Selector  
Signal Head 2:

Sig 10 Selector

Signal Head 10:

Sig 3 Selector  
Signal Head 3:

Sig 11 Selector

Signal Head 11:

Sig 4 Selector  
Signal Head 4:

Sig 12 Selector

Signal Head 12:

Sig 5 Selector  
Signal Head 5:

Sig 13 Selector

Signal Head 13:

Sig 6 Selector  
Signal Head 6:

Sig 14 Selector

SIGNAL HEAD 14

Sig 7 Selector  
Signal Head 7:

Sig 15 Selector

SIGNAL HEAD 15

Sig 8 Selector  
Signal Head 8:

Sig 16 Selector

SIGNAL HEAD 16





# Timingsheet, Controller Operation and Load Switch Page

SECID: 1213    Timing Date: 6/1/2018    Phasing Date: 6/1/2018    Shop Number: 1023    Drop: 4  
 Major Street **CHANNELSIDE**    Orientation: Eastbound    Controller Type **Cobalt**  
 Minor Street **FLORIDA**    Orientation: Northbound    Computer System **CEN**    Last Date Sent **3/27/2015**

Controller Timings (seconds)					
Controller Phase Number			4	6	
Direction			NB	EB	
Minimum Green			10	10	
Vehicle Extention			3.0	3.0	
Yellow Clr/Alt Clr			3.7	4	
Red Clr/Alt Red Clr			2	2	
Max Green I			30	90	
Max Green II			30	90	
Walk			7	7	
Walk - XGuard			---	---	
FDW			9	14	
FDW - XGuard			---	---	
Detector Memory			---	---	
Phase Recall			MAX	MAX	
Ped Recall			ON	ON	
Flash Operation			RED	YEL	

Controller Operation	
RXR Preempt: No	FDOT SOP: 1 Mod
Fire Preempt: No	Backup Protection: Y
Bridge Preempt: No	LPI Location(Y/N): No
Transit Preempt: False	LPI Date:
Crossing Guard Times AM:	
Crossing Guard Times PM:	
Free Time Primary:	
Free Time Secondary:	
Flash Source- (C)omputer or (F)ield:	
Flash Times Primary	
Flash Times Secondary	
CNA Ø's	Ø4, Ø6

Cabinet Load Switch Assienments									
LS1:	LS2:	LS3:	LS4:	Ø4	LS5:	LS6:	Ø6	LS7:	LS8:
LS9:	LS10:	P4	LS11:	P6	LS12:	LS13:	LS14:	LS15:	LS16:

Phase Ring Assignments	
Sequence 1	Ring 1: 1 2 + 3 4 5 6 7 8   Ring 2: 5 6 + 7 8 PER GEORGE DW
Sequence 2	Ring 1: _____ Ring 2: _____
Sequence 3	Ring 1: _____ Ring 2: _____
Sequence 4	Ring 1: _____ Ring 2: _____

\*UPDATED TIMINGS\*  
 ACTUATED PRETIMED OPERATION  
 Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Submitted By: *GT*    Date: *6-6-18*    Review By: *JS*    Date: *6/11/18*    Approved By: *BC*    Date: *06/12/2018*  
 Implemented By: *DW*    Date: *6-14-18*    Notes: \_\_\_\_\_



# Coordination Pattern Page

Print Date: 6/6/2018

Major Street: CHANNELSIDE

Section Id: 1213

Record Number: 158

Coord Date: 11/2/2017

Minor Street: FLORIDA

Min Green:				10		10		
Yellow CLR:				3.7		4		
All Red CLR:				2		2		
Walk:				7		7		
FDW:				9		14		

Free Time Primary:

Free Time Secondary:

Day Plan #1 - Mon-Thr patt 1 -7.

Day Plan #2 - Fri - patt 1 - 7 w/5 @ 14:45

Day Plan #3 - Sat - patt 7, then patt 2 all other times

Day Plan #4 - Sun - patt 7, then patt 2 all other times

Direction:				NB		EB		
Ø Number:				4		6		

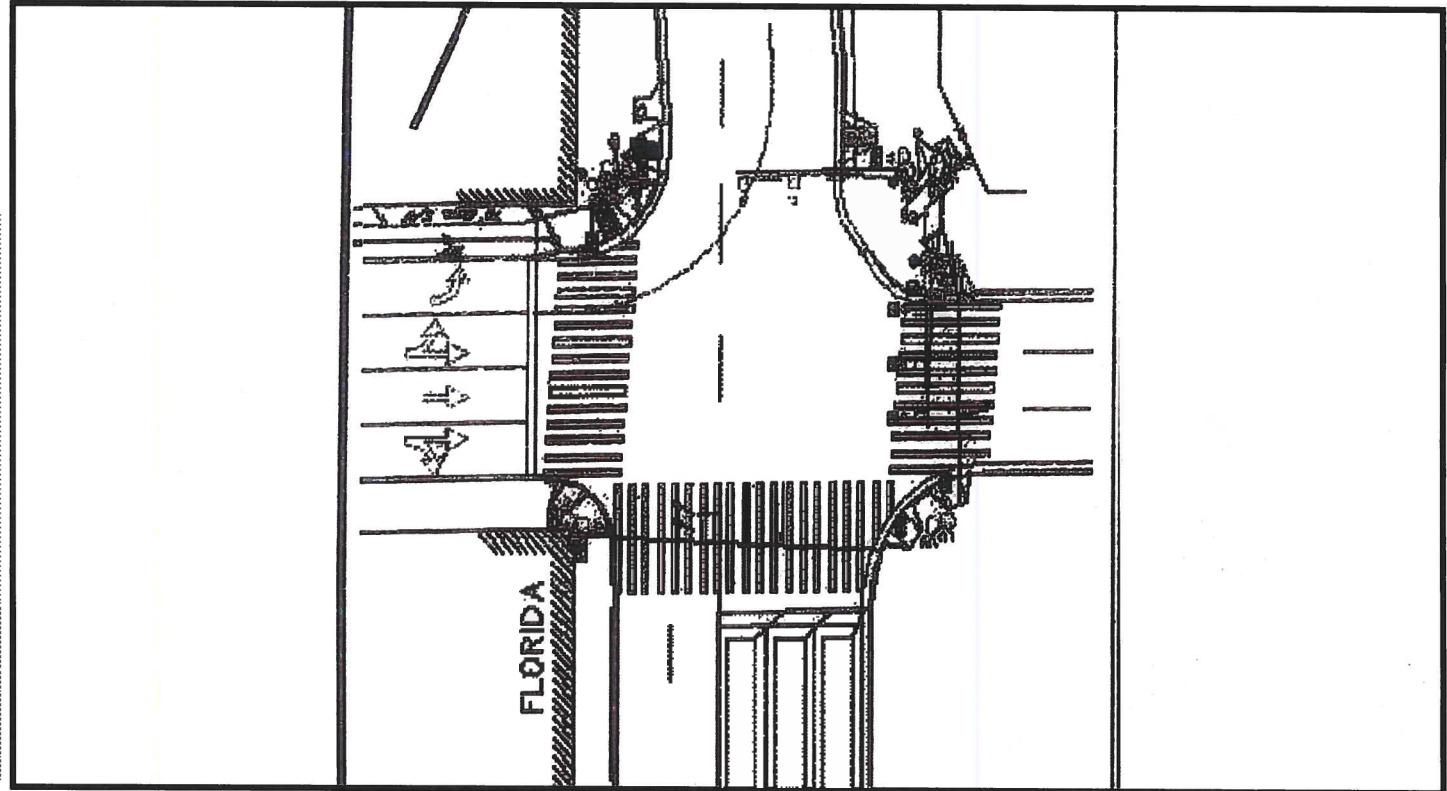
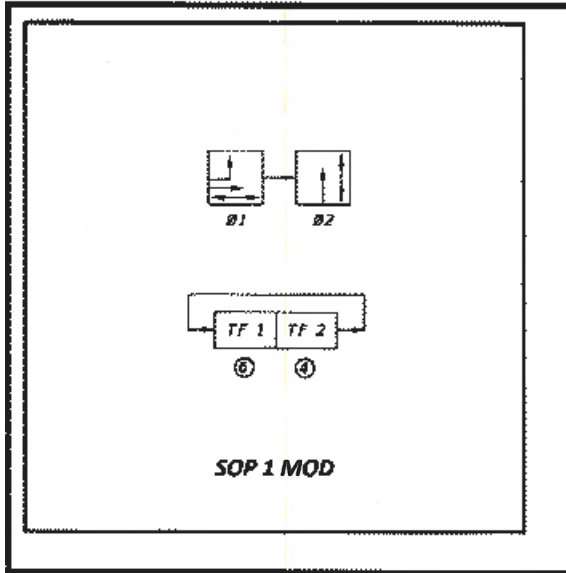
	Patterns	Cycle	Offset						
1.	0615 - 0900 AM Peak	140	83			41		99	
2.	0900 - 1130 AM Off Peak	120	80			30		90	
3.	1130 - 1330 Noon	120	80			30		90	
4.	1330 - 1515 PM Off Peak	120	80			30		90	
5.	1515 - 1830 PM Peak	140	88			41		99	
6.	1830 - 2000 Evening	120	80			50		70	
7.	2000 - 0615 Late	120	80			50		70	
8.		120	1			50		70	
9.	Convention Ctr - Outbound	120	115			40		80	
10.	Arena - Inbound	120	5			30		90	
11.	Arena - Out Fla Ave Closed	120	97			90		30	
12.	Marriott - Outbound PM	100	69			40		60	
13.	Arena - Out Fla Ave Opened	120	91			90		30	
14.	Arena - Inbound Flush	160	5			30		130	
15.	Arena Lg/Straz - Outbound	120	14			90		30	
16.	Hurricane	100	69			25		75	

Section Id 1213 Controller Type Cobalt

Major Street CHANNELSIDE

Minor Street FLORIDA

Coord Date 11/2/2017 FDOT SOP: 1 Mod



<p><b>Ped 1 Selector</b> 1ped-wlk-fdw-count PED Signal 1: P4, P6</p>	<p><b>Sig 1 Selector</b> 3-section-bal-vertica Signal Head 1: 4, 6</p>	<p><b>Sig 2 Selector</b> Signal Head 2:</p>	<p><b>Sig 3 Selector</b> Signal Head 3:</p>	<p><b>Sig 4 Selector</b> Signal Head 4:</p>	<p><b>Sig 5 Selector</b> Signal Head 5:</p>	<p><b>Sig 6 Selector</b> Signal Head 6:</p>	<p><b>Sig 7 Selector</b> Signal Head 7:</p>	<p><b>Sig 8 Selector</b> Signal Head 8:</p>
<p><b>Ped 2 Selector</b> PED Signal 2:</p>	<p><b>Sig 9 Selector</b> Signal Head 9:</p>	<p><b>Sig 10 Selector</b> Signal Head 10:</p>	<p><b>Sig 11 Selector</b> Signal Head 11:</p>	<p><b>Sig 12 Selector</b> Signal Head 12:</p>	<p><b>Sig 13 Selector</b> Signal Head 13:</p>	<p><b>Sig 14 Selector</b> SIGNAL HEAD 14</p>	<p><b>Sig 15 Selector</b> SIGNAL HEAD 15</p>	<p><b>Sig 16 Selector</b> SIGNAL HEAD 16</p>



# Timingsheet, Controller Operation and Load Switch Page

SECID: 1214 Timing Date: 11/2/2017 Phasing Date: 10/20/2000

Shop Number: 1438 Drop:

Major Street **CHANNELSIDE**

Orientation: Eastbound

Controller Type **Cobalt**

Minor Street **CROSTOWN RAMP / MORGAN**

Orientation: North-South

Computer System **CEN**

Last Date Sent **10/29/2018**

## Controller Timings (seconds)

Controller Phase Number			4	5	6		8
Direction			NB	RAMP	EB		SB
Minimum Green			10	5	10		10
Vehicle Extension			3.0	4.5	3.0		3.0
Yellow Clr/Alt Clr			3.7	4	4		3.7
Red Clr/Alt Red Clr			2.2	2.6	2.2		2.2
Max Green I			30	20	40		30
Max Green II			30	25	60		30
Walk			7		7		7
Walk - XGuard			---	---	---		---
FDW			17		11		17
FDW - XGuard			---	---	---		---
Detector Memory			---	ON	---		---
Phase Recall			MAX	---	MAX		MAX
Ped Recall			ON	---	ON		ON
Flash Operation			RED	RED	YEL		RED

## Controller Operation

RXR Preempt: No FDOT SOP: 2 MOD  
 Fire Preempt: No Backup Protection: N  
 Bridge Preempt: No LPI Location(Y/N): No  
 Transit Preempt: False LPI Date:  
 Crossing Guard Times AM:  
 Crossing Guard Times PM:  
 Free Time Primary:  
 Free Time Secondary:  
 Flash Source- (C)omputer or (F)ield:  
 Flash Times Primary  
 Flash Times Secondary  
 CNA Ø's Ø4, Ø6, Ø8

## Phase Ring Assignments

Sequence 1	Ring 1:	1 2   3 4
	Ring 2:	5 6   7 8
Sequence 2	Ring 1:	_____
	Ring 2:	_____
Sequence 3	Ring 1:	_____
	Ring 2:	_____
Sequence 4	Ring 1:	_____
	Ring 2:	_____

## Cabinet Load Switch Assignments

LS1: LS2: LS3: LS4: Ø4 LS5: Ø5 LS6: Ø6 LS7: LS8: Ø8  
 LS9: LS10: P4 LS11: P6 LS12: P8 LS13: LS14: LS15: LS16:

Comments

UPDATED TIMINGS.  
 ACTUATED PRETIMED OPERATION

Submitted By: *CHB* Date: *10/29/18* Review By: *[Signature]* Date: *10-30-18* Approved By: *BC* Date: *10/31/2018*  
 Implemented By: *DW* Date: *11/9/18* Notes:





# Coordination Pattern Page

Ver. E

Print Date: 10/30/2018

Major Street: CHANNELSIDE

Section Id: 1214

Record Number: 159

Coord Date: 11/3/2017

Minor Street: CROSTOWN RAMP / MORGAN

Coord M-F: Mon - Thur patt 1 - 7, Fri patt 1 - 7 w/5@ 1445

Coord WkEnd: Sat - Sun Patt 7 & patt 2 all other times

Coord Free:

Coord Sp Ops:

Direction:				NB	RAMP	EB		SB
Ø Number:				4	5	6		8

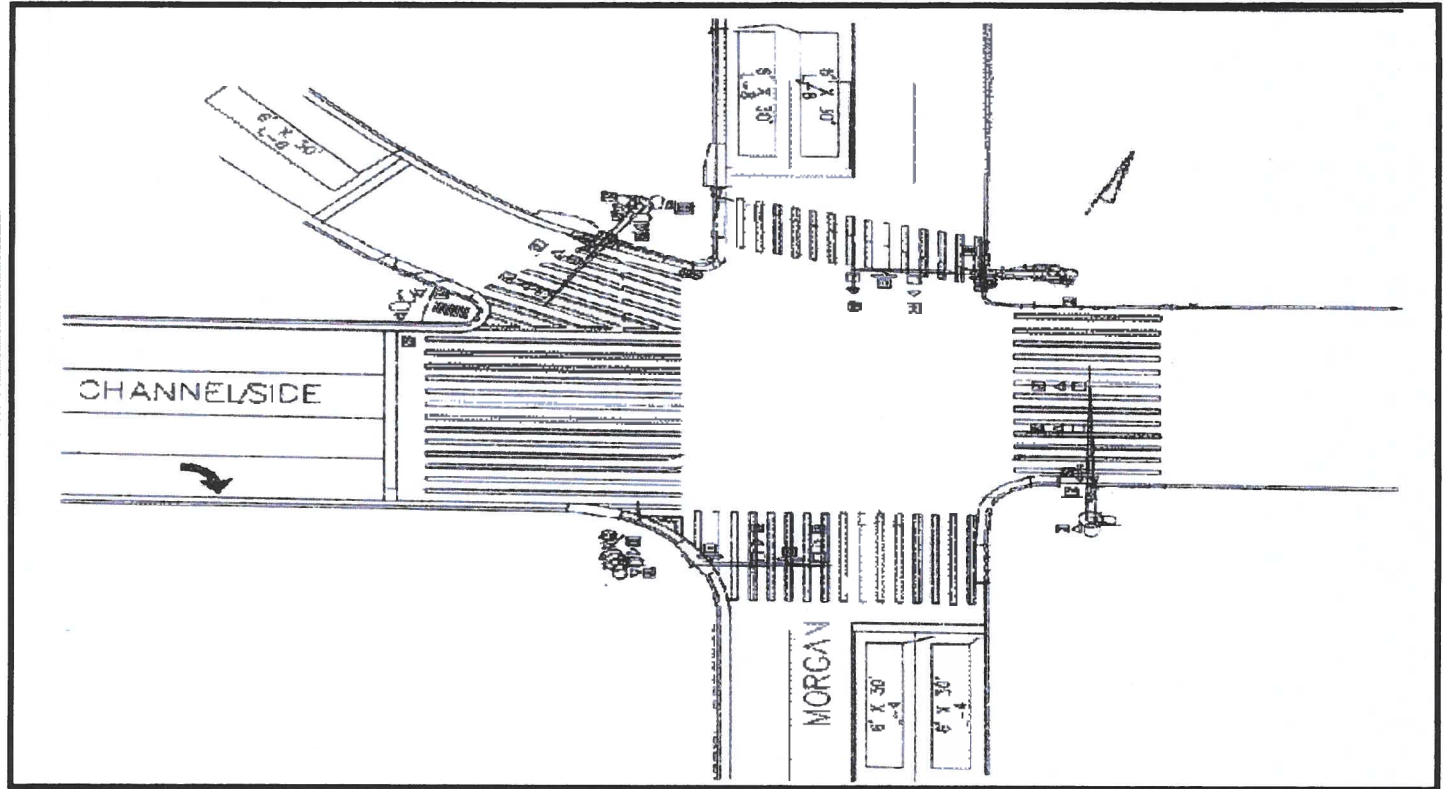
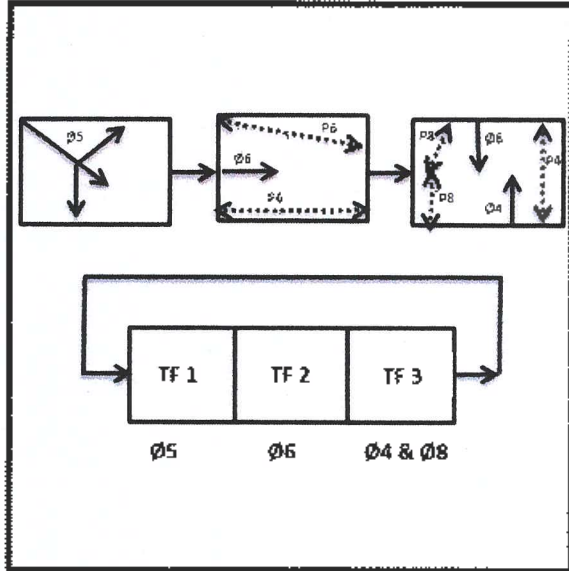
	Patterns	Sequence	Cycle	Offset				NB	RAMP	EB		SB
1.	0615 - 0900 AM Peak	1	140	104				40	35	65		40
2.	0900 - 1130 AM Off Peak	1	120	94				30	25	65		30
3.	1130 - 1330 Noon	1	120	94				30	25	65		30
4.	1330 - 1515 PM Off Peak	1	120	94				30	25	65		30
5.	1515 - 1830 PM Peak	1	140	104				40	25	75		40
6.	1830 - 2000 Evening	1	120	94				30	25	65		30
7.	2000 - 2200 Late	1	120	94				30	25	65		30
8.	2200 - 0615 Overnight	1	120	94				30	25	65		30
9.	Convention Ctr - Outbound	1	120	114				35	25	60		35
10.	Arena - Inbound	1	120	19				65	13	42		65
11.	Arena - Out Fla Ave Closed	1	120	21				80	13	27		80
12.	Marriott - Outbound PM	1	100	9				52	13	35		52
13.	Arena - Out Fla Ave Opened	1	120	21				58	36	26		58
14.	Arena - Inbound Flush	1	160	19				42	13	105		42
15.	Arena Lg/Straz - Outbound	1	120	21				80	13	27		80
16.	Hurricane	1	100	86				32	22	46		32



Section Id 1214 Controller Type Cobalt

Major Street CHANNELSIDE

Minor Street CROSTOWN RAMP / MORGAN

Coord Date 11/3/2017 FDOT SOP: 2 MOD



<p>Ped 1 Selector 1ped-wlk-fdw-count PED Signal 1: P4, P6, P8</p> 	<p>Sig 1 Selector 3-section-ball-vertical Signal Head 1: Ø4, Ø5, Ø6, Ø8</p> 	<p>Sig 2 Selector Signal Head 2:</p>	<p>Sig 3 Selector Signal Head 3:</p>	<p>Sig 4 Selector Signal Head 4:</p>	<p>Sig 5 Selector Signal Head 5:</p>	<p>Sig 6 Selector Signal Head 6:</p>	<p>Sig 7 Selector Signal Head 7:</p>	<p>Sig 8 Selector Signal Head 8:</p>
<p>Ped 2 Selector PED Signal 2:</p>	<p>Sig 9 Selector Signal Head 9:</p>	<p>Sig 10 Selector Signal Head 10:</p>	<p>Sig 11 Selector Signal Head 11:</p>	<p>Sig 12 Selector Signal Head 12:</p>	<p>Sig 13 Selector Signal Head 13:</p>	<p>Sig 14 Selector SIGNAL HEAD 14</p>	<p>Sig 15 Selector SIGNAL HEAD 15</p>	<p>Sig 16 Selector SIGNAL L HEAD 16</p>



# Timingsheet, Controller Operation and Load Switch Page

SECID: 1215    Timing Date: 5/7/2019    Phasing Date: 4/10/2019    Shop Number: 1024    Drop: 6

Major Street **BROREIN / CHANNELSIDE**    Orientation: East-West    Controller Type **COBALT**

Minor Street **OLD WATER (ICE PALACE)**    Orientation: Northbound    Computer System **CEN**    Last Date Sent **4/10/2019**

Controller Timings (seconds)						
Controller Phase Number	2	4	6			
Direction	trolley	NB	EB			
Minimum Green	10	10	15			
Vehicle Extension	3.0	4.0	3.0			
Yellow Clr/Alt Clr	4	3.7	4			
Red Clr/Alt Red Clr	2.5	3.6	2.5			
Max Green I	30	30	30			
Max Green II	65	30	30			
Walk	7	7	7			
Walk - XGuard						
FDW	13	13	16			
FDW - XGuard						
Detector Memory						
Phase Recall	MAX					
Ped Recall	ON					
Flash Operation	YEL	RED	YEL			

Controller Operation	
RXR Preempt: No	FDOT SOP: MOD 11
Fire Preempt: No	Backup Protection: N
Bridge Preempt: No	LPI Location(Y/N): No
Transit Preempt: False	LPI Date:
Crossing Guard Times AM:	
Crossing Guard Times PM:	
Free Time Primary:	
Free Time Secondary:	
Flash Source- (C)omputer or (F)ield:	
Flash Times Primary:	
Flash Times Secondary	
CNA Ø's	Ø2

Cabinet Load Switch Assignments										
LS1:	LS2:	OLB	LS3:	LS4:	Ø4	LS5:	LS6:	OLF	LS7:	LS8:
LS9:	P2	LS10:	P4	LS11:	P6	LS12:	LS13:	LS14:	LS15:	LS16:

Phase Ring Assignments	
Sequence 1	Ring 1: 2 6 4 Ring 2:
Sequence 2	Ring 1: Ring 2:
Sequence 3	Ring 1: Ring 2:
Sequence 4	Ring 1: Ring 2:

Parent phases for overlaps B (Ø2+Ø6) & F (Ø2+Ø6).

Trolley detection on P7. Trolley operation is on phase 2, P2.

Coordinated phase is Ø2 in all plans.

Comments

Submitted By: *CMB*    Date: *5-20-19*    Review By: *LS*    Date: *5-21-19*    Approved By: *BC*    Date: *5/21/19*

Implemented By: *KHL*    Date: *5/15/19*    Notes:



# Coordination Pattern Page

Ver. E

Print Date: 5/20/2019

Major Street: BROREIN / CHANNELSIDE

Section Id: 1215

Record Number: 160

Coord Date: 3/15/2019

Minor Street: OLD WATER (ICE PALACE)

Coord M-F: Day Plan 1 Mon - Thurs, Day Plan 2 Friday

Coord WkEnd: Day Plan 3 Saturday, Day Plan 4 Sunday

Coord Free:

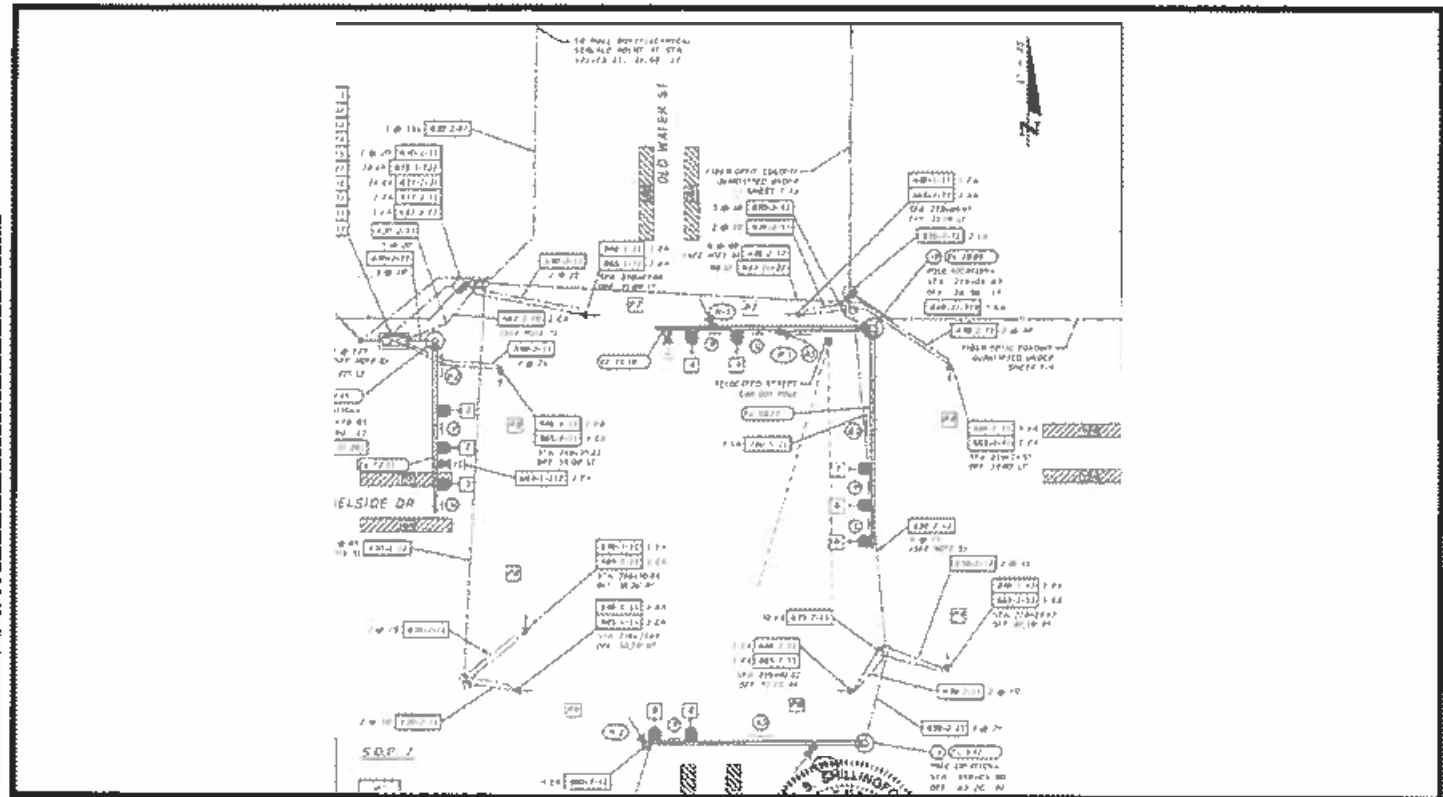
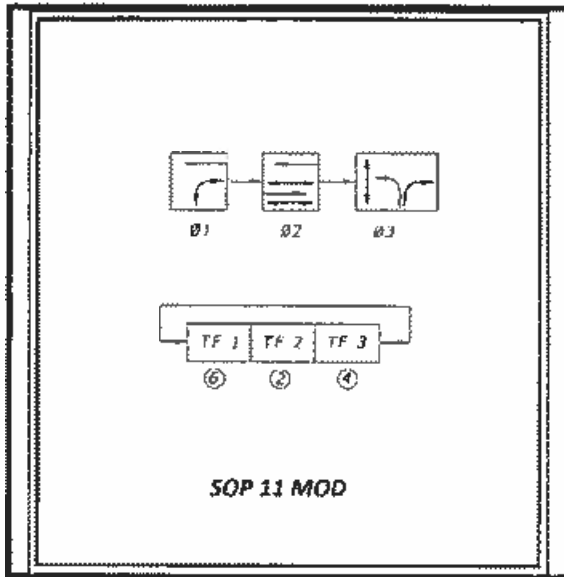
Coord Sp Ops:




Direction:		trolly		NB		EB		
Ø Number:		2		4		6		

	Patterns	Sequence	Cycle	Offset							
1.	0615 - 0900 AM Peak		140	10		74		36		30	
2.	0900 - 1130 AM Off Peak		120	83		60		30		30	
3.	1130 - 1330 Noon		120	83		60		30		30	
4.	1330 - 1515 PM Off Peak		120	83		60		30		30	
5.	1515 - 1830 PM Peak		140	45		74		36		30	
6.	1830 - 2000 Evening		120	83		60		30		30	
7.	2000 - 0615 Late		120	83		60		30		30	
8.			120	83		60		30		30	
9.	Convention Ctr - Outbound		120	105		62		28		30	
10.	Arena - Inbound		120	25		56		34		30	
11.	Arena - Out Fla Ave Closed		120	34		30		60		30	
12.	Marriott - Outbound PM		100	0		31		39		30	
13.	Arena - Out Fla Ave Opened		120	34		30		60		30	
14.	Arena - Inbound Flush		160	25		96		34		30	
15.	Arena Lg/Straz - Outbound		120	115		30		60		30	
16.	Hurricane		100	0		39		31		30	



Section Id 1215 Controller Type COBALT  
 Major Street BROREIN / CHANNELSIDE  
 Minor Street OLD WATER (ICE PALACE)  
 Coord Date 3/15/2019 FDOT SOP: MOD 11



<b>Ped 1 Selector</b> Iped-wlk-fdw-count PED Signal 1: P2,P4,P6 	<b>Sig 1 Selector</b> 3-section-ball-vertica Signal Head 1: Ø4,Ø6 	<b>Sig 2 Selector</b> 2-section-Trolley-Sto Signal Head 2: Trolley - P2 	<b>Sig 3 Selector</b> Signal Head 3: 	<b>Sig 4 Selector</b> Signal Head 4: 	<b>Sig 5 Selector</b> Signal Head 5: 	<b>Sig 6 Selector</b> Signal Head 6: 	<b>Sig 7 Selector</b> Signal Head 7: 	<b>Sig 8 Selector</b> Signal Head 8: 
<b>Ped 2 Selector</b> PED Signal 2: 	<b>Sig 9 Selector</b> Signal Head 9: 	<b>Sig 10 Selector</b> Signal Head 10: 	<b>Sig 11 Selector</b> Signal Head 11: 	<b>Sig 12 Selector</b> Signal Head 12: 	<b>Sig 13 Selector</b> Signal Head 13: 	<b>Sig 14 Selector</b> SIGNAL HEAD 14 	<b>Sig 15 Selector</b> SIGNAL HEAD 15 	<b>Sig 16 Selector</b> SIGNAL HEAD 16 



# Timingsheet, Controller Operation and Load Switch Page

SECID: 1216 Timing Date: 11/3/2017 Phasing Date: 6/12/2015 ARCGIS Node ID: Shop Number: 1110 Drop: 7

Major Street **CHANNELSIDE**

Orientation: East-West

Controller Type **COBALT**

Minor Street **BENEFICIAL / MERIDIAN**

Orientation: North-South

Computer System **Cen**

Date Sen **6/22/2015**

Controller Timings (seconds)							
Controller Phase Number	1	2	4	6	7	8	
Direction	EB LT	WB	NB	EB	NBLT	SB	
Minimum Green	5	15	10	15	5	10	
Vehicle Extention	2.0	3.0	3.0	3.0	2.0	3.0	
Yellow Clr/Alt Clr	4.0	4.0	4.4	4.0	4.4	4.4	
Red Clr/Alt Red Clr	2.0	2.2	2.0	2.2	2.0	2.0	
Max Green I	40	35	35	35	25	35	
Max Green II	40	35	35	35	25	35	
Walk	---	7	7	7	---	7	
Walk - XGuard	---	---	---	---	---	---	
FDW	---	30	25	30	---	25	
FDW - XGuard	---	---	---	---	---	---	
Detector Memory	---	---	ON	---	---	ON	
Phase Recall	---	MAX	MAX	MAX	---	MAX	
Ped Recall	---	ON	ON	ON	---	ON	
Flash Operation	---	YEL	RED	YEL	---	RED	

Controller Operation	
RXR Preempt: No	FDOT SOP: 10 MOD
Fire Preempt: No	Backup Protection: Y
Bridge Preempt: No	FDOT Walk Y
Transit Preempt: False	FDOT FDW: Y
Crossing Guard Times AM:	
Crossing Guard Times PM:	
Free Time Primary:	
Free Time Secondary:	
Flash Source- (C)omputer or (F)ield:	
Flash Times Primary	
Flash Times Secondary	
CNA Ø's	Ø2, Ø4, Ø6, Ø8

Phase Ring Assignments	
Sequence 1	Ring 1: 1 2   3 4 Ring 2: 5 6   7 8
Sequence 2	Ring 1: _____ Ring 2: _____
Sequence 3	Ring 1: _____ Ring 2: _____
Sequence 5	Ring 1: _____ Ring 2: _____

Cabinet Load Switch Assignments							
LS1: PH1	LS2: PH2	LS3: P-8	LS4: PH4	LS5: N/A	LS6: PH6	LS7: PH7	LS8: PH8
LS9: P2	LS10: P4	LS11: P6	LS12: TRUCKS	LS13:	LS14:	LS15:	LS16:

**Comments**

- \*STREETCAR RUNS CONCURRENT W/ EB RED MOVEMENT\*
- \*APPLY BACKUP PROTECTION.\*
- \*ACTUATED PRE-TIMED OPERATION.\*
- \*UPDATED FDOT CLEARANCES BY FALLER DAVIS

Submitted By: *CS* Date: *11-3-17* Review By: *tm* Date: *11/6/17* Approved By: *BJ* Date: *11.6.17*  
 Implemented By: *mgj* Date: *12/4/18* Notes:



# Coordination Pattern Page

Print Date: 11/3/2017

Major Street: CHANNELSIDE

Section Id: 1216

Record Number: 161

Coord Date: 11/3/2017

Minor Street: BENEFICIAL / MERIDIAN

Free Time Primary:

Free Time Secondary:

Day Plan #1 - Mon-Thr patt 1-7.

Day Plan #2 - Fri - patt 1 - 7 w/5 @ 14:45

Day Plan #3 - Sat - patt 7, then patt 6 all other times

Day Plan #4 - Sun - patt 7, then patt 6 all other times

Min Green:	5	15		10		15	5	10
Yellow CLR:	4.0	4.0		4.4		4.0	4.4	4.4
All Red CLR:	2.0	2.2		2.0		2.2	2.0	2.0
Walk:	---	7		7		7	---	7
FDW:	---	30		25		30	---	25

Direction:	EB LT	WB		NB		EB	NBLT	SB
Ø Number:	1	2		4		6	7	8

	Patterns	Cycle	Offset								
1.	0615 - 0900 AM Peak	140	25	24	44		72		68	33	39
2.	0900 - 1130 AM Off Peak	120	20	15	44		61		59	22	39
3.	1130 - 1330 Noon	120	20	15	44		61		59	22	39
4.	1330 - 1515 PM Off Peak	120	20	15	44		61		59	22	39
5.	1515 - 1830 PM Peak	140	67	34	54		52		88	13	39
6.	1830 - 2000 Evening	120	20	15	44		56		59	22	39
7.	2000 - 2200 Late	120	20	20	44		56		64	17	39
8.	2200 - 0615 Overnight	120	10	20	44		56		64	17	39
9.	Convention Ctr - Outbound	120	40	25	44		51		69	12	39
10.	Arena - Inbound	120	40	22	46		52		68	12	40
11.	Arena - Out Fla Ave Closed	120	83	25	44		51		69	12	39
12.	Marriott - Outbound PM	120	9	25	44		51		69	12	39
13.	Arena - Out Fla Ave Opened	120	11	25	44		51		69	12	39
14.	Arena - Inbound Flush	160	40	42	67		51		67	12	39
15.	Arena Lg/Straz - Outbound	240	11	115	45		80		160	25	55
16.	Hurricane	120	9	24	44		52		68	12	40



# Access Coord Structure Page

Section Id: **1216**

Record Number: **161**

Coord Date: **11/3/2017**

Controller Type: **COBALT**

Print Date: 11/3/2017

Major Street: **CHANNELSIDE**

Free Time Primary:

Minor Street: **BENEFICIAL / MERIDIAN**

Free Time Secondary:

Time in seconds?

**1. 0615 - 0900 AM Peak**

Pattern 1 Structure:   
Pattern 1 Seq:   
Pattern 1 C/O/S:   
Pattern 1 Cycle:   
Pattern 1 Offset:

**6. 1830 - 2000 Evening**

Pattern 6 Structure:   
Pattern 6 Seq:   
Pattern 6 C/O/S:   
Pattern 6 Cycle:   
Pattern 6 Offset:

**11. Arena - Out Fla Ave Closed**

Pattern 11 Structure:   
Pattern 11 Seq:   
Pattern 11 C/O/S:   
Pattern 11 Cycle:   
Pattern 11 Offset:

**16. Hurricane**

Pattern 16 Structure:   
Pattern 16 Seq:   
Pattern 16 C/O/S:   
Pattern 16 Cycle:   
Pattern 16 Offset:

**2. 0900 - 1130 AM Off Peak**

Pattern 2 Structure:   
Pattern 2 Seq:   
Pattern 2 C/O/S:   
Pattern 2 Cycle:   
Pattern 2 Offset:

**7. 2000 - 2200 Late**

Pattern 7 Structure:   
Pattern 7 Seq:   
Pattern 7 C/O/S:   
Pattern 7 Cycle:   
Pattern 7 Offset:

**12. Marriott - Outbound PM**

Pattern 12 Structure:   
Pattern 12 Seq:   
Pattern 12 C/O/S:   
Pattern 12 Cycle:   
Pattern 12 Offset:

**21.**

Pattern 21 Structure:   
Pattern 21 Seq:   
Pattern 21 C/O/S:   
Pattern 21 Cycle:   
Pattern 21 Offset:

**3. 1130 - 1330 Noon**

Pattern 3 Structure:   
Pattern 3 Seq:   
Pattern 3 C/O/S:   
Pattern 3 Cycle:   
Pattern 3 Offset:

**8. 2200 - 0615 Overnight**

Pattern 8 Structure:   
Pattern 8 Seq:   
Pattern 8 C/O/S:   
Pattern 8 Cycle:   
Pattern 8 Offset:

**13. Arena - Out Fla Ave Opened**

Pattern 13 Structure:   
Pattern 13 Seq:   
Pattern 13 C/O/S:   
Pattern 13 Cycle:   
Pattern 13 Offset:

**22.**

Pattern 22 Structure:   
Pattern 22 Seq:   
Pattern 22 C/O/S:   
Pattern 22 Cycle:   
Pattern 22 Offset:

**4. 1330 - 1515 PM Off Peak**

Pattern 4 Structure:   
Pattern 4 Seq:   
Pattern 4 C/O/S:   
Pattern 4 Cycle:   
Pattern 4 Offset:

**9. Convention Ctr - Outbound**

Pattern 9 Structure:   
Pattern 9 Seq:   
Pattern 9 C/O/S:   
Pattern 9 Cycle:   
Pattern 9 Offset:

**14. Arena - Inbound Flush**

Pattern 14 Structure:   
Pattern 14 Seq:   
Pattern 14 C/O/S:   
Pattern 14 Cycle:   
Pattern 14 Offset:

**23.**

Pattern 23 Structure:   
Pattern 23 Seq:   
Pattern 23 C/O/S:   
Pattern 23 Cycle:   
Pattern 23 Offset:

**5. 1515 - 1830 PM Peak**

Pattern 5 Structure:   
Pattern 5 Seq:   
Pattern 5 C/O/S:   
Pattern 5 Cycle:   
Pattern 5 Offset:

**10. Arena - Inbound**

Pattern 10 Structure:   
Pattern 10 Seq:   
Pattern 10 C/O/S:   
Pattern 10 Cycle:   
Pattern 10 Offset:

**15. Arena Ig/Straz - Outbound**

Pattern 15 Structure:   
Pattern 15 Seq:   
Pattern 15 C/O/S:   
Pattern 15 Cycle:   
Pattern 15 Offset:

**99.**

**100.**





# Timingsheet, Controller Operation and Load Switch Page

SECID: 1217 Timing Date: 6/22/2015 Phasing Date: 3/13/2006 ARCGIS Node ID: Shop Number: 2099 Drop: 10  
 Major Street **MERIDIAN** Orientation: Controller Type **COBALT**  
 Minor Street **CUMBERLAND** Orientation: Computer System **CEN** Date Sen 6/25/2015

Controller Timings (seconds)						
Controller Phase Number	2	4	5	6		
Direction	SB	WB	SBLT	NB		
Minimum Green	10	10	5	10		
Vehicle Extention	3.0	3.0	4.0	3.0		
Yellow Clr/Alt Clr	4.4	3.7	4.4	4.4		
Red Clr/Alt Red Clr	2.2	3.5	2.0	2.2		
Max Green I	40	45	25	40		
Max Green II	40	45	25	40		
Walk	---	7	---	7		
Walk - XGuard	---	---	---	---		
FDW	---	23	---	7		
FDW - XGuard	---	---	---	---		
Detector Memory	---	---	---	---		
Phase Recall	MAX	---	---	MAX		
Ped Recall	---	---	---	ON		
Flash Operation	YEL	RED	RED	YEL		

Controller Operation	
RXR Preempt:	No FDOT SOP: 11 MOD
Fire Preempt:	No Backup Protection: Y
Bridge Preempt:	No FDOT Walk Y
Transit Preempt:	False FDOT FDW: Y
Crossing Guard Times AM:	
Crossing Guard Times PM:	
Free Time Primary:	
Free Time Secondary:	
Flash Source- (C)omputer or (F)ield:	
Flash Times Primary	
Flash Times Secondary	
CNA Ø's	2 + 6

Cabinet Load Switch Assignments											
LS1:	LS2:	Ø2	LS3:	LS4:	Ø4	LS5:	Ø5	LS6:	Ø6	LS7:	LS8:
LS9:	LS10:	P4	LS11:	P6	LS12:	LS13:	LS14:	LS15:	LS16:		

Phase Ring Assignments	
Sequence 1	Ring 1: 1 2   4 Ring 2: 5 6
Sequence 2	Ring 1: Ring 2:
Sequence 3	Ring 1: Ring 2:
Sequence 5	Ring 1: Ring 2:

**Comments**  
 \*BACKUP PROTECTION APPLIED\*  
 ACTUATED PRETIMED OPERATION  
 \*UPDATED FDOT CLEARANCES BY FALLER DAVIS

Submitted By: *GS* Date: *11-3-17* Review By: *Tun* Date: *11/6/17* Approved By: *BY* Date: *11-6-17*  
 Implemented By: *MJF* Date: *12/4/18* Notes:



# Coordination Pattern Page

Print Date: 11/3/2017

Major Street: **MERIDIAN**

Section Id: 1217

Record Number: 162

Coord Date: 10/2/2017

Minor Street: **CUMBERLAND**

Free Time Primary:

Free Time Secondary:

Day Plan #1 - Mon-Thr patt 1 -7.

Day Plan #2 - Fri - patt 1 - 7 w/5 @ 14:45

Day Plan #3 - Sat - patt 7, then patt 6 all other times

Day Plan #4 - Sun - patt 7, then patt 6 all other times

Patterns 1 -4 & 6 - 16 Omit SBLT Ø5.

Pattern 5 Unomitts SBLT Ø5

Min Green:		10		10	5	10		
Yellow CLR:		4.4		3.7	4.4	4.4		
All Red CLR:		2.2		3.5	2.0	2.2		
Walk:		---		7	---	7		
FDW:		---		23	---	7		

Direction:		SB		WB	SBLT	NB		
Ø Number:		2		4	5	6		

Patterns	Cycle	Offset							
1. 0615 - 0900 AM Peak	140	0		101		39	15	86	
2. 0900 - 1130 AM Off Peak	120	0		80		40	24	56	
3. 1130 - 1330 Noon	120	0		80		40	24	56	
4. 1330 - 1515 PM Off Peak	120	0		80		40	24	56	
5. 1515 - 1830 PM Peak	140	0		101		39	20	81	
6. 1830 - 2000 Evening	120	0		80		40	24	56	
7. 2000 - 2200 Late	120	0		80		40	24	56	
8. 2200 - 0615 Overnight	120	0		80		40	24	56	
9. Convention Ctr - Out	120	0		80		40	24	56	
10. Arena - In	120	0		80		40	24	56	
11. Arena - Out Fla Ave Closed	120	0		81		39	13	68	
12. Marriott (Out PM)	100	0		61		39	13	48	
13. Arena - Out Fla Ave Opened	120	80		81		39	13	68	
14. Arena Inbound Flush	160	30		120		40	24	96	
15. Arena Lg/Straz Out	240	80		195		45	20	175	
16. Hurricane	100	0		61		39	13	48	



# Access Coord Structure Page

Section Id: **1217**

Record Number: **162**

Coord Date: **10/2/2017**

Controller Type: **COBALT**

Print Date: 11/3/2017

Major Street: **MERIDIAN**

Free Time Primary:

Minor Street: **CUMBERLAND**

Free Time Secondary:

Time in seconds?

**1.** 0615 - 0900 AM Peak

Pattern 1 Structure:   
Pattern 1 Seq:   
Pattern 1 C/O/S:   
Pattern 1 Cycle:   
Pattern 1 Offset:

**6.** 1830 - 2000 Evening

Pattern 6 Structure:   
Pattern 6 Seq:   
Pattern 6 C/O/S:   
Pattern 6 Cycle:   
Pattern 6 Offset:

**11.** Arena - Out Fla Ave Closed

Pattern 11 Structure:   
Pattern 11 Seq:   
Pattern 11 C/O/S:   
Pattern 11 Cycle:   
Pattern 11 Offset:

**16.** Hurricane

Pattern 16 Structure:   
Pattern 16 Seq:   
Pattern 16 C/O/S:   
Pattern 16 Cycle:   
Pattern 16 Offset:

**2.** 0900 - 1130 AM Off Peak

Pattern 2 Structure:   
Pattern 2 Seq:   
Pattern 2 C/O/S:   
Pattern 2 Cycle:   
Pattern 2 Offset:

**7.** 2000 - 2200 Late

Pattern 7 Structure:   
Pattern 7 Seq:   
Pattern 7 C/O/S:   
Pattern 7 Cycle:   
Pattern 7 Offset:

**12.** Marriott (Out PM)

Pattern 12 Structure:   
Pattern 12 Seq:   
Pattern 12 C/O/S:   
Pattern 12 Cycle:   
Pattern 12 Offset:

**21.**

Pattern 21 Structure:   
Pattern 21 Seq:   
Pattern 21 C/O/S:   
Pattern 21 Cycle:   
Pattern 21 Offset:

**3.** 1130 - 1330 Noon

Pattern 3 Structure:   
Pattern 3 Seq:   
Pattern 3 C/O/S:   
Pattern 3 Cycle:   
Pattern 3 Offset:

**8.** 2200 - 0615 Overnight

Pattern 8 Structure:   
Pattern 8 Seq:   
Pattern 8 C/O/S:   
Pattern 8 Cycle:   
Pattern 8 Offset:

**13.** Arena - Out Fla Ave Opened

Pattern 13 Structure:   
Pattern 13 Seq:   
Pattern 13 C/O/S:   
Pattern 13 Cycle:   
Pattern 13 Offset:

**22.**

Pattern 22 Structure:   
Pattern 22 Seq:   
Pattern 22 C/O/S:   
Pattern 22 Cycle:   
Pattern 22 Offset:

**4.** 1330 - 1515 PM Off Peak

Pattern 4 Structure:   
Pattern 4 Seq:   
Pattern 4 C/O/S:   
Pattern 4 Cycle:   
Pattern 4 Offset:

**9.** Convention Ctr - Out

Pattern 9 Structure:   
Pattern 9 Seq:   
Pattern 9 C/O/S:   
Pattern 9 Cycle:   
Pattern 9 Offset:

**14.** Arena Inbound Flush

Pattern 14 Structure:   
Pattern 14 Seq:   
Pattern 14 C/O/S:   
Pattern 14 Cycle:   
Pattern 14 Offset:

**23.**

Pattern 23 Structure:   
Pattern 23 Seq:   
Pattern 23 C/O/S:   
Pattern 23 Cycle:   
Pattern 23 Offset:

**5.** 1515 - 1830 PM Peak

Pattern 5 Structure:   
Pattern 5 Seq:   
Pattern 5 C/O/S:   
Pattern 5 Cycle:   
Pattern 5 Offset:

**10.** Arena - In

Pattern 10 Structure:   
Pattern 10 Seq:   
Pattern 10 C/O/S:   
Pattern 10 Cycle:   
Pattern 10 Offset:

**15.** Arena Lg/Straz Out

Pattern 15 Structure:   
Pattern 15 Seq:   
Pattern 15 C/O/S:   
Pattern 15 Cycle:   
Pattern 15 Offset:

**99.**

**100.**



**City of Tampa Signal Timing Sheet**

Form Ver : 4/19/2017

Section ID: 1301 Computer: M CCU: 14 Drop: 3 Facilities ID:

Shop ID: 2095

Timing Date: 9/29/2015 Phase Date: 8/25/2017 Controller: COBALT

Intersection: TWIGGS / MERIDIAN

Phase Numbers	1	2	4	6	7	8
Direction	EBLT	WB	NB	EB	NBLT	SB
Minimum Green	5	10	10	10	5	10
Walk	---	---	7	7	7	---
Walk - XGuard	---	---	---	---	---	---
FDW	---	---	13	32	13	---
FDW - XGuard	---	---	---	---	---	---
Vehicle Extension	3.0	3.0	3.0	3.0	2.0	3.0
Max. Green I	10	30	20	30	10	20
Max. Green II	15	30	40	30	15	60
Yellow Clr/Alt Yel Cl	4.0	4.0	4.4	4.0	4.4	4.4
Red Clr/Alt Red Clr	2.0	2.8	2.0	2.8	2.5	2.0
Phase Recall	MAX	MAX	---	MAX	---	---
Detector Memory	---	---	---	---	---	---
Ped. Recall	---	---	---	---	---	---
Flash Operation	---	RED	RED	RED	---	RED

Special Modes and Times of Operation:

Free Operation Time Free Operation Other Tim  
 Crossing Guard Times A Railroad Preempt: Yes Fire Preempt: No Bridge Preempt: No  
 Crossing Guard Times P Transit Preemp False  
 Flash Source: C = Computer T = TOD/Controller Flash Time Primary:  
 Special Functions: Flash Time Secondary:  
FDOT SOP: 16 MOD  
Backup Protection (Y/N): Y  
FDOT FDW (Y/N): Y

Comments:

\*UPDATED FDOT CLEARANCES BY FALLER DAVIS

Please Implement Signal Timings Within : [ ] 1 Week [ ] 1 Month

Submitted By: GT Reviewed By: RS Approved By: BA Implemented By: MJF  
 Date: 8.24.17 Date: 8.25.17 Date: 8.25.17 Date: 8/30/2017

Implemented as sent: [  ] With the following revisions below: [ ] Returned, not implemented: [ ]

COMPUTER PATTERN SHEET

1301  
1301  
STRUCTURE 1

CITY OF TAMPA

# 1301 - TWIGGS & MERIDIAN

ECONOLITE

Timing Date: 8/25/2017	MIN	10	10	10	5	
MSX: M CCU: 14 Drop: 5	YEL	4	4.4	4.4	4	
Structures: 12	RED	2.8	2	2	2	
Lead / Lag:	WLK			7		
	FDW			13		
	Min - 69	17	17	17	12	
Pat	CYC	OS	EW	SB	NB	EBLT
1 Am 0515 - 0900						
2 Am off 0900 - 1115						
3 Noon 1115 - 1300						
4 Pm off 1300 - 1515	60	45	28	15	15	12
5 Pm 1515 - 1830	140	125	38	16	40	46
6 Evening 1830 - 2200	60	45	18	15	15	12
7 Late 2200 - 0515	60	45	18	15	15	12
8 Late	120	45	51	17	16	36
9 Convention Ctr - Out	120	55	51	17	16	32
10 Arena-In	70	25	24	16	16	14
11 Arena-Out Fla Closed	70	25	20	16	20	14
12 Marriott (Out Pm)	70	25	20	16	20	14
13 Arena-Out Fla Opened	120	0	37	16	55	12
14 P.A.C. - Out	70	25	20	16	20	14
15 Arena Lg/ P.A.C. Out	70	25	20	16	20	14
16 Hurricane	70	25	20	16	20	14

Call for phase 8 during pattern 1 A.M. Closed  
 Call for phase 4 16:15 - 18:30 M-F P.M. Open  
 Call for phase 8 at 05:15 M-F  
 Omit EBLT (01) Pat 8,9,10,11,12,13,14,15  
 Call on NB (04) Pat 6,7,8,9,10,11,12,13,14,15

T.B.C. Day Plan 1: M-Th patt 1-7 Day Plan 2: Fri patt 1-7 w/5 @ 14:45  
 Day Plan 3: S-Su patt 7 and patt 6 all other times

COMPUTER PATTERN SHEET

1301  
1301  
STRUCTURE 2

CITY OF TAMPA

# 1301 - TWIGGS & MERIDIAN

ECONOLITE

Timing Date: 8/25/2017	MIN	10	5	10	
MSX: M CCU: 14 Drop: 5	YEL	4	4.4	4.4	
Structures: 12	RED	2.8	2.5	2	
Lead / Lag:	WLK		7		
	FDW		13		
	Min - 52	17	12	17	
Pat	CYC	OS	EW	NBLT	SB
1 Am 0515 - 0900	140	122	47	12	81
2 Am off 0900 - 1115	60	0	29	13	18
3 Noon 1115 - 1300	60	0	29	13	18
4 Pm off 1300 - 1515					
5 Pm 1515 - 1830					
6 Evening 1830 - 2200					
7 Late 2200 - 0515					
8 Late					
9 Convention Ctr - Out					
10 Arena-In					
11 Arena-Out Fla Closed					
12 Marriott (Out Pm)					
13 Arena-Out Fla Opened					
14 P.A.C. - Out					
15 Arena Lg/ P.A.C. Out					
16 Hurricane					

Call for phase 8 during pattern 1 A.M. Closed  
 Call for phase 4 16:15 - 18:30 M-F P.M. Open  
 Call for phase 8 at 05:15 M-F  
 Omit EBLT (01) Pat 8,9,10,11,12,13,14,15  
 Call on NB (04) Pat 6,7,8,9,10,11,12,13,14,15

T.B.C. Day Plan 1: M-Th patt 1-7 Day Plan 2: Fri patt 1-7 w/5 @ 14:45  
 Day Plan 3: S-Su patt 7 and patt 6 all other times

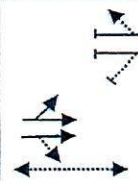
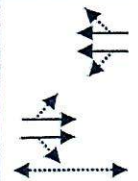
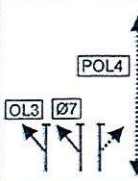


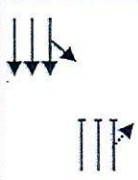
# City of Tampa - Phasing Diagram

**Location:** Twiggs / Meridian Prepared by GT Reviewed by *JS*

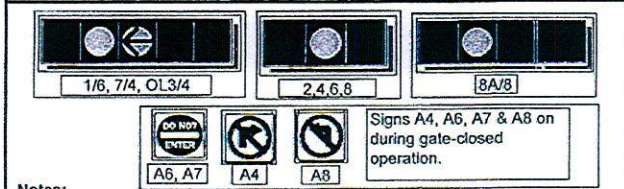
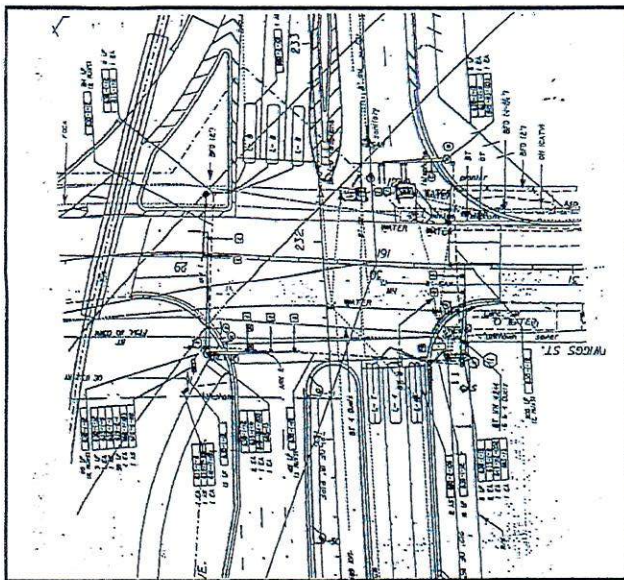
Date: 6/14/2006	Signal Head Numbers	1/6	2	4	6	OL3/4	7/4	8	8A/8				
	Overlaps					OL3							
	Flashing Operation	R	R	R	R	R		R	R	R			

Vehicle Movements	Phase	Display Sequence													
-------------------	-------	------------------	--	--	--	--	--	--	--	--	--	--	--	--	--

	Ø1	RW	←G	G	R	R	G	R	R	R	R	ON	DW	DW	W	DW
	Clear to Ø2 & Ø6	←Y	G	R	R	G	R	R	R	R	R	ON	DW	DW	W	DW
	Ø2	RW	G	G	R	G	R	R	R	R	R	ON	DW	DW	W	DW
	Clear Ped	G	G	R	G	R	R	R	R	R	R	ON	DW	DW	FDW	DW
Clear to All Other	Y	Y	R	Y	R	Y	R	R	R	R	R	ON	DW	DW	DW	DW
	Ø7	RW	R	R	R	R	←G	R	←G	R	R	ON	DW	W	DW	DW
	Clear Ped	R	R	R	R	R	←G	R	←G	R	R	ON	DW	FDW	DW	DW
Clear to Ø4	R	R	R	R	R	←G	R	←Y	R	R	R	ON	DW	W	DW	DW
Clear to All Other	R	R	R	R	R	←Y	R	←Y	R	R	R	ON	DW	DW	DW	DW

	Ø8	RW	R	R	R	R	R	R	G	←G	G	ON	DW	DW	DW	DW
	Clear to All Other	R	R	R	R	R	R	R	Y	←Y	Y	ON	DW	DW	DW	DW

OL3 LS3
LS8 LS8
A4
POL4
A7
LS14 LS15
A8
Closed



**Notes:**  
 8 Phase Controller in 5 phase semi-actuated concurrent/sequential operation. CNA applied to Ø2 & Ø6. Ped heads and buttons on POL4 & P6. Sequence - Ø1 + Ø6, Ø2 + Ø6, Ø7(Ø7 + OL3 + POL4), Ø8(Ø8 + POL4), Ø4(Ø4 + OL3 + POL4). Ped Overlap POL4 operates with Ø's 7, 4 & 8. Ø1 & Ø4 will be omitted during gate-closed operation and Ø7 will be omitted during gate-open operation. Omits to be applied by THCEA ACN(Automated Control Node). Railroad Preemption Clearance- Ø6. Railroad Preemption Dwell - Ø4(OL3 terminates) or Ø8 by ACN. No Ped operation during Preemption.





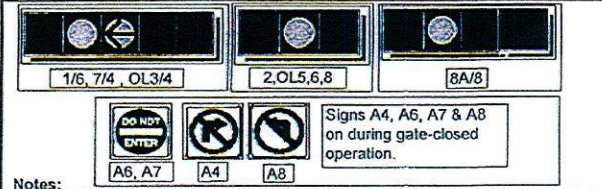
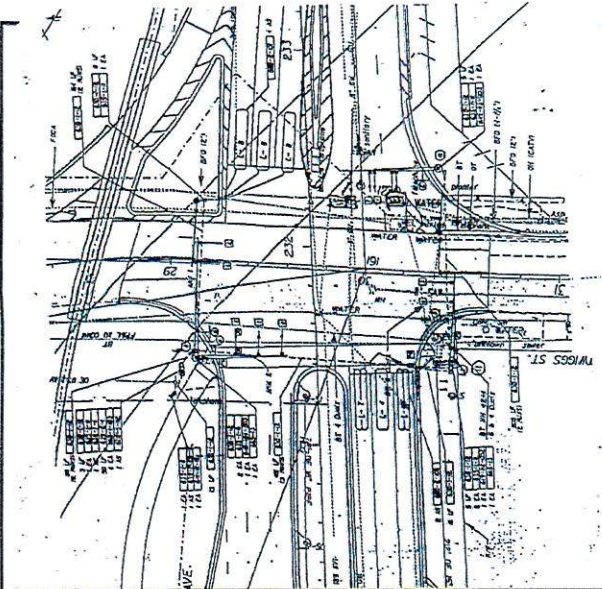
# City of Tampa - Phasing Diagram



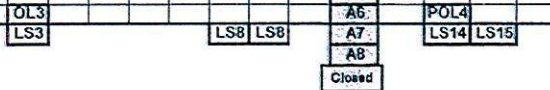
Sect. I.D.# 1301

Pg: 2 of 2

Location:		Twigg's / Meridian								Prepared by		Reviewed by					
Date:	Signal Head Numbers	1/6	2	4	6	OL3/4	7/4	8	8A/8	P	POL	P	P				
6/14/2006	Overlaps					OL3				2	4	6	8				
Vehicle Movements	Flashing Operation	R	R	R	R			R	R								
	Phase Interval	Display Sequence															
	Ø4 RW	R	R	R	R	←G	G	G	R	R			DW	W	DW	DW	
	Clear Ped	R	R	R	R	←G	G	G	R	R			DW	FDW	DW	DW	
	Clear to	R	R	R	R	←Y	Y	Y	R	R			DW	DW	DW	DW	
	All Other	R	R	R	R		R	R	R	R			DW	DW	DW	DW	
OL3																	
POL4																	
	Ø6 RW	G	R	R	G	R	R	R	R				ON	DW	DW	DW	DW
	Clear to	Y	R	R	Y	R	R	R	R				ON	DW	DW	DW	DW
	Dwell	R	R	R	R	R	R	R	R				ON	DW	DW	DW	DW
	Ø8 RW	R	R	R	R	R	R	G	←G	G			ON	DW	DW	DW	DW
	Clear to	R	R	R	R	R	R	Y	←Y	Y			ON	DW	DW	DW	DW
	Exit Ø2 & Ø6	R	R	R	R	R	R	R		R			ON	DW	DW	DW	DW
	Ø4 RW	R	R	G	R	G	G	R	R				DW	DW	DW	DW	
	Clear to	R	R	Y	R	Y	Y	R	R				DW	DW	DW	DW	
	Exit Ø2 & Ø6	R	R	R	R	R	R	R	R				DW	DW	DW	DW	



Notes:  
 8 Phase Controller in 5 phase semi-actuated concurrent/sequential operation. CNA applied to Ø2 & Ø6. Ped heads and buttons on POL4 & P6. Sequence - Ø1 + Ø6, Ø2 + Ø6, Ø7(Ø7 + OL3 + POL4), Ø8(Ø8 + POL4), Ø4(Ø4 + OL3 + POL4). Ped Overlap POL4 operates with Ø's 7, 4 & 8. Ø1 & Ø4 will be omitted during gate-closed operation and Ø7 will be omitted during gate-open operation. Omits to be applied by THCEA ACN(Automated Control Node). Railroad Preemption Clearance - Ø6. Railroad Preemption Dwell - Ø4(OL3 terminates) or Ø8 by ACN. No Ped operation during Preemption.





# Timingsheet, Controller Operation and Load Switch Page

SECID: 1302    Timing Date: 7/9/2019    Phasing Date: 7/9/2019    Shop Number: 2097    Drop: 8  
 Major Street **KENNEDY**    Orientation: Westbound    Controller Type **COBALT**  
 Minor Street **MERIDIAN**    Orientation: North-South    Computer System **CEN**    Last Date Sent **10/27/2017**

Controller Timings (seconds)								
Controller Phase Number	1	2	3	4			7	8
Direction	RR CLR	WB	SBLT	NB			NBLT	SB
Minimum Green	1	10	5	10			5	10
Vehicle Extention	1.0	3.0	2.0	3.0			2.0	3.0
Yellow Clr/Alt Clr	3	4	4.4	4.4			4.4	4.4
Red Clr/Alt Red Clr	1	2.9	2.3	2.3			2.3	2.3
Max Green I	1	35	15	30			15	30
Max Green II	1	55	15	45			15	45
Walk		7		7				7
Walk - XGuard								
FDW		33		20				20
FDW - XGuard								
Detector Memory	---	---	---	---			---	---
Phase Recall	---	MAX	---	---			---	---
Ped Recall	---	---	---	---			---	---
Flash Operation	---	RED	RED	YEL			RED	YEL

Controller Operation	
RXR Preempt: Yes	FOOT SOP: 7 MOD
Fire Preempt: No	Backup Protection: N
Bridge Preempt: No	LPI Location(Y/N): Yes
Transit Preempt: False	LPI Date: 6/21/2019
Crossing Guard Times AM:	
Crossing Guard Times PM:	
Free Time Primary:	
Free Time Secondary:	
Flash Source- (C)omputer or (F)ield:	
Flash Times Primary:	
Flash Times Secondary:	
CNA Ø's	Ø2

Phase Ring Assignments	
Sequence 1	Ring 1: 1 2   3 4 Ring 2: 6   7 8
Sequence 2	Ring 1: _____ Ring 2: _____
Sequence 3	Ring 1: _____ Ring 2: _____
Sequence 4	Ring 1: _____ Ring 2: _____

Cabinet Load Switch Assienments							
LS1: --	LS2: Ø2	LS3: Ø3	LS4: Ø4	LS5: --	LS6: --	LS7: Ø7	LS8: Ø8
LS9: P2	LS10: P4&OLG	LS11: --	LS12: P8&OLF	LS13: --	LS14: --	LS15: --	LS16: --

\*RR PREEMPT - CLEARANCE Ø1(RR CLR), cycling Ø3+ flashing OLG, Ø4 & Ø8, Exit Ø2\*  
 Ø3 omitted by Coord Pattern in Patterns 2, 3, 4, 6, 7, 8, thru 16 & 33 thru 41.  
 LPI: 3 seconds on Ø4 & Ø8

Submitted By: *CMB* Date: *8-1-19* Review By: *JC* Date: *8/1/2019* Approved By: *BC* Date: *08/01/19*  
 Implemented By: *Rhe* Date: *8-7-19* Notes:

Comments





# Coordination Pattern Page

Ver. E

Print Date: 7/9/2019

Major Street: **KENNEDY**

Section Id: 1302

Record Number: 164

Coord Date: 9/29/2017

Minor Street: **MERIDIAN**

Coord M-F: Mon - Thur patt 1-7, Fri patt 1-7 w/5@14:45

Coord WkEnd: Sat - Sun Patt 7 & patt 6 all other times

Coord Free:

Coord Sp Ops:

Direction:

Ø Number:

RR CLR	WB	SBLT	NB			NBLT	SB
1	2	3	4			7	8

	Patterns	Sequence	Cycle	Offset								
1.	0515 - 0900 AM Peak	1	140	100		51	19	70			19	70
2.	0900 - 1115 AM Off Peak	1	120	15		59	12	49			12	49
3.	1115 - 1330 Noon	1	120	15		59	12	49			12	49
4.	1330 - 1515 PM Off Peak	1	120	15		59	12	49			12	49
5.	1515 - 1830 PM Peak	1	140	98		60	30	50			30	50
6.	1830 - 2200 Evening	1	120	15		59	12	49			12	49
7.	2200 - 0515 Late	1	120	15		59	12	49			12	49
8.	Late - Overnight	1	120	15		59	12	49			12	49
9.	Convention Center - Out	1	120	15		40	12	68			12	68
10.	Arena Inbound	1	120	0		50	12	58			12	58
11.	Arena Outbound Fla Closed	1	120	0		39	55	26			55	26
12.	Marriott Special (Out PM)	1	100	0		40	12	48			12	48
13.	Arena Outbound Fla Opened	1	120	75		39	55	26			55	26
14.	Straz Outbound	1	120	0		69	12	39			12	39
15.	Arena Lg/Straz Outbound	1	120	0		69	12	39			12	39
16.	Hurricane	1	100	0		40	12	48			12	48



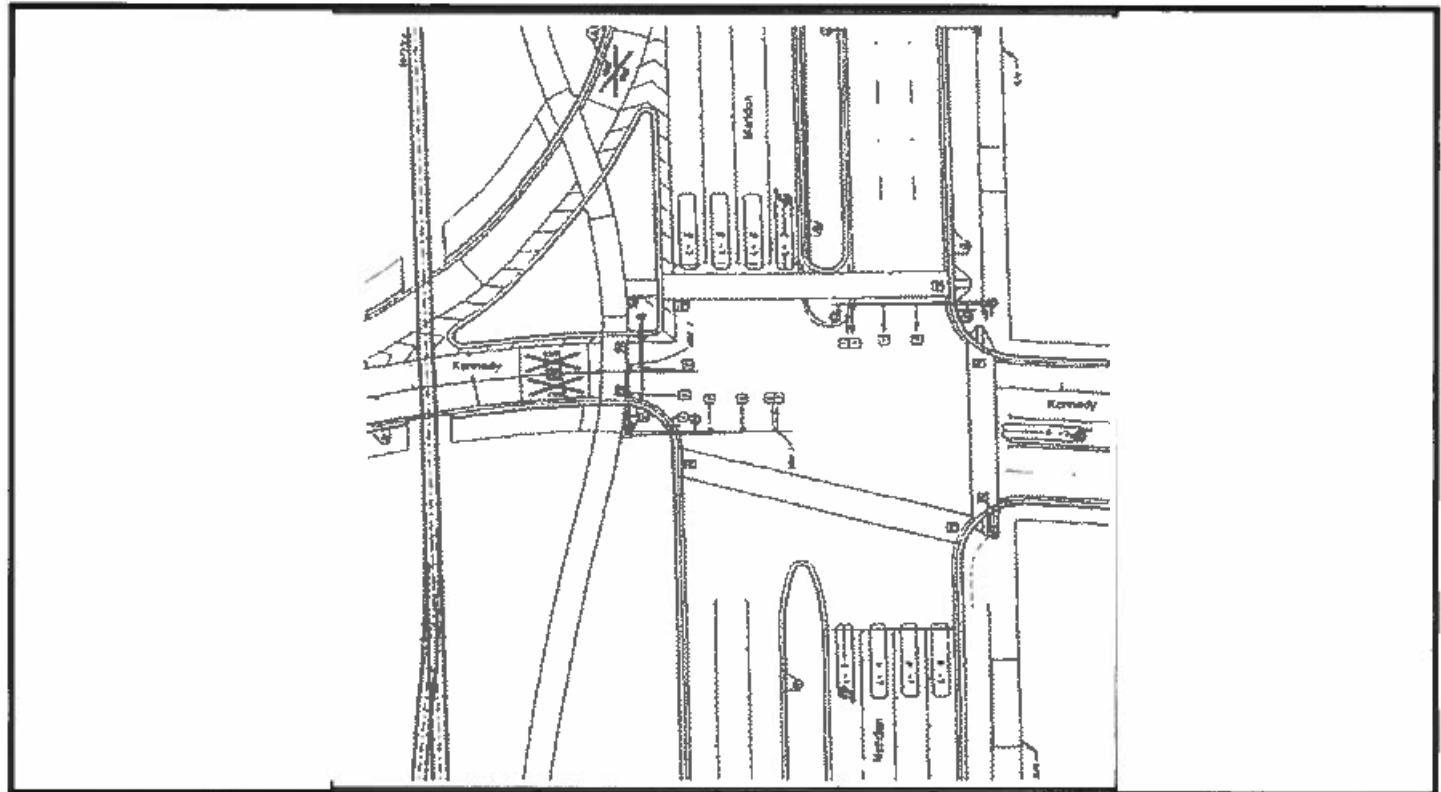
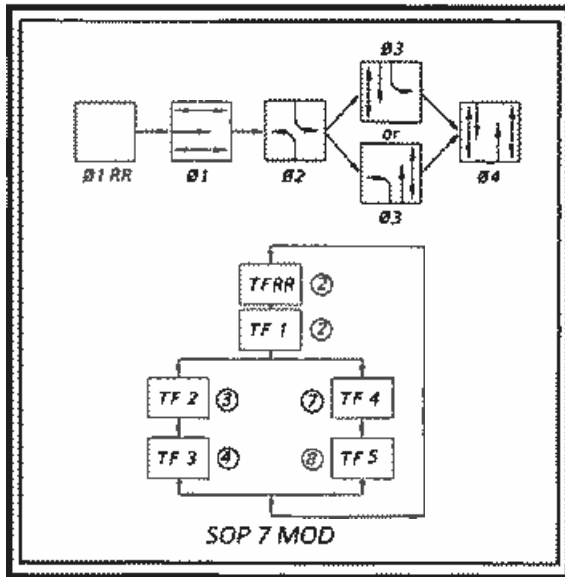





Section Id 1302 Controller Type COBALT

Major Street KENNEDY

Minor Street MERIDIAN

Coord Date 9/29/2017 FDOT SOP: 7 MOD



<p>Ped 1 Selector 1ped-wlk-fdw-count PED Signal 1: P2, P4, P8</p>  <p>Ped 2 Selector PED Signal 2:</p>	<p>Sig 1 Selector 4-section-gl-fyl-yl-rl-v Signal Head 1: 3, 7</p>  <p>Sig 9 Selector Signal Head 9:</p>	<p>Sig 2 Selector 3-section-ball-vertica Signal Head 2: 2, 4, 8</p>  <p>Sig 10 Selector Signal Head 10:</p>	<p>Sig 3 Selector Signal Head 3:</p>	<p>Sig 4 Selector Signal Head 4:</p>	<p>Sig 5 Selector Signal Head 5:</p>	<p>Sig 6 Selector Signal Head 6:</p>	<p>Sig 7 Selector Signal Head 7:</p>	<p>Sig 8 Selector Signal Head 8:</p>
			<p>Sig 11 Selector Signal Head 11:</p>	<p>Sig 12 Selector Signal Head 12:</p>	<p>Sig 13 Selector Signal Head 13:</p>	<p>Sig 14 Selector SIGNAL HEAD 14</p>	<p>Sig 15 Selector SIGNAL HEAD 15</p>	<p>Sig 16 Selector SIGNAL HEAD 16</p>



# Timingsheet, Controller Operation and Load Switch Page

SECID: 1303 Timing Date: 10/2/2017 Phasing Date: 10/2/2017 ARCGIS Node ID: Shop Number: 2098 Drop: 9

Major Street **JACKSON**

Orientation: Eastbound

Controller Type **COBALT**

Minor Street **MERIDIAN**

Orientation: North-South

Computer System **CEN**

Date Sen

### Controller Timings (seconds)

Controller Phase Number			4		6		8
Direction			NB		EB		SB
Minimum Green			10		10		10
Vehicle Extention			3.0		3.0		3.0
Yellow Clr/Alt Clr			4.4		3.7		4.4
Red Clr/Alt Red Clr			2.7		4.5		2.7
Max Green I			40		80		40
Max Green II			40		80		40
Walk					7		7
Walk - XGuard							
FDW			---		31		18
FDW - XGuard							
Detector Memory			---		---		---
Phase Recall			---		MAX		---
Ped Recall			---		ON		---
Flash Operation			RED		RED		RED

### Controller Operation

RXR Preempt: No      FDOT SOP: 1 MOD  
 Fire Preempt: No      Backup Protection:  
 Bridge Preempt: No      FDOT Walk Y  
 Transit Preempt: False      FDOT FDW: Y  
 Crossing Guard Times AM:  
 Crossing Guard Times PM:  
 Free Time Primary:  
 Free Time Secondary:  
 Flash Source- (C)omputer or (F)ield:  
 Flash Times Primary  
 Flash Times Secondary  
 CNA Ø's      6

### Phase Ring Assignments

Sequence 1	Ring 1:	2   4
	Ring 2:	6   8
Sequence 2	Ring 1:	_____
	Ring 2:	_____
Sequence 3	Ring 1:	_____
	Ring 2:	_____
Sequence 4	Ring 1:	_____
	Ring 2:	_____

### Cabinet Load Switch Assignments

LS1:      LS2:      LS3:      LS4: Ø4      LS5:      LS6: Ø6      LS7:      LS8: Ø8  
 LS9:      LS10:      LS11: P6      LS12: P8      LS13:      LS14:      LS15:      LS16:

APPLY CNA TO Ø6.\*

\*RR PREEMPT - Ø6 TRACK CLEARANCE, Ø4 & Ø8 ARE DWELL.\*

Comments

Submitted By: *GT*      Date: 10-17-17      Review By: *CS*      Date: 10-24-17      Approved By: *BY*      Date: 10-27-17  
 Implemented By: *mg*      Date: 12/4/18      Notes:



# Coordination Pattern Page

Print Date: 10/18/2017

Major Street: JACKSON

Section Id: 1303

Record Number: 165

Coord Date: 10/2/2017

Minor Street: MERIDIAN

Free Time Primary:

Free Time Secondary:

Day Plan #1 - Mon-Thr patt 1 -7.

Day Plan #2 - Fri - patt 1 - 7 w/5 @ 14:45

Day Plan #3 - Sat - patt 7, then patt 6 all other times

Day Plan #4 - Sun - patt 7, then patt 6 all other times

Patterns 1 - 8: Call on N/S.

Patterns 11 & 13: Call on N/S.

Min Green:				10		10		10
Yellow CLR:				4.4		3.7		4.4
All Red CLR:				2.7		4.5		2.7
Walk:						7		7
FDW:				---		31		18

Direction:				NB		EB		SB
Ø Number:				4		6		8

	Patterns	Cycle	Offset								
1.	0515 - 0900 AM Peak	140	107				81		59		81
2.	0900 - 1130 AM Off Peak	120	25				61		59		61
3.	1130 - 1330 Noon	120	25				61		59		61
4.	1330 - 1515 PM Off Peak	120	25				61		59		61
5.	1515 - 1830 PM Peak	140	90				38		102		38
6.	1830 - 2000 Evening	120	25				61		59		61
7.	2000 - 2200 Late	120	25				61		59		61
8.	2200 - 0615 Overnight	120	25				61		59		61
9.	Convention Cntr Outbound	120	25				40		80		40
10.	Arena Inbound	120	0				40		80		40
11.	Arena Out - Fla Ave Closed	120	0				61		59		61
12.	Marriott PM Outbound	100	0				53		47		53
13.	Arena Out - Fla Ave Open	120	65				73		47		73
14.	Arena Inbound Flush	160	0				40		80		40
15.	Arena Large Out/Straz	240	0				60		60		60
16.	Hurricane	100	0				50		50		50



# Timingsheet, Controller Operation and Load Switch Page

SECID: 1303    Timing Date: 10/2/2017    Phasing Date: 10/2/2017    ARCGIS Node ID:    Shop Number 2098    Drop: 9

Major Street **JACKSON**    Orientation: Eastbound    Controller Type **COBALT**  
 Minor Street **MERIDIAN**    Orientation: North-South    Computer System **CEN**    Date Set

Controller Timings (seconds)							
Controller Phase Number			4		6		8
Direction			NB		EB		SB
Minimum Green			10		10		10
Vehicle Extension			3.0		3.0		3.0
Yellow Clr/Alt Clr			4.4		3.7		4.4
Red Clr/Alt Red Clr			2.7		4.5		2.7
Max Green I			40		80		40
Max Green II			40		80		40
Walk					7		7
Walk - XGuard							
FDW			---		31		18
FDW - XGuard							
Detector Memory			---		---		---
Phase Recall			---		MAX		---
Ped Recall			---		ON		---
Flash Operation			RED		RED		RED

Controller Operation	
RXR Preempt:	No      FDOT SOP: 1 MOD
Fire Preempt:	No      Backup Protection:
Bridge Preempt:	No      FDOT Walk Y
Transit Preempt:	False      FDOT FDW: Y
Crossing Guard Times AM:	
Crossing Guard Times PM:	
Free Time Primary:	
Free Time Secondary:	
Flash Source- (C)omputer or (F)ield:	
Flash Times Primary	
Flash Times Secondary	
CNA Ø's	6

Cabinet Load Switch Assignments							
LS1:	LS2:	LS3:	LS4:	LS5:	LS6:	LS7:	LS8:
LS9:	LS10:	LS11:	LS12:	LS13:	LS14:	LS15:	LS16:

Phase Ring Assignments	
Sequence 1	Ring 1: _____ Ring 2: _____
Sequence 2	Ring 1: _____ Ring 2: _____
Sequence 3	Ring 1: _____ Ring 2: _____
Sequence 4	Ring 1: _____ Ring 2: _____

**Comments**  
 APPLY CNA TO Ø6.\*  
 \*RR PREEMPT - Ø6 TRACK CLEARANCE, Ø4 & Ø8 ARE DWELL.\*

Submitted By:	Date:	Review By:	Date:	Approved By:	Date:
Implemented By:	Date:	Notes:			





# Coordination Pattern Page

Print Date: 10/18/2017

Major Street: JACKSON

Section Id: 1303

Record Number: 165

Coord Date: 10/2/2017

Minor Street: MERIDIAN

Free Time Primary:

Free Time Secondary:

Min Green:				10		10		10
Yellow CLR:				4.4		3.7		4.4
All Red CLR:				2.7		4.5		2.7
Walk:						7		7
FDW:				—		31		18

Direction:				NB		EB		SB
Ø Number:				4		6		8

Patterns	Cycle	Offset							
1. 0615 - 0900 AM Peak	140	0107				81		59	81
2. 0900 - 1130 AM Off Peak	120	025				61		59	61
3. 1130 - 1330 Noon	120	025				61		59	61
4. 1330 - 1515 PM Off Peak	120	025				61		59	61
5. 1515 - 1830 PM Peak	140	090				38		102	38
6. 1830 - 2000 Evening	120	025				61		59	61
7. 2000 - 2200 Late	120	025				61		59	61
8. 2200 - 0615 Overnight	120	025				61		59	61
9. Convention Cntr Outbound	120	025				40		80	40
10. Arena inbound	120	0				40		80	40
11. Arena Out - Fla Ave Closed	120	0				61		59	61
12. Marriott PM Outbound	100	0				53		47	53
13. Arena Out - Fla Ave Open	120	065				73		47	73
14. Arena inbound Flush	160	30				40		80	40
15. Arena Large Out/Straz	240	80				60		60	60
16. Hurricane	100	0				50		50	50



# Timingsheet, Controller Operation and Load Switch Page

SECID: 1304 Timing Date: 8/7/2017 Phasing Date: 8/7/2017 ARCGIS Node ID: Shop Number: Drop:

Major Street **MERIDIAN**

Orientation: North-South

Controller Type **COBALT**

Minor Street **WHITING**

Orientation: West

Computer System **CEN**

Date Sen

## Controller Timings (seconds)

Controller Phase Number	2	4	5	6	8
Direction	SB	WB	SBLT	NB	EBPED
Minimum Green	10	10	5	10	10
Vehicle Extention	3.0	3.0	3.0	3.0	3.0
Yellow Clr/Alt Clr	4.4	3.7	4.4	4.4	3.7
Red Clr/Alt Red Clr	2.2	3.5	2.0	2.2	3.5
Max Green I	17	17	12	17	17
Max Green II	40	45	25	40	45
Walk	---	7	---	7	7
Walk - XGuard	---	---	---	---	---
FDW	---	30	---	14	30
FDW - XGuard	---	---	---	---	---
Detector Memory	---	---	---	---	---
Phase Recall	MIN	---	---	MIN	---
Ped Recall	---	---	---	ON	---
Flash Operation	YEL	RED	---	YEL	---

## Controller Operation

RXR Preempt: No FDOT SOP: 12  
 Fire Preempt: No Backup Protection: Y  
 Bridge Preempt: No FDOT Walk Y  
 Transit Preempt: False FDOT FDW: Y  
 Crossing Guard Times AM:  
 Crossing Guard Times PM:  
 Free Time Primary:  
 Free Time Secondary:  
 Flash Source- (C)omputer or (F)ield:  
 Flash Times Primary  
 Flash Times Secondary  
**CNA Ø's 2 + 6**

## Phase Ring Assignments

Sequence 1	Ring 1: 1 2 / 4
	Ring 2: 5 6 / 8
Sequence 2	Ring 1: _____
	Ring 2: _____
Sequence 3	Ring 1: _____
	Ring 2: _____
Sequence 4	Ring 1: _____
	Ring 2: _____

## Cabinet Load Switch Assignments

LS1: LS2: Ø2 LS3: LS4: Ø4 LS5: Ø5 LS6: Ø6 LS7: LS8:  
 LS9: LS10: LS11: LS12: LS13: LS14: P4 LS15: P6 LS16: P8

Comments

Logic statement Control (LP 1-15 EEE)  
 Logic stat. 1 IF DET 14 on - Then Det 14 on  
 2 " 15 " " " P4 on  
 3 " 16 " " " P8 on

Submitted By: *[Signature]* Date: 10-31-17 Review By: *[Signature]* Date: 10-31-17 Approved By: *[Signature]* Date: 10-31-17

Implemented By: *[Signature]* Date: 11-1-17 Notes:

DET Assign  
 14-14  
 15-15  
 16-16

17-1  
 18-2  
 19-3  
 20-4

21-5  
 22-6



# Coordination Pattern Page

Print Date: 10/31/2017

Major Street: MERIDIAN

Section Id: 1304

Record Number: 166

Coord Date: 10/18/2017

Minor Street: WHITING

Free Time Primary:

Free Time Secondary:

Day Plan #1 - Mon-Thr patt 1 -7.

Day Plan #2 - Fri - patt 1 - 7 w/5 @ 14:45

Day Plan #3 - Sat - patt 7, then patt 6 all other times

Day Plan #4 - Sun - patt 7, then patt 6 all other times

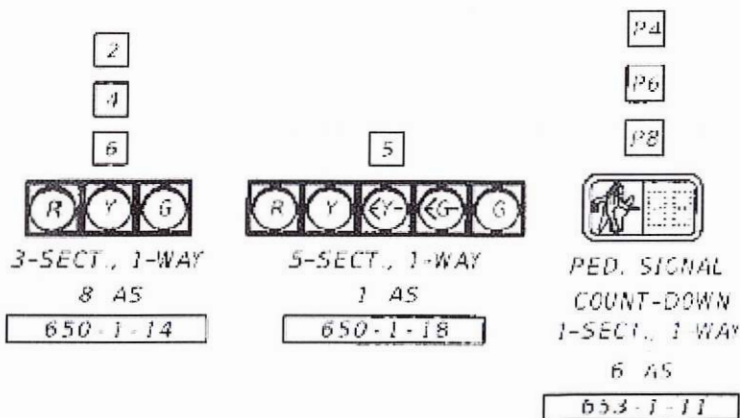
Min Green:	<input type="text"/>	10	<input type="text"/>	10	5	10	<input type="text"/>	10
Yellow CLR:	<input type="text"/>	4.4	<input type="text"/>	3.7	4.4	4.4	<input type="text"/>	3.7
All Red CLR:	<input type="text"/>	2.2	<input type="text"/>	3.5	2.0	2.2	<input type="text"/>	3.5
Walk:	<input type="text"/>	---	<input type="text"/>	7	---	7	<input type="text"/>	7
FDW:	<input type="text"/>	---	<input type="text"/>	30	---	14	<input type="text"/>	30

Direction:	<input type="text"/>	SB	<input type="text"/>	WB	SBLT	NB	<input type="text"/>	EBPED
Ø Number:	<input type="text"/>	2	<input type="text"/>	4	5	6	<input type="text"/>	8

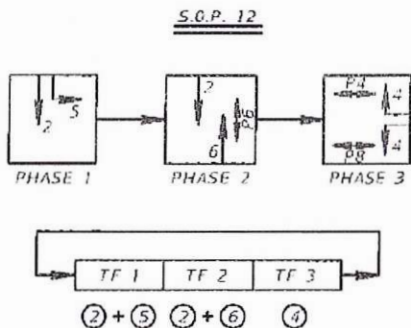
	Patterns	Cycle	Offset								
1.	0615 - 0900 AM Peak	140	0	<input type="text"/>	95	<input type="text"/>	45	15	80	<input type="text"/>	45
2.	0900 - 1130 AM Off Peak	120	0	<input type="text"/>	75	<input type="text"/>	45	24	51	<input type="text"/>	45
3.	1130 - 1330 Noon	120	0	<input type="text"/>	75	<input type="text"/>	45	24	51	<input type="text"/>	45
4.	1330 - 1515 PM Off Peak	120	0	<input type="text"/>	75	<input type="text"/>	45	24	51	<input type="text"/>	45
5.	1515 - 1830 PM Peak	140	0	<input type="text"/>	95	<input type="text"/>	45	20	75	<input type="text"/>	45
6.	1830 - 2000 Evening	120	0	<input type="text"/>	75	<input type="text"/>	45	24	51	<input type="text"/>	45
7.	2000 - 2200 Late	120	0	<input type="text"/>	75	<input type="text"/>	45	24	51	<input type="text"/>	45
8.	2200 - 0615 Overnight	120	0	<input type="text"/>	75	<input type="text"/>	45	24	51	<input type="text"/>	45
9.	Convention Center - Out	120	0	<input type="text"/>	75	<input type="text"/>	45	24	51	<input type="text"/>	45
10.	Arena - In	120	0	<input type="text"/>	75	<input type="text"/>	45	24	51	<input type="text"/>	45
11.	Arena - Out Florida Ave Close	120	0	<input type="text"/>	81	<input type="text"/>	39	13	68	<input type="text"/>	39
12.	Marriot - Out (PM Special)	120	0	<input type="text"/>	81	<input type="text"/>	39	13	68	<input type="text"/>	39
13.	Arena - Out Florida Ave Open	120	0	<input type="text"/>	75	<input type="text"/>	45	13	62	<input type="text"/>	45
14.	Arena Inbound Flush	160	30	<input type="text"/>	115	<input type="text"/>	45	24	91	<input type="text"/>	45
15.	Arena Large / Straz Outbound	240	80	<input type="text"/>	195	<input type="text"/>	45	20	175	<input type="text"/>	45
16.	Hurricane	100	0	<input type="text"/>	61	<input type="text"/>	39	13	48	<input type="text"/>	39



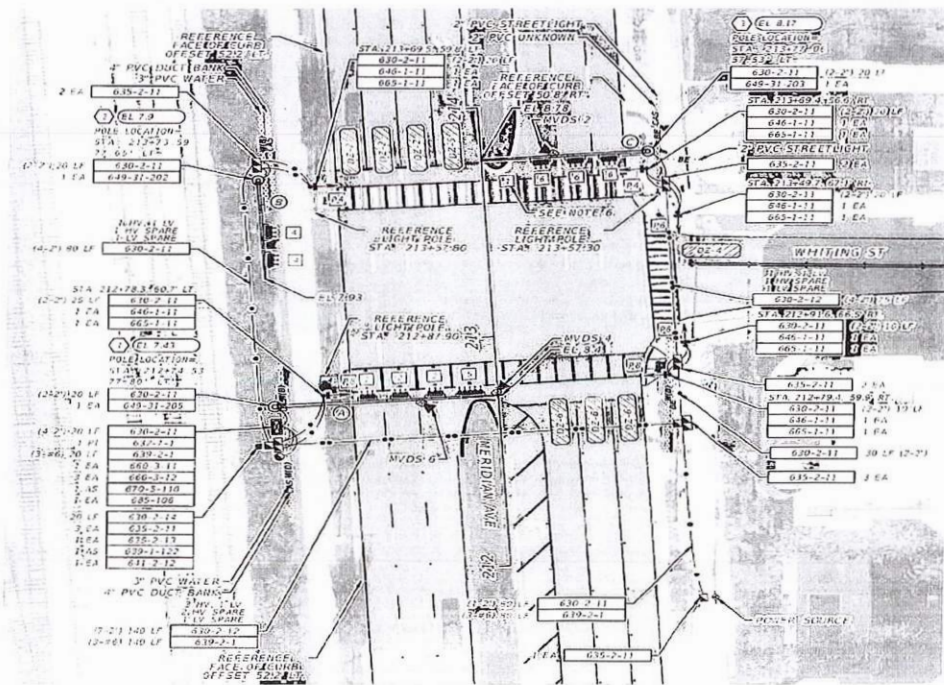
# Signal Head Detail



# Signal Operating Plan 12



# Signal Plan



Meridian-Whiting  
10/31/2017  
Section ID: 1304





# Timingsheet, Controller Operation and Load Switch Page

SECID: 1312 Timing Date: 4/3/2018 Phasing Date: 4/3/2018 ARCGIS Node ID: Shop Number: 1533 Drop:

Major Street **CHANNELSIDE**

Orientation: North-South

Controller Type **COBALT**

Minor Street **KENNEDY**

Orientation: East-West

Computer System **Cen**

Date Sen **6/25/2015**

## Controller Timings (seconds)

Controller Phase Number	1	2	3					
Direction	WB	N/S	EB					
Minimum Green	5	15	10					
Vehicle Extention	3.0	3.0	3.0					
Yellow Clr/Alt Clr	4.1	4	4					
Red Clr/Alt Red Clr	2.7	2.3	2.3					
Max Green I	15	85	45					
Max Green II	45	85	45					
Walk		7	7					
Walk - XGuard								
FDW		22	18					
FDW - XGuard								
Detector Memory	ON							
Phase Recall		MAX						
Ped Recall		ON						
Flash Operation	RED	YEL	RED					

## Controller Operation

RXR Preempt: No FDOT SOP: SOP 4 MOD  
 Fire Preempt: No Backup Protection:  
 Bridge Preempt: No FDOT Walk Y  
 Transit Preempt: False FDOT FDW: Y  
 Crossing Guard Times AM:  
 Crossing Guard Times PM:  
 Free Time Primary:  
 Free Time Secondary:  
 Flash Source- (C)omputer or (F)ield:  
 Flash Times Primary  
 Flash Times Secondary  
 CNA Ø's Ø2

## Phase Ring Assignments

Sequence 1 Ring 1: 2 3 1  
 Ring 2:  
 Sequence 2 Ring 1:  
 Ring 2:  
 Sequence 3 Ring 1:  
 Ring 2:  
 Sequence 4 Ring 1:  
 Ring 2:

## Cabinet Load Switch Assienments

LS1: Ø1 LS2: Ø2 LS3: Ø3 LS4: LS5: LS6: LS7: LS8:  
 LS9: P1 LS10: LS11: P6 Trolley LS12: P3 LS13: LS14: LS15: LS16:

\*EB AND WB ARE SPLIT PHASE\*

Comments

LPI - Location, NS only - 5 sec delay green.  
 EB called to Max Recall by TOD 9:00 - 22:00.

Submitted By: *[Signature]* Date: 4/19 Date: 4/19/18 Review By: *[Signature]* Approved By: *[Signature]* Date: 4/19/18

Implemented By: *[Signature]* Date: 4/20/18 Notes:



# Coordination Pattern Page

Print Date: 4/3/2018

Major Street: CHANNELSIDE

Section Id: 1312

Record Number: 168

Coord Date: 4/3/2018

Minor Street: KENNEDY

Min Green:	5	15	10					
Yellow CLR:	4.1	4	4					
All Red CLR:	2.7	2.3	2.3					
Walk:		7	7					
FDW:		22	18					

Free Time Primary:

Free Time Secondary:

Day Plan #1 - Mon-Thr patt 1-7.

Day Plan #2 - Fri - patt 1 - 7 w/5 @ 14:45

Day Plan #3 - Sat - patt 7, then patt 2 all other times

Day Plan #4 - Sun - patt 7, then patt 2 all other times

Direction:	WB	N/S	EB					
Ø Number:	1	2	3					

	Patterns	Cycle	Offset						
1.	0515 - 0900 AM Peak	140	5	15	92	33			
2.	0900 - 1115 AM Off Peak	120	40	20	45	55			
3.	1115 - 1330 Noon	120	40	20	45	55			
4.	1330 - 1515 PM Off Peak	120	40	20	45	55			
5.	1515 - 1830 PM Peak	140	40	22	57	61			
6.	1830 - 2200 Evening	120	40	20	45	55			
7.	2200 - 0515 Late	120	40	20	45	55			
8.	Port - Outbound	140	40	45	45	50			
9.	Convention Ctr - Outbound	120	40	20	45	55			
10.	Arena - Inbound	120	96	20	65	35			
11.	Arena - Out Fla Ave Closed	120	88	12	57	51			
12.	Marriott - Outbound PM	100	64	12	37	51			
13.	Arena - Out Fla Ave Opened	120	88	12	57	51			
14.	Straz - Outbound	120	88	12	57	51			
15.	Arena Lg/Straz - Outbound	200	180	20	122	58			
16.	Hurricane	250	20	20	162	68			



# Coordination Pattern Page

Print Date: 4/3/2018

Major Street: CHANNELSIDE

Section Id: 1312

Record Number: 168

Coord Date: 4/3/2018

Minor Street: KENNEDY

Min Green:	5	15	10					
Yellow CLR:	4.1	4	4					
All Red CLR:	2.7	2.3	2.3					
Walk:		7	7					
FDW:		22	18					

Free Time Primary:

Free Time Secondary:

- Day Plan #1 - Mon-Thr patt 1 -7.
- Day Plan #2 - Fri - patt 1 - 7 w/5 @ 14:45
- Day Plan #3 - Sat - patt 7, then patt 2 all other times
- Day Plan #4 - Sun - patt 7, then patt 2 all other times

Direction:	WB	N/S	EB					
Ø Number:	1	2	3					

Patterns	Cycle	Offset							
1. 0515 - 0900 AM Peak	140	5	15	92	33				
2. 0900 - 1115 AM Off Peak	120	40	20	45	55				
3. 1115 - 1330 Noon	120	40	20	45	55				
4. 1330 - 1515 PM Off Peak	120	40	20	45	55				
5. 1515 - 1830 PM Peak	140	40	22	57	61				
6. 1830 - 2200 Evening	120	40	20	45	55				
7. 2200 - 0515 Late	120	40	20	45	55				
8. Port - Outbound	120	40	40	40	40				
9. Convention Ctr - Outbound	120	40	20	45	55				
10. Arena - Inbound	120	96	20	65	35				
11. Arena - Out Fla Ave Closed	120	88	12	57	51				
12. Marriott - Outbound PM	100	64	12	37	51				
13. Arena - Out Fla Ave Opened	120	88	12	57	51				
14. Straz - Outbound	120	88	12	57	51				
15. Arena Lg/Straz - Outbound	200	180	20	122	58				
16. Hurricane	250	20	20	162	68				



# Timingsheet, Controller Operation and Load Switch Page

SECID: 1313    Timing Date: 4/3/2018    Phasing Date: 4/3/2018    Shop Number: 1016    Drop:  
 Major Street **CHANNELSIDE**    Orientation: North-South    Controller Type **COBALT**  
 Minor Street **WASHINGTON/YORK**    Orientation: East-West    Computer System **Cen**    Last Date Sent **6/16/2015**

Controller Timings (seconds)							
Controller Phase Number	1	2	3	4			
Direction	SB LT	N/S	WB	EB			
Minimum Green	5	10	5	5			
Vehicle Extension	2.0	3.0	4.0	2.0			
Yellow Clr/Alt Clr	4	4	3.4	3.4			
Red Clr/Alt Red Clr	2	2	5	2.5			
Max Green I	10	60	45	25			
Max Green II	15	75	45	25			
Walk		7		7			
Walk - XGuard							
FDW		20		15			
FDW - XGuard							
Detector Memory			ON				
Phase Recall		MAX	MIN				
Ped Recall		ON					
Flash Operation		YEL	RED	RED			

Controller Operation	
RXR Preempt:	No      FDOT SOP: 16 MOD
Fire Preempt:	No      Backup Protection: Y
Bridge Preempt:	No      LPI Location(Y/N): No
Transit Preempt:	False      LPI Date:
Crossing Guard Times AM:	
Crossing Guard Times PM:	
Free Time Primary:	
Free Time Secondary:	
Flash Source- (C)omputer or (F)ield:	
Flash Times Primary	
Flash Times Secondary	
CNA Ø's	Ø2

Cabinet Load Switch Assignments															
LS1:	Ø1	LS2:	OLF	LS3:	Ø3	LS4:	Ø4	LSS:		LS6:	OLJ	LS7:	OLK	LS8:	
LS9:	P2	LS10:	P4	LS11:	P2	LS12:	P2 trolley	LS13:		LS14:		LS15:		LS16:	

Phase Ring Assignments	
Sequence 1	Ring 1: 1 2 4 3 Ring 2: _____
Sequence 2	Ring 1: _____ Ring 2: _____
Sequence 3	Ring 1: _____ Ring 2: _____
Sequence 4	Ring 1: _____ Ring 2: _____

**Comments**  
 Sequence - Ø1(Ø1+OLF+OLK), Ø2(OLF+OLJ+P2+POL6+Trolley), Ø4(Ø4+OLK+P4), Ø3,  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Submitted By: CS    Date: 4/19    Review By: BT    Date: 4/19/18    Approved By: BC    Date: 4/19/18  
 Implemented By: KN    Date: 4/28    Notes: \_\_\_\_\_

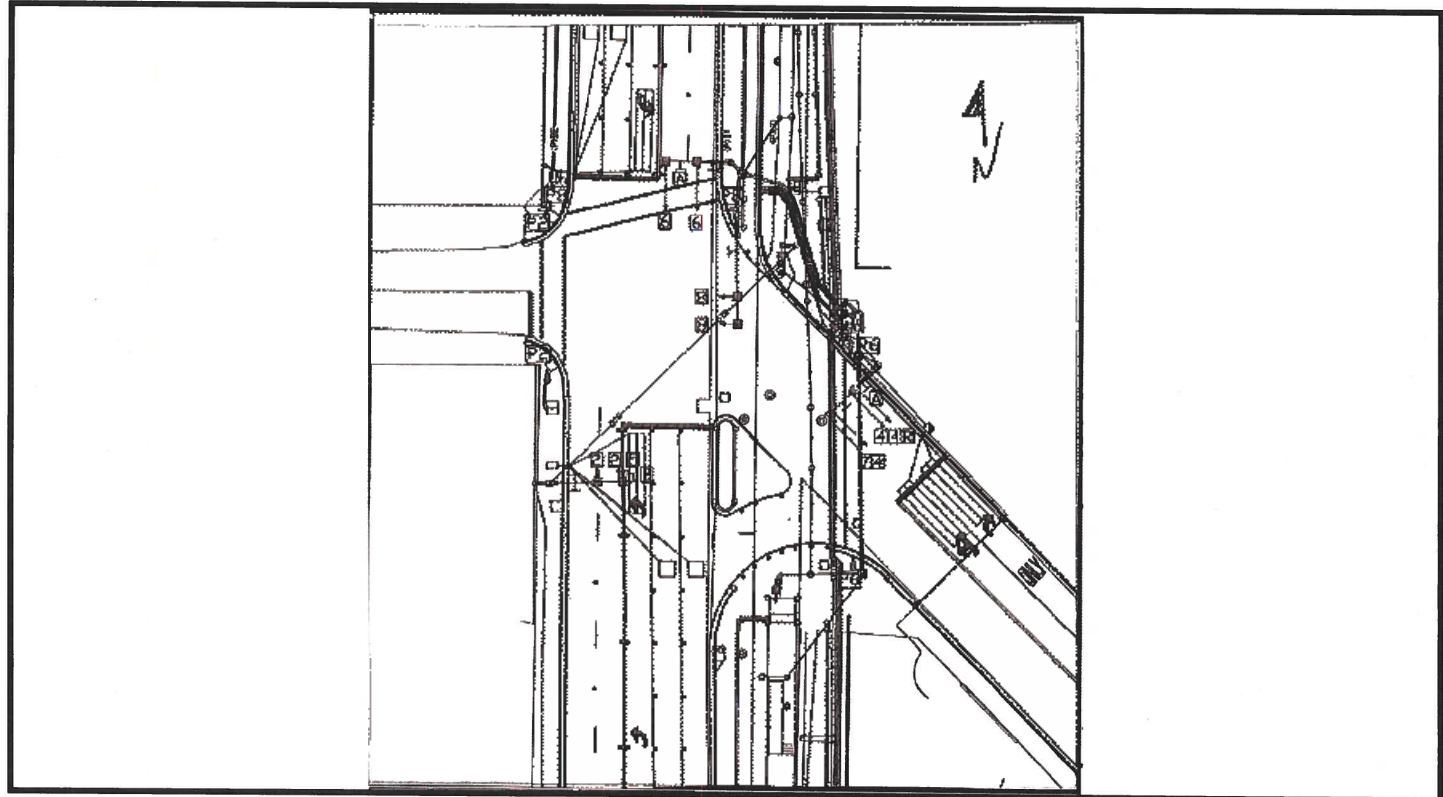
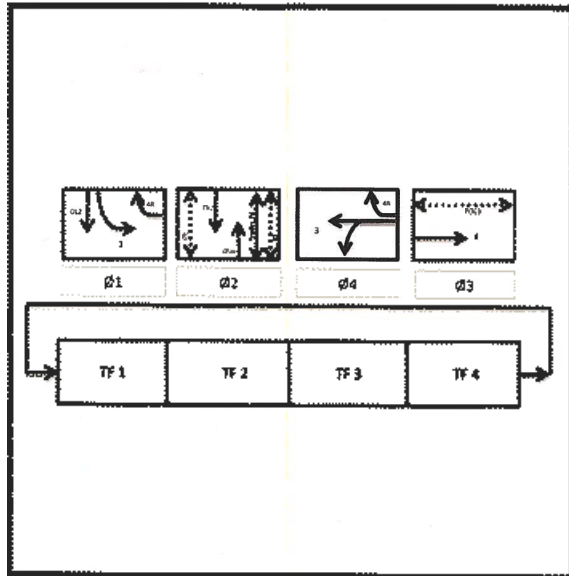


Section Id 1313 Controller Type COBALT

Major Street CHANNELSIDE

Minor Street WASHINGTON/YORK

Coord Date 4/3/2018 FDOT SOP: 16 MOD



<p>Ped 1 Selector 1ped-wlk-fdw-count PED Signal 1: P2, POL6, POL8</p>	<p>Sig 1 Selector 5-section-doghouse- Signal Head 1: S/2, 7/4</p>	<p>Sig 2 Selector 3-section-ball-vertica Signal Head 2: 2, 6, 8</p>	<p>Sig 3 Selector 5-section-doghouse- Signal Head 3: 4R</p>	<p>Sig 4 Selector 2-section-Trolley-Sto Signal Head 4: S1</p>	<p>Sig 5 Selector sign-universal-no rig Signal Head 5: A</p>	<p>Sig 6 Selector sign-universal-no left Signal Head 6: B</p>	<p>Sig 7 Selector Signal Head 7:</p>	<p>Sig 8 Selector Signal Head 8:</p>
<p>Ped 2 Selector PED Signal 2:</p>	<p>Sig 9 Selector Signal Head 9:</p>	<p>Sig 10 Selector Signal Head 10:</p>	<p>Sig 11 Selector Signal Head 11:</p>	<p>Sig 12 Selector Signal Head 12:</p>	<p>Sig 13 Selector Signal Head 13:</p>	<p>Sig 14 Selector SIGNAL HEAD 14</p>	<p>Sig 15 Selector SIGNAL HEAD 15</p>	<p>Sig 16 Selector SIGNAL HEAD 16</p>



# Coordination Pattern Page

Print Date: 4/3/2018

Major Street: CHANNELSIDE

Section Id: 1313

Record Number: 169

Coord Date: 4/3/2018

Minor Street: YORK

Min Green:	5	10	5	5				
Yellow CLR:	4	4	3.4	3.4				
All Red CLR:	2	2	5	2.5				
Walk:		7		7				
FDW:		20		15				

Free Time Primary:

Free Time Secondary:

Day Plan #1 - Mon-Thr patt 1 -7.

Day Plan #2 - Fri - patt 1 - 7 w/5 @ 14:45

Day Plan #3 - Sat - patt 7, then patt 2 all other times

Day Plan #4 - Sun - patt 7, then patt 2 all other times

Direction:	SB LT	N/S	WB	EB				
Ø Number:	1	2	3	4				




















Patterns		Cycle	Offset							
1.	0515 - 0900 AM Peak	140	82	15	66	30	29			
2.	0900 - 1115 AM Off Peak	120	47	13	48	30	29			
3.	1115 - 1330 Noon	120	47	13	48	30	29			
4.	1330 - 1515 PM Off Peak	120	47	13	48	30	29			
5.	1515 - 1830 PM Peak	140	23	15	66	30	29			
6.	1830 - 2200 Evening	120	47	13	48	30	29			
7.	2200 - 0515 Late	120	47	13	48	30	29			
8.	Port - Outbound	140	82	23	48	40	29			
9.	Convention Ctr - Outbound	120	47	13	48	30	29			
10.	Arena - Inbound	120	112	13	63	15	29			
11.	Arena - Out Fla Ave Closed	120	112	13	63	15	29			
12.	Marriott - Outbound PM	120	112	13	63	15	29			
13.	Arena - Out Fla Ave Opened	120	112	13	63	15	29			
14.	Straz - Outbound	120	112	13	63	15	29			
15.	Arena Lg/Straz - Outbound	120	112	13	63	15	29			
16.	Hurricane	120	112	13	63	15	29			

# Appendix F

Existing Conditions Analysis

HCM Signalized Intersection Capacity Analysis  
 114: Florida Ave & Channelside Dr

01/19/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 				
Traffic Volume (vph)	712	654	313	0	0	0	0	167	39	0	0	0
Future Volume (vph)	712	654	313	0	0	0	0	167	39	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0						5.7	5.7			
Lane Util. Factor	0.86	0.86						0.95	1.00			
Frt	1.00	0.96						1.00	0.85			
Flt Protected	0.95	0.99						1.00	1.00			
Satd. Flow (prot)	1522	4573						3539	1583			
Flt Permitted	0.95	0.99						1.00	1.00			
Satd. Flow (perm)	1522	4573						3539	1583			
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	766	703	337	0	0	0	0	180	42	0	0	0
RTOR Reduction (vph)	146	81	0	0	0	0	0	0	31	0	0	0
Lane Group Flow (vph)	306	1273	0	0	0	0	0	180	11	0	0	0
Turn Type	Split	NA						NA	Perm			
Protected Phases	6	6						4				
Permitted Phases									4			
Actuated Green, G (s)	93.0	93.0						35.3	35.3			
Effective Green, g (s)	93.0	93.0						35.3	35.3			
Actuated g/C Ratio	0.66	0.66						0.25	0.25			
Clearance Time (s)	6.0	6.0						5.7	5.7			
Vehicle Extension (s)	3.0	3.0						3.0	3.0			
Lane Grp Cap (vph)	1011	3037						892	399			
v/s Ratio Prot	0.20	c0.28						c0.05				
v/s Ratio Perm									0.01			
v/c Ratio	0.30	0.42						0.20	0.03			
Uniform Delay, d1	9.9	10.9						41.2	39.4			
Progression Factor	1.00	1.00						1.00	1.00			
Incremental Delay, d2	0.8	0.4						0.5	0.1			
Delay (s)	10.6	11.4						41.8	39.5			
Level of Service	B	B						D	D			
Approach Delay (s)		11.2			0.0			41.3			0.0	
Approach LOS		B			A			D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.5					HCM 2000 Level of Service		B		
HCM 2000 Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		11.7		
Intersection Capacity Utilization			83.8%					ICU Level of Service		E		
Analysis Period (min)			15									
c Critical Lane Group												



Queues

114: Florida Ave & Channelside Dr

01/19/2022



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	452	1354	180	42
v/c Ratio	0.39	0.43	0.20	0.10
Control Delay	2.0	9.2	42.0	11.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	2.0	9.2	42.0	11.7
Queue Length 50th (ft)	5	168	68	0
Queue Length 95th (ft)	47	200	102	31
Internal Link Dist (ft)		924	937	
Turn Bay Length (ft)				
Base Capacity (vph)	1157	3121	892	430
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.43	0.20	0.10
<b>Intersection Summary</b>				

# HCM Signalized Intersection Capacity Analysis

## 115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/19/2022



Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations		↕↕↕	↗	↕	↗		↕↕		↘↘	
Traffic Volume (vph)	92	559	42	43	23	95	136	53	169	11
Future Volume (vph)	92	559	42	43	23	95	136	53	169	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	6.2	5.9	5.9		5.9		6.6	
Lane Util. Factor		0.91	1.00	1.00	1.00		0.95		1.00	
Frt		1.00	0.85	1.00	0.85		1.00		0.99	
Flt Protected		0.99	1.00	1.00	1.00		0.98		0.95	
Satd. Flow (prot)		5050	1583	1863	1583		3468		1767	
Flt Permitted		0.99	1.00	1.00	1.00		0.81		0.95	
Satd. Flow (perm)		5050	1583	1863	1583		2869		1767	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	98	595	45	46	24	101	145	56	180	12
RTOR Reduction (vph)	0	0	26	0	18	0	0	0	0	0
Lane Group Flow (vph)	0	693	19	46	6	0	246	0	248	0
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Prot	Prot	
Protected Phases		6		4			8	5	5	
Permitted Phases	6		6		4	8				
Actuated Green, G (s)		58.8	58.8	34.1	34.1		34.1		28.4	
Effective Green, g (s)		58.8	58.8	34.1	34.1		34.1		28.4	
Actuated g/C Ratio		0.42	0.42	0.24	0.24		0.24		0.20	
Clearance Time (s)		6.2	6.2	5.9	5.9		5.9		6.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		4.5	
Lane Grp Cap (vph)		2121	664	453	385		698		358	
v/s Ratio Prot				0.02					c0.14	
v/s Ratio Perm		0.14	0.01		0.00		c0.09			
v/c Ratio		0.33	0.03	0.10	0.02		0.35		0.69	
Uniform Delay, d1		27.3	23.8	41.1	40.2		43.8		51.8	
Progression Factor		0.91	4.84	1.00	1.00		1.00		1.00	
Incremental Delay, d2		0.4	0.1	0.4	0.1		1.2		10.5	
Delay (s)		25.2	115.4	41.5	40.3		45.0		62.3	
Level of Service		C	F	D	D		D		E	
Approach Delay (s)		30.7		41.1			45.0		62.3	
Approach LOS		C		D			D		E	

### Intersection Summary

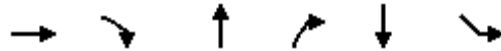
HCM 2000 Control Delay	39.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/19/2022



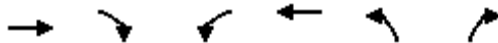
Lane Group	EBT	EBR	NBT	NBR	SBT	SEL
Lane Group Flow (vph)	693	45	46	24	246	248
v/c Ratio	0.33	0.06	0.10	0.05	0.35	0.69
Control Delay	25.3	7.8	42.0	0.2	45.3	63.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	7.8	42.0	0.2	45.3	63.0
Queue Length 50th (ft)	170	6	33	0	107	212
Queue Length 95th (ft)	205	28	68	0	151	310
Internal Link Dist (ft)	523		969		424	319
Turn Bay Length (ft)		450				
Base Capacity (vph)	2121	707	453	443	699	358
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	0.33	0.06	0.10	0.05	0.35	0.69

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 119: Old Water St & Channelside Dr

01/19/2022



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	↗
Traffic Volume (vph)	589	23	76	1694	29	6
Future Volume (vph)	589	23	76	1694	29	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5			6.5	7.3	7.3
Lane Util. Factor	0.95			0.95	1.00	1.00
Frt	0.99			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3519			3532	1770	1583
Flt Permitted	1.00			0.87	0.95	1.00
Satd. Flow (perm)	3519			3091	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	620	24	80	1783	31	6
RTOR Reduction (vph)	2	0	0	0	0	6
Lane Group Flow (vph)	642	0	0	1863	31	0
Turn Type	NA		D.P+P	NA	Perm	Prot
Protected Phases	2		6	2 6		4
Permitted Phases			2		4	
Actuated Green, G (s)	78.4			113.4	6.3	6.3
Effective Green, g (s)	78.4			113.4	6.3	6.3
Actuated g/C Ratio	0.56			0.81	0.04	0.04
Clearance Time (s)	6.5				7.3	7.3
Vehicle Extension (s)	3.0				4.0	4.0
Lane Grp Cap (vph)	1970			2613	79	71
v/s Ratio Prot	0.18			c0.18		0.00
v/s Ratio Perm				c0.40	c0.02	
v/c Ratio	0.33			0.71	0.39	0.00
Uniform Delay, d1	16.6			6.0	65.0	63.9
Progression Factor	1.03			2.31	1.00	1.00
Incremental Delay, d2	0.4			0.5	4.3	0.0
Delay (s)	17.5			14.3	69.3	63.9
Level of Service	B			B	E	E
Approach Delay (s)	17.5			14.3	68.5	
Approach LOS	B			B	E	

### Intersection Summary

HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.3
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		

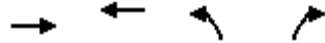
c Critical Lane Group



Queues

119: Old Water St & Channelside Dr

01/19/2022



Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	644	1863	31	6
v/c Ratio	0.31	0.70	0.24	0.05
Control Delay	18.8	9.3	65.7	34.3
Queue Delay	0.0	0.3	0.0	0.0
Total Delay	18.8	9.6	65.7	34.3
Queue Length 50th (ft)	258	461	27	0
Queue Length 95th (ft)	315	m546	61	15
Internal Link Dist (ft)	194	425	945	
Turn Bay Length (ft)				
Base Capacity (vph)	2045	2680	362	329
Starvation Cap Reductn	0	249	0	0
Spillback Cap Reductn	262	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.77	0.09	0.02

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 118: Beneficial Dr/Meridian Ave & Channelside Dr

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	411	44	86	449	9	289	126	63	21	210	1032
Future Volume (vph)	140	411	44	86	449	9	289	126	63	21	210	1032
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.2		6.2	6.2		6.4	6.4		6.4	6.4	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1836		1770	1857		1770	3363		1770	1863	1583
Flt Permitted	0.09	1.00		0.44	1.00		0.35	1.00		0.61	1.00	1.00
Satd. Flow (perm)	170	1836		817	1857		643	3363		1144	1863	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	163	478	51	100	522	10	336	147	73	24	244	1200
RTOR Reduction (vph)	0	3	0	0	1	0	0	39	0	0	0	0
Lane Group Flow (vph)	163	526	0	100	531	0	336	181	0	24	244	1200
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	Free
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6			2			4			8		Free
Actuated Green, G (s)	61.8	61.8		37.8	37.8		65.6	65.6		32.6	32.6	140.0
Effective Green, g (s)	61.8	61.8		37.8	37.8		65.6	65.6		32.6	32.6	140.0
Actuated g/C Ratio	0.44	0.44		0.27	0.27		0.47	0.47		0.23	0.23	1.00
Clearance Time (s)	6.0	6.2		6.2	6.2		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	2.0	3.0		3.0	3.0		2.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	280	810		220	501		515	1575		266	433	1583
v/s Ratio Prot	0.07	0.29			c0.29		0.12	0.05			0.13	
v/s Ratio Perm	0.18			0.12			0.18			0.02		c0.76
v/c Ratio	0.58	0.65		0.45	1.06		0.65	0.12		0.09	0.56	0.76
Uniform Delay, d1	30.3	30.6		42.5	51.1		25.8	20.9		42.1	47.4	0.0
Progression Factor	0.44	0.77		1.00	1.00		1.00	1.00		1.06	0.93	1.00
Incremental Delay, d2	8.4	3.9		6.6	57.2		6.3	0.1		0.6	5.0	3.3
Delay (s)	21.7	27.4		49.2	108.3		32.1	21.0		45.1	49.2	3.3
Level of Service	C	C		D	F		C	C		D	D	A
Approach Delay (s)		26.1			98.9			27.8			11.6	
Approach LOS		C			F			C			B	

Intersection Summary

HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues

118: Beneficial Dr/Meridian Ave & Channelside Dr

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	163	529	100	532	336	220	24	244	1200
v/c Ratio	0.58	0.65	0.45	1.06	0.65	0.14	0.09	0.56	0.76
Control Delay	20.9	27.7	50.5	105.2	31.1	14.1	45.8	49.8	27.2
Queue Delay	0.0	0.7	0.0	0.0	14.6	0.0	0.0	0.0	0.9
Total Delay	20.9	28.3	50.5	105.2	45.7	14.1	45.8	49.8	28.2
Queue Length 50th (ft)	80	442	76	~531	197	38	12	120	755
Queue Length 95th (ft)	106	548	130	#705	262	60	32	181	802
Internal Link Dist (ft)		425		125		927		460	
Turn Bay Length (ft)			150		300				
Base Capacity (vph)	281	813	220	502	515	1614	266	433	1583
Starvation Cap Reductn	0	80	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	161	0	0	0	162
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.72	0.45	1.06	0.95	0.14	0.09	0.56	0.84

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCS7 Two-Way Stop-Control Report

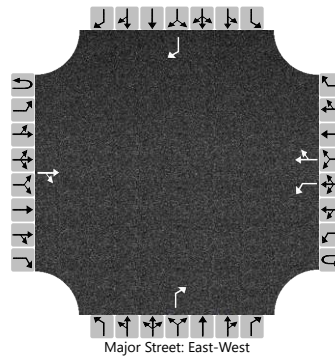
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2019
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Whiting PD&E Study

## Site Information

Intersection	ChannelsideDr&12thSt
Jurisdiction	FDOT, District 7
East/West Street	Channelside Dr
North/South Street	12th St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	1	1	0		0	0	1		0	0	1
Configuration				TR		L		TR				R				R
Volume (veh/h)			425	70		5	534	15				39				10
Percent Heavy Vehicles (%)						2						2				2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized										No				No		
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)					4.1							6.2				6.2
Critical Headway (sec)					4.12							6.22				6.22
Base Follow-Up Headway (sec)					2.2							3.3				3.3
Follow-Up Headway (sec)					2.22							3.32				3.32

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					5							41				11		
Capacity, c (veh/h)					1045							583				521		
v/c Ratio					0.01							0.07				0.02		
95% Queue Length, Q <sub>95</sub> (veh)					0.0							0.2				0.1		
Control Delay (s/veh)					8.5							11.6				12.1		
Level of Service (LOS)					A							B				B		
Approach Delay (s/veh)					0.1						11.6				12.1			
Approach LOS					A						B				B			



# MOVEMENT SUMMARY

**Site: 8 [Channelside Drive at Cumberland Avenue\_2019-AM  
(Site Folder: General)]**

Existing Year (2019) -  
AM Peak Hour  
Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h ]	[ HV ] %	[ Total veh/h ]	[ HV ] %				[ Veh. veh ]	[ Dist ] ft				
South: Channelside Drive														
3	L2	15	2.0	16	2.0	0.387	6.5	LOS A	2.1	53.1	0.27	0.14	0.27	38.3
8	T1	439	2.0	462	2.0	0.387	6.5	LOS A	2.1	53.1	0.27	0.14	0.27	39.1
18	R2	20	2.0	21	2.0	0.387	6.5	LOS A	2.1	53.1	0.27	0.14	0.27	37.8
Approach		474	2.0	499	2.0	0.387	6.5	LOS A	2.1	53.1	0.27	0.14	0.27	39.0
East: E Cumberland Avenue														
1	L2	1	2.0	1	2.0	0.009	4.1	LOS A	0.0	0.8	0.45	0.31	0.45	39.8
6	T1	2	2.0	2	2.0	0.009	4.1	LOS A	0.0	0.8	0.45	0.31	0.45	36.9
16	R2	5	2.0	5	2.0	0.009	4.1	LOS A	0.0	0.8	0.45	0.31	0.45	36.7
Approach		8	2.0	8	2.0	0.009	4.1	LOS A	0.0	0.8	0.45	0.31	0.45	37.1
North: Channelside Drive														
7	L2	40	2.0	42	2.0	0.452	7.0	LOS A	2.8	71.7	0.13	0.04	0.13	36.9
4	T1	548	2.0	577	2.0	0.452	7.0	LOS A	2.8	71.7	0.13	0.04	0.13	38.6
14	R2	60	2.0	63	2.0	0.049	3.2	LOS A	0.2	4.7	0.08	0.02	0.08	35.4
Approach		648	2.0	682	2.0	0.452	6.7	LOS A	2.8	71.7	0.12	0.03	0.12	38.2
West: E Cumberland Avenue														
5	L2	38	2.0	40	2.0	0.062	5.0	LOS A	0.2	5.5	0.50	0.44	0.50	33.6
2	T1	6	2.0	6	2.0	0.062	5.0	LOS A	0.2	5.5	0.50	0.44	0.50	33.3
12	R2	4	2.0	4	2.0	0.062	5.0	LOS A	0.2	5.5	0.50	0.44	0.50	32.3
Approach		48	2.0	51	2.0	0.062	5.0	LOS A	0.2	5.5	0.50	0.44	0.50	33.4
All Vehicles		1178	2.0	1240	2.0	0.452	6.5	LOS A	2.8	71.7	0.20	0.09	0.20	38.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# HCS7 Two-Way Stop-Control Report

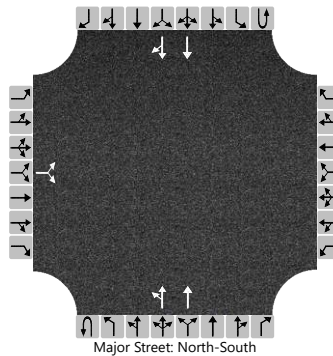
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2019
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	ChannelsideDr&E WhitingSt
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Channelside Dr
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	0	0		0	2	0		0	2	0	
Configuration			LR							LT	T				T	TR	
Volume (veh/h)		29		1						1	481				647	36	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.84		6.94						4.14						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			32							1								
Capacity, c (veh/h)			261							878								
v/c Ratio			0.12							0.00								
95% Queue Length, Q <sub>95</sub> (veh)			0.4							0.0								
Control Delay (s/veh)			20.7							9.1								
Level of Service (LOS)			C							A								
Approach Delay (s/veh)		20.7									0.0							
Approach LOS		C									A							

HCM Signalized Intersection Capacity Analysis  
 130: Channelside Dr & E Washington St/E York St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕↔		↕	↕↔	
Traffic Volume (vph)	14	9	2	4	7	15	1	504	6	56	679	36
Future Volume (vph)	14	9	2	4	7	15	1	504	6	56	679	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.9			8.4	8.4	6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.99			1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.97			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1792			1829	1583	1770	3533		1770	3512	
Flt Permitted		0.35			0.87	1.00	0.37	1.00		0.95	1.00	
Satd. Flow (perm)		646			1619	1583	682	3533		1770	3512	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	15	9	2	4	7	16	1	531	6	59	715	38
RTOR Reduction (vph)	0	2	0	0	0	15	0	0	0	0	2	0
Lane Group Flow (vph)	0	24	0	0	11	1	1	537	0	59	751	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases		4			3			2		1	1	2
Permitted Phases	4			3		3	2					
Actuated Green, G (s)		9.0			7.5	7.5	80.9	80.9		16.3	103.2	
Effective Green, g (s)		9.0			7.5	7.5	80.9	80.9		16.3	103.2	
Actuated g/C Ratio		0.06			0.05	0.05	0.58	0.58		0.12	0.74	
Clearance Time (s)		5.9			8.4	8.4	6.0	6.0		6.0		
Vehicle Extension (s)		2.0			4.0	4.0	3.0	3.0		2.0		
Lane Grp Cap (vph)		41			86	84	394	2041		206	2588	
v/s Ratio Prot								0.15		0.03	c0.21	
v/s Ratio Perm		c0.04			c0.01	0.00	0.00					
v/c Ratio		0.59			0.13	0.01	0.00	0.26		0.29	0.29	
Uniform Delay, d1		63.7			63.1	62.7	12.5	14.7		56.5	6.2	
Progression Factor		1.00			1.00	1.00	1.00	1.00		0.72	3.44	
Incremental Delay, d2		13.1			0.9	0.1	0.0	0.3		0.3	0.0	
Delay (s)		76.7			64.1	62.8	12.5	15.0		40.7	21.2	
Level of Service		E			E	E	B	B		D	C	
Approach Delay (s)		76.7			63.3			15.0			22.6	
Approach LOS		E			E			B			C	

Intersection Summary

HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.3
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

130: Channelside Dr & E Washington St/E York St

01/19/2022

























Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	26	11	16	1	537	59	753
v/c Ratio	0.48	0.13	0.08	0.00	0.26	0.29	0.28
Control Delay	83.9	65.8	0.8	20.0	16.9	42.1	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.9	65.8	0.8	20.0	16.9	42.1	23.2
Queue Length 50th (ft)	21	10	0	0	127	50	283
Queue Length 95th (ft)	45	31	0	4	217	89	402
Internal Link Dist (ft)	922	976			474		596
Turn Bay Length (ft)			430	160		280	
Base Capacity (vph)	108	249	342	405	2102	205	2649
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.04	0.05	0.00	0.26	0.29	0.28

Intersection Summary



HCM Signalized Intersection Capacity Analysis  
129: Channelside Dr & Kennedy Blvd

01/19/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	15	36	1	4	2	15	512	6	24	736	759
Future Volume (vph)	202	15	36	1	4	2	15	512	6	24	736	759
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1697	1583		1844	1583	1770	3533		1770	3539	1583
Flt Permitted	0.95	0.96	1.00		0.99	1.00	0.30	1.00		0.41	1.00	1.00
Satd. Flow (perm)	1681	1697	1583		1844	1583	554	3533		769	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	213	16	38	1	4	2	16	539	6	25	775	799
RTOR Reduction (vph)	0	0	34	0	0	2	0	0	0	0	0	370
Lane Group Flow (vph)	115	114	4	0	5	0	16	545	0	25	775	429
Turn Type	Split	NA	Perm	Split	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	3	3		1	1			2				2
Permitted Phases			3			1	2			2		2
Actuated Green, G (s)	15.1	15.1	15.1		1.4	1.4	75.2	75.2		75.2	75.2	75.2
Effective Green, g (s)	15.1	15.1	15.1		1.4	1.4	75.2	75.2		75.2	75.2	75.2
Actuated g/C Ratio	0.11	0.11	0.11		0.01	0.01	0.54	0.54		0.54	0.54	0.54
Clearance Time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3
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)	181	183	170		18	15	297	1897		413	1900	850
v/s Ratio Prot	c0.07	0.07			c0.00			0.15				0.22
v/s Ratio Perm			0.00			0.00	0.03			0.03		c0.27
v/c Ratio	0.64	0.62	0.02		0.28	0.00	0.05	0.29		0.06	0.41	0.50
Uniform Delay, d1	59.8	59.7	55.9		68.8	68.6	15.4	17.7		15.5	19.2	20.6
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.46	1.50		1.00	1.00	1.00
Incremental Delay, d2	7.1	6.5	0.1		8.3	0.0	0.3	0.4		0.3	0.7	2.1
Delay (s)	66.9	66.2	55.9		77.1	68.6	22.9	26.9		15.8	19.9	22.7
Level of Service	E	E	E		E	E	C	C		B	B	C
Approach Delay (s)		65.0			74.6			26.8			21.2	
Approach LOS		E			E			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			27.5									C
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			140.0							22.4		
Intersection Capacity Utilization			79.8%									D
Analysis Period (min)			15									

c Critical Lane Group

Queues

129: Channelside Dr & Kennedy Blvd

01/19/2022















Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	115	114	38	5	2	16	545	25	775	799
v/c Ratio	0.64	0.63	0.15	0.06	0.01	0.05	0.27	0.06	0.38	0.64
Control Delay	75.1	74.2	1.2	65.6	0.0	19.7	22.7	13.5	16.8	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.1	74.2	1.2	65.6	0.0	19.7	22.7	13.5	16.8	3.5
Queue Length 50th (ft)	107	106	0	5	0	11	226	10	193	0
Queue Length 95th (ft)	171	170	0	20	0	32	289	24	237	54
Internal Link Dist (ft)		903		909			596		1256	
Turn Bay Length (ft)			140			280		75		375
Base Capacity (vph)	320	323	384	108	184	319	2036	443	2039	1250
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.35	0.10	0.05	0.01	0.05	0.27	0.06	0.38	0.64

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

109: Florida Ave & Brorein St

01/19/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑↑		↘	↑↑↑↑					
Traffic Volume (vph)	0	0	0	0	1631	400	186	1439	0	0	0	0	
Future Volume (vph)	0	0	0	0	1631	400	186	1439	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					5.8		6.1	6.1					
Lane Util. Factor					0.86		1.00	0.91					
Frt					0.97		1.00	1.00					
Flt Protected					1.00		0.95	1.00					
Satd. Flow (prot)					6219		1770	5085					
Flt Permitted					1.00		0.95	1.00					
Satd. Flow (perm)					6219		1770	5085					
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	0	0	0	0	1754	430	200	1547	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	28	0	23	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	2156	0	177	1547	0	0	0	0	
Turn Type					NA		Perm	NA					
Protected Phases					2			4					
Permitted Phases							4						
Actuated Green, G (s)					54.2		68.9	68.9					
Effective Green, g (s)					54.2		68.9	68.9					
Actuated g/C Ratio					0.39		0.49	0.49					
Clearance Time (s)					5.8		6.1	6.1					
Vehicle Extension (s)					3.0		3.0	3.0					
Lane Grp Cap (vph)					2407		871	2502					
v/s Ratio Prot					c0.35			c0.30					
v/s Ratio Perm							0.10						
v/c Ratio					0.90		0.20	0.62					
Uniform Delay, d1					40.3		20.1	26.0					
Progression Factor					1.00		1.00	0.98					
Incremental Delay, d2					5.7		0.5	1.1					
Delay (s)					46.0		20.5	26.5					
Level of Service					D		C	C					
Approach Delay (s)		0.0			46.0			25.8			0.0		
Approach LOS		A			D			C			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			37.0		HCM 2000 Level of Service				D				
HCM 2000 Volume to Capacity ratio			0.73										
Actuated Cycle Length (s)			140.0		Sum of lost time (s)				14.9				
Intersection Capacity Utilization			68.0%		ICU Level of Service				C				
Analysis Period (min)			15										
c Critical Lane Group													

# Queues

## 109: Florida Ave & Brorein St

01/19/2022



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	2184	200	1547
v/c Ratio	0.90	0.22	0.62
Control Delay	45.4	16.2	26.7
Queue Delay	0.0	0.0	0.0
Total Delay	45.4	16.2	26.7
Queue Length 50th (ft)	530	75	347
Queue Length 95th (ft)	582	127	404
Internal Link Dist (ft)	416		237
Turn Bay Length (ft)			
Base Capacity (vph)	2434	893	2502
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.90	0.22	0.62
<b>Intersection Summary</b>			



# HCM Signalized Intersection Capacity Analysis

## 110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/19/2022



Movement	WBL	WBT	NBL	NBT	SBT	SBR	SWR	SWR2
Lane Configurations		↑↑↑		↑↑	↑↓		↑	↑
Traffic Volume (vph)	83	1547	39	146	175	162	546	377
Future Volume (vph)	83	1547	39	146	175	162	546	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7		6.0	6.0		5.7	5.7
Lane Util. Factor		0.91		0.95	0.95		1.00	1.00
Fr <sub>t</sub>		1.00		1.00	0.93		1.00	0.85
Fl <sub>t</sub> Protected		1.00		0.99	1.00		1.00	1.00
Satd. Flow (prot)		5072		3503	3284		1863	1583
Fl <sub>t</sub> Permitted		1.00		0.76	1.00		1.00	1.00
Satd. Flow (perm)		5072		2699	3284		1863	1583
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	99	1842	46	174	208	193	650	449
RTOR Reduction (vph)	0	0	0	0	3	0	0	166
Lane Group Flow (vph)	0	1941	0	220	398	0	650	283
Turn Type	Perm	NA	Perm	NA	NA		Prot	Perm
Protected Phases		2!		4	4		2!	
Permitted Phases	2		4					2
Actuated Green, G (s)		88.3		40.0	40.0		88.3	88.3
Effective Green, g (s)		88.3		40.0	40.0		88.3	88.3
Actuated g/C Ratio		0.63		0.29	0.29		0.63	0.63
Clearance Time (s)		5.7		6.0	6.0		5.7	5.7
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3198		771	938		1175	998
v/s Ratio Prot					c0.12		0.35	
v/s Ratio Perm		0.38		0.08				0.18
v/c Ratio		0.61		0.29	0.42		0.55	0.28
Uniform Delay, d <sub>1</sub>		15.5		38.9	40.6		14.7	11.6
Progression Factor		0.63		0.69	1.00		1.00	1.00
Incremental Delay, d <sub>2</sub>		0.7		0.9	1.4		1.9	0.7
Delay (s)		10.4		27.7	41.9		16.5	12.3
Level of Service		B		C	D		B	B
Approach Delay (s)		10.4		27.7	41.9			
Approach LOS		B		C	D			

### Intersection Summary

HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	11.7
Intersection Capacity Utilization	103.3%	ICU Level of Service	G
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Queues

110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/19/2022



Lane Group	WBT	NBT	SBT	SWR	SWR2
Lane Group Flow (vph)	1941	220	401	650	449
v/c Ratio	0.61	0.29	0.43	0.55	0.39
Control Delay	10.5	28.0	41.8	16.9	1.9
Queue Delay	0.3	0.0	0.0	0.0	0.0
Total Delay	10.8	28.0	41.8	16.9	1.9
Queue Length 50th (ft)	375	67	158	317	0
Queue Length 95th (ft)	284	83	190	377	26
Internal Link Dist (ft)	487	424	563		
Turn Bay Length (ft)					
Base Capacity (vph)	3197	770	941	1175	1164
Starvation Cap Reductn	537	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.73	0.29	0.43	0.55	0.39

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

111: Jefferson St & Brorein St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑↑				↑
Traffic Volume (vph)	0	0	0	0	1484	200	10	234	0	0	0	146
Future Volume (vph)	0	0	0	0	1484	200	10	234	0	0	0	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.7			5.7				5.7
Lane Util. Factor					0.95			0.95				1.00
Frt					0.98			1.00				0.86
Flt Protected					1.00			1.00				1.00
Satd. Flow (prot)					3476			3532				1611
Flt Permitted					1.00			1.00				1.00
Satd. Flow (perm)					3476			3532				1611
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	1649	222	11	260	0	0	0	162
RTOR Reduction (vph)	0	0	0	0	7	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1864	0	0	253	0	0	0	162
Turn Type					NA		Perm	NA				Perm
Protected Phases					2			4				
Permitted Phases							4					2 4
Actuated Green, G (s)					109.3			19.3				140.0
Effective Green, g (s)					109.3			19.3				140.0
Actuated g/C Ratio					0.78			0.14				1.00
Clearance Time (s)					5.7			5.7				
Vehicle Extension (s)					2.0			2.0				
Lane Grp Cap (vph)					2713			486				1611
v/s Ratio Prot					0.54							
v/s Ratio Perm								0.07				0.10
v/c Ratio					0.69			0.52				0.10
Uniform Delay, d1					7.3			56.1				0.0
Progression Factor					0.96			1.34				1.00
Incremental Delay, d2					1.2			3.8				0.1
Delay (s)					8.2			79.0				0.1
Level of Service					A			E				A
Approach Delay (s)		0.0			8.2			79.0			0.1	
Approach LOS		A			A			E			A	

## Intersection Summary

HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	11.4
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Queues

111: Jefferson St & Brorein St

01/19/2022



Lane Group	WBT	NBT	SBR
Lane Group Flow (vph)	1871	271	162
v/c Ratio	0.69	0.54	0.10
Control Delay	8.2	73.7	0.1
Queue Delay	0.0	0.0	0.0
Total Delay	8.2	73.7	0.1
Queue Length 50th (ft)	476	116	0
Queue Length 95th (ft)	461	161	0
Internal Link Dist (ft)	191	428	
Turn Bay Length (ft)			
Base Capacity (vph)	2721	505	1611
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	9	0	4
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.69	0.54	0.10
Intersection Summary			



# HCM Signalized Intersection Capacity Analysis

## 120: Meridian Ave & Cumberland Ave

01/19/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	93	139	134	141	62	1170
Future Volume (vph)	93	139	134	141	62	1170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.2	4.0	6.6		6.6	6.6
Lane Util. Factor	1.00	1.00	0.95		1.00	0.91
Frt	1.00	0.85	0.92		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3268		1770	5085
Flt Permitted	0.95	1.00	1.00		0.53	1.00
Satd. Flow (perm)	1770	1583	3268		981	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	101	151	146	153	67	1272
RTOR Reduction (vph)	0	0	64	0	0	0
Lane Group Flow (vph)	101	151	235	0	67	1272
Turn Type	Prot	Free	NA		pm+pt	NA
Protected Phases	4		6		5	2
Permitted Phases		Free			2	
Actuated Green, G (s)	31.8	140.0	81.8		94.4	94.4
Effective Green, g (s)	31.8	140.0	81.8		94.4	94.4
Actuated g/C Ratio	0.23	1.00	0.58		0.67	0.67
Clearance Time (s)	7.2		6.6		6.6	6.6
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	402	1583	1909		695	3428
v/s Ratio Prot	c0.06		0.07		0.00	c0.25
v/s Ratio Perm		0.10			0.06	
v/c Ratio	0.25	0.10	0.12		0.10	0.37
Uniform Delay, d1	44.3	0.0	13.0		7.9	9.9
Progression Factor	1.00	1.00	0.56		0.02	0.02
Incremental Delay, d2	1.5	0.1	0.1		0.1	0.3
Delay (s)	45.8	0.1	7.4		0.2	0.5
Level of Service	D	A	A		A	A
Approach Delay (s)	18.4		7.4			0.5
Approach LOS	B		A			A

### Intersection Summary

HCM 2000 Control Delay	4.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.4
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# Queues

## 120: Meridian Ave & Cumberland Ave

01/19/2022























Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	101	151	299	67	1272
v/c Ratio	0.25	0.10	0.15	0.10	0.37
Control Delay	46.4	0.1	3.8	0.4	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	46.4	0.1	3.8	0.4	0.5
Queue Length 50th (ft)	76	0	2	1	2
Queue Length 95th (ft)	131	0	m43	1	4
Internal Link Dist (ft)	882		460		709
Turn Bay Length (ft)		100		250	
Base Capacity (vph)	402	1583	2001	709	3428
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.25	0.10	0.15	0.09	0.37

### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 102: Florida Ave & Whiting St

01/19/2022

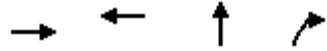
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  				
Traffic Volume (vph)	113	110	0	0	277	153	30	1572	69	0	0	0
Future Volume (vph)	113	110	0	0	277	153	30	1572	69	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			5.7	5.7			
Lane Util. Factor		0.95			0.95			0.91	1.00			
Frt		1.00			0.95			1.00	0.85			
Flt Protected		0.98			1.00			1.00	1.00			
Satd. Flow (prot)		3452			3351			5080	1583			
Flt Permitted		0.60			1.00			1.00	1.00			
Satd. Flow (perm)		2140			3351			5080	1583			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	119	116	0	0	292	161	32	1655	73	0	0	0
RTOR Reduction (vph)	0	0	0	0	23	0	0	0	25	0	0	0
Lane Group Flow (vph)	0	235	0	0	430	0	0	1687	48	0	0	0
Turn Type	Perm	NA			NA		Perm	NA	Perm			
Protected Phases		4			4			2				
Permitted Phases	4						2		2			
Actuated Green, G (s)		59.0			59.0			64.3	64.3			
Effective Green, g (s)		59.0			59.0			64.3	64.3			
Actuated g/C Ratio		0.42			0.42			0.46	0.46			
Clearance Time (s)		6.0			6.0			5.7	5.7			
Vehicle Extension (s)		3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)		901			1412			2333	727			
v/s Ratio Prot					c0.13							
v/s Ratio Perm		0.11						0.33	0.03			
v/c Ratio		0.26			0.30			0.72	0.07			
Uniform Delay, d1		26.3			26.9			30.6	21.1			
Progression Factor		1.00			0.97			0.46	0.22			
Incremental Delay, d2		0.7			0.5			1.4	0.1			
Delay (s)		27.0			26.5			15.6	4.7			
Level of Service		C			C			B	A			
Approach Delay (s)		27.0			26.5			15.2			0.0	
Approach LOS		C			C			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			18.4					HCM 2000 Level of Service		B		
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		14.7		
Intersection Capacity Utilization			66.6%					ICU Level of Service		C		
Analysis Period (min)			15									

c Critical Lane Group

# Queues

## 102: Florida Ave & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	235	453	1687	73
v/c Ratio	0.26	0.32	0.72	0.10
Control Delay	27.3	24.3	15.7	2.2
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	27.3	24.3	15.9	2.2
Queue Length 50th (ft)	72	115	176	0
Queue Length 95th (ft)	105	147	198	m7
Internal Link Dist (ft)	994	519	567	
Turn Bay Length (ft)				75
Base Capacity (vph)	902	1435	2333	752
Starvation Cap Reductn	0	0	93	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.32	0.75	0.10





















### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



HCM Signalized Intersection Capacity Analysis  
103: Morgan St & Whiting St

01/19/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	36	57	48	166	264	39	111	263	58	22	161	46	
Future Volume (vph)	36	57	48	166	264	39	111	263	58	22	161	46	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.8	5.8		5.8	5.8			5.7			5.7		
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95		
Frt	1.00	0.93		1.00	0.98			0.98			0.97		
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00		
Satd. Flow (prot)	1770	1734		1770	1827			3424			3416		
Flt Permitted	0.53	1.00		0.67	1.00			0.78			0.87		
Satd. Flow (perm)	992	1734		1249	1827			2698			2982		
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	
Adj. Flow (vph)	46	73	62	213	338	50	142	337	74	28	206	59	
RTOR Reduction (vph)	0	42	0	0	7	0	0	17	0	0	32	0	
Lane Group Flow (vph)	46	93	0	213	381	0	0	536	0	0	261	0	
Turn Type	Perm	NA		D.P+P	NA		Perm	NA		Perm	NA		
Protected Phases		4		3	3 4			2			2		
Permitted Phases	4			4			2			2			
Actuated Green, G (s)	22.2	22.2		31.4	37.2			21.3			21.3		
Effective Green, g (s)	22.2	22.2		31.4	37.2			21.3			21.3		
Actuated g/C Ratio	0.32	0.32		0.45	0.53			0.30			0.30		
Clearance Time (s)	5.8	5.8		5.8				5.7			5.7		
Vehicle Extension (s)	3.0	3.0		3.0				3.0			3.0		
Lane Grp Cap (vph)	314	549		628	970			820			907		
v/s Ratio Prot		0.05		0.04	c0.21								
v/s Ratio Perm	0.05			0.11				c0.20			0.09		
v/c Ratio	0.15	0.17		0.34	0.39			0.65			0.29		
Uniform Delay, d1	17.1	17.2		12.1	9.7			21.1			18.6		
Progression Factor	0.76	0.69		1.31	1.37			0.91			1.00		
Incremental Delay, d2	1.0	0.7		1.5	1.2			3.8			0.8		
Delay (s)	13.9	12.6		17.2	14.4			23.2			19.4		
Level of Service	B	B		B	B			C			B		
Approach Delay (s)		12.9			15.4			23.2			19.4		
Approach LOS		B			B			C			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			18.5									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.54										
Actuated Cycle Length (s)			70.0									Sum of lost time (s)	17.3
Intersection Capacity Utilization			64.4%									ICU Level of Service	C
Analysis Period (min)			15										

c Critical Lane Group

Queues

103: Morgan St & Whiting St

01/19/2022




















Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	46	135	213	388	553	293
v/c Ratio	0.15	0.23	0.34	0.40	0.66	0.31
Control Delay	14.2	7.5	13.4	14.1	22.5	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	7.5	13.4	14.1	22.5	16.7
Queue Length 50th (ft)	23	50	49	114	103	42
Queue Length 95th (ft)	35	58	59	127	118	60
Internal Link Dist (ft)		519		503	563	1059
Turn Bay Length (ft)						
Base Capacity (vph)	314	592	629	978	838	939
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	0.15	0.23	0.34	0.40	0.66	0.31

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 104: Jefferson St & Whiting St

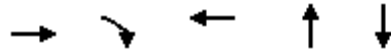
01/19/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	24	84	51	47	105	25	62	199	47	11	89	63	
Future Volume (vph)	24	84	51	47	105	25	62	199	47	11	89	63	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.7	5.7		5.7			5.7			5.7		
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95		
Frt		1.00	0.85		0.98			0.98			0.94		
Flt Protected		0.99	1.00		0.99			0.99			1.00		
Satd. Flow (prot)		1842	1583		1803			3424			3322		
Flt Permitted		0.88	1.00		0.86			0.84			0.92		
Satd. Flow (perm)		1632	1583		1579			2912			3072		
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	
Adj. Flow (vph)	31	108	65	60	135	32	79	255	60	14	114	81	
RTOR Reduction (vph)	0	0	51	0	9	0	0	21	0	0	47	0	
Lane Group Flow (vph)	0	139	14	0	218	0	0	373	0	0	162	0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA		
Protected Phases		8			4			6			2		
Permitted Phases	8		8	4			6			2			
Actuated Green, G (s)		14.6	14.6		14.6			29.3			29.3		
Effective Green, g (s)		14.6	14.6		14.6			29.3			29.3		
Actuated g/C Ratio		0.21	0.21		0.21			0.42			0.42		
Clearance Time (s)		5.7	5.7		5.7			5.7			5.7		
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0		
Lane Grp Cap (vph)		340	330		329			1218			1285		
v/s Ratio Prot													
v/s Ratio Perm		0.09	0.01		c0.14			c0.13			0.05		
v/c Ratio		0.41	0.04		0.66			0.31			0.13		
Uniform Delay, d1		24.0	22.1		25.4			13.6			12.5		
Progression Factor		0.98	1.00		1.00			0.89			1.00		
Incremental Delay, d2		0.8	0.0		4.9			0.6			0.2		
Delay (s)		24.1	22.2		30.4			12.7			12.7		
Level of Service		C	C		C			B			B		
Approach Delay (s)		23.5			30.4			12.7			12.7		
Approach LOS		C			C			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			18.7									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.35										
Actuated Cycle Length (s)			70.0									Sum of lost time (s)	17.4
Intersection Capacity Utilization			47.7%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues

104: Jefferson St & Whiting St

01/19/2022



Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	139	65	227	394	209
v/c Ratio	0.41	0.15	0.67	0.32	0.16
Control Delay	26.0	3.3	33.6	11.7	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	3.3	33.6	11.7	8.0
Queue Length 50th (ft)	53	3	86	100	16
Queue Length 95th (ft)	62	m7	117	66	29
Internal Link Dist (ft)	503		431	509	207
Turn Bay Length (ft)					
Base Capacity (vph)	449	534	444	1239	1333
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.31	0.12	0.51	0.32	0.16

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



# HCS7 Two-Way Stop-Control Report

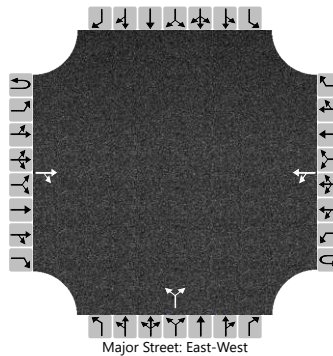
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2019
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWhitingSt&Nebraska Ave
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Nebraska Ave
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			125	17		19	169			8		32				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.12				6.42		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						20					42					
Capacity, c (veh/h)						1432					834					
v/c Ratio						0.01					0.05					
95% Queue Length, Q <sub>95</sub> (veh)						0.0					0.2					
Control Delay (s/veh)						7.5					9.5					
Level of Service (LOS)						A					A					
Approach Delay (s/veh)						0.9				9.5						
Approach LOS						A				A						

# HCM Signalized Intersection Capacity Analysis

## 107: Meridian Ave & Whiting St

01/19/2022



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations	W		W	W		W	W
Traffic Volume (vph)	25	35	0	261	12	24	1207
Future Volume (vph)	25	35	0	261	12	24	1207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.2			6.6		6.4	6.6
Lane Util. Factor	1.00			0.91		1.00	0.91
Fr <sub>t</sub>	0.92			0.99		1.00	1.00
Fl <sub>t</sub> Protected	0.98			1.00		0.95	1.00
Satd. Flow (prot)	1681			5053		1770	5085
Fl <sub>t</sub> Permitted	0.98			1.00		0.48	1.00
Satd. Flow (perm)	1681			5053		889	5085
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	30	42	0	314	14	29	1454
RTOR Reduction (vph)	21	0	0	5	0	0	0
Lane Group Flow (vph)	51	0	0	323	0	29	1454
Turn Type	Prot		Perm	NA		pm+pt	NA
Protected Phases	4			6		5	2
Permitted Phases			6			2	
Actuated Green, G (s)	69.7			45.6		56.5	56.5
Effective Green, g (s)	69.7			45.6		56.5	56.5
Actuated g/C Ratio	0.50			0.33		0.40	0.40
Clearance Time (s)	7.2			6.6		6.4	6.6
Vehicle Extension (s)	3.0			3.0		3.0	3.0
Lane Grp Cap (vph)	836			1645		387	2052
v/s Ratio Prot	c0.03			0.06		0.00	c0.29
v/s Ratio Perm						0.03	
v/c Ratio	0.06			0.20		0.07	0.71
Uniform Delay, d <sub>1</sub>	18.2			34.0		25.5	34.9
Progression Factor	1.13			1.14		1.00	1.00
Incremental Delay, d <sub>2</sub>	0.0			0.3		0.1	2.1
Delay (s)	20.6			39.2		25.6	37.0
Level of Service	C			D		C	D
Approach Delay (s)	20.6			39.2			36.7
Approach LOS	C			D			D

### Intersection Summary

HCM 2000 Control Delay	36.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# Queues

## 107: Meridian Ave & Whiting St

01/19/2022



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	72	328	29	1454
v/c Ratio	0.08	0.19	0.07	0.71
Control Delay	12.1	36.3	22.9	36.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.1	36.3	22.9	36.5
Queue Length 50th (ft)	2	80	16	401
Queue Length 95th (ft)	44	87	29	354
Internal Link Dist (ft)	876	709		494
Turn Bay Length (ft)			225	
Base Capacity (vph)	858	2653	413	3210
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.08	0.12	0.07	0.45

### Intersection Summary

# HCS7 Two-Way Stop-Control Report

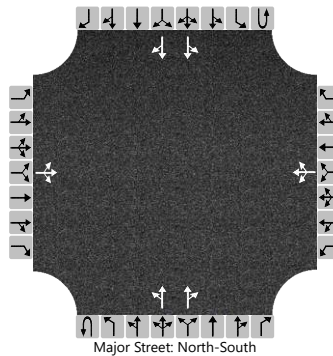
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2019
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWashingtonSt&JeffersonSt
Jurisdiction	FDOT, District 7
East/West Street	E Washington St
North/South Street	Jefferson St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0	0	0	2	0	0	0	2	0	
Configuration			LTR				LTR			LT		TR		LT		TR	
Volume (veh/h)		5	15	34		7	21	194		15	223	10		5	122	80	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.54	6.54	6.94		7.54	6.54	6.94		4.14				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			57				234				16				5		
Capacity, c (veh/h)			685				815				1355				1318		
v/c Ratio			0.08				0.29				0.01				0.00		
95% Queue Length, Q <sub>95</sub> (veh)			0.3				1.2				0.0				0.0		
Control Delay (s/veh)			10.7				11.2				7.7				7.7		
Level of Service (LOS)			B				B				A				A		
Approach Delay (s/veh)		10.7				11.2				0.5				0.2			
Approach LOS		B				B				A				A			

# HCS7 Two-Way Stop-Control Report

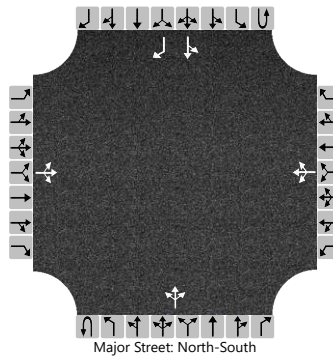
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2019
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWashingtonSt&BrushSt
Jurisdiction	FDOT, District 7
East/West Street	E Washington St
North/South Street	Brush St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0		0	1	0		0	1	1	
Configuration			LTR				LTR				LTR			LT		R	
Volume (veh/h)		21	2	5		10	4	1		31	62	5		11	218	170	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																Yes	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			29				16				33				12		
Capacity, c (veh/h)			583				510				1339				1530		
v/c Ratio			0.05				0.03				0.02				0.01		
95% Queue Length, Q <sub>95</sub> (veh)			0.2				0.1				0.1				0.0		
Control Delay (s/veh)			11.5				12.3				7.8				7.4		
Level of Service (LOS)			B				B				A				A		
Approach Delay (s/veh)		11.5				12.3				2.6				0.2			
Approach LOS		B				B				A				A			



# HCS7 Two-Way Stop-Control Report

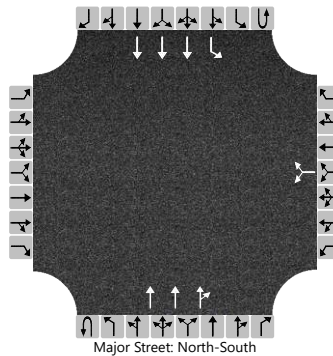
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2019
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	MeridianAve&EWashingtonSt
Jurisdiction	FDOT, District 7
East/West Street	Meridian Ave
North/South Street	E Washington St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0		0	3	0		0	1	3
Configuration							LR				T	TR		L	T	
Volume (veh/h)						55		131			283	12	0	48	1176	
Percent Heavy Vehicles (%)						2		2					2	2		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type   Storage							Left Only								1	

## Critical and Follow-up Headways




















Base Critical Headway (sec)						6.4		7.1							5.3	
Critical Headway (sec)						5.74		7.14							5.34	
Base Follow-Up Headway (sec)						3.8		3.9							3.1	
Follow-Up Headway (sec)						3.82		3.92							3.12	

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								196							51	
Capacity, c (veh/h)								571							830	
v/c Ratio								0.34							0.06	
95% Queue Length, Q <sub>95</sub> (veh)								1.6							0.2	
Control Delay (s/veh)								14.6							9.6	
Level of Service (LOS)								B							A	
Approach Delay (s/veh)								14.6							0.4	
Approach LOS								B								

HCM Signalized Intersection Capacity Analysis  
 114: Florida Ave & Channelside Dr

01/19/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  						 					
Traffic Volume (vph)	781	1322	111	0	0	0	0	383	101	0	0	0	
Future Volume (vph)	781	1322	111	0	0	0	0	383	101	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.0	6.0						5.7	5.7				
Lane Util. Factor	0.86	0.86						0.95	1.00				
Frt	1.00	0.99						1.00	0.85				
Flt Protected	0.95	0.99						1.00	1.00				
Satd. Flow (prot)	1522	4724						3539	1583				
Flt Permitted	0.95	0.99						1.00	1.00				
Satd. Flow (perm)	1522	4724						3539	1583				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	840	1422	119	0	0	0	0	412	109	0	0	0	
RTOR Reduction (vph)	42	20	0	0	0	0	0	0	46	0	0	0	
Lane Group Flow (vph)	538	1781	0	0	0	0	0	412	63	0	0	0	
Turn Type	Split	NA						NA	Perm				
Protected Phases	6	6						4					
Permitted Phases									4				
Actuated Green, G (s)	93.0	93.0						35.3	35.3				
Effective Green, g (s)	93.0	93.0						35.3	35.3				
Actuated g/C Ratio	0.66	0.66						0.25	0.25				
Clearance Time (s)	6.0	6.0						5.7	5.7				
Vehicle Extension (s)	3.0	3.0						3.0	3.0				
Lane Grp Cap (vph)	1011	3138						892	399				
v/s Ratio Prot	0.35	c0.38						c0.12					
v/s Ratio Perm									0.04				
v/c Ratio	0.53	0.57						0.46	0.16				
Uniform Delay, d1	12.2	12.7						44.3	40.8				
Progression Factor	1.00	1.00						1.00	1.00				
Incremental Delay, d2	2.0	0.7						1.7	0.8				
Delay (s)	14.2	13.4						46.0	41.6				
Level of Service	B	B						D	D				
Approach Delay (s)		13.6			0.0			45.1			0.0		
Approach LOS		B			A			D			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			19.3		HCM 2000 Level of Service					B			
HCM 2000 Volume to Capacity ratio			0.54										
Actuated Cycle Length (s)			140.0		Sum of lost time (s)					11.7			
Intersection Capacity Utilization			70.4%		ICU Level of Service					C			
Analysis Period (min)			15										

c Critical Lane Group

# Queues

## 114: Florida Ave & Channelside Dr

01/19/2022



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	580	1801	412	109
v/c Ratio	0.55	0.57	0.46	0.24
Control Delay	11.6	13.0	46.3	20.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.6	13.0	46.3	20.8
Queue Length 50th (ft)	233	308	167	33
Queue Length 95th (ft)	344	350	221	85
Internal Link Dist (ft)		924	937	
Turn Bay Length (ft)				
Base Capacity (vph)	1053	3159	892	445
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.57	0.46	0.24
<b>Intersection Summary</b>				

# HCM Signalized Intersection Capacity Analysis

## 115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/19/2022



Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations		↕↕↕	↗	↕	↗		↕↕		↘↘	
Traffic Volume (vph)	44	1371	8	72	30	55	12	7	88	1
Future Volume (vph)	44	1371	8	72	30	55	12	7	88	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.2	6.2	5.9	5.9		5.9		6.6	
Lane Util. Factor		0.91	1.00	1.00	1.00		0.95		1.00	
Frt		1.00	0.85	1.00	0.85		1.00		1.00	
Flt Protected		1.00	1.00	1.00	1.00		0.96		0.95	
Satd. Flow (prot)		5077	1583	1863	1583		3400		1773	
Flt Permitted		1.00	1.00	1.00	1.00		0.72		0.95	
Satd. Flow (perm)		5077	1583	1863	1583		2563		1773	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	47	1459	9	77	32	59	13	7	94	1
RTOR Reduction (vph)	0	0	5	0	24	0	0	0	0	0
Lane Group Flow (vph)	0	1506	4	77	8	0	72	0	102	0
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Prot	Prot	
Protected Phases		6		4			8	5	5	
Permitted Phases	6		6		4	8				
Actuated Green, G (s)		68.8	68.8	34.1	34.1		34.1		18.4	
Effective Green, g (s)		68.8	68.8	34.1	34.1		34.1		18.4	
Actuated g/C Ratio		0.49	0.49	0.24	0.24		0.24		0.13	
Clearance Time (s)		6.2	6.2	5.9	5.9		5.9		6.6	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0		4.5	
Lane Grp Cap (vph)		2494	777	453	385		624		233	
v/s Ratio Prot				c0.04					c0.06	
v/s Ratio Perm		0.30	0.00		0.00		0.03			
v/c Ratio		0.60	0.01	0.17	0.02		0.12		0.44	
Uniform Delay, d1		25.7	18.2	41.8	40.3		41.2		56.0	
Progression Factor		0.77	1.00	1.00	1.00		1.11		1.00	
Incremental Delay, d2		0.9	0.0	0.8	0.1		0.3		5.9	
Delay (s)		20.9	18.2	42.6	40.3		45.9		61.9	
Level of Service		C	B	D	D		D		E	
Approach Delay (s)		20.8		41.9			45.9		61.9	
Approach LOS		C		D			D		E	

### Intersection Summary

HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues

115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/19/2022



Lane Group	EBT	EBR	NBT	NBR	SBT	SEL
Lane Group Flow (vph)	1506	9	77	32	72	102
v/c Ratio	0.60	0.01	0.17	0.07	0.12	0.44
Control Delay	21.0	0.0	43.1	0.3	46.3	62.6
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	21.3	0.0	43.1	0.3	46.3	62.6
Queue Length 50th (ft)	390	0	56	0	28	87
Queue Length 95th (ft)	447	m0	101	0	54	148
Internal Link Dist (ft)	523		969		424	319
Turn Bay Length (ft)		450				
Base Capacity (vph)	2494	815	453	443	624	233
Starvation Cap Reductn	403	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	0.72	0.01	0.17	0.07	0.12	0.44

Intersection Summary

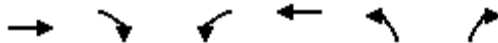
m Volume for 95th percentile queue is metered by upstream signal.



# HCM Signalized Intersection Capacity Analysis

## 119: Old Water St & Channelside Dr

01/19/2022



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	↗
Traffic Volume (vph)	960	26	5	728	105	53
Future Volume (vph)	960	26	5	728	105	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5			6.5	7.3	7.3
Lane Util. Factor	0.95			0.95	1.00	1.00
Fr <sub>t</sub>	1.00			1.00	1.00	0.85
Fl <sub>t</sub> Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3525			3538	1770	1583
Fl <sub>t</sub> Permitted	1.00			0.95	0.95	1.00
Satd. Flow (perm)	3525			3368	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1011	27	5	766	111	56
RTOR Reduction (vph)	1	0	0	0	0	50
Lane Group Flow (vph)	1037	0	0	771	111	6
Turn Type	NA		D.P+P	NA	Perm	Prot
Protected Phases	2		6	2 6		4
Permitted Phases			2		4	
Actuated Green, G (s)	87.9			104.6	15.1	15.1
Effective Green, g (s)	87.9			104.6	15.1	15.1
Actuated g/C Ratio	0.63			0.75	0.11	0.11
Clearance Time (s)	6.5				7.3	7.3
Vehicle Extension (s)	3.0				4.0	4.0
Lane Grp Cap (vph)	2213			2536	190	170
v/s Ratio Prot	c0.29			c0.04		0.00
v/s Ratio Perm				0.19	c0.06	
v/c Ratio	0.47			0.30	0.58	0.04
Uniform Delay, d <sub>1</sub>	13.7			5.8	59.5	55.9
Progression Factor	2.43			2.01	1.00	1.00
Incremental Delay, d <sub>2</sub>	0.6			0.1	5.3	0.1
Delay (s)	34.0			11.7	64.8	56.0
Level of Service	C			B	E	E
Approach Delay (s)	34.0			11.7	61.9	
Approach LOS	C			B	E	

### Intersection Summary

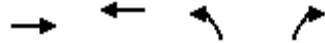
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.3
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# Queues

## 119: Old Water St & Channelside Dr

01/19/2022



Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	1038	771	111	56
v/c Ratio	0.47	0.30	0.58	0.25
Control Delay	36.1	8.9	71.2	15.9
Queue Delay	0.1	0.1	0.0	0.0
Total Delay	36.2	9.0	71.2	15.9
Queue Length 50th (ft)	455	140	98	0
Queue Length 95th (ft)	544	238	157	41
Internal Link Dist (ft)	194	425	945	
Turn Bay Length (ft)				
Base Capacity (vph)	2213	2682	362	369
Starvation Cap Reductn	0	886	0	0
Spillback Cap Reductn	342	0	0	5
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.55	0.43	0.31	0.15

### Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 118: Beneficial Dr/Meridian Ave & Channelside Dr

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	328	645	40	87	397	15	187	208	56	6	121	149
Future Volume (vph)	328	645	40	87	397	15	187	208	56	6	121	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.2		6.2	6.2		6.4	6.4		6.4	6.4	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1846		1770	1853		1770	3427		1770	1863	1583
Flt Permitted	0.19	1.00		0.32	1.00		0.51	1.00		0.56	1.00	1.00
Satd. Flow (perm)	349	1846		593	1853		952	3427		1052	1863	1583
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	381	750	47	101	462	17	217	242	65	7	141	173
RTOR Reduction (vph)	0	2	0	0	1	0	0	18	0	0	0	0
Lane Group Flow (vph)	381	795	0	101	478	0	217	289	0	7	141	173
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	Free
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6			2			4			8		Free
Actuated Green, G (s)	81.8	81.8		47.8	47.8		45.6	45.6		32.6	32.6	140.0
Effective Green, g (s)	81.8	81.8		47.8	47.8		45.6	45.6		32.6	32.6	140.0
Actuated g/C Ratio	0.58	0.58		0.34	0.34		0.33	0.33		0.23	0.23	1.00
Clearance Time (s)	6.0	6.2		6.2	6.2		6.4	6.4		6.4	6.4	
Vehicle Extension (s)	2.0	3.0		3.0	3.0		2.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	488	1078		202	632		348	1116		244	433	1583
v/s Ratio Prot	0.16	c0.43			0.26		c0.03	0.08			0.08	
v/s Ratio Perm	c0.30			0.17			c0.17			0.01		0.11
v/c Ratio	0.78	0.74		0.50	0.76		0.62	0.26		0.03	0.33	0.11
Uniform Delay, d1	24.6	21.3		36.6	40.9		40.9	34.8		41.5	44.6	0.0
Progression Factor	0.61	1.13		1.00	1.00		1.00	1.00		1.05	1.01	1.00
Incremental Delay, d2	11.0	4.2		8.6	8.2		8.2	0.6		0.2	2.0	0.1
Delay (s)	25.9	28.2		45.2	49.2		49.1	35.3		43.6	46.9	0.1
Level of Service	C	C		D	D		D	D		D	D	A
Approach Delay (s)		27.4			48.5			41.0			21.6	
Approach LOS		C			D			D			C	

Intersection Summary

HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues

118: Beneficial Dr/Meridian Ave & Channelside Dr

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	381	797	101	479	217	307	7	141	173
v/c Ratio	0.78	0.74	0.50	0.76	0.62	0.27	0.03	0.33	0.11
Control Delay	24.4	28.8	47.0	49.8	47.0	32.6	44.0	47.4	0.5
Queue Delay	0.8	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.2	30.6	47.0	49.8	47.0	32.6	44.0	47.4	0.5
Queue Length 50th (ft)	314	701	73	386	152	98	5	109	0
Queue Length 95th (ft)	164	802	130	491	215	132	21	174	0
Internal Link Dist (ft)		425		125		927		460	
Turn Bay Length (ft)			150		300				
Base Capacity (vph)	488	1080	202	633	348	1133	244	433	1583
Starvation Cap Reductn	17	145	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.85	0.50	0.76	0.62	0.27	0.03	0.33	0.11

Intersection Summary

# HCS7 Two-Way Stop-Control Report

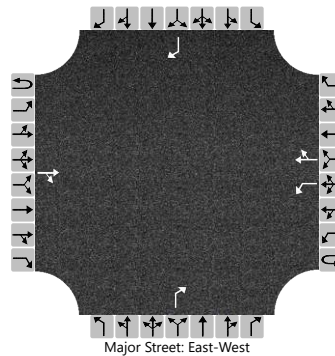
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2019
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Whiting PD&E Study

## Site Information

Intersection	ChannelsideDr&12thSt
Jurisdiction	FDOT, District 7
East/West Street	Channelside Dr
North/South Street	12th St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	1	1	0		0	0	1		0	0	1
Configuration				TR		L		TR				R				R
Volume (veh/h)			645	62		5	484	9				58				15
Percent Heavy Vehicles (%)						2						2				2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized										No				No		
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)					4.1							6.2				6.2
Critical Headway (sec)					4.12							6.22				6.22
Base Follow-Up Headway (sec)					2.2							3.3				3.3
Follow-Up Headway (sec)					2.22							3.32				3.32

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					5							61				16			
Capacity, c (veh/h)					863							433				560			
v/c Ratio					0.01							0.14				0.03			
95% Queue Length, Q <sub>95</sub> (veh)					0.0							0.5				0.1			
Control Delay (s/veh)					9.2							14.7				11.6			
Level of Service (LOS)					A							B				B			
Approach Delay (s/veh)					0.1						14.7					11.6			
Approach LOS					A						B					B			



# MOVEMENT SUMMARY

**Site: 8 [Channelside Drive at Cumberland Avenue\_2019-PM  
(Site Folder: General)]**

Existing Year (2019) -  
PM Peak Hour  
Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h ]	[ HV % ]	[ Total veh/h ]	[ HV % ]				[ Veh. veh ]	[ Dist ft ]				
South: Channelside Drive														
3	L2	17	2.0	18	2.0	0.560	8.8	LOS A	4.2	106.1	0.25	0.10	0.25	36.9
8	T1	671	2.0	706	2.0	0.560	8.8	LOS A	4.2	106.1	0.25	0.10	0.25	37.7
18	R2	25	2.0	26	2.0	0.560	8.8	LOS A	4.2	106.1	0.25	0.10	0.25	36.4
Approach		713	2.0	751	2.0	0.560	8.8	LOS A	4.2	106.1	0.25	0.10	0.25	37.6
East: E Cumberland Avenue														
1	L2	6	2.0	6	2.0	0.052	5.4	LOS A	0.2	4.5	0.54	0.49	0.54	38.8
6	T1	8	2.0	8	2.0	0.052	5.4	LOS A	0.2	4.5	0.54	0.49	0.54	36.0
16	R2	22	2.0	23	2.0	0.052	5.4	LOS A	0.2	4.5	0.54	0.49	0.54	35.8
Approach		36	2.0	38	2.0	0.052	5.4	LOS A	0.2	4.5	0.54	0.49	0.54	36.3
North: Channelside Drive														
7	L2	22	2.0	23	2.0	0.395	6.4	LOS A	2.2	56.7	0.16	0.05	0.16	37.4
4	T1	486	2.0	512	2.0	0.395	6.4	LOS A	2.2	56.7	0.16	0.05	0.16	39.1
14	R2	109	2.0	115	2.0	0.089	3.5	LOS A	0.4	9.0	0.11	0.03	0.11	35.2
Approach		617	2.0	649	2.0	0.395	5.9	LOS A	2.2	56.7	0.15	0.05	0.15	38.3
West: E Cumberland Avenue														
5	L2	17	2.0	18	2.0	0.036	4.5	LOS A	0.1	3.2	0.47	0.37	0.47	34.5
2	T1	2	2.0	2	2.0	0.036	4.5	LOS A	0.1	3.2	0.47	0.37	0.47	34.2
12	R2	11	2.0	12	2.0	0.036	4.5	LOS A	0.1	3.2	0.47	0.37	0.47	33.2
Approach		30	2.0	32	2.0	0.036	4.5	LOS A	0.1	3.2	0.47	0.37	0.47	34.0
All Vehicles		1396	2.0	1469	2.0	0.560	7.3	LOS A	4.2	106.1	0.22	0.09	0.22	37.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# HCS7 Two-Way Stop-Control Report

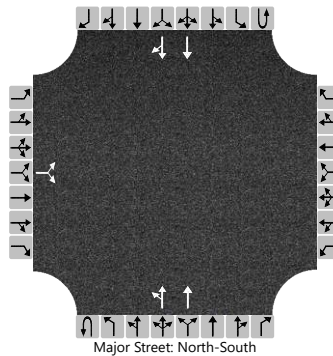
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2019
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	ChannelsideDr&E WhitingSt
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Channelside Dr
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	0	0		0	2	0		0	2	0	
Configuration			LR							LT	T				T	TR	
Volume (veh/h)		18		1						1	709				617	4	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways




















Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.84		6.94						4.14						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			20							1								
Capacity, c (veh/h)			238							929								
v/c Ratio			0.08							0.00								
95% Queue Length, Q <sub>95</sub> (veh)			0.3							0.0								
Control Delay (s/veh)			21.5							8.9								
Level of Service (LOS)			C							A								
Approach Delay (s/veh)		21.5									0.0							
Approach LOS		C									A							

HCM Signalized Intersection Capacity Analysis  
 130: Channelside Dr & E Washington St/E York St

01/19/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	18	8	5	15	6	64	5	722	2	3	621	22	
Future Volume (vph)	18	8	5	15	6	64	5	722	2	3	621	22	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.9			8.4	8.4	6.0	6.0		6.0	6.0		
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95		
Frt		0.98			1.00	0.85	1.00	1.00		1.00	0.99		
Flt Protected		0.97			0.96	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)		1771			1797	1583	1770	3538		1770	3521		
Flt Permitted		0.29			0.76	1.00	0.39	1.00		0.95	1.00		
Satd. Flow (perm)		533			1424	1583	734	3538		1770	3521		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	19	8	5	16	6	67	5	760	2	3	654	23	
RTOR Reduction (vph)	0	5	0	0	0	63	0	0	0	0	1	0	
Lane Group Flow (vph)	0	27	0	0	22	4	5	762	0	3	676	0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Prot	NA		
Protected Phases		4			3			2		1	1 2		
Permitted Phases	4			3		3	2						
Actuated Green, G (s)		10.9			8.6	8.6	80.0	80.0		14.2	100.2		
Effective Green, g (s)		10.9			8.6	8.6	80.0	80.0		14.2	100.2		
Actuated g/C Ratio		0.08			0.06	0.06	0.57	0.57		0.10	0.72		
Clearance Time (s)		5.9			8.4	8.4	6.0	6.0		6.0			
Vehicle Extension (s)		2.0			4.0	4.0	3.0	3.0		2.0			
Lane Grp Cap (vph)		41			87	97	419	2021		179	2520		
v/s Ratio Prot								c0.22		0.00	c0.19		
v/s Ratio Perm		c0.05			c0.02	0.00	0.01						
v/c Ratio		0.67			0.25	0.04	0.01	0.38		0.02	0.27		
Uniform Delay, d1		62.8			62.6	61.8	12.9	16.4		56.6	7.0		
Progression Factor		0.87			1.00	1.00	1.00	1.00		0.99	2.11		
Incremental Delay, d2		27.5			2.1	0.2	0.1	0.5		0.0	0.0		
Delay (s)		82.2			64.7	62.1	13.0	16.9		56.0	14.8		
Level of Service		F			E	E	B	B		E	B		
Approach Delay (s)		82.2			62.7			16.9			14.9		
Approach LOS		F			E			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			20.0									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.39										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	26.3
Intersection Capacity Utilization			45.3%									ICU Level of Service	A
Analysis Period (min)			15										

c Critical Lane Group

Queues

130: Channelside Dr & E Washington St/E York St

01/19/2022


























Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	32	22	67	5	762	3	677
v/c Ratio	0.57	0.25	0.33	0.01	0.37	0.02	0.26
Control Delay	81.0	68.8	4.9	21.0	19.2	52.7	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.0	68.8	4.9	21.0	19.2	52.7	17.0
Queue Length 50th (ft)	24	19	0	2	204	3	153
Queue Length 95th (ft)	59	49	5	12	323	m7	225
Internal Link Dist (ft)	922	976			474		596
Turn Bay Length (ft)			430	160		280	
Base Capacity (vph)	91	219	342	431	2080	182	2555
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.10	0.20	0.01	0.37	0.02	0.26

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
129: Channelside Dr & Kennedy Blvd

01/19/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	648	2	23	5	23	37	29	773	2	2	573	361
Future Volume (vph)	648	2	23	5	23	37	29	773	2	2	573	361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1686	1583		1847	1583	1770	3538		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.99	1.00	0.29	1.00		0.16	1.00	1.00
Satd. Flow (perm)	1681	1686	1583		1847	1583	537	3538		298	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	682	2	24	5	24	39	31	814	2	2	603	380
RTOR Reduction (vph)	0	0	15	0	0	37	0	0	0	0	0	260
Lane Group Flow (vph)	341	343	9	0	29	2	31	816	0	2	603	120
Turn Type	Split	NA	Perm	Split	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	3	3		1	1			2			2	
Permitted Phases			3			1	2			2		2
Actuated Green, G (s)	54.7	54.7	54.7		6.6	6.6	44.3	44.3		44.3	44.3	44.3
Effective Green, g (s)	54.7	54.7	54.7		6.6	6.6	44.3	44.3		44.3	44.3	44.3
Actuated g/C Ratio	0.39	0.39	0.39		0.05	0.05	0.32	0.32		0.32	0.32	0.32
Clearance Time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3
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)	656	658	618		87	74	169	1119		94	1119	500
v/s Ratio Prot	0.20	c0.20			c0.02			c0.23			0.17	
v/s Ratio Perm			0.01			0.00	0.06			0.01		0.08
v/c Ratio	0.52	0.52	0.02		0.33	0.02	0.18	0.73		0.02	0.54	0.24
Uniform Delay, d1	32.6	32.6	26.1		64.6	63.6	34.7	42.5		32.9	39.4	35.4
Progression Factor	1.00	1.00	1.00		1.00	1.00	0.44	0.65		1.00	1.00	1.00
Incremental Delay, d2	2.9	2.9	0.0		2.3	0.1	2.3	4.0		0.4	1.9	1.1
Delay (s)	35.5	35.6	26.2		66.8	63.8	17.6	31.8		33.3	41.3	36.5
Level of Service	D	D	C		E	E	B	C		C	D	D
Approach Delay (s)		35.2			65.1			31.3			39.4	
Approach LOS		D			E			C			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			36.3		HCM 2000 Level of Service						D	
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			140.0		Sum of lost time (s)						22.4	
Intersection Capacity Utilization			59.8%		ICU Level of Service						B	
Analysis Period (min)			15									

c Critical Lane Group



Queues

129: Channelside Dr & Kennedy Blvd

01/19/2022















Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	341	343	24	29	39	31	816	2	603	380
v/c Ratio	0.52	0.52	0.04	0.29	0.22	0.18	0.71	0.02	0.52	0.49
Control Delay	36.1	36.1	0.1	69.9	2.8	17.6	30.7	33.0	40.3	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	36.1	0.1	69.9	2.8	17.6	30.7	33.0	40.3	5.5
Queue Length 50th (ft)	248	249	0	26	0	20	350	1	234	0
Queue Length 95th (ft)	352	352	0	60	0	37	427	8	295	74
Internal Link Dist (ft)		903		909			596		1256	
Turn Bay Length (ft)			140			280		75		375
Base Capacity (vph)	656	658	680	200	259	174	1155	97	1155	772
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.52	0.04	0.14	0.15	0.18	0.71	0.02	0.52	0.49

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

109: Florida Ave & Brorein St

01/19/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↑		↘	↑↑↑↑				
Traffic Volume (vph)	0	0	0	0	1137	124	161	1410	0	0	0	0
Future Volume (vph)	0	0	0	0	1137	124	161	1410	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.8		6.1	6.1				
Lane Util. Factor					0.86		1.00	0.91				
Flt					0.99		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6314		1770	5085				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6314		1770	5085				
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	0	1223	133	173	1516	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	27	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1343	0	146	1516	0	0	0	0
Turn Type					NA		Perm	NA				
Protected Phases					2			4				
Permitted Phases							4					
Actuated Green, G (s)					54.2		68.9	68.9				
Effective Green, g (s)					54.2		68.9	68.9				
Actuated g/C Ratio					0.39		0.49	0.49				
Clearance Time (s)					5.8		6.1	6.1				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					2444		871	2502				
v/s Ratio Prot					c0.21			c0.30				
v/s Ratio Perm							0.08					
v/c Ratio					0.55		0.17	0.61				
Uniform Delay, d1					33.4		19.7	25.7				
Progression Factor					1.00		0.90	0.90				
Incremental Delay, d2					0.9		0.4	1.0				
Delay (s)					34.3		18.1	24.2				
Level of Service					C		B	C				
Approach Delay (s)		0.0			34.3			23.6			0.0	
Approach LOS		A			C			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			28.4		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			140.0		Sum of lost time (s)				14.9			
Intersection Capacity Utilization			55.7%		ICU Level of Service				B			
Analysis Period (min)			15									
c Critical Lane Group												

# Queues

## 109: Florida Ave & Brorein St

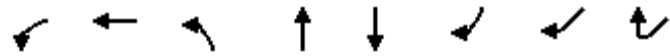
01/19/2022



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1356	173	1516
v/c Ratio	0.55	0.19	0.61
Control Delay	33.9	12.8	24.4
Queue Delay	0.0	0.0	0.0
Total Delay	33.9	12.8	24.4
Queue Length 50th (ft)	273	56	318
Queue Length 95th (ft)	311	98	360
Internal Link Dist (ft)	416		237
Turn Bay Length (ft)			
Base Capacity (vph)	2456	898	2502
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.55	0.19	0.61
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/19/2022



Movement	WBL	WBT	NBL	NBT	SBT	SBR	SWR	SWR2
Lane Configurations		↑↑↑		↑↑	↑↓		↑	↑
Traffic Volume (vph)	22	934	63	79	38	348	251	44
Future Volume (vph)	22	934	63	79	38	348	251	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7		6.0	6.0		5.7	5.7
Lane Util. Factor		0.91		0.95	0.95		1.00	1.00
Fr <sub>t</sub>		1.00		1.00	0.86		1.00	0.85
Fl <sub>t</sub> Protected		1.00		0.98	1.00		1.00	1.00
Satd. Flow (prot)		5079		3462	3060		1863	1583
Fl <sub>t</sub> Permitted		1.00		0.59	1.00		1.00	1.00
Satd. Flow (perm)		5079		2088	3060		1863	1583
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	26	1112	75	94	45	414	299	52
RTOR Reduction (vph)	0	0	0	0	39	0	0	19
Lane Group Flow (vph)	0	1138	0	169	420	0	299	33
Turn Type	Perm	NA	Perm	NA	NA		Prot	Perm
Protected Phases		2!		4	4		2!	
Permitted Phases	2		4					2
Actuated Green, G (s)		88.3		40.0	40.0		88.3	88.3
Effective Green, g (s)		88.3		40.0	40.0		88.3	88.3
Actuated g/C Ratio		0.63		0.29	0.29		0.63	0.63
Clearance Time (s)		5.7		6.0	6.0		5.7	5.7
Vehicle Extension (s)		3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		3203		596	874		1175	998
v/s Ratio Prot					c0.14		0.16	
v/s Ratio Perm		0.22		0.08				0.02
v/c Ratio		0.36		0.28	0.48		0.25	0.03
Uniform Delay, d <sub>1</sub>		12.3		38.9	41.4		11.4	9.7
Progression Factor		0.30		1.07	1.08		1.00	1.00
Incremental Delay, d <sub>2</sub>		0.3		1.2	1.8		0.5	0.1
Delay (s)		4.0		42.7	46.7		11.9	9.8
Level of Service		A		D	D		B	A
Approach Delay (s)		4.0		42.7	46.7			
Approach LOS		A		D	D			

Intersection Summary

HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	11.7
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

# Queues

## 110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/19/2022



Lane Group	WBT	NBT	SBT	SWR	SWR2
Lane Group Flow (vph)	1138	169	459	299	52
v/c Ratio	0.36	0.28	0.50	0.25	0.05
Control Delay	4.0	43.1	41.8	12.1	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.0	43.1	41.8	12.1	2.6
Queue Length 50th (ft)	48	65	168	113	0
Queue Length 95th (ft)	50	93	203	147	14
Internal Link Dist (ft)	487	424	563		
Turn Bay Length (ft)					
Base Capacity (vph)	3204	596	913	1175	1017
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.36	0.28	0.50	0.25	0.05


















### Intersection Summary



# HCM Signalized Intersection Capacity Analysis

111: Jefferson St & Brorein St

01/19/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					 			 					
Traffic Volume (vph)	0	0	0	0	768	88	36	543	0	0	0	191	
Future Volume (vph)	0	0	0	0	768	88	36	543	0	0	0	191	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					5.7			5.7				5.7	
Lane Util. Factor					0.95			0.95				1.00	
Frt					0.98			1.00				0.86	
Flt Protected					1.00			1.00				1.00	
Satd. Flow (prot)					3485			3528				1611	
Flt Permitted					1.00			1.00				1.00	
Satd. Flow (perm)					3485			3528				1611	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	0	0	0	0	853	98	40	603	0	0	0	212	
RTOR Reduction (vph)	0	0	0	0	6	0	0	15	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	945	0	0	628	0	0	0	212	
Turn Type					NA		Perm	NA				Perm	
Protected Phases					2			4					
Permitted Phases							4					2 4	
Actuated Green, G (s)					89.3			39.3				140.0	
Effective Green, g (s)					89.3			39.3				140.0	
Actuated g/C Ratio					0.64			0.28				1.00	
Clearance Time (s)					5.7			5.7					
Vehicle Extension (s)					2.0			2.0					
Lane Grp Cap (vph)					2222			990				1611	
v/s Ratio Prot					0.27								
v/s Ratio Perm								0.18				0.13	
v/c Ratio					0.43			0.63				0.13	
Uniform Delay, d1					12.6			44.1				0.0	
Progression Factor					1.66			0.51				1.00	
Incremental Delay, d2					0.6			2.7				0.2	
Delay (s)					21.5			25.3				0.2	
Level of Service					C			C				A	
Approach Delay (s)		0.0			21.5			25.3			0.2		
Approach LOS		A			C			C			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			20.3		HCM 2000 Level of Service					C			
HCM 2000 Volume to Capacity ratio			0.49										
Actuated Cycle Length (s)			140.0		Sum of lost time (s)					11.4			
Intersection Capacity Utilization			66.2%		ICU Level of Service					C			
Analysis Period (min)			15										
c Critical Lane Group													

# Queues

## 111: Jefferson St & Brorein St

01/19/2022



Lane Group	WBT	NBT	SBR
Lane Group Flow (vph)	951	643	212
v/c Ratio	0.43	0.64	0.13
Control Delay	21.3	24.7	0.2
Queue Delay	0.0	0.0	0.0
Total Delay	21.3	24.7	0.2
Queue Length 50th (ft)	397	96	0
Queue Length 95th (ft)	416	164	0
Internal Link Dist (ft)	191	428	
Turn Bay Length (ft)			
Base Capacity (vph)	2229	1005	1611
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.43	0.64	0.13
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 120: Meridian Ave & Cumberland Ave

01/19/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	19	108	431	120	83	257
Future Volume (vph)	19	108	431	120	83	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.2	4.0	6.6		6.4	6.6
Lane Util. Factor	1.00	1.00	0.95		1.00	0.91
Frt	1.00	0.85	0.97		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	3424		1770	5085
Flt Permitted	0.95	1.00	1.00		0.35	1.00
Satd. Flow (perm)	1770	1583	3424		659	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	117	468	130	90	279
RTOR Reduction (vph)	0	0	18	0	0	0
Lane Group Flow (vph)	21	117	580	0	90	279
Turn Type	Prot	Free	NA		pm+pt	NA
Protected Phases	4		6		5	2
Permitted Phases		Free			2	
Actuated Green, G (s)	31.8	140.0	74.4		94.4	94.4
Effective Green, g (s)	31.8	140.0	74.4		94.4	94.4
Actuated g/C Ratio	0.23	1.00	0.53		0.67	0.67
Clearance Time (s)	7.2		6.6		6.4	6.6
Vehicle Extension (s)	3.0		3.0		4.0	3.0
Lane Grp Cap (vph)	402	1583	1819		552	3428
v/s Ratio Prot	0.01		c0.17		c0.02	0.05
v/s Ratio Perm		c0.07			0.09	
v/c Ratio	0.05	0.07	0.32		0.16	0.08
Uniform Delay, d1	42.3	0.0	18.5		8.6	7.9
Progression Factor	1.00	1.00	1.50		0.92	0.90
Incremental Delay, d2	0.2	0.1	0.4		0.6	0.0
Delay (s)	42.6	0.1	28.2		8.5	7.1
Level of Service	D	A	C		A	A
Approach Delay (s)	6.6		28.2			7.5
Approach LOS	A		C			A

### Intersection Summary

HCM 2000 Control Delay	18.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# Queues

## 120: Meridian Ave & Cumberland Ave

01/19/2022



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	21	117	598	90	279
v/c Ratio	0.05	0.07	0.33	0.16	0.08
Control Delay	42.9	0.1	26.4	7.9	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	0.1	26.4	7.9	7.1
Queue Length 50th (ft)	15	0	151	23	26
Queue Length 95th (ft)	39	0	191	40	36
Internal Link Dist (ft)	882		460		709
Turn Bay Length (ft)		100		250	
Base Capacity (vph)	402	1583	1836	553	3428
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.07	0.33	0.16	0.08

### Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 102: Florida Ave & Whiting St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↕			↕↕			↕↕↕	↕				
Traffic Volume (vph)	170	238	0	0	84	103	35	1571	129	0	0	0	
Future Volume (vph)	170	238	0	0	84	103	35	1571	129	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.0			6.0			5.7	5.7				
Lane Util. Factor		0.95			0.95			0.91	1.00				
Frt		1.00			0.92			1.00	0.85				
Flt Protected		0.98			1.00			1.00	1.00				
Satd. Flow (prot)		3467			3247			5080	1583				
Flt Permitted		0.74			1.00			1.00	1.00				
Satd. Flow (perm)		2630			3247			5080	1583				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	179	251	0	0	88	108	37	1654	136	0	0	0	
RTOR Reduction (vph)	0	0	0	0	29	0	0	0	23	0	0	0	
Lane Group Flow (vph)	0	430	0	0	167	0	0	1691	113	0	0	0	
Turn Type	Perm	NA			NA		Perm	NA	Perm				
Protected Phases		4			4			2					
Permitted Phases	4						2		2				
Actuated Green, G (s)		49.0			49.0			74.3	74.3				
Effective Green, g (s)		49.0			49.0			74.3	74.3				
Actuated g/C Ratio		0.35			0.35			0.53	0.53				
Clearance Time (s)		6.0			6.0			5.7	5.7				
Vehicle Extension (s)		3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)		920			1136			2696	840				
v/s Ratio Prot					0.05								
v/s Ratio Perm		c0.16						0.33	0.07				
v/c Ratio		0.47			0.15			0.63	0.14				
Uniform Delay, d1		35.4			31.2			23.1	16.6				
Progression Factor		1.00			1.21			0.77	0.93				
Incremental Delay, d2		1.7			0.3			0.9	0.3				
Delay (s)		37.1			38.1			18.6	15.7				
Level of Service		D			D			B	B				
Approach Delay (s)		37.1			38.1			18.4			0.0		
Approach LOS		D			D			B			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			23.3									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.55										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	14.7
Intersection Capacity Utilization			65.7%									ICU Level of Service	C
Analysis Period (min)			15										

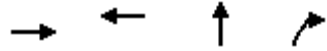
c Critical Lane Group



# Queues

## 102: Florida Ave & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	430	196	1691	136
v/c Ratio	0.47	0.17	0.63	0.16
Control Delay	37.4	29.8	18.8	10.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	37.4	29.8	18.8	10.4
Queue Length 50th (ft)	159	62	199	22
Queue Length 95th (ft)	212	99	217	40
Internal Link Dist (ft)	994	519	567	
Turn Bay Length (ft)				75
Base Capacity (vph)	920	1164	2696	862
Starvation Cap Reductn	0	0	40	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.47	0.17	0.64	0.16

### Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 103: Morgan St & Whiting St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	241	25	96	105	11	19	131	46	17	218	33
Future Volume (vph)	100	241	25	96	105	11	19	131	46	17	218	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8		5.8	5.8			5.7			5.7	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	0.99		1.00	0.99			0.96			0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1770	1837		1770	1836			3398			3463	
Flt Permitted	0.66	1.00		0.48	1.00			0.90			0.93	
Satd. Flow (perm)	1234	1837		903	1836			3085			3218	
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Adj. Flow (vph)	128	309	32	123	135	14	24	168	59	22	279	42
RTOR Reduction (vph)	0	5	0	0	5	0	0	34	0	0	16	0
Lane Group Flow (vph)	128	336	0	123	144	0	0	217	0	0	327	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	29.2	29.2		29.2	29.2			29.3			29.3	
Effective Green, g (s)	29.2	29.2		29.2	29.2			29.3			29.3	
Actuated g/C Ratio	0.42	0.42		0.42	0.42			0.42			0.42	
Clearance Time (s)	5.8	5.8		5.8	5.8			5.7			5.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	514	766		376	765			1291			1346	
v/s Ratio Prot		c0.18			0.08							
v/s Ratio Perm	0.10			0.14				0.07			c0.10	
v/c Ratio	0.25	0.44		0.33	0.19			0.17			0.24	
Uniform Delay, d1	13.3	14.6		13.8	12.9			12.7			13.2	
Progression Factor	1.13	1.19		1.01	1.02			1.11			1.00	
Incremental Delay, d2	1.1	1.8		2.3	0.5			0.3			0.4	
Delay (s)	16.1	19.1		16.2	13.8			14.4			13.6	
Level of Service	B	B		B	B			B			B	
Approach Delay (s)		18.3			14.9			14.4			13.6	
Approach LOS		B			B			B			B	

### Intersection Summary

HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues

103: Morgan St & Whiting St

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	128	341	123	149	251	343
v/c Ratio	0.25	0.44	0.33	0.19	0.19	0.25
Control Delay	16.3	18.9	16.6	13.1	11.1	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	18.9	16.6	13.1	11.1	12.7
Queue Length 50th (ft)	68	194	35	38	54	44
Queue Length 95th (ft)	93	218	49	50	65	60
Internal Link Dist (ft)		519		503	563	1059
Turn Bay Length (ft)						
Base Capacity (vph)	514	771	376	771	1326	1362
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	0.25	0.44	0.33	0.19	0.19	0.25

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

## 104: Jefferson St & Whiting St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Volume (vph)	76	63	316	13	35	31	10	244	1	14	183	21
Future Volume (vph)	76	63	316	13	35	31	10	244	1	14	183	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7			5.7			5.7	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.95			1.00			0.99	
Flt Protected		0.97	1.00		0.99			1.00			1.00	
Satd. Flow (prot)		1813	1583		1750			3531			3477	
Flt Permitted		0.81	1.00		0.93			0.94			0.92	
Satd. Flow (perm)		1512	1583		1635			3322			3222	
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Adj. Flow (vph)	97	81	405	17	45	40	13	313	1	18	235	27
RTOR Reduction (vph)	0	0	320	0	32	0	0	1	0	0	12	0
Lane Group Flow (vph)	0	178	85	0	70	0	0	326	0	0	268	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)		14.7	14.7		14.7			29.3			29.3	
Effective Green, g (s)		14.7	14.7		14.7			29.3			29.3	
Actuated g/C Ratio		0.21	0.21		0.21			0.42			0.42	
Clearance Time (s)		5.7	5.7		5.7			5.7			5.7	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		317	332		343			1390			1348	
v/s Ratio Prot												
v/s Ratio Perm		c0.12	0.05		0.04			c0.10			0.08	
v/c Ratio		0.56	0.26		0.21			0.23			0.20	
Uniform Delay, d1		24.8	23.1		22.8			13.1			12.9	
Progression Factor		1.35	6.63		1.00			0.85			1.00	
Incremental Delay, d2		2.2	0.4		0.3			0.3			0.3	
Delay (s)		35.6	153.5		23.1			11.4			13.2	
Level of Service		D	F		C			B			B	
Approach Delay (s)		117.5			23.1			11.4			13.2	
Approach LOS		F			C			B			B	

### Intersection Summary

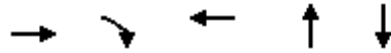
HCM 2000 Control Delay	60.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

104: Jefferson St & Whiting St

01/19/2022



Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	178	405	102	327	280
v/c Ratio	0.56	0.62	0.27	0.24	0.21
Control Delay	39.3	16.8	16.0	11.5	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	39.3	16.8	16.0	11.5	12.5
Queue Length 50th (ft)	104	110	22	54	35
Queue Length 95th (ft)	125	119	45	64	50
Internal Link Dist (ft)	503		431	509	207
Turn Bay Length (ft)					
Base Capacity (vph)	417	729	479	1391	1361
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.43	0.56	0.21	0.24	0.21

Intersection Summary



# HCS7 Two-Way Stop-Control Report

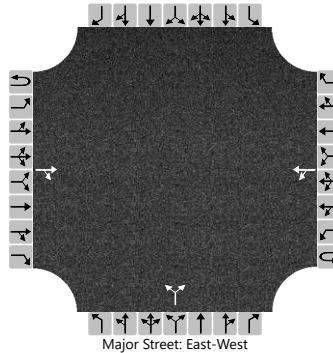
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2019
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWhitingSt&Nebraska Ave
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Nebraska Ave
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			64	12		3	76			8		33				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways













Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.12				6.42		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					3					43						
Capacity, c (veh/h)					1518					952						
v/c Ratio					0.00					0.05						
95% Queue Length, Q <sub>95</sub> (veh)					0.0					0.1						
Control Delay (s/veh)					7.4					9.0						
Level of Service (LOS)					A					A						
Approach Delay (s/veh)					0.3				9.0							
Approach LOS					A				A							

HCM Signalized Intersection Capacity Analysis  
107: Meridian Ave & Whiting St

01/19/2022

							
Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	45	19	0	496	43	35	295
Future Volume (vph)	45	19	0	496	43	35	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.2			6.6		6.4	6.6
Lane Util. Factor	1.00			0.91		1.00	0.91
Fr <sub>t</sub>	0.96			0.99		1.00	1.00
Fl <sub>t</sub> Protected	0.97			1.00		0.95	1.00
Satd. Flow (prot)	1727			5024		1770	5085
Fl <sub>t</sub> Permitted	0.97			1.00		0.37	1.00
Satd. Flow (perm)	1727			5024		690	5085
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	54	23	0	598	52	42	355
RTOR Reduction (vph)	14	0	0	4	0	0	0
Lane Group Flow (vph)	63	0	0	646	0	42	355
Turn Type	Prot		Perm	NA		pm+pt	NA
Protected Phases	4			6		5	2
Permitted Phases			6			2	
Actuated Green, G (s)	11.6			103.2		114.6	114.6
Effective Green, g (s)	11.6			103.2		114.6	114.6
Actuated g/C Ratio	0.08			0.74		0.82	0.82
Clearance Time (s)	7.2			6.6		6.4	6.6
Vehicle Extension (s)	3.0			3.0		3.0	3.0
Lane Grp Cap (vph)	143			3703		603	4162
v/s Ratio Prot	c0.04			c0.13		0.00	c0.07
v/s Ratio Perm						0.05	
v/c Ratio	0.44			0.17		0.07	0.09
Uniform Delay, d <sub>1</sub>	61.1			5.6		2.5	2.5
Progression Factor	1.02			2.69		1.00	1.00
Incremental Delay, d <sub>2</sub>	2.2			0.1		0.0	0.0
Delay (s)	64.4			15.0		2.6	2.5
Level of Service	E			B		A	A
Approach Delay (s)	64.4			15.0			2.5
Approach LOS	E			B			A
<b>Intersection Summary</b>							
HCM 2000 Control Delay			14.0		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio			0.20				
Actuated Cycle Length (s)			140.0		Sum of lost time (s)		20.2
Intersection Capacity Utilization			42.0%		ICU Level of Service		A
Analysis Period (min)			15				

c Critical Lane Group

# Queues

## 107: Meridian Ave & Whiting St

01/19/2022



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	77	650	42	355
v/c Ratio	0.49	0.17	0.07	0.09
Control Delay	60.7	15.0	2.8	2.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	60.7	15.0	2.8	2.6
Queue Length 50th (ft)	55	120	5	17
Queue Length 95th (ft)	98	134	13	27
Internal Link Dist (ft)	876	709		494
Turn Bay Length (ft)			225	
Base Capacity (vph)	477	3754	671	4164
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.16	0.17	0.06	0.09

### Intersection Summary

# HCS7 Two-Way Stop-Control Report

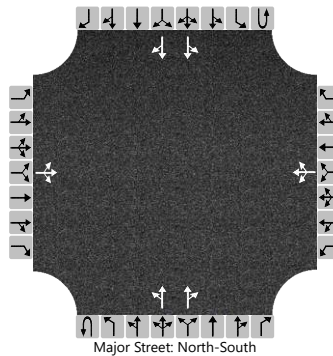
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2019
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWashingtonSt&JeffersonSt
Jurisdiction	FDOT, District 7
East/West Street	E Washington St
North/South Street	Jefferson St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0	0	0	2	0	0	0	2	0	
Configuration			LTR				LTR			LT		TR		LT		TR	
Volume (veh/h)		55	39	25		59	33	60		30	315	6		2	134	51	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.54	6.54	6.94		7.54	6.54	6.94		4.14				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			125				160				32				2		
Capacity, c (veh/h)			484				508				1376				1218		
v/c Ratio			0.26				0.32				0.02				0.00		
95% Queue Length, Q <sub>95</sub> (veh)			1.0				1.4				0.1				0.0		
Control Delay (s/veh)			15.0				15.3				7.7				8.0		
Level of Service (LOS)			C				C				A				A		
Approach Delay (s/veh)		15.0				15.3				0.7				0.1			
Approach LOS		C				C											

# HCS7 Two-Way Stop-Control Report

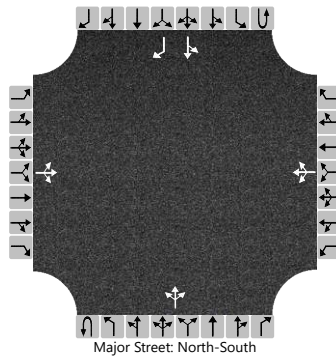
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2019
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWashingtonSt&BrushSt
Jurisdiction	FDOT, District 7
East/West Street	E Washington St
North/South Street	Brush St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0		0	1	0		0	1	1	
Configuration			LTR				LTR				LTR			LT		R	
Volume (veh/h)		36	5	5		5	21	4		20	103	4		6	30	22	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																Yes	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			48				32				21				6		
Capacity, c (veh/h)			737				718				1581				1477		
v/c Ratio			0.07				0.04				0.01				0.00		
95% Queue Length, Q <sub>95</sub> (veh)			0.2				0.1				0.0				0.0		
Control Delay (s/veh)			10.2				10.2				7.3				7.4		
Level of Service (LOS)			B				B				A				A		
Approach Delay (s/veh)		10.2				10.2				1.2				0.8			
Approach LOS		B				B				A				A			



# HCS7 Two-Way Stop-Control Report

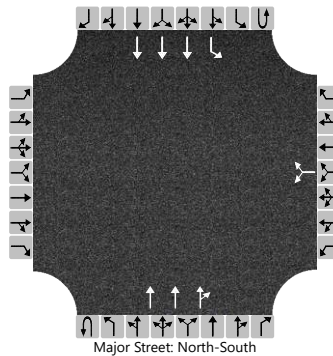
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2019
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	MeridianAve&EWashingtonSt
Jurisdiction	FDOT, District 7
East/West Street	Meridian Ave
North/South Street	E Washington St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0		0	3	0		0	1	3
Configuration							LR				T	TR		L	T	
Volume (veh/h)						12		49			468	47	0	117	318	
Percent Heavy Vehicles (%)						2		2					2	2		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type   Storage							Left Only								1	

## Critical and Follow-up Headways

Base Critical Headway (sec)						6.4		7.1							5.3	
Critical Headway (sec)						5.74		7.14							5.34	
Base Follow-Up Headway (sec)						3.8		3.9							3.1	
Follow-Up Headway (sec)						3.82		3.92							3.12	

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							64								123	
Capacity, c (veh/h)							537								647	
v/c Ratio							0.12								0.19	
95% Queue Length, Q <sub>95</sub> (veh)							0.4								0.7	
Control Delay (s/veh)							12.6								11.9	
Level of Service (LOS)							B								B	
Approach Delay (s/veh)							12.6								3.2	
Approach LOS							B									

# Appendix G

Safety Analysis Technical Memorandum

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## TECHNICAL MEMORANDUM

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**TO:** Bill Howell, P.E.

**FROM:** W. T. Bowman, P.E., Tindale Oliver

**SUBJECT:** Safety Analysis  
Whiting Street PD&E  
City of Tampa, FL

**DATE:** March 3, 2021

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### BACKGROUND

Tindale Oliver conducted a safety analysis to evaluate the potential safety outcomes of the Build Alternative being evaluated as part of the Whiting Street PD&E study. This analysis includes the following elements:

- Analysis of crash history associated with the Florida Avenue off-ramp
- Comparative analysis of the No Build and Build Alternative roadway geometry at the Florida Avenue off-ramp
- Qualitative assessment of the Build Alternative including the Florida Avenue off-ramp area as well as the Whiting Street off ramp, Whiting Street improvements, and Meridian Avenue improvements.

Crash analysis at the Whiting Street ramp and along the proposed connection of Whiting Street to Meridian Avenue was not included in this analysis because the build alternative is essentially a new roadway and, as such, there is no relevant existing crash data.

### CRASH DATA REVIEW

Crash data from January 2013 to December 2019 were extracted from the State Crash Analysis Reporting System (CARS), Signal Four Analytics, and Tindale Oliver's Crash Data Management System (CDMS) within the influence area of the Selmon Expressway Florida Avenue off-ramp. As part of the crash data analysis process, police reports were reviewed to identify crashes directly related to the ramp, confirm/correct crash locations and correct miscoded crashes.

During the study period, there were 13 crashes documented within the influence area of the off-ramps as shown in the collision diagram in **Figure 1**. There were few crashes identified directly related to vehicles accessing, traveling on, or exiting the ramp. The identified crashes are summarized as follows:

- Nine crashes along the mainline and at/near the exit gore

- Three rear-end crashes
  - Three sideswipe crashes
  - Three crashes identified as lost control or hit fixed object (single vehicle). One of these was coded as resulting in an incapacitating injury
- Three single vehicle/fixed object crashes were identified along the off-ramp.
  - One sideswipe crash was reported along the off ramp.

Based on the historical crash data, and as shown in Figure 1, the reported crash history in this area is not significant enough to show patterns of correctable crashes that could be mitigated to the proposed changes to the ramp's geometry and signalization. The next section of this report provides a comparison of the No Build and Build Alternative ramp geometry and offers an evaluation of the potential safety benefits of the Build Alternative. This will become increasingly important as traffic volumes at this ramp grow in the future.

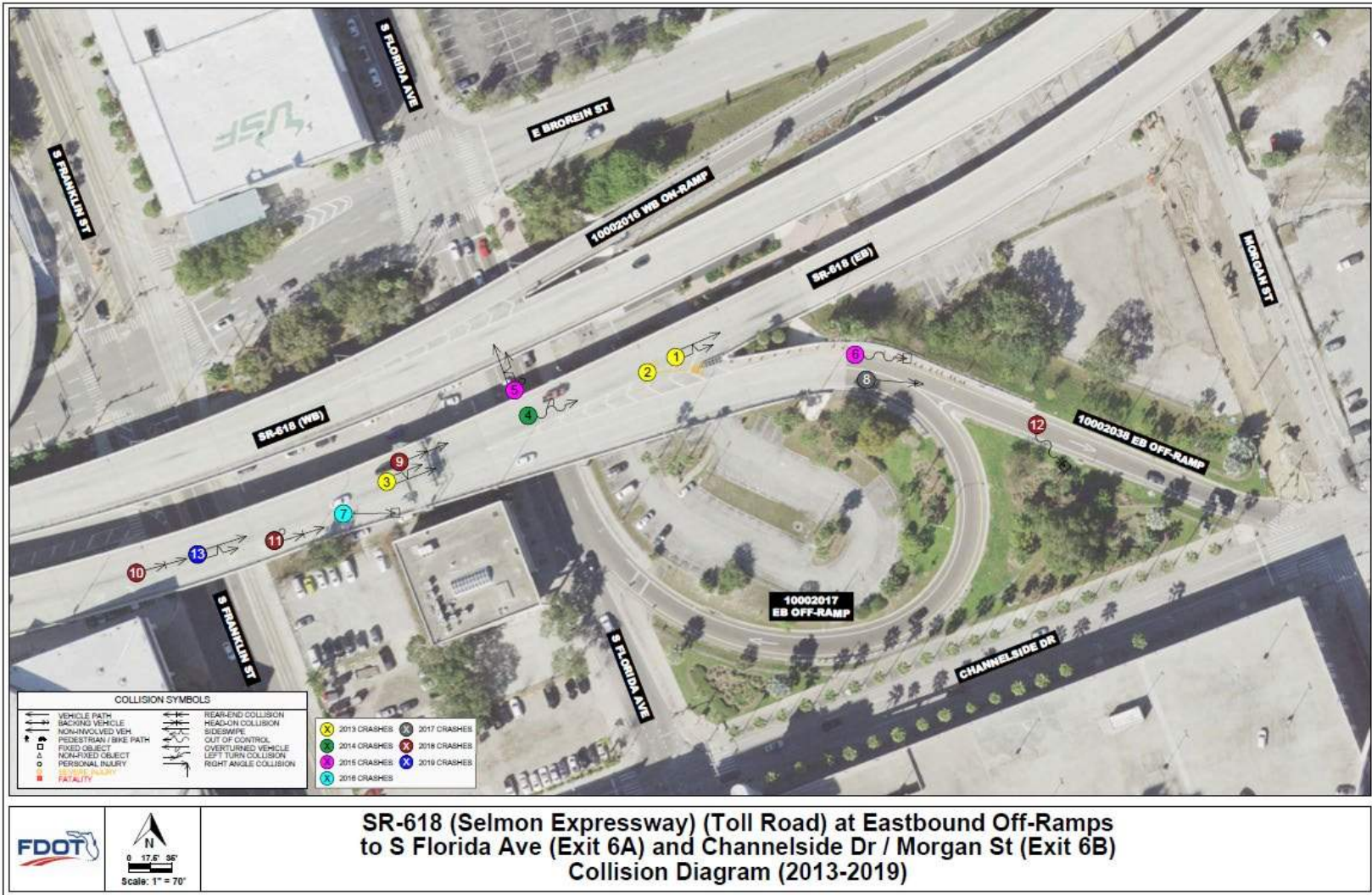


Figure 1: Florida Avenue Ramp Collision Diagram (2013 – 2019)

## **GEOMETRIC DESIGN ELEMENT REVIEW**

For the design of loop ramps there are usually five competing standards: the curve radius, the length of curve, the superelevation transition rate, and the maximum algebraic difference in cross slope at turning roadway terminals (crossover between the mainline and the ramps). The Build Alternative provides the following improvements to the substandard geometry of the existing ramp within the right of way constraints of the project:

- The Build Alternative provides the greatest attainable curve length.
- Adding tangents to both sides of the ramp will increase drivers stopping sight distance and reaction times.
- The signalized ramp terminal will reduce conflicts between ramp traffic and traffic along Florida Avenue.
- The signalized ramp terminal is preferable to the existing free-flowing ramp for safe pedestrian and bicycle operation.
- The proposed design allows for more queue, hence reducing the potential spillback traffic into the expressway mainline.
- The proposed design offers the opportunity to reduce ramp queue spillback through the use of occupancy sensors connected to the signal controller.

Table 2 summarizes the specific design elements that will be modified and the proactive/qualitative impact on ramps safety.



**Table 1: Design Element Review**

<b>Existing Condition</b>	<b>Future Condition</b>	<b>Safety Benefit</b>
Compound curve with 3 radii (127', 109' and 214')	117' radius curve	The predominant radii on the existing compound curve is 109'. By providing a single and larger curve radius the safety of the ramp will improve since it can handle higher speeds while reducing the potential for drivers to lose control and/or overturn.
Unsignalized Merge at Florida Avenue	Signalized termini at Florida Avenue	The signalization of the ramp decreases the potential for sideswipe crashes with merging traffic and also provides safer accommodation for pedestrians.
260' entrance curve tangent	396' entrance curve tangent	By increasing the entering tangent, vehicles have additional distance to slow from the mainline speed before entering the curve.
0' departure curve tangent	283' departure curve tangent	By increasing the exiting tangent towards Florida Ave., the sight distance is improved for vehicles approaching the signal which reduces the likelihood of rear-end crashes. In the existing condition there is limited sight distance which could result in vehicles not recognizing conflicts with vehicles on Florida Ave.
304' departure curve tangent onto Morgan St.	No Tangent (Flat Curve 796') onto Whiting St.	By providing a flat departure curve towards Whiting St., the sight distance is improved for vehicles approaching the signal which reduces the likelihood of rear-end crashes by not recognizing stopped vehicles at the new signal. In the existing condition there is limited sight distance which could result in vehicles not recognizing conflicts with vehicles on Whiting St. Shifting "Downtown East" traffic to a separate ramp also reduces the demand and potential conflicts at the Florida Avenue ramp gore area.
830' distance from Florida Avenue to the mainline	1,132' distance from Florida Avenue to the mainline	The additional length of the ramp provides for additional vehicle storage along the ramp and reduces the likelihood of queue spillback onto the mainline

As shown in the table, the proposed design significantly improves potentially unsafe conditions along the ramp.

To further enhance safety along this ramp the following design elements should also be considered as part of the project's design phase:

- Lower ramp speed to 25MPH.
- Ramp speed sign to be placed prior to the curve.
- Chevrons to be installed along the curve.
- Audible and vibratory edge treatment.
- Lighting to be added along the curve.
- Solar powered LED to be added along the curve.
- High friction pavement to be added to the ramp.

## **QUALITATIVE ASSESSMENT OF MULTIMODAL MOBILITY AND SAFETY**

Figures 2 – 4 document opportunities to further enhance the Build Alternative to improve safety and mobility for motorized and non-motorized road users at the Florida Avenue off-ramp (Figure 2), the Whiting Avenue off ramp (Figure 3), and the new connection of Whiting Street to Meridian Avenue (Figure 4)

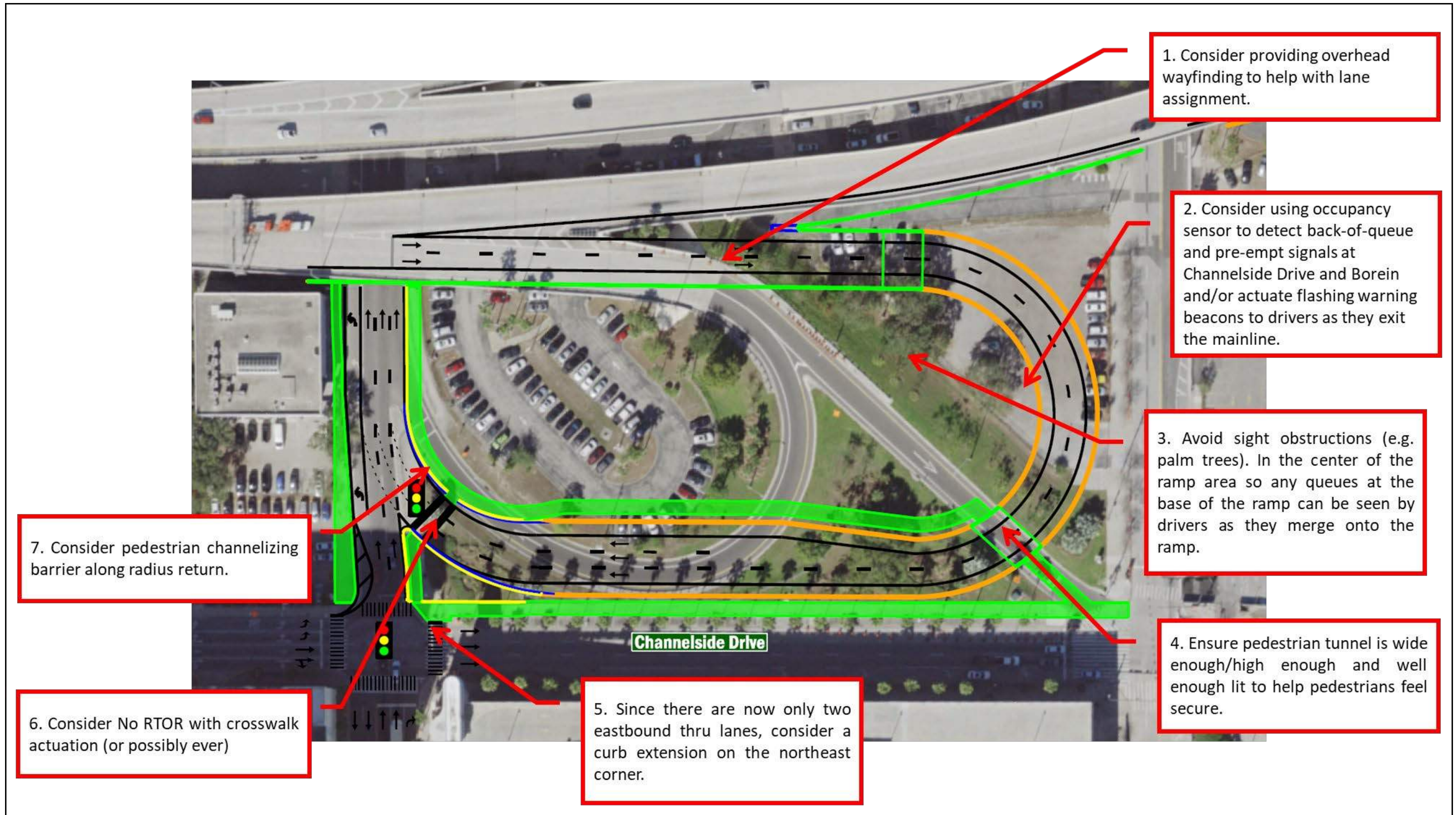


Figure 2: Mobility and Safety Qualitative Assessment - Florida Avenue Ramp



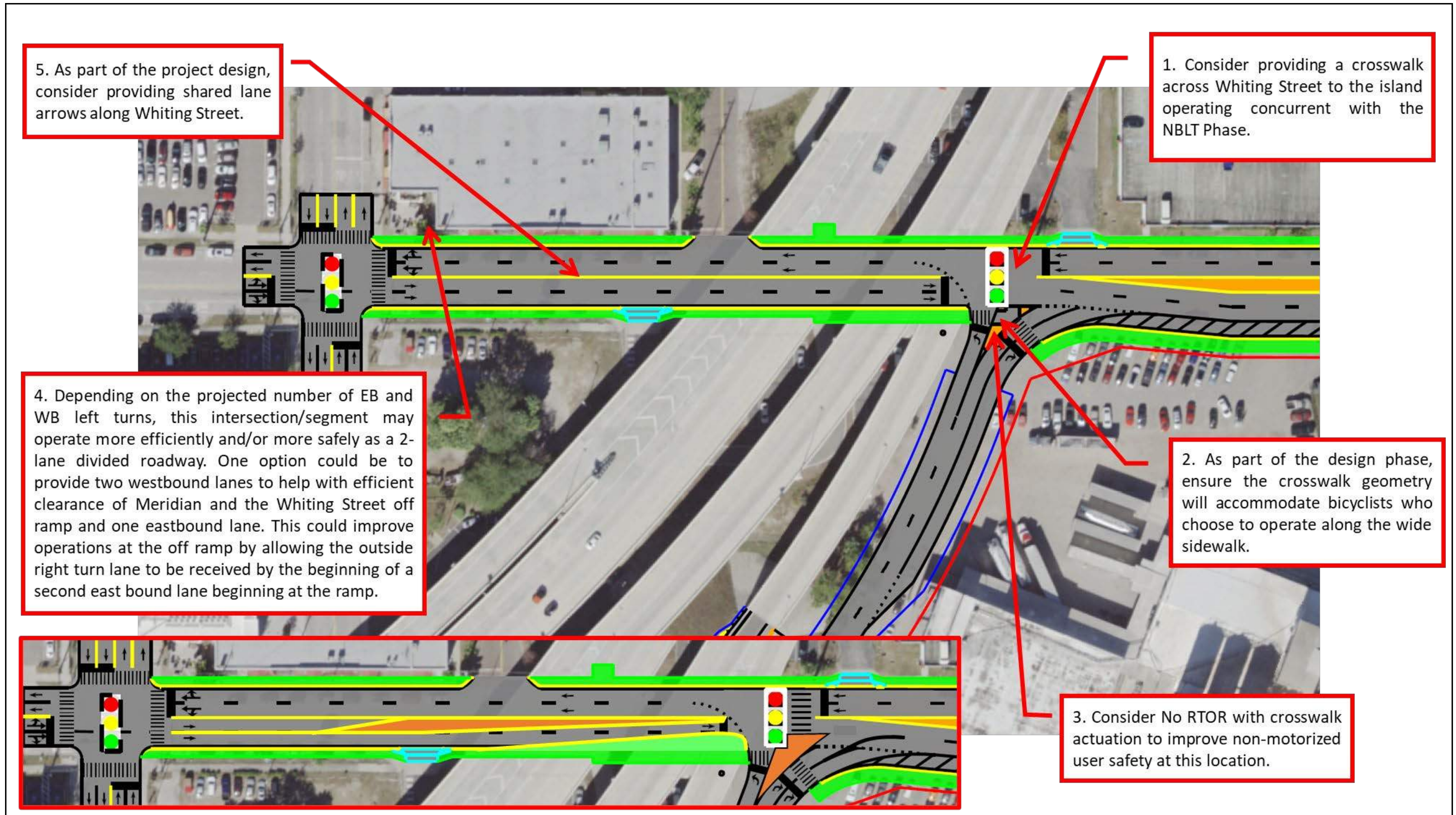


Figure 3: Mobility and Safety Qualitative Assessment - Whiting Street Ramp



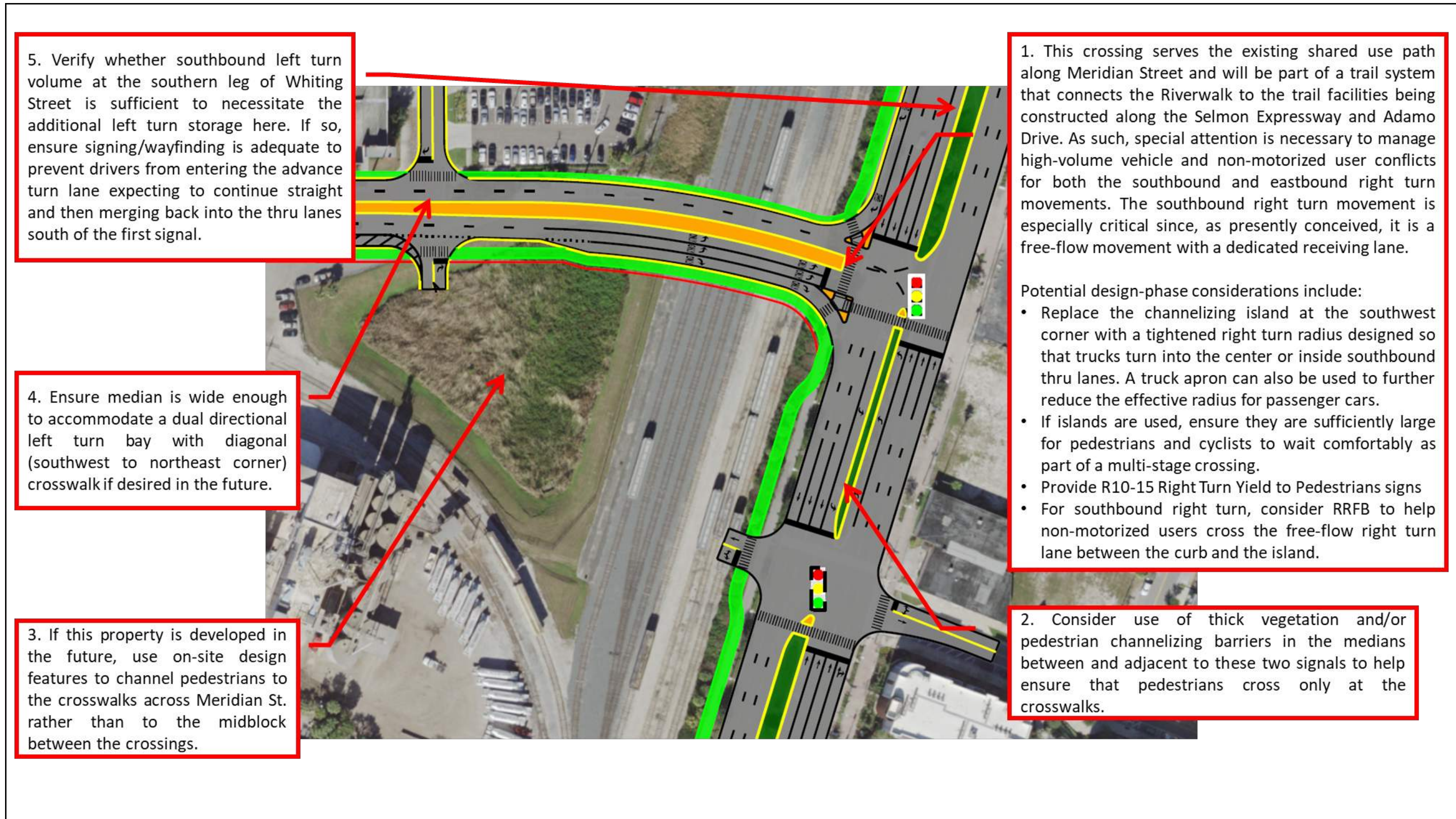


Figure 4: Mobility and Safety Qualitative Assessment - Meridian Avenue Connection

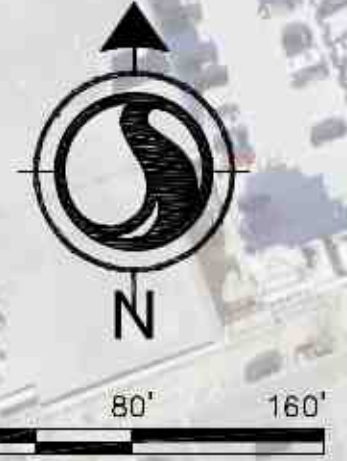


# Appendix H

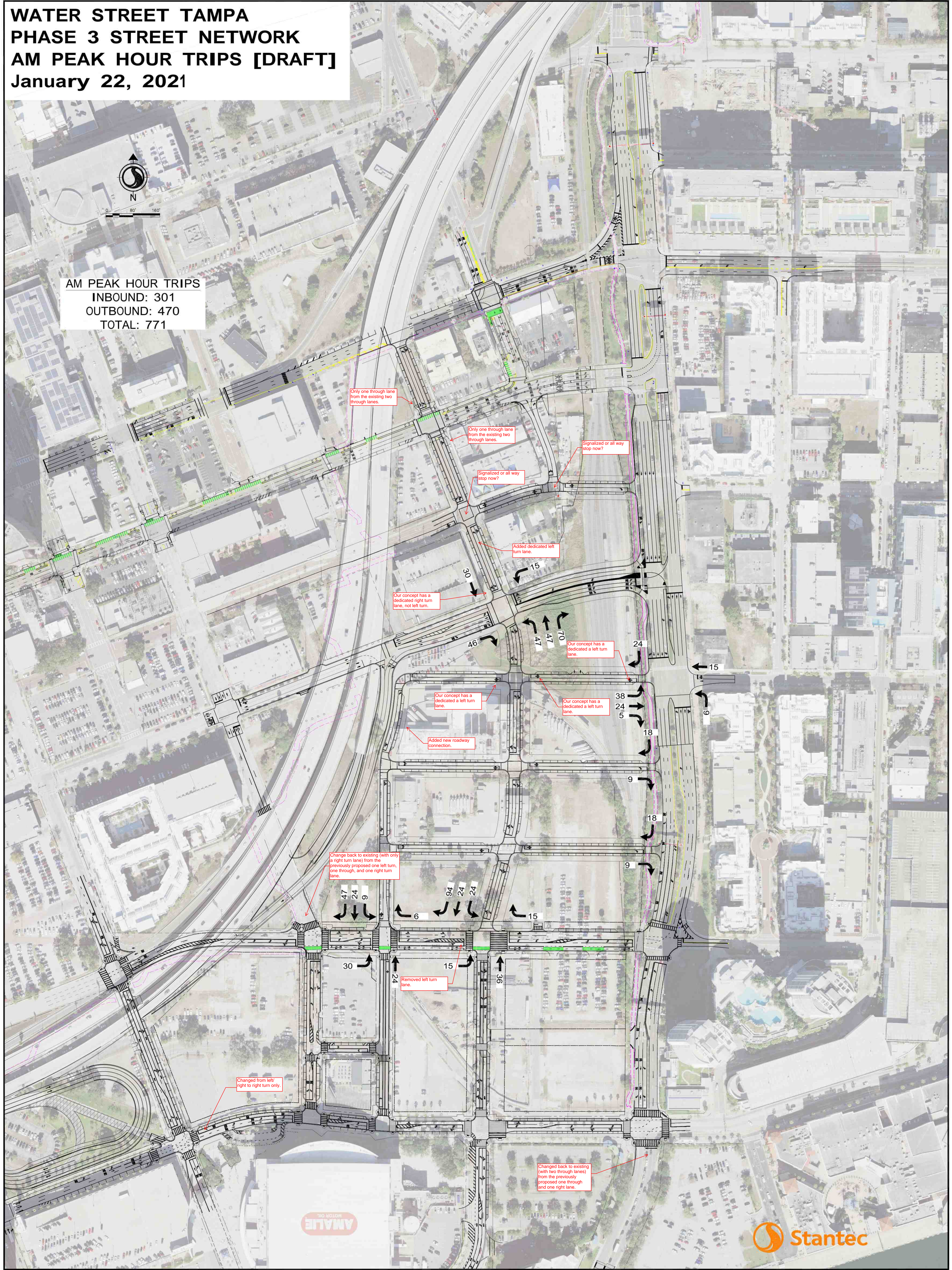
SPP Concepts



# WATER STREET TAMPA PHASE 3 STREET NETWORK AM PEAK HOUR TRIPS [DRAFT] January 22, 2021



AM PEAK HOUR TRIPS  
INBOUND: 301  
OUTBOUND: 470  
TOTAL: 771

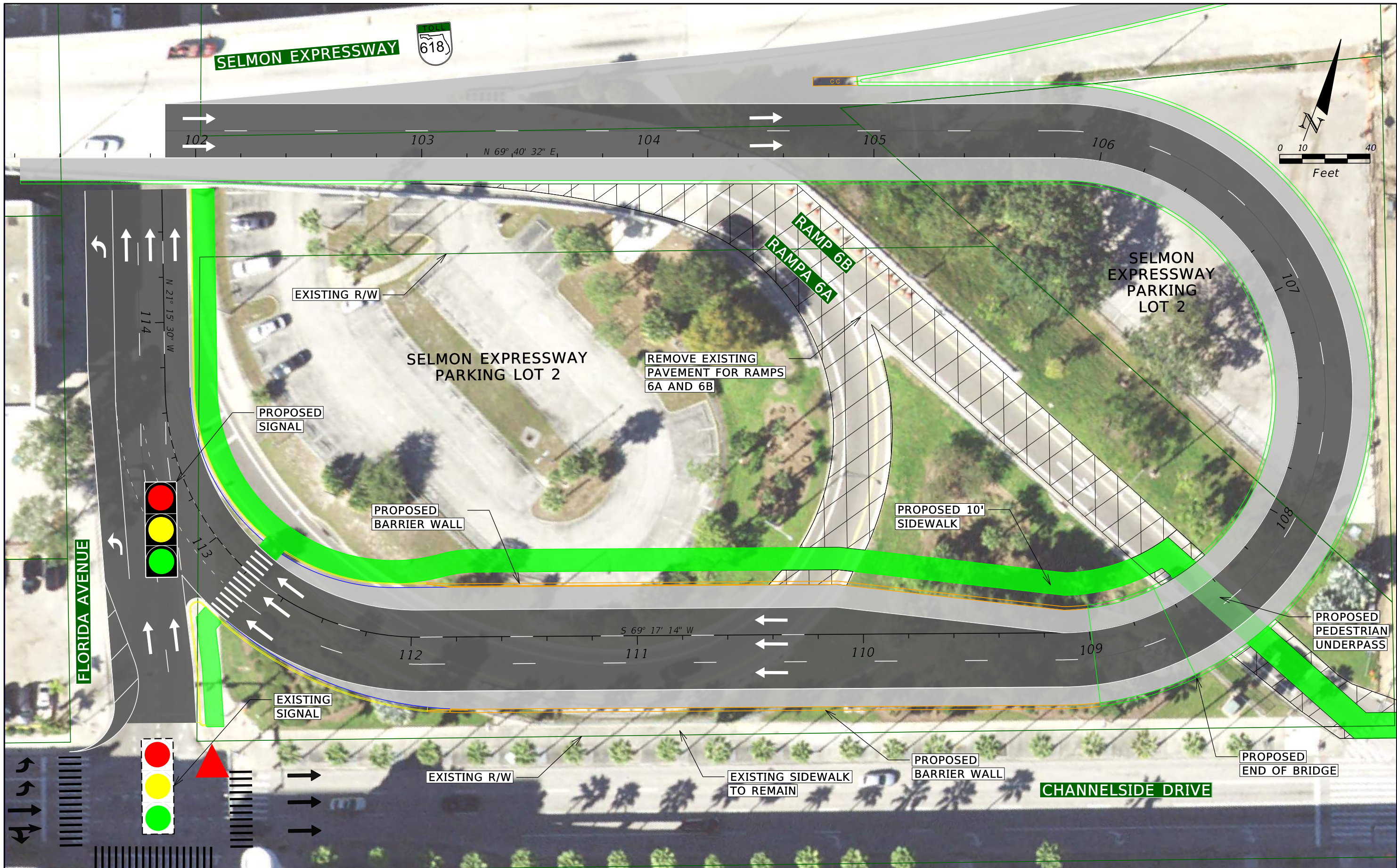




# Appendix I

Preferred Alternative Concept Plans





LEGEND	
	Sidewalk
	Roadway Pavement
	Grass
	Traffic Separator/ Raised Median
	Proposed Maintenance Agreement
	Proposed Roadway Limits of Construction
	Existing ROW
	Proposed ROW
	Wall Barrier
	Bridge
	Curb
	Ramp Shoulder
	Pavement Removal
	High Level Contamination
	Medium Level Contamination

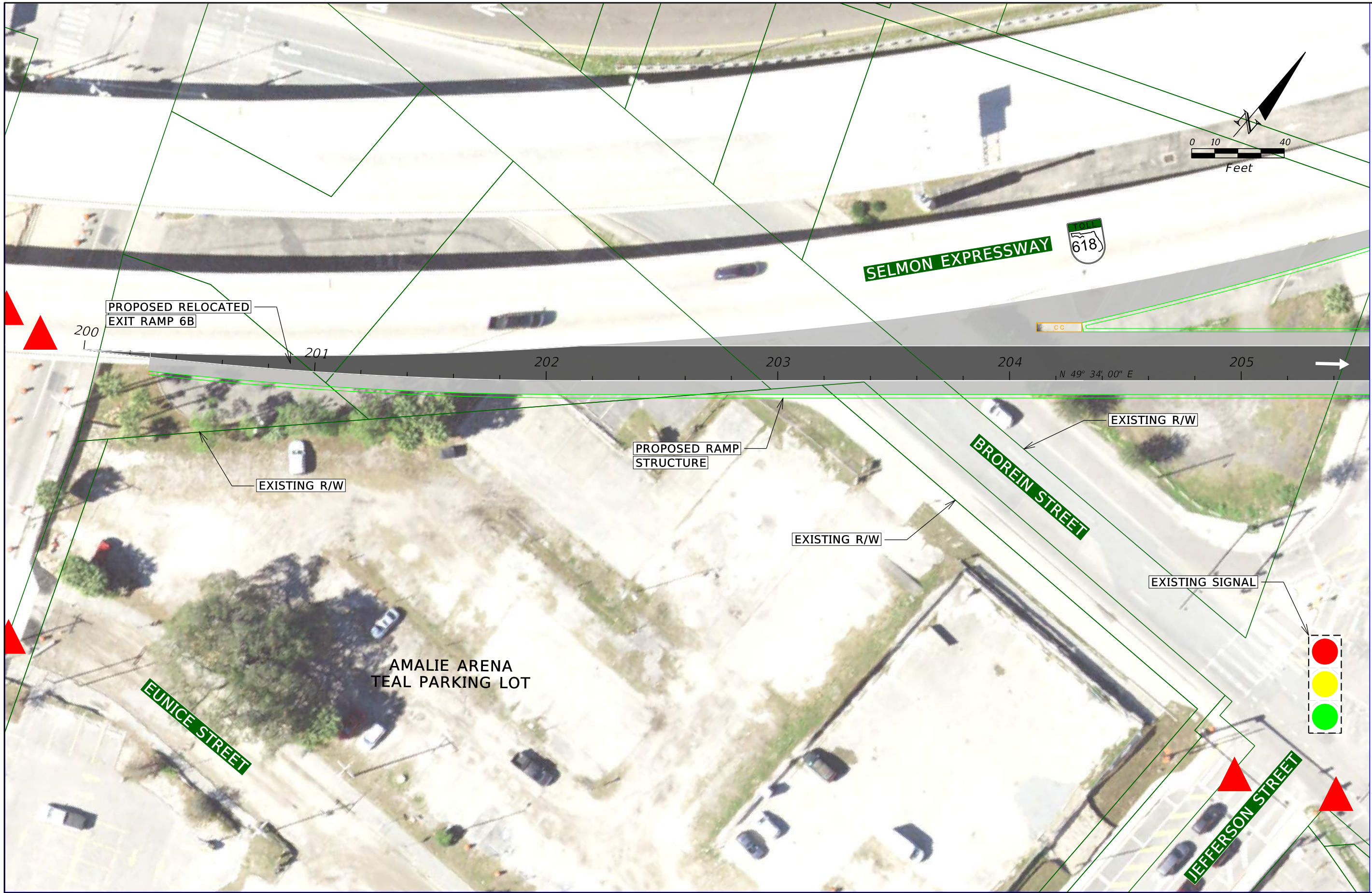
H.W. LOCHNER, INC.  
 4350 W. CYPRESS STREET - SUITE 800  
 TAMPA, FL 33607  
 CERTIFICATE OF AUTHORIZATION #894

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY		
ROAD NO.	COUNTY	FINANCIAL PROJCT ID
SR 618	HILLSBOROUGH	HI-0141

*PREFERRED ALTERNATIVE  
 CONCEPT PLAN SHEET*

SHEET NO.  
 1





AMALIE ARENA  
TEAL PARKING LOT

LEGEND	Sidewalk	Proposed Maintenance Agreement	Wall Barrier	Pavement Removal
	Roadway Pavement	Proposed Roadway Limits of Construction	Bridge	High Level Contamination
	Grass	Existing ROW	Curb	Medium Level Contamination
	Traffic Separator/Raised Median	Proposed ROW	Ramp Shoulder	

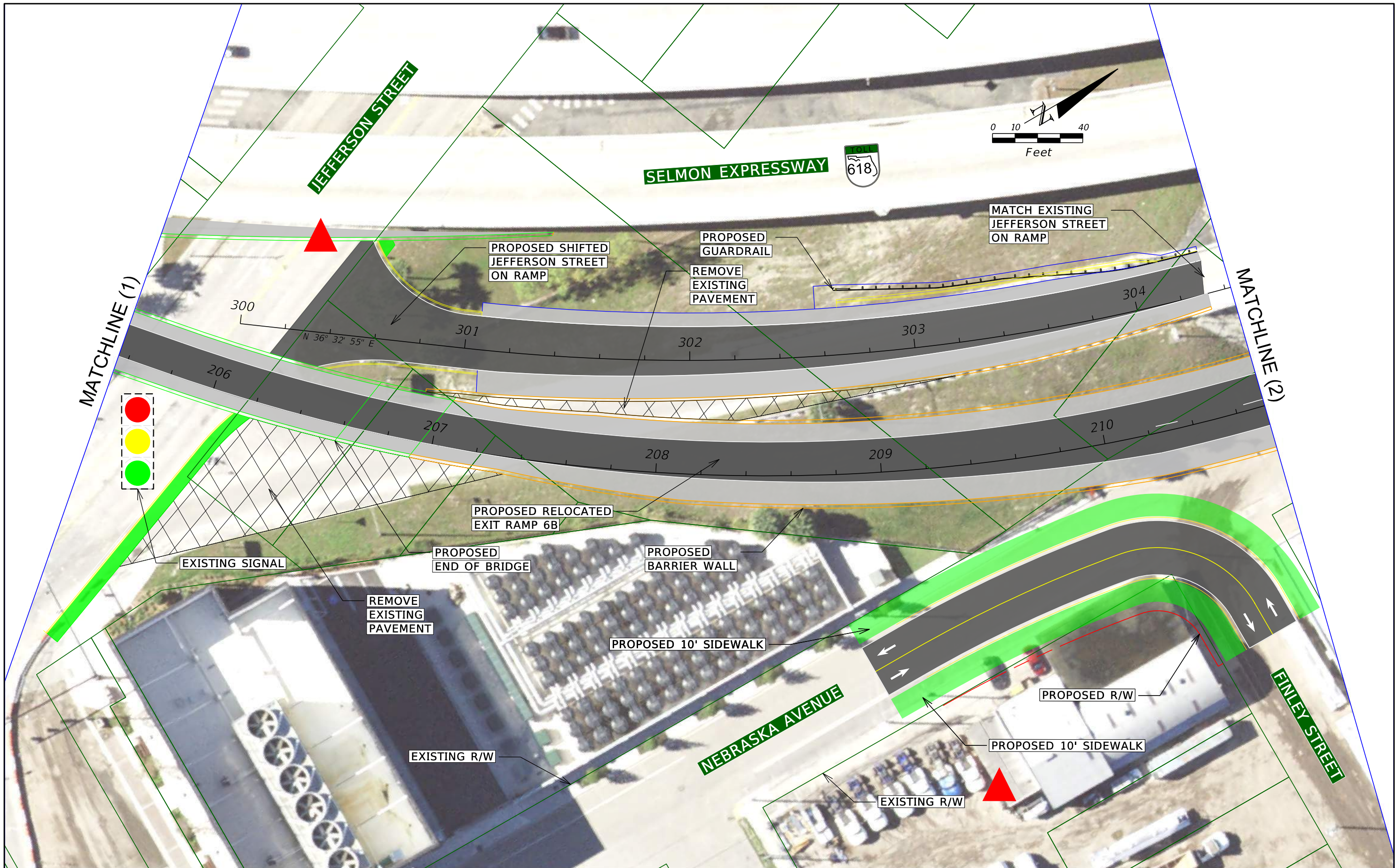
H.W. LOCHNER, INC.  
4350 W. CYPRESS STREET - SUITE 800  
TAMPA, FL 33607  
CERTIFICATE OF AUTHORIZATION #894

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY		
ROAD NO.	COUNTY	FINANCIAL PROJCT ID
SR 618	HILLSBOROUGH	HI-0141

**PREFERRED ALTERNATIVE  
CONCEPT PLAN SHEET**

SHEET NO.  
**2**





LEGEND	
	Sidewalk
	Roadway Pavement
	Grass
	Traffic Separator/ Raised Median
	Proposed Maintenance Agreement
	Proposed Roadway Limits of Construction
	Existing ROW
	Proposed ROW
	Wall Barrier
	Bridge
	Curb
	Ramp Shoulder
	Pavement Removal
	High Level Contamination
	Medium Level Contamination

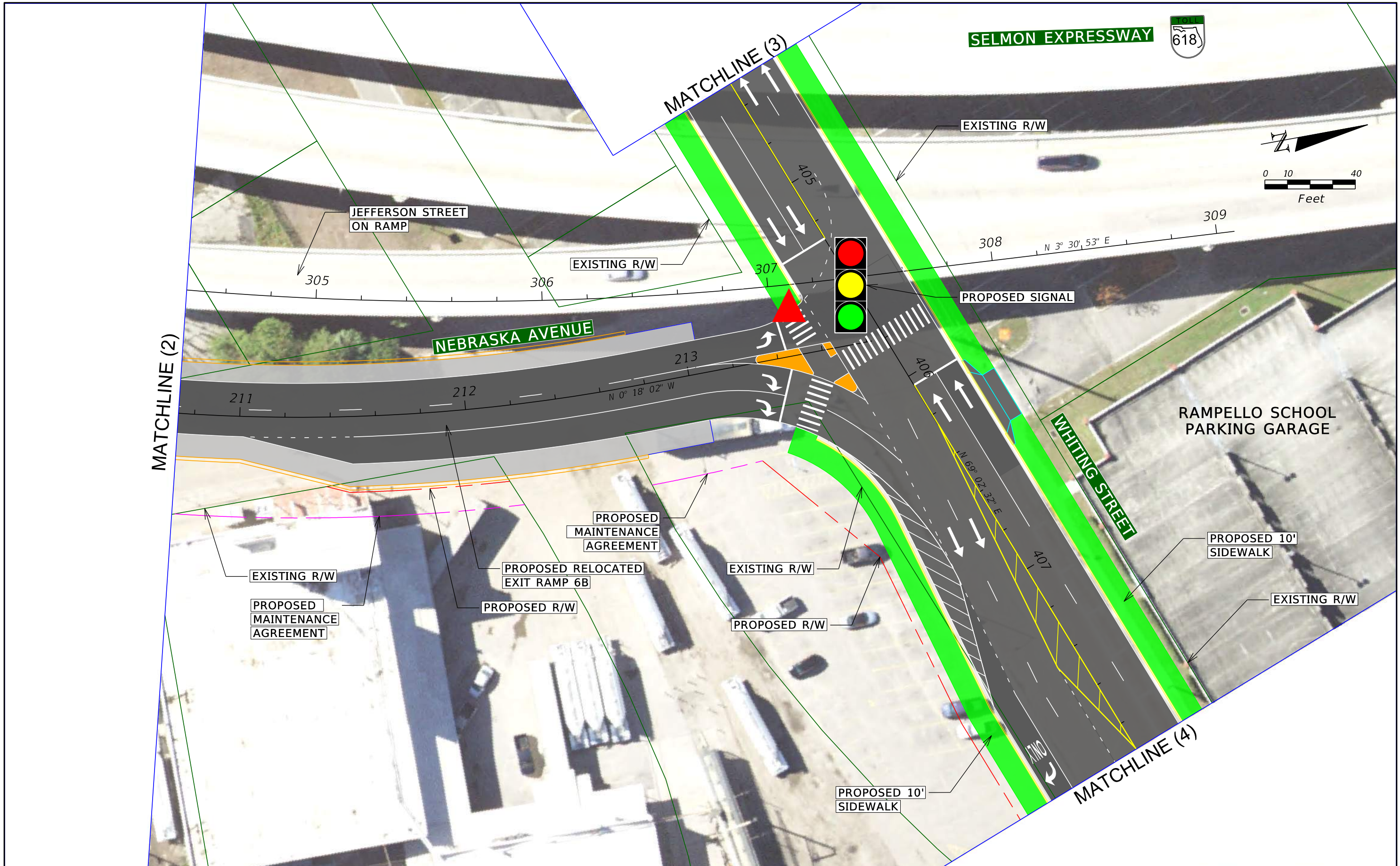
H.W. LOCHNER, INC.  
 4350 W. CYPRESS STREET - SUITE 800  
 TAMPA, FL 33607  
 CERTIFICATE OF AUTHORIZATION #894

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY		
ROAD NO.	COUNTY	FINANCIAL PROJCT ID
SR 618	HILLSBOROUGH	HI-0141

**PREFERRED ALTERNATIVE  
 CONCEPT PLAN SHEET**

SHEET NO.  
**3**





<b>LEGEND</b>	Sidewalk	Proposed Maintenance Agreement	Wall Barrier	Pavement Removal
	Roadway Pavement	Proposed Roadway Limits of Construction	Bridge	High Level Contamination
	Grass	Existing ROW	Curb	Medium Level Contamination
	Traffic Separator/Raised Median	Proposed ROW	Ramp Shoulder	

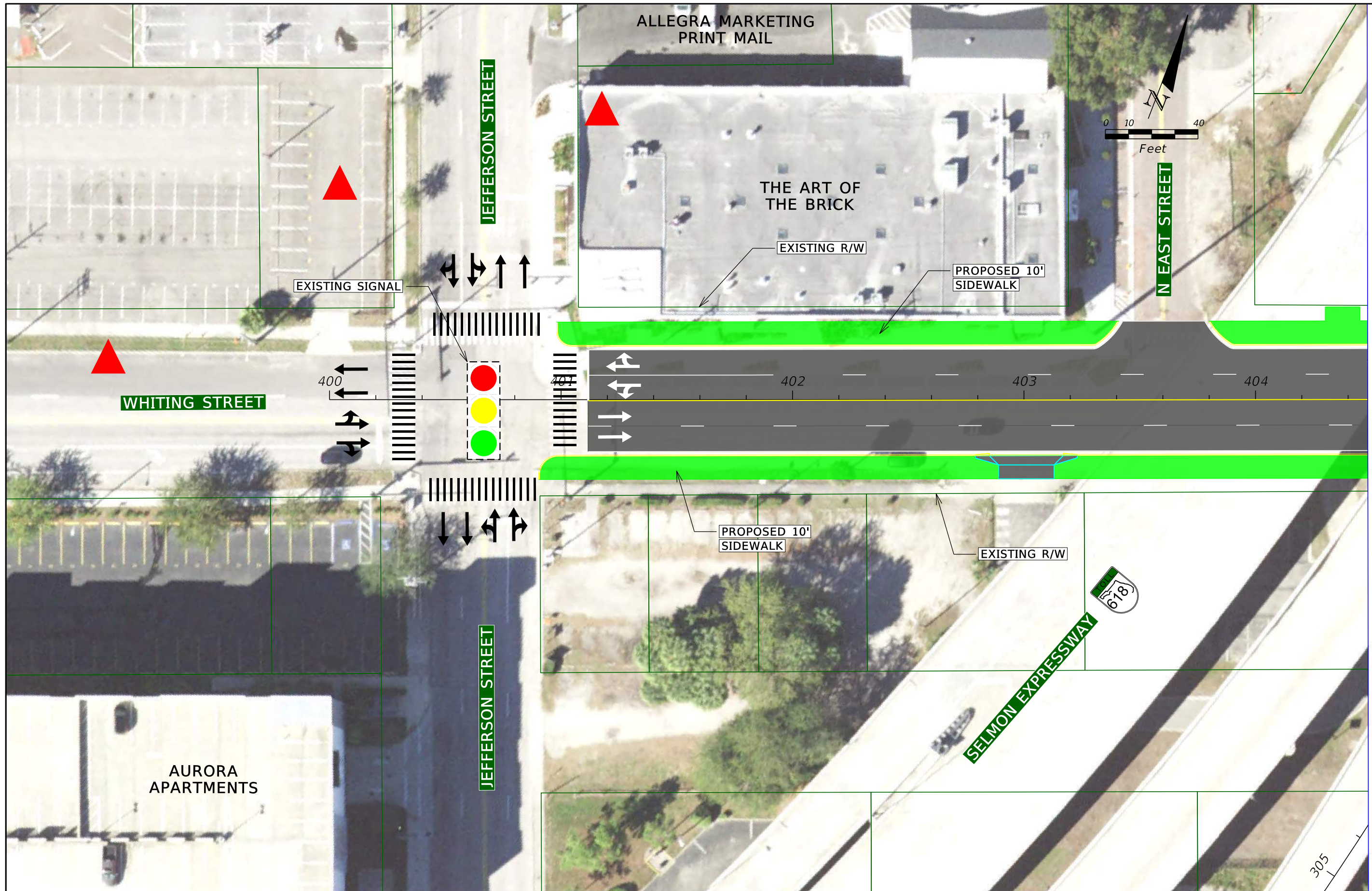
H.W. LOCHNER, INC.  
 4350 W. CYPRESS STREET - SUITE 800  
 TAMPA, FL 33607  
 CERTIFICATE OF AUTHORIZATION #894

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY		
ROAD NO.	COUNTY	FINANCIAL PROJCT ID
SR 618	HILLSBOROUGH	HI-0141

**PREFERRED ALTERNATIVE  
 CONCEPT PLAN SHEET**

SHEET NO.  
**4**





MATCHLINE (3)

<b>LEGEND</b>	Sidewalk	Proposed Maintenance Agreement	Wall Barrier	Pavement Removal
	Roadway Pavement	Proposed Roadway Limits of Construction	Bridge	High Level Contamination
	Grass	Existing ROW	Curb	Medium Level Contamination
	Traffic Separator/Raised Median	Proposed ROW	Ramp Shoulder	

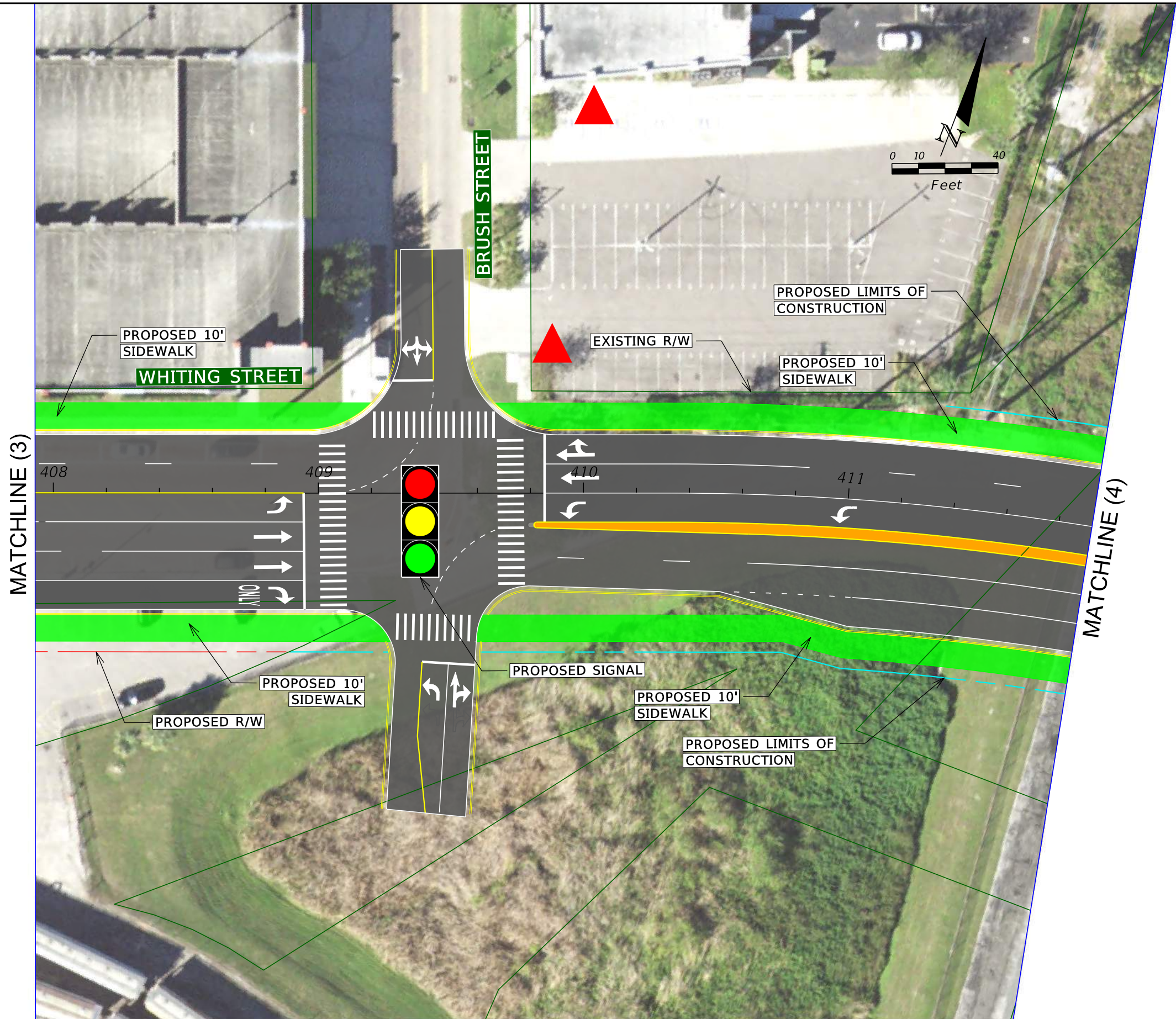
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 CERTIFICATE OF AUTHORIZATION #894

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY		
ROAD NO.	COUNTY	FINANCIAL PROJ ID
SR 618	HILLSBOROUGH	HI-0141

*PREFERRED ALTERNATIVE  
 CONCEPT PLAN SHEET*

SHEET NO.  
 5





LEGEND	
	Sidewalk
	Roadway Pavement
	Grass
	Traffic Separator/ Raised Median
	Proposed Maintenance Agreement
	Proposed Roadway Limits of Construction
	Existing ROW
	Proposed ROW
	Wall Barrier
	Bridge
	Curb
	Ramp Shoulder
	Pavement Removal
	High Level Contamination
	Medium Level Contamination

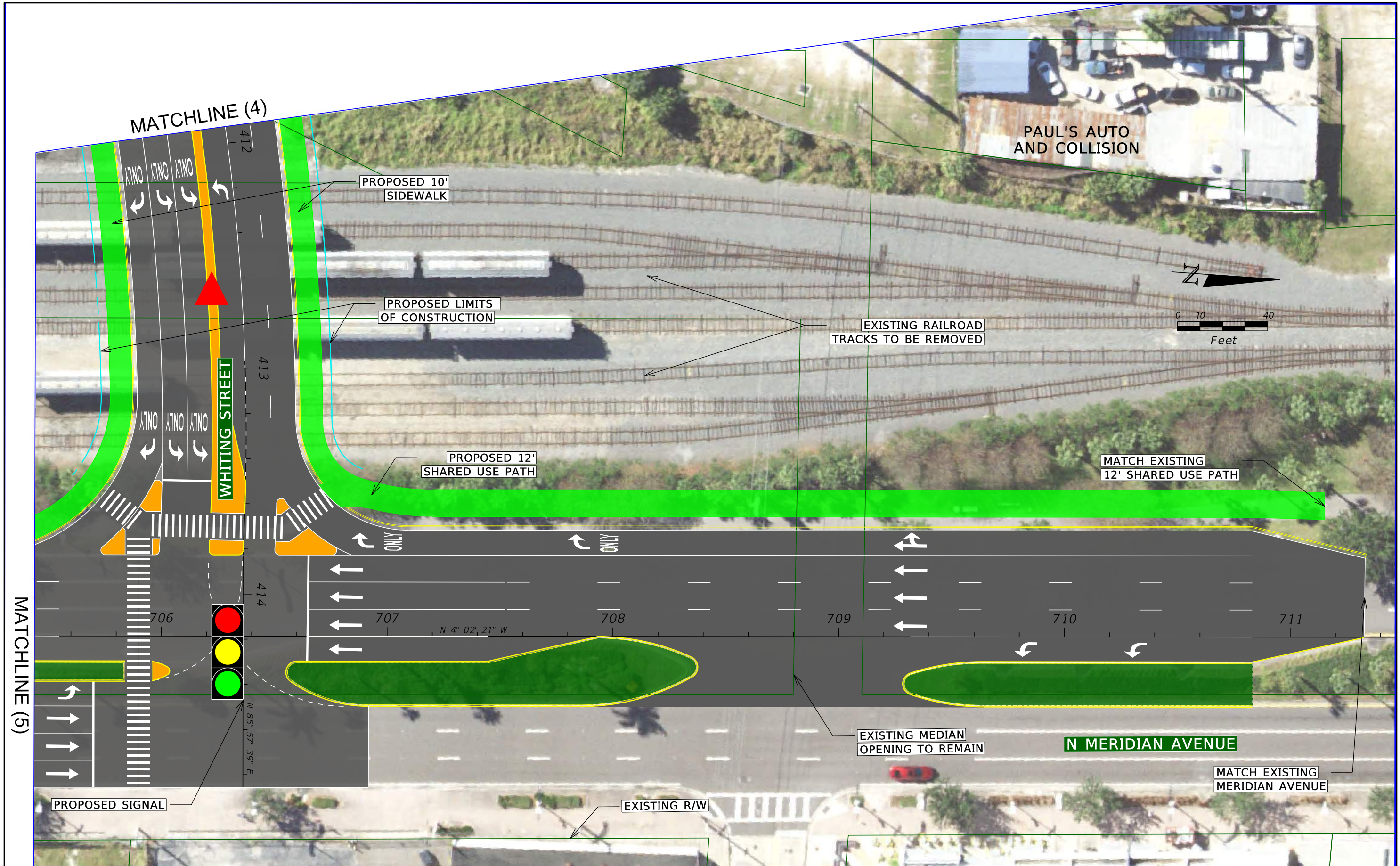
H.W. LOCHNER, INC.  
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 TAMPA, FL 33607  
 CERTIFICATE OF AUTHORIZATION #894

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY		
ROAD NO.	COUNTY	FINANCIAL PROJCT ID
SR 618	HILLSBOROUGH	HI-0141

**PREFERRED ALTERNATIVE  
 CONCEPT PLAN SHEET**

SHEET NO.  
**6**





LEGEND	
	Sidewalk
	Roadway Pavement
	Grass
	Traffic Separator/ Raised Median
	Proposed Maintenance Agreement
	Proposed Roadway Limits of Construction
	Existing ROW
	Proposed ROW
	Wall Barrier
	Bridge
	Curb
	Ramp Shoulder
	Pavement Removal
	High Level Contamination
	Medium Level Contamination

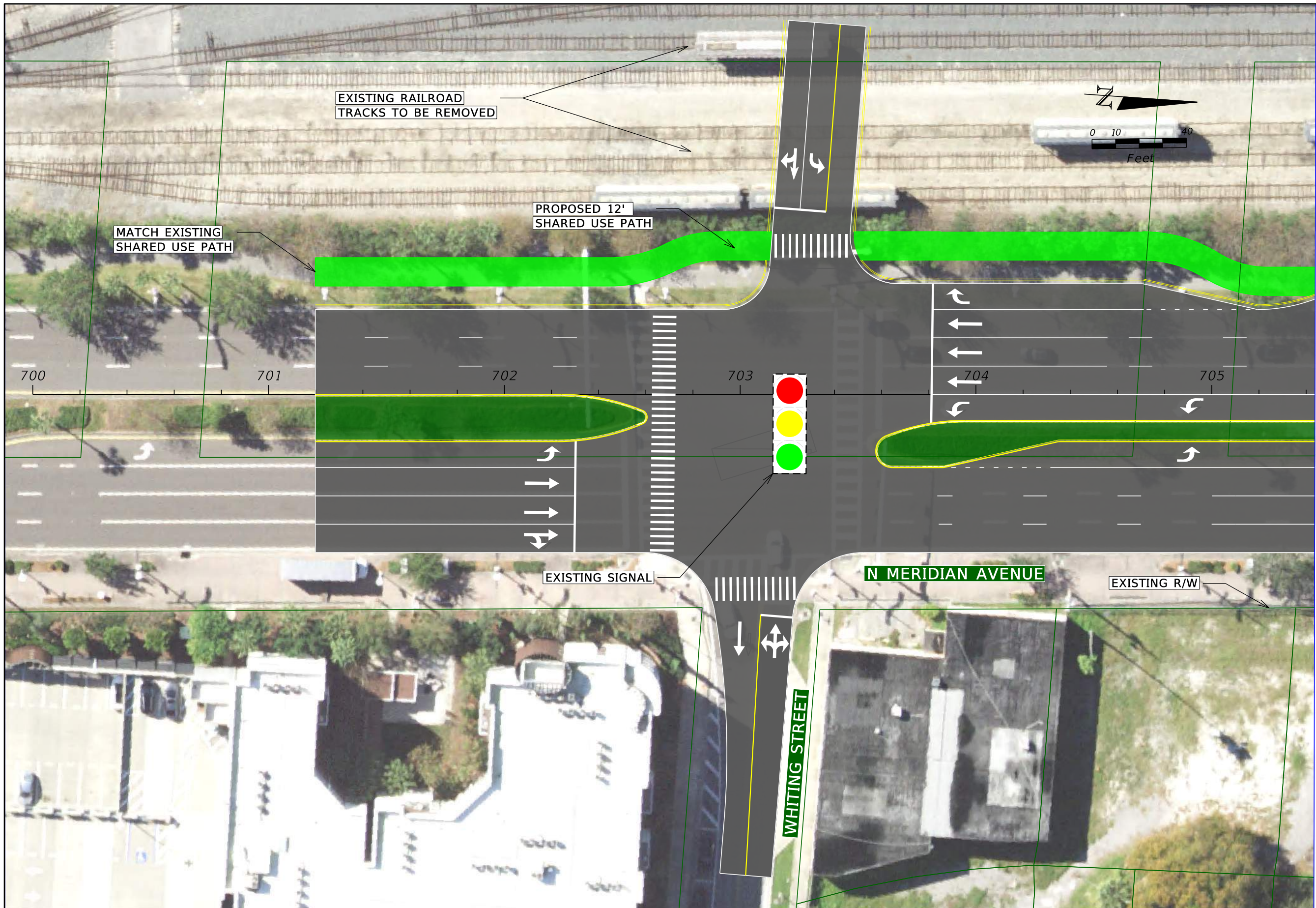
H.W. LOCHNER, INC.  
 4350 W. CYPRESS STREET - SUITE 800  
 TAMPA, FL 33607  
 CERTIFICATE OF AUTHORIZATION #894

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY		
ROAD NO.	COUNTY	FINANCIAL PROJ. ID
SR 618	HILLSBOROUGH	HI-0141

**PREFERRED ALTERNATIVE  
 CONCEPT PLAN SHEET**

SHEET NO.  
**7**





MATCHLINE (5)

LEGEND	
	Sidewalk
	Roadway Pavement
	Grass
	Traffic Separator/ Raised Median
	Proposed Maintenance Agreement
	Proposed Roadway Limits of Construction
	Existing ROW
	Proposed ROW
	Wall Barrier
	Bridge
	Curb
	Ramp Shoulder
	Pavement Removal
	High Level Contamination
	Medium Level Contamination

H.W. LOCHNER, INC.  
 4350 W. CYPRESS STREET - SUITE 800  
 TAMPA, FL 33607  
 CERTIFICATE OF AUTHORIZATION #894

TAMPA HILLSBOROUGH EXPRESSWAY AUTHORITY		
ROAD NO.	COUNTY	FINANCIAL PROJCT ID
SR 618	HILLSBOROUGH	HI-0141

**PREFERRED ALTERNATIVE  
 CONCEPT PLAN SHEET**

SHEET NO.  
**8**



















# Appendix J

No-Build Alternative Analysis



HCM Signalized Intersection Capacity Analysis  
 114: Florida Ave & Channelside Dr

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	847	1116	368	0	0	0	0	202	62	0	0	0
Future Volume (vph)	847	1116	368	0	0	0	0	202	62	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0						5.7	5.7			
Lane Util. Factor	0.86	0.86						0.95	1.00			
Frt	1.00	0.97						1.00	0.85			
Flt Protected	0.95	0.99						1.00	1.00			
Satd. Flow (prot)	1522	4619						3539	1583			
Flt Permitted	0.95	0.99						1.00	1.00			
Satd. Flow (perm)	1522	4619						3539	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	921	1213	400	0	0	0	0	220	67	0	0	0
RTOR Reduction (vph)	118	47	0	0	0	0	0	0	50	0	0	0
Lane Group Flow (vph)	517	1852	0	0	0	0	0	220	17	0	0	0
Turn Type	Split	NA						NA	Perm			
Protected Phases	6	6						4				
Permitted Phases									4			
Actuated Green, G (s)	93.0	93.0						35.3	35.3			
Effective Green, g (s)	93.0	93.0						35.3	35.3			
Actuated g/C Ratio	0.66	0.66						0.25	0.25			
Clearance Time (s)	6.0	6.0						5.7	5.7			
Vehicle Extension (s)	3.0	3.0						3.0	3.0			
Lane Grp Cap (vph)	1011	3068						892	399			
v/s Ratio Prot	0.34	c0.40						c0.06				
v/s Ratio Perm									0.01			
v/c Ratio	0.51	0.60						0.25	0.04			
Uniform Delay, d1	11.9	13.2						41.7	39.6			
Progression Factor	1.00	1.00						1.00	1.00			
Incremental Delay, d2	1.8	0.9						0.7	0.2			
Delay (s)	13.8	14.1						42.4	39.8			
Level of Service	B	B						D	D			
Approach Delay (s)		14.0			0.0			41.8			0.0	
Approach LOS		B			A			D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			16.8					HCM 2000 Level of Service		B		
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		11.7		
Intersection Capacity Utilization			101.7%					ICU Level of Service		G		
Analysis Period (min)			15									

c Critical Lane Group

# Queues

## 114: Florida Ave & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	635	1899	220	67
v/c Ratio	0.56	0.61	0.25	0.15
Control Delay	7.0	13.1	42.6	9.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.0	13.1	42.6	9.7
Queue Length 50th (ft)	131	325	84	0
Queue Length 95th (ft)	237	370	122	39
Internal Link Dist (ft)		924	937	
Turn Bay Length (ft)				
Base Capacity (vph)	1129	3116	892	449
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.56	0.61	0.25	0.15
<b>Intersection Summary</b>				

HCM Signalized Intersection Capacity Analysis  
 115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBR2	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations												
Traffic Volume (vph)	306	827	45	77	463	86	4	12	65	143	514	35
Future Volume (vph)	306	827	45	77	463	86	4	12	65	143	514	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.2		5.9	5.9	5.9	5.9	5.9	5.9		6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.85	1.00	0.85	1.00	1.00		0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	1.00	0.95	1.00		0.95	
Satd. Flow (prot)	1770	3512		1770	1583	1863	1583	1770	1863		1766	
Flt Permitted	0.95	1.00		0.30	1.00	1.00	1.00	0.66	1.00		0.95	
Satd. Flow (perm)	1770	3512		562	1583	1863	1583	1237	1863		1766	
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)	333	899	49	84	503	93	4	13	71	155	559	38
RTOR Reduction (vph)	0	3	0	0	216	0	4	0	0	0	0	0
Lane Group Flow (vph)	333	945	0	84	287	93	0	13	71	0	752	0
Turn Type	pm+pt	NA		Perm	Perm	NA	Perm	Perm	NA	Prot	Prot	
Protected Phases	1	6				4			8	9	9	
Permitted Phases	6			2	2		4	8				
Actuated Green, G (s)	68.8	68.8		47.1	47.1	17.1	17.1	17.1	17.1		35.4	
Effective Green, g (s)	68.8	68.8		47.1	47.1	17.1	17.1	17.1	17.1		35.4	
Actuated g/C Ratio	0.49	0.49		0.34	0.34	0.12	0.12	0.12	0.12		0.25	
Clearance Time (s)	5.5	6.2		5.9	5.9	5.9	5.9	5.9	5.9		6.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		4.5	
Lane Grp Cap (vph)	869	1725		189	532	227	193	151	227		446	
v/s Ratio Prot	0.05	c0.27				c0.05			0.04		c0.43	
v/s Ratio Perm	0.14			0.15	0.18		0.00	0.01				
v/c Ratio	0.38	0.55		0.44	0.54	0.41	0.00	0.09	0.31		1.69	
Uniform Delay, d1	22.3	24.8		36.2	37.7	56.8	54.0	54.5	56.1		52.3	
Progression Factor	0.95	0.91		0.59	1.37	1.00	1.00	0.66	0.68		1.00	
Incremental Delay, d2	1.0	1.0		5.5	2.9	5.4	0.0	0.9	3.0		318.4	
Delay (s)	22.2	23.6		26.7	54.6	62.2	54.0	37.1	40.9		370.7	
Level of Service	C	C		C	D	E	D	D	D		F	
Approach Delay (s)		23.3				61.8			40.3		370.7	
Approach LOS		C				E			D		F	

Intersection Summary

HCM 2000 Control Delay	124.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.9
Intersection Capacity Utilization	94.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Queues

115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/20/2022



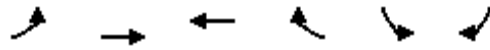
Lane Group	EBL	EBT	WBL	WBR2	NBT	NBR	SBL	SBT	SEL
Lane Group Flow (vph)	333	948	84	503	93	4	13	71	752
v/c Ratio	0.38	0.55	0.44	0.67	0.41	0.01	0.09	0.31	1.69
Control Delay	22.1	23.7	27.8	22.0	62.8	0.0	37.5	41.3	351.2
Queue Delay	0.5	0.3	0.0	11.9	96.0	0.0	0.0	0.0	619.2
Total Delay	22.6	24.0	27.8	33.9	158.8	0.0	37.5	41.3	970.5
Queue Length 50th (ft)	142	217	61	252	79	0	11	64	~999
Queue Length 95th (ft)	210	281	m100	475	138	0	m22	m122	#1247
Internal Link Dist (ft)		523			969			424	319
Turn Bay Length (ft)				10			100		
Base Capacity (vph)	878	1728	189	748	227	297	151	227	446
Starvation Cap Reductn	0	253	0	222	0	0	0	0	0
Spillback Cap Reductn	229	0	0	198	175	0	0	0	446
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.64	0.44	0.96	1.79	0.01	0.09	0.31	752.00

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 116: Channelside Dr & Jefferson St

01/20/2022

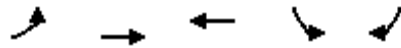


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↖	↗
Traffic Volume (veh/h)	351	1005	509	151	5	31
Future Volume (veh/h)	351	1005	509	151	5	31
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	382	1092	553	164	5	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	531	1488	776	230	218	194
Arrive On Green	0.06	0.26	0.18	0.18	0.12	0.12
Sat Flow, veh/h	1781	1870	1386	411	1781	1585
Grp Volume(v), veh/h	382	1092	0	717	5	34
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1796	1781	1585
Q Serve(g_s), s	14.4	74.7	0.0	52.5	0.3	2.7
Cycle Q Clear(g_c), s	14.4	74.7	0.0	52.5	0.3	2.7
Prop In Lane	1.00			0.23	1.00	1.00
Lane Grp Cap(c), veh/h	531	1488	0	1006	218	194
V/C Ratio(X)	0.72	0.73	0.00	0.71	0.02	0.18
Avail Cap(c_a), veh/h	531	1488	0	1006	218	194
HCM Platoon Ratio	0.33	0.33	0.33	0.33	1.00	1.00
Upstream Filter(l)	0.09	0.09	0.00	0.58	0.09	0.09
Uniform Delay (d), s/veh	35.5	38.1	0.0	46.5	54.1	55.1
Incr Delay (d2), s/veh	0.8	0.3	0.0	2.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	37.3	0.0	26.0	0.2	1.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	36.3	38.4	0.0	49.0	54.1	55.3
LnGrp LOS	D	D	A	D	D	E
Approach Vol, veh/h		1474	717		39	
Approach Delay, s/veh		37.8	49.0		55.2	
Approach LOS		D	D		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	33.0	84.4			117.4	22.6
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	27.0	78.4			111.4	17.1
Max Q Clear Time (g_c+I1), s	16.4	54.5			76.7	4.7
Green Ext Time (p_c), s	0.9	5.1			11.3	0.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			41.7			
HCM 6th LOS			D			

# Queues

## 116: Channelside Dr & Jefferson St

01/20/2022



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	382	1092	717	5	34
v/c Ratio	0.67	0.74	0.70	0.02	0.15
Control Delay	24.2	8.2	12.7	39.4	26.2
Queue Delay	0.9	6.3	13.0	0.0	0.0
Total Delay	25.2	14.5	25.7	39.4	26.2
Queue Length 50th (ft)	142	259	358	5	19
Queue Length 95th (ft)	m151	m219	514	m5	m17
Internal Link Dist (ft)		315	140	434	
Turn Bay Length (ft)				100	
Base Capacity (vph)	569	1482	1018	216	223
Starvation Cap Reductn	51	338	287	0	0
Spillback Cap Reductn	0	9	240	0	3
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.74	0.95	0.98	0.02	0.15

### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



HCM 6th Signalized Intersection Summary  
 117: Channelside Dr & Nebraska Ave

01/20/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	161	844	553	238	27	107
Future Volume (veh/h)	161	844	553	238	27	107
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	175	917	601	259	29	116
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	663	1483	788	340	40	161
Arrive On Green	0.23	1.00	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1781	1870	1240	534	322	1289
Grp Volume(v), veh/h	175	917	0	860	146	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1774	1622	0
Q Serve(g_s), s	3.5	0.0	0.0	0.0	12.1	0.0
Cycle Q Clear(g_c), s	3.5	0.0	0.0	0.0	12.1	0.0
Prop In Lane	1.00			0.30	0.20	0.79
Lane Grp Cap(c), veh/h	663	1483	0	1128	203	0
V/C Ratio(X)	0.26	0.62	0.00	0.76	0.72	0.00
Avail Cap(c_a), veh/h	663	1483	0	1128	203	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.60	0.60	0.00	0.35	0.18	0.00
Uniform Delay (d), s/veh	3.8	0.0	0.0	0.0	58.9	0.0
Incr Delay (d2), s/veh	0.6	1.2	0.0	1.8	4.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.5	0.0	0.6	5.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.3	1.2	0.0	1.8	62.9	0.0
LnGrp LOS	A	A	A	A	E	A
Approach Vol, veh/h		1092	860		146	
Approach Delay, s/veh		1.7	1.8		62.9	
Approach LOS		A	A		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	22.0	95.0			117.0	23.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	16.0	89.0			111.0	17.5
Max Q Clear Time (g_c+I1), s	5.5	2.0			2.0	14.1
Green Ext Time (p_c), s	0.3	8.1			8.7	0.1
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			6.0			
HCM 6th LOS			A			

# Queues

## 117: Channelside Dr & Nebraska Ave

01/20/2022



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	175	917	860	145
v/c Ratio	0.41	0.62	0.75	0.47
Control Delay	4.9	3.4	4.3	16.5
Queue Delay	0.9	1.1	9.8	1.5
Total Delay	5.8	4.5	14.1	18.0
Queue Length 50th (ft)	15	80	33	36
Queue Length 95th (ft)	m33	138	m60	m84
Internal Link Dist (ft)		140	194	464
Turn Bay Length (ft)	80			
Base Capacity (vph)	423	1477	1146	307
Starvation Cap Reductn	91	310	153	0
Spillback Cap Reductn	0	125	261	59
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.79	0.97	0.58

### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 119: Old Water St & Channelside Dr

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	748	28	93	768	169	7	33	20	37	5	17
Future Volume (veh/h)	95	748	28	93	768	169	7	33	20	37	5	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	103	813	30	101	835	184	8	36	22	40	5	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	557	1261	47	685	1119	246	206	134	82	177	44	159
Arrive On Green	0.23	1.00	1.00	0.32	1.00	1.00	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1781	1792	66	1781	1484	327	1388	1087	664	1345	356	1283
Grp Volume(v), veh/h	103	0	843	101	0	1019	8	0	58	40	0	23
Grp Sat Flow(s),veh/h/ln	1781	0	1858	1781	0	1811	1388	0	1751	1345	0	1639
Q Serve(g_s), s	2.6	0.0	0.0	0.0	0.0	0.0	0.7	0.0	4.2	3.9	0.0	1.7
Cycle Q Clear(g_c), s	2.6	0.0	0.0	0.0	0.0	0.0	2.5	0.0	4.2	8.1	0.0	1.7
Prop In Lane	1.00		0.04	1.00		0.18	1.00		0.38	1.00		0.78
Lane Grp Cap(c), veh/h	557	0	1308	685	0	1365	206	0	216	177	0	203
V/C Ratio(X)	0.18	0.00	0.64	0.15	0.00	0.75	0.04	0.00	0.27	0.23	0.00	0.11
Avail Cap(c_a), veh/h	557	0	1308	685	0	1365	206	0	216	177	0	203
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.77	0.00	0.77	0.37	0.00	0.37	1.00	0.00	1.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	6.8	0.0	0.0	6.1	0.0	0.0	55.6	0.0	55.6	59.3	0.0	54.5
Incr Delay (d2), s/veh	0.6	0.0	1.9	0.2	0.0	1.4	0.4	0.0	3.0	2.9	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.7	0.8	0.0	0.5	0.3	0.0	2.1	1.5	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.4	0.0	1.9	6.3	0.0	1.4	56.0	0.0	58.6	62.2	0.0	55.7
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		946			1120			66				63
Approach Delay, s/veh		2.5			1.9			58.3				59.8
Approach LOS		A			A			E				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.0	112.5		23.0	29.5	105.0		23.0				
Change Period (Y+Rc), s	6.0	6.5		* 5.7	6.5	* 6.5		* 5.7				
Max Green Setting (Gmax), s	16.0	88.5		* 17	6.0	* 99		* 17				
Max Q Clear Time (g_c+I1), s	4.6	2.0		6.2	2.0	2.0		10.1				
Green Ext Time (p_c), s	0.2	11.3		0.2	0.1	7.4		0.1				

Intersection Summary

HCM 6th Ctrl Delay	5.5
HCM 6th LOS	A

Notes

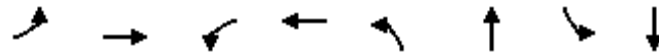
\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Queues

119: Old Water St & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	103	843	101	1019	8	58	40	23
v/c Ratio	0.39	0.65	0.24	0.89	0.05	0.25	0.24	0.11
Control Delay	28.5	9.8	13.5	25.6	55.0	43.0	40.9	13.7
Queue Delay	0.3	0.3	0.0	34.0	0.0	0.0	0.0	0.0
Total Delay	28.8	10.1	13.5	59.6	55.0	43.0	40.9	13.7
Queue Length 50th (ft)	35	225	38	503	7	33	34	8
Queue Length 95th (ft)	m84	301	m41	m514	24	79	m55	m16
Internal Link Dist (ft)		194		425		945		461
Turn Bay Length (ft)	80		100				150	
Base Capacity (vph)	265	1304	423	1150	170	232	165	219
Starvation Cap Reductn	19	103	0	195	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.70	0.24	1.07	0.05	0.25	0.24	0.11

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 118: Beneficial Dr/Meridian Ave & Channelside Dr

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	428	313	65	94	453	95	173	362	65	47	249	403
Future Volume (vph)	428	313	65	94	453	95	173	362	65	47	249	403
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.2		6.2	6.2		6.4	6.4	6.4	6.4	6.4	6.4
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1814		1770	1814		1770	1863	1583	1770	1863	1583
Flt Permitted	0.09	1.00		0.52	1.00		0.30	1.00	1.00	0.53	1.00	1.00
Satd. Flow (perm)	170	1814		971	1814		565	1863	1583	987	1863	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)	465	340	71	102	492	103	188	393	71	51	271	438
RTOR Reduction (vph)	0	6	0	0	5	0	0	0	38	0	0	330
Lane Group Flow (vph)	465	405	0	102	590	0	188	393	33	51	271	108
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6			2			4		4	8		8
Actuated Green, G (s)	61.8	61.8		37.8	37.8		65.6	65.6	65.6	32.6	32.6	32.6
Effective Green, g (s)	61.8	61.8		37.8	37.8		65.6	65.6	65.6	32.6	32.6	32.6
Actuated g/C Ratio	0.44	0.44		0.27	0.27		0.47	0.47	0.47	0.23	0.23	0.23
Clearance Time (s)	6.0	6.2		6.2	6.2		6.4	6.4	6.4	6.4	6.4	6.4
Vehicle Extension (s)	2.0	3.0		3.0	3.0		2.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	280	800		262	489		493	872	741	229	433	368
v/s Ratio Prot	c0.21	0.22			0.33		0.07	c0.21			c0.15	
v/s Ratio Perm	c0.52			0.11			0.11		0.02	0.05		0.07
v/c Ratio	1.66	0.51		0.39	1.21		0.38	0.45	0.04	0.22	0.63	0.29
Uniform Delay, d1	44.0	28.1		41.7	51.1		23.7	25.1	20.2	43.4	48.2	44.2
Progression Factor	0.99	0.68		1.00	1.00		1.00	1.00	1.00	0.88	0.92	5.33
Incremental Delay, d2	309.5	1.8		4.3	110.9		2.2	1.7	0.1	2.1	6.3	1.9
Delay (s)	353.1	20.9		46.0	162.0		25.9	26.7	20.3	40.3	50.7	237.6
Level of Service	F	C		D	F		C	C	C	D	D	F
Approach Delay (s)		197.3			145.0			25.8			157.7	
Approach LOS		F			F			C			F	

Intersection Summary

HCM 2000 Control Delay	137.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	101.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Queues

118: Beneficial Dr/Meridian Ave & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	465	411	102	595	188	393	71	51	271	438
v/c Ratio	1.65	0.51	0.39	1.20	0.38	0.45	0.09	0.22	0.63	0.63
Control Delay	335.8	20.8	47.1	153.0	24.7	27.2	4.5	41.1	51.3	28.1
Queue Delay	0.0	1.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	8.3
Total Delay	335.8	21.8	47.1	153.0	24.9	27.2	4.5	41.1	51.3	36.4
Queue Length 50th (ft)	~582	252	76	~655	100	237	0	44	256	240
Queue Length 95th (ft)	#784	324	135	#890	153	326	27	m91	357	339
Internal Link Dist (ft)		425		125		927			460	
Turn Bay Length (ft)	150		150				400	200		
Base Capacity (vph)	281	806	261	494	493	872	780	229	433	698
Starvation Cap Reductn	0	192	0	0	0	0	0	0	0	84
Spillback Cap Reductn	0	0	0	1	58	0	0	0	0	219
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.65	0.67	0.39	1.21	0.43	0.45	0.09	0.22	0.63	0.91

Intersection Summary

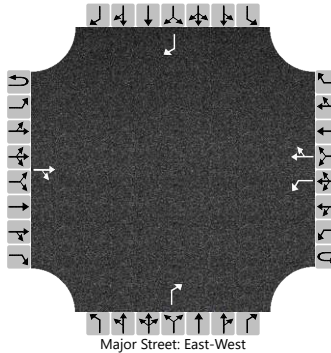
- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	H.W. Lochner	Intersection	ChannelsideDr&12thSt
Agency/Co.		Jurisdiction	FDOT, District 7
Date Performed	09/24/2021	East/West Street	Channelside Dr
Analysis Year	2026	North/South Street	12th St
Time Analyzed	AM Peak Hour	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	1.00
Project Description	Whiting PD&E Study		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	1	1	0		0	0	1		0	0	1
Configuration				TR		L		TR				R				R
Volume (veh/h)			321	103		8	382	1				60				260
Percent Heavy Vehicles (%)						2						2				2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized										No				No		
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)					4.1							6.2				6.2
Critical Headway (sec)					4.12							6.22				6.22
Base Follow-Up Headway (sec)					2.2							3.3				3.3
Follow-Up Headway (sec)					2.22							3.32				3.32

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					8							63				274		
Capacity, c (veh/h)					1114							657				648		
v/c Ratio					0.01							0.10				0.42		
95% Queue Length, Q <sub>95</sub> (veh)					0.0							0.3				2.2		
Control Delay (s/veh)					8.3							11.1				14.6		
Level of Service (LOS)					A							B				B		
Approach Delay (s/veh)					0.2						11.1				14.6			
Approach LOS					B						B				B			

# MOVEMENT SUMMARY

**Site: 8 [Channelside Drive at Cumberland Avenue\_NB2026-AM  
(Site Folder: General)]**

No-Build 2026 Year -  
AM Peak Hour  
Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h ]	[ HV ] %	[ Total veh/h ]	[ HV ] %				[ Veh. veh ]	[ Dist ] ft				
South: Channelside Drive														
3	L2	94	2.0	99	2.0	0.366	6.3	LOS A	1.9	48.6	0.28	0.15	0.28	37.1
8	T1	318	2.0	335	2.0	0.366	6.3	LOS A	1.9	48.6	0.28	0.15	0.28	37.9
18	R2	32	2.0	34	2.0	0.366	6.3	LOS A	1.9	48.6	0.28	0.15	0.28	36.6
Approach		444	2.0	467	2.0	0.366	6.3	LOS A	1.9	48.6	0.28	0.15	0.28	37.6
East: E Cumberland Avenue														
1	L2	4	2.0	4	2.0	0.030	4.2	LOS A	0.1	2.6	0.44	0.32	0.44	39.7
6	T1	5	2.0	5	2.0	0.030	4.2	LOS A	0.1	2.6	0.44	0.32	0.44	36.8
16	R2	17	2.0	18	2.0	0.030	4.2	LOS A	0.1	2.6	0.44	0.32	0.44	36.7
Approach		26	2.0	27	2.0	0.030	4.2	LOS A	0.1	2.6	0.44	0.32	0.44	37.1
North: Channelside Drive														
7	L2	45	2.0	47	2.0	0.355	6.2	LOS A	1.8	46.1	0.29	0.16	0.29	37.3
4	T1	382	2.0	402	2.0	0.355	6.2	LOS A	1.8	46.1	0.29	0.16	0.29	39.0
14	R2	262	2.0	276	2.0	0.231	5.1	LOS A	1.0	26.5	0.26	0.14	0.26	34.4
Approach		689	2.0	725	2.0	0.355	5.7	LOS A	1.8	46.1	0.28	0.15	0.28	37.0
West: E Cumberland Avenue														
5	L2	39	2.0	41	2.0	0.067	4.4	LOS A	0.2	6.1	0.44	0.35	0.44	34.3
2	T1	12	2.0	13	2.0	0.067	4.4	LOS A	0.2	6.1	0.44	0.35	0.44	34.0
12	R2	9	2.0	9	2.0	0.067	4.4	LOS A	0.2	6.1	0.44	0.35	0.44	33.0
Approach		60	2.0	63	2.0	0.067	4.4	LOS A	0.2	6.1	0.44	0.35	0.44	34.0
All Vehicles		1219	2.0	1283	2.0	0.366	5.8	LOS A	1.9	48.6	0.29	0.17	0.29	37.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# HCS7 Two-Way Stop-Control Report

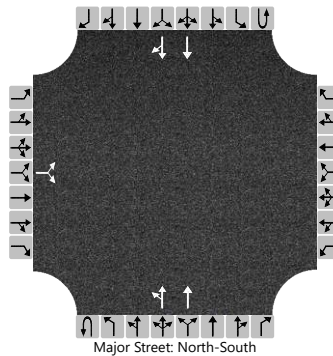
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2026
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	ChannelsideDr&E WhitingSt
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Channelside Dr
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	0	0		0	2	0		0	2	0	
Configuration			LR							LT	T				T	TR	
Volume (veh/h)		41		1						12	362				688	74	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.84		6.94						4.14						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			44								13							
Capacity, c (veh/h)			246								817							
v/c Ratio			0.18								0.02							
95% Queue Length, Q <sub>95</sub> (veh)			0.7								0.0							
Control Delay (s/veh)			22.8								9.5							
Level of Service (LOS)			C								A							
Approach Delay (s/veh)		22.8									0.4							
Approach LOS		C									A							



HCM Signalized Intersection Capacity Analysis  
 130: Channelside Dr & E Washington St/E York St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕↔		↕	↕↔	
Traffic Volume (vph)	14	5	5	8	5	35	2	384	7	92	746	25
Future Volume (vph)	14	5	5	8	5	35	2	384	7	92	746	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.9			8.4	8.4	6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.97			1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1760			1805	1583	1770	3529		1770	3522	
Flt Permitted		0.38			0.79	1.00	0.34	1.00		0.95	1.00	
Satd. Flow (perm)		690			1472	1583	627	3529		1770	3522	
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)	15	5	5	9	5	38	2	417	8	100	811	27
RTOR Reduction (vph)	0	5	0	0	0	36	0	1	0	0	1	0
Lane Group Flow (vph)	0	20	0	0	14	2	2	424	0	100	837	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases		4			3			2		1	1 2	
Permitted Phases	4			3		3	2					
Actuated Green, G (s)		8.4			7.9	7.9	79.8	79.8		17.6	103.4	
Effective Green, g (s)		8.4			7.9	7.9	79.8	79.8		17.6	103.4	
Actuated g/C Ratio		0.06			0.06	0.06	0.57	0.57		0.13	0.74	
Clearance Time (s)		5.9			8.4	8.4	6.0	6.0		6.0		
Vehicle Extension (s)		2.0			4.0	4.0	3.0	3.0		2.0		
Lane Grp Cap (vph)		41			83	89	357	2011		222	2601	
v/s Ratio Prot								0.12		c0.06	c0.24	
v/s Ratio Perm		c0.03			c0.01	0.00	0.00					
v/c Ratio		0.50			0.17	0.02	0.01	0.21		0.45	0.32	
Uniform Delay, d1		63.7			62.9	62.4	13.0	14.7		56.7	6.3	
Progression Factor		1.03			1.00	1.00	1.00	1.00		0.78	2.59	
Incremental Delay, d2		3.4			1.3	0.1	0.0	0.2		0.5	0.0	
Delay (s)		69.0			64.2	62.6	13.0	15.0		44.8	16.3	
Level of Service		E			E	E	B	B		D	B	
Approach Delay (s)		69.0			63.0			14.9			19.3	
Approach LOS		E			E			B			B	

Intersection Summary

HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.3
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

130: Channelside Dr & E Washington St/E York St

01/20/2022


























Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	25	14	38	2	425	100	838
v/c Ratio	0.44	0.17	0.19	0.01	0.21	0.45	0.31
Control Delay	74.4	67.0	2.1	20.5	16.8	49.2	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.4	67.0	2.1	20.5	16.8	49.2	17.9
Queue Length 50th (ft)	19	12	0	1	98	85	255
Queue Length 95th (ft)	49	36	0	7	170	141	367
Internal Link Dist (ft)	922	976			474		596
Turn Bay Length (ft)			430	160		280	
Base Capacity (vph)	118	227	342	368	2072	222	2662
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.06	0.11	0.01	0.21	0.45	0.31

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 129: Channelside Dr & Kennedy Blvd

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	391	29	130	3	15	4	35	387	11	28	736	932
Future Volume (vph)	391	29	130	3	15	4	35	387	11	28	736	932
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1697	1583		1848	1583	1770	3525		1770	3539	1583
Flt Permitted	0.95	0.96	1.00		0.89	1.00	0.29	1.00		0.48	1.00	1.00
Satd. Flow (perm)	1681	1697	1583		1661	1583	545	3525		900	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	425	32	141	3	16	4	38	421	12	30	800	1013
RTOR Reduction (vph)	0	0	108	0	0	4	0	1	0	0	0	449
Lane Group Flow (vph)	229	228	33	0	19	0	38	432	0	30	800	564
Turn Type	Split	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	3	3			1			2				2
Permitted Phases			3	1		1	2			2		2
Actuated Green, G (s)	23.4	23.4	23.4		4.6	4.6	78.0	78.0		78.0	78.0	78.0
Effective Green, g (s)	23.4	23.4	23.4		4.6	4.6	78.0	78.0		78.0	78.0	78.0
Actuated g/C Ratio	0.17	0.17	0.17		0.03	0.03	0.56	0.56		0.56	0.56	0.56
Clearance Time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3
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)	280	283	264		54	52	303	1963		501	1971	881
v/s Ratio Prot	c0.14	0.13						0.12				0.23
v/s Ratio Perm			0.02		c0.01	0.00	0.07			0.03		c0.36
v/c Ratio	0.82	0.81	0.12		0.35	0.00	0.13	0.22		0.06	0.41	0.64
Uniform Delay, d1	56.2	56.1	49.6		66.2	65.5	14.8	15.6		14.2	17.7	21.3
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.70	1.60		1.00	1.00	1.00
Incremental Delay, d2	16.7	15.3	0.2		3.9	0.0	0.8	0.3		0.2	0.6	3.6
Delay (s)	72.9	71.4	49.8		70.2	65.5	25.9	25.3		14.4	18.4	24.9
Level of Service	E	E	D		E	E	C	C		B	B	C
Approach Delay (s)		66.9			69.4			25.3			21.9	
Approach LOS		E			E			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			32.0									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			140.0								22.4	Sum of lost time (s)
Intersection Capacity Utilization			90.5%									ICU Level of Service E
Analysis Period (min)			15									

c Critical Lane Group

Queues

129: Channelside Dr & Kennedy Blvd

01/20/2022



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	229	228	141	19	4	38	433	30	800	1013
v/c Ratio	0.82	0.81	0.38	0.23	0.02	0.12	0.21	0.06	0.39	0.76
Control Delay	78.4	77.0	12.6	70.2	0.2	24.6	23.1	13.5	16.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.4	77.0	12.6	70.2	0.2	24.6	23.1	13.5	16.9	5.1
Queue Length 50th (ft)	211	209	8	17	0	27	174	12	201	0
Queue Length 95th (ft)	310	308	68	45	0	63	227	27	246	56
Internal Link Dist (ft)		903		909			596		1256	
Turn Bay Length (ft)			140			280		75		375
Base Capacity (vph)	320	323	407	97	184	314	2033	518	2039	1341
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.71	0.35	0.20	0.02	0.12	0.21	0.06	0.39	0.76

Intersection Summary



# HCM Signalized Intersection Capacity Analysis

109: Florida Ave & Brorein St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↑		↘	↑↑↑↑				
Traffic Volume (vph)	0	0	0	0	1876	494	216	1733	0	0	0	0
Future Volume (vph)	0	0	0	0	1876	494	216	1733	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.8		6.1	6.1				
Lane Util. Factor					0.86		1.00	0.91				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6207		1770	5085				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6207		1770	5085				
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	0	0	0	2039	537	235	1884	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	22	0	23	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2554	0	212	1884	0	0	0	0
Turn Type					NA		Perm	NA				
Protected Phases					2			4				
Permitted Phases							4					
Actuated Green, G (s)					54.2		68.9	68.9				
Effective Green, g (s)					54.2		68.9	68.9				
Actuated g/C Ratio					0.39		0.49	0.49				
Clearance Time (s)					5.8		6.1	6.1				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					2402		871	2502				
v/s Ratio Prot					c0.41			c0.37				
v/s Ratio Perm							0.12					
v/c Ratio					1.06		0.24	0.75				
Uniform Delay, d1					42.9		20.5	28.7				
Progression Factor					1.00		1.01	0.99				
Incremental Delay, d2					37.9		0.6	2.1				
Delay (s)					80.8		21.3	30.6				
Level of Service					F		C	C				
Approach Delay (s)		0.0			80.8			29.6			0.0	
Approach LOS		A			F			C			A	

## Intersection Summary

HCM 2000 Control Delay	57.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.9
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# Queues

## 109: Florida Ave & Brorein St

01/20/2022



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	2576	235	1884
v/c Ratio	1.06	0.26	0.75
Control Delay	78.1	17.5	30.9
Queue Delay	11.6	0.0	0.0
Total Delay	89.7	17.5	30.9
Queue Length 50th (ft)	~743	99	481
Queue Length 95th (ft)	#812	159	543
Internal Link Dist (ft)	416		237
Turn Bay Length (ft)			
Base Capacity (vph)	2425	893	2502
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	61	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.09	0.26	0.75

### Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

## 110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/20/2022



Movement	WBL	WBT	NBL	NBT	NBR2	SBL	SBT	SBR	SWR	SWR2
Lane Configurations		↕↕	↙	↕	↙	↙	↘		↙	↙
Traffic Volume (vph)	1	1915	102	645	230	514	87	226	655	581
Future Volume (vph)	1	1915	102	645	230	514	87	226	655	581
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.5	6.0	6.0	5.5	6.0		5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	1.00	1.00	0.85	1.00	0.89		1.00	0.85
Flt Protected		1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00
Satd. Flow (prot)		3539	1770	1863	1583	1770	1661		1863	1583
Flt Permitted		1.00	0.16	1.00	1.00	0.15	1.00		1.00	1.00
Satd. Flow (perm)		3539	292	1863	1583	287	1661		1863	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
Adj. Flow (vph)	1	2082	111	701	250	559	95	246	712	632
RTOR Reduction (vph)	0	0	0	0	50	0	36	0	0	251
Lane Group Flow (vph)	0	2083	111	701	200	559	305	0	712	381
Turn Type	Perm	NA	pm+pt	NA	Perm	pm+pt	NA		Prot	Perm
Protected Phases		2!	7	4		3	8		2!	
Permitted Phases	2		4		4	8				2
Actuated Green, G (s)		60.3	38.0	38.0	38.0	50.5	50.0		60.3	60.3
Effective Green, g (s)		60.3	38.0	38.0	38.0	50.5	50.0		60.3	60.3
Actuated g/C Ratio		0.43	0.27	0.27	0.27	0.36	0.36		0.43	0.43
Clearance Time (s)		5.7	5.5	6.0	6.0	5.5	6.0		5.7	5.7
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1524	211	505	429	363	593		802	681
v/s Ratio Prot			0.05	c0.38		c0.27	0.18		0.38	
v/s Ratio Perm		0.59	0.10		0.13	c0.29				0.24
v/c Ratio		1.37	0.53	1.39	0.47	1.54	0.51		0.89	0.56
Uniform Delay, d1		39.9	41.3	51.0	42.6	53.5	35.4		36.7	29.9
Progression Factor		0.46	1.25	1.19	1.31	0.97	1.04		1.00	1.00
Incremental Delay, d2		165.5	6.4	183.1	2.5	253.0	2.3		13.9	3.3
Delay (s)		183.6	57.9	243.8	58.3	305.0	39.3		50.7	33.2
Level of Service		F	E	F	E	F	D		D	C
Approach Delay (s)		183.6		180.7			204.4			
Approach LOS		F		F			F			

### Intersection Summary

HCM 2000 Control Delay	151.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.45		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	175.0%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Queues

110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/20/2022



Lane Group	WBT	NBL	NBT	NBR2	SBL	SBT	SWR	SWR2
Lane Group Flow (vph)	2083	111	701	250	559	341	712	632
v/c Ratio	1.37	0.52	1.39	0.52	1.54	0.54	0.89	0.68
Control Delay	187.0	55.9	226.7	44.0	288.8	33.8	51.3	12.9
Queue Delay	0.2	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Total Delay	187.2	55.9	227.2	44.0	288.8	33.8	51.3	12.9
Queue Length 50th (ft)	~1308	79	~855	140	~698	197	591	133
Queue Length 95th (ft)	m#1187	m115	m#995	m195	#936	306	#833	276
Internal Link Dist (ft)	507		424			563		
Turn Bay Length (ft)		250		10				
Base Capacity (vph)	1524	212	505	479	363	629	802	932
Starvation Cap Reductn	88	0	30	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.45	0.52	1.48	0.52	1.54	0.54	0.89	0.68

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



# HCM 6th Signalized Intersection Summary

111: Jefferson St & Brorein St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	↶
Traffic Volume (veh/h)	213	215	37	27	1793	363	24	199	79	279	461	99
Future Volume (veh/h)	213	215	37	27	1793	363	24	199	79	279	461	99
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	232	234	40	29	1949	395	26	216	86	303	501	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	51	982	168	676	1868	366	121	399	154	294	391	
Arrive On Green	0.63	0.63	0.63	0.42	0.42	0.42	0.04	0.16	0.16	0.18	0.42	0.00
Sat Flow, veh/h	153	1556	266	1105	2962	580	1781	2507	967	1781	1870	1585
Grp Volume(v), veh/h	232	0	274	29	1142	1202	26	151	151	303	501	0
Grp Sat Flow(s),veh/h/ln	153	0	1822	1105	1777	1766	1781	1777	1696	1781	1870	1585
Q Serve(g_s), s	0.0	0.0	9.1	2.3	88.3	88.3	1.7	10.9	11.5	12.5	29.3	0.0
Cycle Q Clear(g_c), s	88.3	0.0	9.1	11.5	88.3	88.3	1.7	10.9	11.5	12.5	29.3	0.0
Prop In Lane	1.00		0.15	1.00		0.33	1.00		0.57	1.00		1.00
Lane Grp Cap(c), veh/h	51	0	1149	676	1121	1114	121	283	270	294	391	
V/C Ratio(X)	4.51	0.00	0.24	0.04	1.02	1.08	0.21	0.53	0.56	1.03	1.28	
Avail Cap(c_a), veh/h	51	0	1149	676	1121	1114	121	283	270	294	391	
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.09	0.00	0.09	0.55	0.55	0.55	0.69	0.69	0.69	1.00	1.00	0.00
Uniform Delay (d), s/veh	70.0	0.0	11.2	21.1	40.4	40.4	47.4	54.1	54.3	48.1	40.7	0.0
Incr Delay (d2), s/veh	1584.0	0.0	0.0	0.1	24.8	45.2	2.8	4.9	5.7	61.0	144.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.5	0.0	3.7	0.7	47.5	53.5	0.8	5.3	5.4	9.4	27.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1654.0	0.0	11.3	21.2	65.3	85.6	50.2	59.0	60.0	109.1	185.0	0.0
LnGrp LOS	F	A	B	C	F	F	D	E	E	F	F	
Approach Vol, veh/h		506			2373			328			804	A
Approach Delay, s/veh		764.5			75.0			58.7			156.4	
Approach LOS		F			E			E			F	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		94.0	18.0	28.0		94.0	11.0	35.0				
Change Period (Y+Rc), s		* 5.7	5.5	* 5.7		* 5.7	5.5	* 5.7				
Max Green Setting (Gmax), s		* 88	12.5	* 22		* 88	5.5	* 29				
Max Q Clear Time (g_c+I1), s		90.3	14.5	13.5		90.3	3.7	31.3				
Green Ext Time (p_c), s		0.0	0.0	0.8		0.0	0.0	0.0				

## Intersection Summary

HCM 6th Ctrl Delay	177.0
HCM 6th LOS	F

## Notes

- \* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
- Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Queues

111: Jefferson St & Brorein St

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	232	274	29	2344	26	302	303	501	108
v/c Ratio	4.46	0.24	0.04	1.07	0.21	0.53	1.07	1.29	0.28
Control Delay	1573.2	3.2	9.8	60.5	35.4	44.9	100.6	181.7	18.8
Queue Delay	0.0	0.0	0.0	13.3	0.0	0.0	0.0	0.0	0.1
Total Delay	1573.2	3.2	9.8	73.8	35.4	44.9	100.6	181.7	18.8
Queue Length 50th (ft)	~372	55	10	~394	15	113	~205	~573	29
Queue Length 95th (ft)	m#317	m37	m11	m#1136	m24	165	m#385	m#780	m44
Internal Link Dist (ft)		507		143		434		68	
Turn Bay Length (ft)	150		50		100		50		
Base Capacity (vph)	52	1153	666	2188	123	569	284	389	381
Starvation Cap Reductn	0	0	0	500	0	0	0	0	0
Spillback Cap Reductn	0	0	0	730	0	0	0	0	13
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	4.46	0.24	0.04	1.61	0.21	0.53	1.07	1.29	0.29

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 112: Nebraska Ave & Brorein St/Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↘		↗	↕			↕			↕	
Traffic Volume (veh/h)	119	376	78	20	1715	1	349	123	94	163	20	119
Future Volume (veh/h)	119	376	78	20	1715	1	349	123	94	163	20	119
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	129	409	85	22	1864	1	379	134	102	177	22	129
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	1033	215	673	2507	1	216	62	47	214	22	127
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	246	1502	312	903	3645	2	756	267	203	756	94	551
Grp Volume(v), veh/h	129	0	494	22	909	956	615	0	0	328	0	0
Grp Sat Flow(s),veh/h/ln	246	0	1814	903	1777	1870	1227	0	0	1400	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	32.3	0.0	0.0	32.3	0.0	0.0
Prop In Lane	1.00		0.17	1.00		0.00	0.62		0.17	0.54		0.39
Lane Grp Cap(c), veh/h	220	0	1248	673	1222	1286	325	0	0	363	0	0
V/C Ratio(X)	0.59	0.00	0.40	0.03	0.74	0.74	1.89	0.00	0.00	0.90	0.00	0.00
Avail Cap(c_a), veh/h	220	0	1248	673	1222	1286	325	0	0	363	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.68	0.00	0.68	0.43	0.43	0.43	0.91	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	55.9	0.0	0.0	54.1	0.0	0.0
Incr Delay (d2), s/veh	7.5	0.0	0.6	0.0	1.8	1.7	413.0	0.0	0.0	28.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.2	0.0	0.6	0.6	49.0	0.0	0.0	14.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.5	0.0	0.6	0.0	1.8	1.7	469.0	0.0	0.0	82.4	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	F	A	A	F	A	A
Approach Vol, veh/h		623			1887			615				328
Approach Delay, s/veh		2.1			1.7			469.0				82.4
Approach LOS		A			A			F				F
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		102.0		38.0		102.0		38.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7		* 5.7				
Max Green Setting (Gmax), s		* 96		* 32		* 96		* 32				
Max Q Clear Time (g_c+I1), s		2.0		34.3		2.0		34.3				
Green Ext Time (p_c), s		32.0		0.0		10.5		0.0				

Intersection Summary

HCM 6th Ctrl Delay	92.7
HCM 6th LOS	F

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

112: Nebraska Ave & Brorein St/Cumberland Ave

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	129	494	22	1865	615	328
v/c Ratio	1.65	0.39	0.04	0.77	2.22	1.02
Control Delay	351.0	0.8	3.0	4.5	586.6	103.0
Queue Delay	0.0	4.3	0.0	27.5	6.1	31.3
Total Delay	351.0	5.1	3.0	31.9	592.7	134.3
Queue Length 50th (ft)	~172	2	2	80	~904	~302
Queue Length 95th (ft)	m#237	m0	m2	93	#1140	m#470
Internal Link Dist (ft)		143		195	464	798
Turn Bay Length (ft)	50		70			
Base Capacity (vph)	78	1253	549	2434	277	321
Starvation Cap Reductn	0	666	0	309	0	0
Spillback Cap Reductn	0	97	0	660	95	108
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.65	0.84	0.04	1.05	3.38	1.54

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



HCM 6th Signalized Intersection Summary  
701: Old Water St & Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕		↖	↗		↖	↗	
Traffic Volume (veh/h)	13	298	322	10	1644	235	72	39	32	17	35	20
Future Volume (veh/h)	13	298	322	10	1644	235	72	39	32	17	35	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	324	350	11	1787	255	78	42	35	18	38	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	202	598	647	584	2280	318	279	226	188	198	169	98
Arrive On Green	0.97	0.97	0.97	1.00	1.00	1.00	0.02	0.08	0.08	0.15	0.15	0.15
Sat Flow, veh/h	207	822	888	764	3132	436	1781	943	786	1322	1111	643
Grp Volume(v), veh/h	14	0	674	11	995	1047	78	0	77	18	0	60
Grp Sat Flow(s),veh/h/ln	207	0	1710	764	1777	1792	1781	0	1729	1322	0	1755
Q Serve(g_s), s	0.4	0.0	3.7	0.1	0.0	0.0	0.0	0.0	5.8	1.7	0.0	4.2
Cycle Q Clear(g_c), s	0.6	0.0	3.7	4.4	0.0	0.0	0.0	0.0	5.8	7.5	0.0	4.2
Prop In Lane	1.00		0.52	1.00		0.24	1.00		0.45	1.00		0.37
Lane Grp Cap(c), veh/h	202	0	1245	584	1293	1304	279	0	414	198	0	267
V/C Ratio(X)	0.07	0.00	0.54	0.02	0.77	0.80	0.28	0.00	0.19	0.09	0.00	0.22
Avail Cap(c_a), veh/h	202	0	1245	584	1293	1304	279	0	414	198	0	267
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.00	0.92	0.09	0.09	0.09	0.95	0.00	0.95	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.6	0.0	0.7	0.1	0.0	0.0	55.0	0.0	51.7	56.1	0.0	52.1
Incr Delay (d2), s/veh	0.6	0.0	1.6	0.0	0.4	0.5	2.4	0.0	0.9	0.9	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	1.2	0.0	0.1	0.2	2.8	0.0	2.8	0.6	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.2	0.0	2.2	0.1	0.4	0.5	57.4	0.0	52.7	57.1	0.0	54.0
LnGrp LOS	A	A	A	A	A	A	E	A	D	E	A	D
Approach Vol, veh/h		688			2053			155				78
Approach Delay, s/veh		2.2			0.5			55.0				54.7
Approach LOS		A			A			E				D
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		107.8		39.2		107.8	12.2	27.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s		* 95		* 33		* 95	* 6.5	* 21				
Max Q Clear Time (g_c+I1), s		6.4		7.8		5.7	2.0	9.5				
Green Ext Time (p_c), s		40.9		0.4		7.0	0.1	0.2				

Intersection Summary

HCM 6th Ctrl Delay	5.1
HCM 6th LOS	A

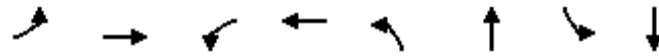
Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

701: Old Water St & Cumberland Ave

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	14	674	11	2042	78	77	18	60
v/c Ratio	0.26	0.56	0.03	0.86	0.23	0.18	0.09	0.21
Control Delay	22.5	15.9	3.9	7.0	48.4	32.0	52.5	39.7
Queue Delay	0.0	1.5	0.0	46.6	0.0	0.0	0.0	0.0
Total Delay	22.5	17.4	3.9	53.6	48.4	32.0	52.5	39.7
Queue Length 50th (ft)	6	410	2	280	58	28	14	34
Queue Length 95th (ft)	m15	m420	m2	m214	m85	m63	39	79
Internal Link Dist (ft)		195		457		461		758
Turn Bay Length (ft)	70		70		150		150	
Base Capacity (vph)	53	1196	402	2371	340	434	200	283
Starvation Cap Reductn	0	323	0	536	0	0	0	0
Spillback Cap Reductn	0	0	0	10	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.77	0.03	1.11	0.23	0.18	0.09	0.21

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 120: Meridian Ave & Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖	↗	↖	↗		↖	↗	↖
Traffic Volume (veh/h)	212	83	53	11	391	138	249	497	139	59	635	1278
Future Volume (veh/h)	212	83	53	11	391	138	249	497	139	59	635	1278
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	230	90	58	12	425	0	271	540	151	64	690	1389
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	230	355	229	34	614		183	1345	375	422	1741	777
Arrive On Green	0.22	0.22	0.22	0.33	0.33	0.00	0.08	0.98	0.98	0.01	0.16	0.16
Sat Flow, veh/h	962	1062	685	22	1837	1585	1781	2745	765	1781	3554	1585
Grp Volume(v), veh/h	230	0	148	437	0	0	271	349	342	64	690	1389
Grp Sat Flow(s),veh/h/ln	962	0	1747	1859	0	1585	1781	1777	1733	1781	1777	1585
Q Serve(g_s), s	18.3	0.0	9.8	2.4	0.0	0.0	5.6	0.9	0.9	2.8	24.3	68.6
Cycle Q Clear(g_c), s	46.8	0.0	9.8	28.5	0.0	0.0	5.6	0.9	0.9	2.8	24.3	68.6
Prop In Lane	1.00		0.39	0.03		1.00	1.00		0.44	1.00		1.00
Lane Grp Cap(c), veh/h	230	0	584	648	0		183	871	849	422	1741	777
V/C Ratio(X)	1.00	0.00	0.25	0.67	0.00		1.48	0.40	0.40	0.15	0.40	1.79
Avail Cap(c_a), veh/h	230	0	584	648	0		183	871	849	422	1741	777
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(l)	0.82	0.00	0.82	1.00	0.00	0.00	0.09	0.09	0.09	0.85	0.85	0.85
Uniform Delay (d), s/veh	65.2	0.0	39.9	40.5	0.0	0.0	55.7	0.7	0.7	21.9	40.1	58.7
Incr Delay (d2), s/veh	53.3	0.0	0.9	5.5	0.0	0.0	219.8	0.1	0.1	0.6	0.6	359.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	0.0	4.5	14.2	0.0	0.0	17.3	0.3	0.3	1.3	11.7	106.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	118.5	0.0	40.8	46.0	0.0	0.0	275.5	0.8	0.9	22.6	40.7	417.9
LnGrp LOS	F	A	D	D	A		F	A	A	C	D	F
Approach Vol, veh/h		378			437	A		962			2143	
Approach Delay, s/veh		88.1			46.0			78.2			284.6	
Approach LOS		F			D			E			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	75.0		53.0	12.0	75.0		53.0				
Change Period (Y+Rc), s	6.4	6.4		* 6.2	6.4	6.4		* 6.2				
Max Green Setting (Gmax), s	5.6	68.6		* 47	5.6	68.6		* 47				
Max Q Clear Time (g_c+I1), s	7.6	70.6		48.8	4.8	2.9		30.5				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	4.6		2.6				

Intersection Summary

HCM 6th Ctrl Delay	188.4
HCM 6th LOS	F

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.  
 Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Queues

120: Meridian Ave & Cumberland Ave

01/20/2022



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	230	148	437	150	271	691	64	690	1389
v/c Ratio	1.47	0.25	0.71	0.24	0.68	0.41	0.21	0.40	1.57
Control Delay	285.8	47.1	48.1	9.0	34.0	22.8	18.2	19.9	286.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	285.8	47.1	48.1	9.0	34.0	22.8	18.2	19.9	287.0
Queue Length 50th (ft)	~296	103	347	15	157	208	24	207	~1752
Queue Length 95th (ft)	#470	170	475	65	m146	m176	47	174	#1994
Internal Link Dist (ft)		457	882			460		709	
Turn Bay Length (ft)	100			100	200		250		
Base Capacity (vph)	156	602	617	613	397	1695	303	1734	882
Starvation Cap Reductn	0	0	0	0	0	0	0	0	15
Spillback Cap Reductn	0	0	0	0	0	0	0	0	4
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.47	0.25	0.71	0.24	0.68	0.41	0.21	0.40	1.60

Intersection Summary





















- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



# HCM Signalized Intersection Capacity Analysis

## 102: Florida Ave & Whiting St

01/20/2022

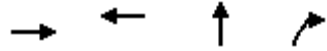
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  				
Traffic Volume (vph)	114	459	0	0	363	179	73	1760	86	0	0	0
Future Volume (vph)	114	459	0	0	363	179	73	1760	86	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			5.7	5.7			
Lane Util. Factor		0.95			0.95			0.91	1.00			
Frt		1.00			0.95			1.00	0.85			
Flt Protected		0.99			1.00			1.00	1.00			
Satd. Flow (prot)		3504			3364			5075	1583			
Flt Permitted		0.65			1.00			1.00	1.00			
Satd. Flow (perm)		2286			3364			5075	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)	124	499	0	0	395	195	79	1913	93	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	0	0	0	30	0	0	0
Lane Group Flow (vph)	0	623	0	0	578	0	0	1992	63	0	0	0
Turn Type	Perm	NA			NA		Perm	NA	Perm			
Protected Phases		4			4			2				
Permitted Phases	4						2		2			
Actuated Green, G (s)		59.0			59.0			64.3	64.3			
Effective Green, g (s)		59.0			59.0			64.3	64.3			
Actuated g/C Ratio		0.42			0.42			0.46	0.46			
Clearance Time (s)		6.0			6.0			5.7	5.7			
Vehicle Extension (s)		3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)		963			1417			2330	727			
v/s Ratio Prot					0.17							
v/s Ratio Perm		c0.27						0.39	0.04			
v/c Ratio		0.65			0.41			0.85	0.09			
Uniform Delay, d1		32.2			28.3			33.7	21.3			
Progression Factor		1.00			0.92			1.32	2.08			
Incremental Delay, d2		3.4			0.5			2.4	0.1			
Delay (s)		35.6			26.6			47.0	44.4			
Level of Service		D			C			D	D			
Approach Delay (s)		35.6			26.6			46.9			0.0	
Approach LOS		D			C			D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			41.1					HCM 2000 Level of Service		D		
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		15.7		
Intersection Capacity Utilization			82.0%					ICU Level of Service		D		
Analysis Period (min)			15									

c Critical Lane Group

# Queues

## 102: Florida Ave & Whiting St

01/20/2022



Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	623	590	1992	93
v/c Ratio	0.65	0.41	0.85	0.12
Control Delay	36.1	25.9	47.5	20.8
Queue Delay	0.0	0.0	2.0	0.0
Total Delay	36.1	25.9	49.4	20.8
Queue Length 50th (ft)	234	172	547	22
Queue Length 95th (ft)	304	m217	m598	m45
Internal Link Dist (ft)	994	519	567	
Turn Bay Length (ft)				75
Base Capacity (vph)	963	1428	2330	756
Starvation Cap Reductn	0	0	200	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.65	0.41	0.94	0.12

### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
103: Morgan St & Whiting St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Volume (vph)	44	108	295	171	488	193	141	439	78	24	522	106
Future Volume (vph)	44	108	295	171	488	193	141	439	78	24	522	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8		5.8	5.8			5.7			5.7	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	0.89		1.00	0.96			0.98			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1658		1770	1783			3439			3447	
Flt Permitted	0.35	1.00		0.29	1.00			0.60			0.90	
Satd. Flow (perm)	648	1658		539	1783			2073			3095	
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)	48	117	321	186	530	210	153	477	85	26	567	115
RTOR Reduction (vph)	0	122	0	0	20	0	0	15	0	0	23	0
Lane Group Flow (vph)	48	316	0	186	720	0	0	700	0	0	685	0
Turn Type	Perm	NA		D.P+P	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	3 4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	22.2	22.2		31.4	37.2			21.3			21.3	
Effective Green, g (s)	22.2	22.2		31.4	37.2			21.3			21.3	
Actuated g/C Ratio	0.32	0.32		0.45	0.53			0.30			0.30	
Clearance Time (s)	5.8	5.8		5.8				5.7			5.7	
Vehicle Extension (s)	3.0	3.0		3.0				3.0			3.0	
Lane Grp Cap (vph)	205	525		403	947			630			941	
v/s Ratio Prot		0.19		0.06	c0.40							
v/s Ratio Perm	0.07			0.15				c0.34			0.22	
v/c Ratio	0.23	0.60		0.46	0.76			1.11			0.73	
Uniform Delay, d1	17.6	20.2		12.7	12.9			24.4			21.8	
Progression Factor	0.69	1.28		1.34	1.38			1.61			1.00	
Incremental Delay, d2	2.2	4.2		3.2	4.9			52.2			4.9	
Delay (s)	14.3	30.0		20.2	22.7			91.6			26.7	
Level of Service	B	C		C	C			F			C	
Approach Delay (s)		28.4			22.2			91.6			26.7	
Approach LOS		C			C			F			C	

Intersection Summary

HCM 2000 Control Delay	41.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	17.3
Intersection Capacity Utilization	102.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

# Queues

## 103: Morgan St & Whiting St

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	48	438	186	740	715	708
v/c Ratio	0.23	0.68	0.46	0.77	1.11	0.73
Control Delay	14.8	20.1	15.4	22.2	87.7	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	20.1	15.4	22.2	87.7	26.1
Queue Length 50th (ft)	12	281	46	278	~299	135
Queue Length 95th (ft)	m25	304	m65	360	m#244	196
Internal Link Dist (ft)		519		503	563	1059
Turn Bay Length (ft)						
Base Capacity (vph)	205	648	403	967	645	964
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	0.23	0.68	0.46	0.77	1.11	0.73




















### Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



HCM Signalized Intersection Capacity Analysis  
 104: Jefferson St & Whiting St

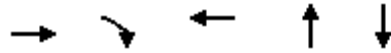
01/20/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	37	112	116	32	344	62	164	316	1	190	675	106	
Future Volume (vph)	37	112	116	32	344	62	164	316	1	190	675	106	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.7	5.7		5.7			5.7			5.7		
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95		
Frt		1.00	0.85		0.98			1.00			0.98		
Flt Protected		0.99	1.00		1.00			0.98			0.99		
Satd. Flow (prot)		1840	1583		1821			3479			3448		
Flt Permitted		0.80	1.00		0.97			0.53			0.73		
Satd. Flow (perm)		1493	1583		1768			1863			2533		
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)	40	122	126	35	374	67	178	343	1	207	734	115	
RTOR Reduction (vph)	0	0	84	0	8	0	0	0	0	0	12	0	
Lane Group Flow (vph)	0	162	42	0	468	0	0	522	0	0	1045	0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA		
Protected Phases		8			4			6			2		
Permitted Phases	8		8	4			6			2			
Actuated Green, G (s)		23.6	23.6		23.6			35.0			35.0		
Effective Green, g (s)		23.6	23.6		23.6			35.0			35.0		
Actuated g/C Ratio		0.34	0.34		0.34			0.50			0.50		
Clearance Time (s)		5.7	5.7		5.7			5.7			5.7		
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0		
Lane Grp Cap (vph)		503	533		596			931			1266		
v/s Ratio Prot													
v/s Ratio Perm		0.11	0.03		c0.26			0.28			c0.41		
v/c Ratio		0.32	0.08		0.79			0.99dl			0.83		
Uniform Delay, d1		17.3	15.8		20.9			12.2			14.9		
Progression Factor		1.12	2.36		1.00			1.26			1.00		
Incremental Delay, d2		0.3	0.0		6.7			0.2			6.2		
Delay (s)		19.7	37.3		27.6			15.6			21.1		
Level of Service		B	D		C			B			C		
Approach Delay (s)		27.4			27.6			15.6			21.1		
Approach LOS		C			C			B			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			22.0									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.90										
Actuated Cycle Length (s)			70.0									Sum of lost time (s)	17.4
Intersection Capacity Utilization			85.6%									ICU Level of Service	E
Analysis Period (min)			15										
dl Defacto Left Lane. Recode with 1 though lane as a left lane.													
c Critical Lane Group													

Queues

104: Jefferson St & Whiting St

01/20/2022



Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	162	126	476	522	1056
v/c Ratio	0.32	0.20	0.79	0.99dl	0.82
Control Delay	20.6	5.3	31.7	16.1	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.6	5.3	31.7	16.1	22.1
Queue Length 50th (ft)	66	11	175	100	191
Queue Length 95th (ft)	m76	m17	#318	m82	#320
Internal Link Dist (ft)	503		431	509	207
Turn Bay Length (ft)					
Base Capacity (vph)	501	623	602	932	1280
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.32	0.20	0.79	0.56	0.82

Intersection Summary

# 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.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

# HCS7 Two-Way Stop-Control Report

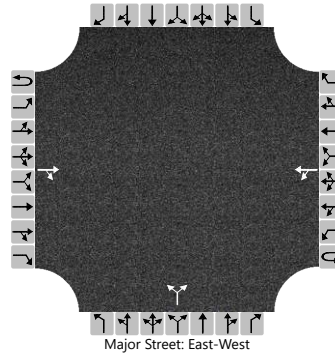
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2026
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWhitingSt&Nebraska Ave
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Nebraska Ave
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			81	234		121	268			161		149				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.12				6.42		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						127						326				
Capacity, c (veh/h)						1228						469				
v/c Ratio						0.10						0.70				
95% Queue Length, Q <sub>95</sub> (veh)						0.3						6.3				
Control Delay (s/veh)						8.3						29.6				
Level of Service (LOS)						A						D				
Approach Delay (s/veh)						3.3				29.6						
Approach LOS						A				D						

# HCM Signalized Intersection Capacity Analysis

## 107: Meridian Ave & Whiting St

01/20/2022



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	41	43	0	767	80	21	1931
Future Volume (vph)	41	43	0	767	80	21	1931
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.2			6.6		6.4	6.6
Lane Util. Factor	1.00			0.91		1.00	0.91
Fr <sub>t</sub>	0.93			0.99		1.00	1.00
Fl <sub>t</sub> Protected	0.98			1.00		0.95	1.00
Satd. Flow (prot)	1693			5013		1770	5085
Fl <sub>t</sub> Permitted	0.98			1.00		0.28	1.00
Satd. Flow (perm)	1693			5013		515	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	47	0	834	87	23	2099
RTOR Reduction (vph)	34	0	0	5	0	0	0
Lane Group Flow (vph)	58	0	0	916	0	23	2099
Turn Type	Perm		Perm	NA		pm+pt	NA
Protected Phases				6		5	2
Permitted Phases	4		6			2	
Actuated Green, G (s)	11.5			104.7		114.7	114.7
Effective Green, g (s)	11.5			104.7		114.7	114.7
Actuated g/C Ratio	0.08			0.75		0.82	0.82
Clearance Time (s)	7.2			6.6		6.4	6.6
Vehicle Extension (s)	3.0			3.0		3.0	3.0
Lane Grp Cap (vph)	139			3749		454	4166
v/s Ratio Prot				0.18		0.00	c0.41
v/s Ratio Perm	c0.03					0.04	
v/c Ratio	0.42			0.24		0.05	0.50
Uniform Delay, d1	61.1			5.4		2.6	3.9
Progression Factor	0.93			0.82		1.00	1.00
Incremental Delay, d2	2.0			0.1		0.0	0.4
Delay (s)	58.8			4.6		2.6	4.3
Level of Service	E			A		A	A
Approach Delay (s)	58.8			4.6			4.3
Approach LOS	E			A			A

### Intersection Summary

HCM 2000 Control Delay	6.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



# Queues

## 107: Meridian Ave & Whiting St

01/20/2022



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	92	921	23	2099
v/c Ratio	0.53	0.24	0.05	0.50
Control Delay	45.8	4.4	2.8	4.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	45.8	4.4	2.8	4.5
Queue Length 50th (ft)	57	67	3	161
Queue Length 95th (ft)	116	m79	9	234
Internal Link Dist (ft)	876	709		494
Turn Bay Length (ft)			225	
Base Capacity (vph)	484	3844	499	4166
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	25	0	0	305
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.20	0.24	0.05	0.54

### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCS7 Two-Way Stop-Control Report

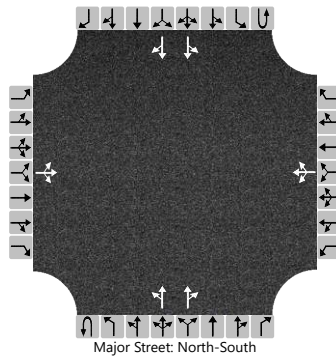
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2026
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWashingtonSt&JeffersonSt
Jurisdiction	FDOT, District 7
East/West Street	E Washington St
North/South Street	Jefferson St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0	0	0	2	0	0	0	2	0	
Configuration			LTR				LTR			LT		TR		LT		TR	
Volume (veh/h)		1	16	169		36	59	211		29	386	5		24	766	95	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.54	6.54	6.94		7.54	6.54	6.94		4.14				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			196				322				31				25		
Capacity, c (veh/h)			417				295				746				1144		
v/c Ratio			0.47				1.09				0.04				0.02		
95% Queue Length, Q <sub>95</sub> (veh)			2.6				29.8				0.1				0.1		
Control Delay (s/veh)			21.2				275.6				10.0				8.2		
Level of Service (LOS)			C				F				B				A		
Approach Delay (s/veh)		21.2				275.6				0.9				0.4			
Approach LOS		C				F											

# HCS7 Two-Way Stop-Control Report

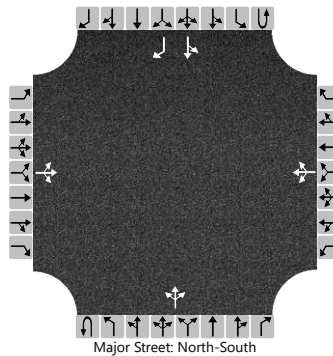
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2026
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWashingtonSt&BrushSt
Jurisdiction	FDOT, District 7
East/West Street	E Washington St
North/South Street	Brush St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0		0	1	0		0	1	1	
Configuration			LTR				LTR				LTR			LT		R	
Volume (veh/h)		12	2	20		24	4	1		70	89	6		6	364	201	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																Yes	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

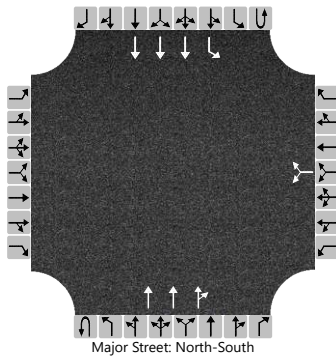
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			36				31				74				6		
Capacity, c (veh/h)			494				311				1175				1493		
v/c Ratio			0.07				0.10				0.06				0.00		
95% Queue Length, Q <sub>95</sub> (veh)			0.2				0.3				0.2				0.0		
Control Delay (s/veh)			12.8				17.8				8.3				7.4		
Level of Service (LOS)			B				C				A				A		
Approach Delay (s/veh)		12.8				17.8				3.8				0.1			
Approach LOS		B				C											

# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	H.W. Lochner	Intersection	MeridianAve&EWashingtonSt
Agency/Co.		Jurisdiction	FDOT, District 7
Date Performed	09/24/2021	East/West Street	Meridian Ave
Analysis Year	2026	North/South Street	E Washington St
Time Analyzed	AM Peak Hour	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	Whiting PD&E Study		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	0	0		0	1	0	0	0	3	0	0	1	3	0	
Configuration							LR				T	TR		L	T		
Volume (veh/h)						94		133			747	63	0	11	1858		
Percent Heavy Vehicles (%)						2		2					2	2			
Proportion Time Blocked																	
Percent Grade (%)						0											
Right Turn Channelized																	
Median Type   Storage						Left Only								1			

## Critical and Follow-up Headways

Base Critical Headway (sec)						6.4		7.1							5.3		
Critical Headway (sec)						5.74		7.14							5.34		
Base Follow-Up Headway (sec)						3.8		3.9							3.1		
Follow-Up Headway (sec)						3.82		3.92							3.12		

















## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						239									12		
Capacity, c (veh/h)						323									461		
v/c Ratio						0.74									0.03		
95% Queue Length, Q <sub>95</sub> (veh)						7.3									0.1		
Control Delay (s/veh)						46.2									13.0		
Level of Service (LOS)						E									B		
Approach Delay (s/veh)						46.2								0.1			
Approach LOS						E											



HCM Signalized Intersection Capacity Analysis  
 114: Florida Ave & Channelside Dr

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	892	1738	156	0	0	0	0	444	115	0	0	0
Future Volume (vph)	892	1738	156	0	0	0	0	444	115	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0						5.7	5.7			
Lane Util. Factor	0.86	0.86						0.95	1.00			
Frt	1.00	0.99						1.00	0.85			
Flt Protected	0.95	0.99						1.00	1.00			
Satd. Flow (prot)	1522	4728						3539	1583			
Flt Permitted	0.95	0.99						1.00	1.00			
Satd. Flow (perm)	1522	4728						3539	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	970	1889	170	0	0	0	0	483	125	0	0	0
RTOR Reduction (vph)	29	15	0	0	0	0	0	0	17	0	0	0
Lane Group Flow (vph)	708	2277	0	0	0	0	0	483	108	0	0	0
Turn Type	Split	NA						NA	Perm			
Protected Phases	6	6						4				
Permitted Phases									4			
Actuated Green, G (s)	93.0	93.0						35.3	35.3			
Effective Green, g (s)	93.0	93.0						35.3	35.3			
Actuated g/C Ratio	0.66	0.66						0.25	0.25			
Clearance Time (s)	6.0	6.0						5.7	5.7			
Vehicle Extension (s)	3.0	3.0						3.0	3.0			
Lane Grp Cap (vph)	1011	3140						892	399			
v/s Ratio Prot	0.47	c0.48						c0.14				
v/s Ratio Perm									0.07			
v/c Ratio	0.70	0.73						0.54	0.27			
Uniform Delay, d1	14.8	15.2						45.3	42.0			
Progression Factor	1.00	1.00						1.00	1.00			
Incremental Delay, d2	4.0	1.5						2.4	1.7			
Delay (s)	18.8	16.7						47.7	43.7			
Level of Service	B	B						D	D			
Approach Delay (s)		17.2			0.0			46.9			0.0	
Approach LOS		B			A			D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			22.2					HCM 2000 Level of Service		C		
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		11.7		
Intersection Capacity Utilization			87.2%					ICU Level of Service		E		
Analysis Period (min)			15									

c Critical Lane Group

Queues

114: Florida Ave & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	737	2292	483	125
v/c Ratio	0.71	0.73	0.54	0.30
Control Delay	17.6	16.6	48.0	36.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.6	16.6	48.0	36.6
Queue Length 50th (ft)	411	480	202	75
Queue Length 95th (ft)	593	536	260	134
Internal Link Dist (ft)		924	937	
Turn Bay Length (ft)				
Base Capacity (vph)	1039	3156	892	416
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.73	0.54	0.30
<b>Intersection Summary</b>				

# HCM Signalized Intersection Capacity Analysis

## 115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBR2	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations												
Traffic Volume (vph)	453	1371	29	5	803	134	12	1	18	108	303	5
Future Volume (vph)	453	1371	29	5	803	134	12	1	18	108	303	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.2		5.9	5.9	5.9	5.9	5.9	5.9		6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	1.00		1.00	0.85	1.00	0.85	1.00	1.00		1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	1.00	0.95	1.00		0.95	
Satd. Flow (prot)	1770	3528		1770	1583	1863	1583	1770	1863		1772	
Flt Permitted	0.95	1.00		0.10	1.00	1.00	1.00	0.47	1.00		0.95	
Satd. Flow (perm)	1770	3528		187	1583	1863	1583	879	1863		1772	
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)	492	1490	32	5	873	146	13	1	20	117	329	5
RTOR Reduction (vph)	0	1	0	0	209	0	11	0	0	0	0	0
Lane Group Flow (vph)	492	1521	0	5	664	146	2	1	20	0	451	0
Turn Type	pm+pt	NA		Perm	Perm	NA	Perm	Perm	NA	Prot	Prot	
Protected Phases	1	6				4			8	9	9	
Permitted Phases	6			2	2		4	8				
Actuated Green, G (s)	78.8	78.8		61.1	61.1	17.1	17.1	17.1	17.1		25.4	
Effective Green, g (s)	78.8	78.8		61.1	61.1	17.1	17.1	17.1	17.1		25.4	
Actuated g/C Ratio	0.56	0.56		0.44	0.44	0.12	0.12	0.12	0.12		0.18	
Clearance Time (s)	5.5	6.2		5.9	5.9	5.9	5.9	5.9	5.9		6.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		4.5	
Lane Grp Cap (vph)	996	1985		81	690	227	193	107	227		321	
v/s Ratio Prot	0.04	c0.43				c0.08			0.01		c0.25	
v/s Ratio Perm	0.23			0.03	c0.42		0.00	0.00				
v/c Ratio	0.49	0.77		0.06	0.96	0.64	0.01	0.01	0.09		1.40	
Uniform Delay, d1	18.5	23.5		22.8	38.3	58.5	54.0	54.0	54.5		57.3	
Progression Factor	0.82	0.71		0.93	0.65	1.00	1.00	1.28	1.28		1.00	
Incremental Delay, d2	1.2	2.0		1.3	23.8	13.2	0.1	0.1	0.3		200.0	
Delay (s)	16.5	18.8		22.4	48.8	71.7	54.1	69.4	70.1		257.3	
Level of Service	B	B		C	D	E	D	E	E		F	
Approach Delay (s)		18.2				70.3			70.0		257.3	
Approach LOS		B				E			E		F	

### Intersection Summary

HCM 2000 Control Delay	59.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.9
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues

115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/20/2022



Lane Group	EBL	EBT	WBL	WBR2	NBT	NBR	SBL	SBT	SEL
Lane Group Flow (vph)	492	1522	5	873	146	13	1	20	451
v/c Ratio	0.49	0.77	0.06	0.97	0.64	0.04	0.01	0.09	1.40
Control Delay	16.4	19.1	23.6	37.3	72.4	0.2	70.0	70.7	241.3
Queue Delay	0.6	2.3	0.0	22.2	2.4	0.0	0.0	0.0	0.0
Total Delay	17.0	21.3	23.6	59.5	74.9	0.2	70.0	70.7	241.3
Queue Length 50th (ft)	169	281	2	176	129	0	1	15	~548
Queue Length 95th (ft)	237	351	m4	#647	205	0	m1	m18	#764
Internal Link Dist (ft)		523			969			424	319
Turn Bay Length (ft)				10			100		
Base Capacity (vph)	1005	1987	82	899	227	297	107	227	321
Starvation Cap Reductn	213	148	0	14	0	0	0	0	0
Spillback Cap Reductn	68	320	0	70	25	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.91	0.06	1.05	0.72	0.04	0.01	0.09	1.40

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



HCM 6th Signalized Intersection Summary  
 116: Channelside Dr & Jefferson St

01/20/2022

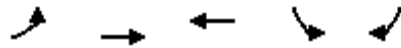


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗	↑	↖		↗	↖
Traffic Volume (veh/h)	128	1559	642	11	7	160
Future Volume (veh/h)	128	1559	642	11	7	160
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	139	1695	698	12	8	174
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	645	1470	1283	22	235	209
Arrive On Green	0.01	0.26	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1781	1870	1833	32	1781	1585
Grp Volume(v), veh/h	139	1695	0	710	8	174
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1865	1781	1585
Q Serve(g_s), s	2.8	110.0	0.0	0.0	0.5	15.0
Cycle Q Clear(g_c), s	2.8	110.0	0.0	0.0	0.5	15.0
Prop In Lane	1.00			0.02	1.00	1.00
Lane Grp Cap(c), veh/h	645	1470	0	1305	235	209
V/C Ratio(X)	0.22	1.15	0.00	0.54	0.03	0.83
Avail Cap(c_a), veh/h	645	1470	0	1305	235	209
HCM Platoon Ratio	0.33	0.33	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.30	0.30	0.00	0.74	0.96	0.96
Uniform Delay (d), s/veh	4.6	51.8	0.0	0.0	53.0	59.2
Incr Delay (d2), s/veh	0.2	71.7	0.0	1.2	0.3	29.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	84.1	0.0	0.4	0.3	7.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.9	123.5	0.0	1.2	53.2	88.5
LnGrp LOS	A	F	A	A	D	F
Approach Vol, veh/h		1834	710		182	
Approach Delay, s/veh		114.5	1.2		86.9	
Approach LOS		F	A		F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	12.0	104.0			116.0	24.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	6.0	98.0			110.0	18.5
Max Q Clear Time (g_c+I1), s	4.8	2.0			112.0	17.0
Green Ext Time (p_c), s	0.0	5.5			0.0	0.1
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			83.2			
HCM 6th LOS			F			

Queues

116: Channelside Dr & Jefferson St

01/20/2022



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	139	1695	710	8	174
v/c Ratio	0.29	1.16	0.55	0.03	0.48
Control Delay	3.9	101.3	2.1	52.1	28.9
Queue Delay	0.0	1.4	0.3	0.0	0.8
Total Delay	3.9	102.7	2.3	52.1	29.6
Queue Length 50th (ft)	20	~1830	21	7	82
Queue Length 95th (ft)	m24	m#1881	43	m21	127
Internal Link Dist (ft)		315	140	434	
Turn Bay Length (ft)				100	
Base Capacity (vph)	478	1463	1301	233	360
Starvation Cap Reductn	0	425	150	0	0
Spillback Cap Reductn	0	149	52	0	48
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	1.63	0.62	0.03	0.56

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 117: Channelside Dr & Nebraska Ave

01/20/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	290	1276	599	59	8	54
Future Volume (veh/h)	290	1276	599	59	8	54
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	315	1387	651	64	9	59
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	454	1470	1041	102	28	182
Arrive On Green	0.24	1.00	0.21	0.21	0.13	0.13
Sat Flow, veh/h	1781	1870	1676	165	210	1378
Grp Volume(v), veh/h	315	1387	0	715	69	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1841	1612	0
Q Serve(g_s), s	0.1	0.0	0.0	49.6	5.4	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.0	49.6	5.4	0.0
Prop In Lane	1.00			0.09	0.13	0.86
Lane Grp Cap(c), veh/h	454	1470	0	1144	213	0
V/C Ratio(X)	0.69	0.94	0.00	0.63	0.32	0.00
Avail Cap(c_a), veh/h	454	1470	0	1144	213	0
HCM Platoon Ratio	2.00	2.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.00	0.81	0.81	0.00
Uniform Delay (d), s/veh	36.1	0.0	0.0	40.8	55.1	0.0
Incr Delay (d2), s/veh	0.8	1.7	0.0	2.1	3.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.5	0.7	0.0	25.1	2.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	36.9	1.7	0.0	42.9	58.3	0.0
LnGrp LOS	D	A	A	D	E	A
Approach Vol, veh/h		1702	715		69	
Approach Delay, s/veh		8.2	42.9		58.3	
Approach LOS		A	D		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	23.0	93.0			116.0	24.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	17.0	87.0			110.0	18.5
Max Q Clear Time (g_c+I1), s	2.1	51.6			2.0	7.4
Green Ext Time (p_c), s	0.8	5.4			29.0	0.1
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			19.6			
HCM 6th LOS			B			

# Queues

## 117: Channelside Dr & Nebraska Ave

01/20/2022



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	315	1387	715	68
v/c Ratio	0.57	0.95	0.62	0.26
Control Delay	6.6	11.3	13.8	40.0
Queue Delay	47.3	44.4	1.2	0.0
Total Delay	53.9	55.7	15.0	40.0
Queue Length 50th (ft)	19	1248	175	29
Queue Length 95th (ft)	m16	m314	429	m23
Internal Link Dist (ft)		140	194	464
Turn Bay Length (ft)	80			
Base Capacity (vph)	550	1463	1146	266
Starvation Cap Reductn	255	359	209	0
Spillback Cap Reductn	135	340	224	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.07	1.26	0.78	0.26

### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



HCM 6th Signalized Intersection Summary  
119: Old Water St & Channelside Dr

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	31	1216	37	7	510	141	89	24	70	48	4	59
Future Volume (veh/h)	31	1216	37	7	510	141	89	24	70	48	4	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	34	1322	40	8	554	153	97	26	76	52	4	64
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	407	1283	39	325	1174	324	164	52	152	136	12	186
Arrive On Green	0.05	0.95	0.95	0.10	0.56	0.56	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1781	1806	55	1781	1411	390	1333	420	1229	1293	94	1505
Grp Volume(v), veh/h	34	0	1362	8	0	707	97	0	102	52	0	68
Grp Sat Flow(s),veh/h/ln	1781	0	1861	1781	0	1800	1333	0	1649	1293	0	1599
Q Serve(g_s), s	0.9	0.0	99.5	0.0	0.0	33.0	10.1	0.0	8.1	5.5	0.0	5.4
Cycle Q Clear(g_c), s	0.9	0.0	99.5	0.0	0.0	33.0	15.5	0.0	8.1	13.6	0.0	5.4
Prop In Lane	1.00		0.03	1.00		0.22	1.00		0.75	1.00		0.94
Lane Grp Cap(c), veh/h	407	0	1322	325	0	1498	164	0	204	136	0	198
V/C Ratio(X)	0.08	0.00	1.03	0.02	0.00	0.47	0.59	0.00	0.50	0.38	0.00	0.34
Avail Cap(c_a), veh/h	407	0	1322	325	0	1498	164	0	204	136	0	198
HCM Platoon Ratio	1.33	1.33	1.33	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.28	0.00	0.28	0.78	0.00	0.78	1.00	0.00	1.00	0.74	0.00	0.74
Uniform Delay (d), s/veh	11.7	0.0	3.8	53.2	0.0	12.5	63.3	0.0	57.3	63.7	0.0	56.2
Incr Delay (d2), s/veh	0.1	0.0	21.7	0.1	0.0	0.8	14.6	0.0	8.5	5.9	0.0	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	10.2	0.3	0.0	14.7	4.1	0.0	3.9	2.0	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.9	0.0	25.5	53.3	0.0	13.3	77.9	0.0	65.8	69.5	0.0	59.7
LnGrp LOS	B	A	F	D	A	B	E	A	E	E	A	E
Approach Vol, veh/h		1396			715			199				120
Approach Delay, s/veh		25.2			13.8			71.7				63.9
Approach LOS		C			B			E				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.0	123.5		23.0	28.5	106.0		23.0				
Change Period (Y+Rc), s	6.0	6.5		* 5.7	6.5	* 6.5		* 5.7				
Max Green Setting (Gmax), s	5.0	99.5		* 17	5.0	* 1E2		* 17				
Max Q Clear Time (g_c+I1), s	2.9	35.0		17.5	2.0	101.5		15.6				
Green Ext Time (p_c), s	0.0	5.6		0.0	0.0	0.0		0.1				

Intersection Summary

HCM 6th Ctrl Delay	27.5
HCM 6th LOS	C

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

119: Old Water St & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	1362	8	707	97	102	52	68
v/c Ratio	0.08	1.03	0.07	0.55	0.59	0.38	0.36	0.27
Control Delay	7.8	39.8	3.6	3.6	73.7	22.9	56.1	22.9
Queue Delay	0.0	27.3	0.0	0.4	1.8	105.1	672.9	0.2
Total Delay	7.8	67.1	3.6	4.0	75.6	128.0	729.0	23.1
Queue Length 50th (ft)	10	~1315	0	19	85	21	50	18
Queue Length 95th (ft)	m11	m#1463	m1	92	149	79	m59	m27
Internal Link Dist (ft)		194		425		945		461
Turn Bay Length (ft)	80		100				150	
Base Capacity (vph)	428	1319	116	1288	164	270	143	253
Starvation Cap Reductn	0	219	0	190	0	0	0	0
Spillback Cap Reductn	0	317	0	158	15	229	143	26
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	1.36	0.07	0.64	0.65	2.49	52.00	0.30

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 118: Beneficial Dr/Meridian Ave & Channelside Dr

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	726	554	54	95	276	112	122	386	78	112	212	261
Future Volume (vph)	726	554	54	95	276	112	122	386	78	112	212	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.2		6.2	6.2		6.4	6.4	6.4	6.4	6.4	6.4
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1838		1770	1782		1770	1863	1583	1770	1863	1583
Flt Permitted	0.25	1.00		0.41	1.00		0.37	1.00	1.00	0.37	1.00	1.00
Satd. Flow (perm)	460	1838		771	1782		684	1863	1583	687	1863	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)	789	602	59	103	300	122	133	420	85	122	230	284
RTOR Reduction (vph)	0	2	0	0	11	0	0	0	57	0	0	218
Lane Group Flow (vph)	789	659	0	103	411	0	133	420	28	122	230	66
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6			2			4		4	8		8
Actuated Green, G (s)	81.8	81.8		47.8	47.8		45.6	45.6	45.6	32.6	32.6	32.6
Effective Green, g (s)	81.8	81.8		47.8	47.8		45.6	45.6	45.6	32.6	32.6	32.6
Actuated g/C Ratio	0.58	0.58		0.34	0.34		0.33	0.33	0.33	0.23	0.23	0.23
Clearance Time (s)	6.0	6.2		6.2	6.2		6.4	6.4	6.4	6.4	6.4	6.4
Vehicle Extension (s)	2.0	3.0		3.0	3.0		2.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	530	1073		263	608		273	606	515	159	433	368
v/s Ratio Prot	c0.30	0.36			0.23		0.02	c0.23			0.12	
v/s Ratio Perm	c0.57			0.13			0.14		0.02	c0.18		0.04
v/c Ratio	1.49	0.61		0.39	0.68		0.49	0.69	0.05	0.77	0.53	0.18
Uniform Delay, d1	27.6	18.9		35.0	39.5		37.1	41.1	32.4	50.2	47.0	43.0
Progression Factor	1.61	1.02		1.00	1.00		1.00	1.00	1.00	1.49	1.51	7.92
Incremental Delay, d2	222.7	0.7		4.3	6.0		6.1	6.4	0.2	24.4	3.7	0.9
Delay (s)	267.0	20.0		39.4	45.4		43.2	47.5	32.6	99.3	74.7	341.6
Level of Service	F	B		D	D		D	D	C	F	E	F
Approach Delay (s)		154.4			44.2			44.6			198.6	
Approach LOS		F			D			D			F	

Intersection Summary

HCM 2000 Control Delay	123.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	111.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues

118: Beneficial Dr/Meridian Ave & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	789	661	103	422	133	420	85	122	230	284
v/c Ratio	1.49	0.61	0.39	0.68	0.49	0.69	0.15	0.77	0.53	0.48
Control Delay	251.3	20.3	40.6	44.6	41.8	48.2	7.1	99.4	75.7	40.6
Queue Delay	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	251.3	25.2	40.6	44.6	41.8	48.2	7.1	99.4	75.7	40.6
Queue Length 50th (ft)	~818	281	71	318	88	333	0	116	218	159
Queue Length 95th (ft)	m#798	m282	130	442	143	457	39	m#197	307	248
Internal Link Dist (ft)		425		125		927			460	
Turn Bay Length (ft)	150		150				400	200		
Base Capacity (vph)	531	1076	263	619	273	606	572	159	433	586
Starvation Cap Reductn	0	340	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.49	0.90	0.39	0.68	0.49	0.69	0.15	0.77	0.53	0.48

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



# HCS7 Two-Way Stop-Control Report

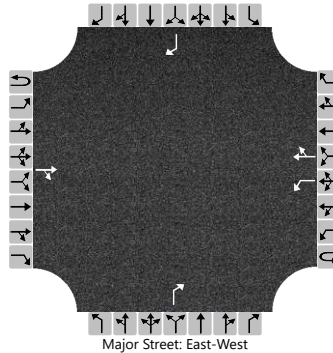
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2026
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Whiting PD&E Study

## Site Information

Intersection	ChannelsideDrt&12thSt
Jurisdiction	FDOT, District 7
East/West Street	Channelside Dr
North/South Street	12th St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	1	1	0		0	0	1		0	0	1
Configuration				TR		L		TR				R				R
Volume (veh/h)			663	81		6	401	24				85				82
Percent Heavy Vehicles (%)						2						2				2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized										No				No		
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)					4.1							6.2				6.2
Critical Headway (sec)					4.12							6.22				6.22
Base Follow-Up Headway (sec)					2.2							3.3				3.3
Follow-Up Headway (sec)					2.22							3.32				3.32

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					6							89				86		
Capacity, c (veh/h)					835							416				621		
v/c Ratio					0.01							0.21				0.14		
95% Queue Length, Q <sub>95</sub> (veh)					0.0							0.8				0.5		
Control Delay (s/veh)					9.3							16.0				11.7		
Level of Service (LOS)					A							C				B		
Approach Delay (s/veh)					0.1						16.0				11.7			
Approach LOS					C						B				B			

# MOVEMENT SUMMARY

**Site: 8 [Channelside Drive at Cumberland Avenue\_2026-PM  
(Site Folder: General)]**

No-Build 2026 Year -  
AM Peak Hour  
Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h ]	[ HV ] %	[ Total veh/h ]	[ HV ] %				[ Veh. veh ]	[ Dist ] ft				
South: Channelside Drive														
3	L2	123	2.0	129	2.0	0.608	10.1	LOS B	4.7	119.7	0.41	0.23	0.41	35.2
8	T1	591	2.0	622	2.0	0.608	10.1	LOS B	4.7	119.7	0.41	0.23	0.41	35.9
18	R2	25	2.0	26	2.0	0.608	10.1	LOS B	4.7	119.7	0.41	0.23	0.41	34.8
Approach		739	2.0	778	2.0	0.608	10.1	LOS B	4.7	119.7	0.41	0.23	0.41	35.8
East: E Cumberland Avenue														
1	L2	11	2.0	12	2.0	0.091	6.1	LOS A	0.3	7.9	0.56	0.55	0.56	38.5
6	T1	5	2.0	5	2.0	0.091	6.1	LOS A	0.3	7.9	0.56	0.55	0.56	35.7
16	R2	44	2.0	46	2.0	0.091	6.1	LOS A	0.3	7.9	0.56	0.55	0.56	35.6
Approach		60	2.0	63	2.0	0.091	6.1	LOS A	0.3	7.9	0.56	0.55	0.56	36.1
North: Channelside Drive														
7	L2	25	2.0	26	2.0	0.381	6.6	LOS A	2.0	50.3	0.35	0.22	0.35	37.2
4	T1	419	2.0	441	2.0	0.381	6.6	LOS A	2.0	50.3	0.35	0.22	0.35	38.9
14	R2	214	2.0	225	2.0	0.195	4.9	LOS A	0.8	21.3	0.30	0.18	0.30	34.5
Approach		658	2.0	693	2.0	0.381	6.1	LOS A	2.0	50.3	0.33	0.20	0.33	37.3
West: E Cumberland Avenue														
5	L2	46	2.0	48	2.0	0.092	4.8	LOS A	0.3	8.4	0.46	0.38	0.46	34.3
2	T1	22	2.0	23	2.0	0.092	4.8	LOS A	0.3	8.4	0.46	0.38	0.46	34.1
12	R2	12	2.0	13	2.0	0.092	4.8	LOS A	0.3	8.4	0.46	0.38	0.46	33.0
Approach		80	2.0	84	2.0	0.092	4.8	LOS A	0.3	8.4	0.46	0.38	0.46	34.1
All Vehicles		1537	2.0	1618	2.0	0.608	7.9	LOS A	4.7	119.7	0.39	0.24	0.39	36.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Organisation: H. W. LOCHNER, INC. | Licence: PLUS / Enterprise | Processed: Monday, November 29, 2021 2:14:47 AM

Project: C:\Users\kshams\Desktop\April\Tampa Office\Whitting\PTAR-Working\HCS\_SIDRA\No-Build\2026\Channelside Drive\_Cumberland Avenue\_Existing\_NB2026\_PM.sip9

# HCS7 Two-Way Stop-Control Report

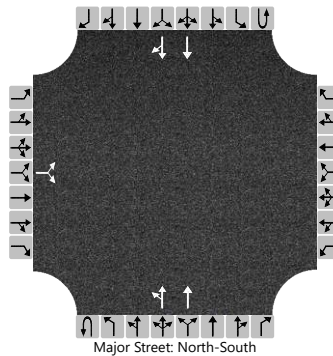
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2026
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	ChannelsideDr&E WhitingSt
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Channelside Dr
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	0	0		0	2	0		0	2	0	
Configuration			LR							LT	T				T	TR	
Volume (veh/h)		5		1						21	660				657	18	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways




















Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.84		6.94						4.14						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			6							22								
Capacity, c (veh/h)			226							885								
v/c Ratio			0.03							0.02								
95% Queue Length, Q <sub>95</sub> (veh)			0.1							0.1								
Control Delay (s/veh)			21.4							9.2								
Level of Service (LOS)			C							A								
Approach Delay (s/veh)		21.4									0.5							
Approach LOS		C									A							

HCM Signalized Intersection Capacity Analysis  
 130: Channelside Dr & E Washington St/E York St

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	8	5	17	5	98	5	661	2	30	647	16
Future Volume (vph)	20	8	5	17	5	98	5	661	2	30	647	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.9			8.4	8.4	6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.98			1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1774			1793	1583	1770	3538		1770	3527	
Flt Permitted		0.22			0.75	1.00	0.38	1.00		0.95	1.00	
Satd. Flow (perm)		395			1394	1583	704	3538		1770	3527	
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)	22	9	5	18	5	107	5	718	2	33	703	17
RTOR Reduction (vph)	0	4	0	0	0	100	0	0	0	0	1	0
Lane Group Flow (vph)	0	32	0	0	23	7	5	720	0	33	719	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases		4			3			2		1	1 2	
Permitted Phases	4			3		3	2					
Actuated Green, G (s)		14.9			8.8	8.8	74.3	74.3		15.7	96.0	
Effective Green, g (s)		14.9			8.8	8.8	74.3	74.3		15.7	96.0	
Actuated g/C Ratio		0.11			0.06	0.06	0.53	0.53		0.11	0.69	
Clearance Time (s)		5.9			8.4	8.4	6.0	6.0		6.0		
Vehicle Extension (s)		2.0			4.0	4.0	3.0	3.0		2.0		
Lane Grp Cap (vph)		42			87	99	373	1877		198	2418	
v/s Ratio Prot								c0.20		0.02	c0.20	
v/s Ratio Perm		c0.08			c0.02	0.00	0.01					
v/c Ratio		0.75			0.26	0.07	0.01	0.38		0.17	0.30	
Uniform Delay, d1		60.7			62.5	61.7	15.5	19.4		56.2	8.7	
Progression Factor		1.29			1.00	1.00	1.00	1.00		1.02	1.53	
Incremental Delay, d2		45.0			2.2	0.4	0.1	0.6		0.1	0.0	
Delay (s)		123.1			64.7	62.1	15.6	20.0		57.5	13.3	
Level of Service		F			E	E	B	B		E	B	
Approach Delay (s)		123.1			62.6			19.9			15.3	
Approach LOS		F			E			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			23.4									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.42									
Actuated Cycle Length (s)			140.0								26.3	Sum of lost time (s)
Intersection Capacity Utilization			45.5%									ICU Level of Service A
Analysis Period (min)			15									

c Critical Lane Group



Queues

130: Channelside Dr & E Washington St/E York St

01/20/2022


























Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	36	23	107	5	720	33	720
v/c Ratio	0.73	0.26	0.51	0.01	0.38	0.17	0.29
Control Delay	126.7	69.1	17.6	22.6	22.4	57.0	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	126.7	69.1	17.6	22.6	22.4	57.0	15.3
Queue Length 50th (ft)	29	20	0	2	208	32	126
Queue Length 95th (ft)	m62	50	51	12	302	m57	204
Internal Link Dist (ft)	922	976			474		596
Turn Bay Length (ft)			430	160		280	
Base Capacity (vph)	69	215	342	379	1908	199	2420
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.11	0.31	0.01	0.38	0.17	0.30

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 129: Channelside Dr & Kennedy Blvd

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	792	10	39	16	23	47	55	721	2	12	619	372
Future Volume (vph)	792	10	39	16	23	47	55	721	2	12	619	372
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1687	1583		1826	1583	1770	3538		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.67	1.00	0.24	1.00		0.18	1.00	1.00
Satd. Flow (perm)	1681	1687	1583		1254	1583	452	3538		328	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	861	11	42	17	25	51	60	784	2	13	673	404
RTOR Reduction (vph)	0	0	26	0	0	48	0	0	0	0	0	276
Lane Group Flow (vph)	439	433	16	0	42	3	60	786	0	13	673	128
Turn Type	Split	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	3	3			1			2				2
Permitted Phases			3	1		1	2			2		2
Actuated Green, G (s)	54.7	54.7	54.7		8.8	8.8	44.3	44.3		44.3	44.3	44.3
Effective Green, g (s)	54.7	54.7	54.7		8.8	8.8	44.3	44.3		44.3	44.3	44.3
Actuated g/C Ratio	0.39	0.39	0.39		0.06	0.06	0.32	0.32		0.32	0.32	0.32
Clearance Time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3
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)	656	659	618		78	99	143	1119		103	1119	500
v/s Ratio Prot	c0.26	0.26						c0.22				0.19
v/s Ratio Perm			0.01		c0.03	0.00	0.13			0.04		0.08
v/c Ratio	0.67	0.66	0.03		0.54	0.03	0.42	0.70		0.13	0.60	0.26
Uniform Delay, d1	35.2	35.0	26.3		63.6	61.6	37.7	42.1		34.1	40.4	35.6
Progression Factor	1.00	1.00	1.00		1.00	1.00	0.60	0.70		1.00	1.00	1.00
Incremental Delay, d2	5.4	5.1	0.1		7.0	0.1	8.3	3.5		2.5	2.4	1.2
Delay (s)	40.5	40.0	26.3		70.6	61.7	30.9	32.8		36.6	42.8	36.8
Level of Service	D	D	C		E	E	C	C		D	D	D
Approach Delay (s)		39.6			65.7			32.6			40.5	
Approach LOS		D			E			C			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			38.8		HCM 2000 Level of Service						D	
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			140.0		Sum of lost time (s)						22.4	
Intersection Capacity Utilization			77.1%		ICU Level of Service						D	
Analysis Period (min)			15									

c Critical Lane Group

Queues

129: Channelside Dr & Kennedy Blvd

01/20/2022



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	439	433	42	42	51	60	786	13	673	404
v/c Ratio	0.67	0.66	0.06	0.48	0.25	0.41	0.68	0.12	0.58	0.51
Control Delay	41.3	40.7	0.2	78.8	3.0	30.9	31.7	36.9	41.7	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.3	40.7	0.2	78.8	3.0	30.9	31.7	36.9	41.7	5.6
Queue Length 50th (ft)	344	337	0	38	0	45	345	8	268	0
Queue Length 95th (ft)	477	468	0	77	2	99	427	27	333	76
Internal Link Dist (ft)		903		909			596		1256	
Turn Bay Length (ft)			140			280		75		375
Base Capacity (vph)	656	659	680	136	259	147	1155	107	1155	788
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.66	0.06	0.31	0.20	0.41	0.68	0.12	0.58	0.51

Intersection Summary

# HCM Signalized Intersection Capacity Analysis

109: Florida Ave & Brorein St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↑		↘	↑↑↑↑				
Traffic Volume (vph)	0	0	0	0	1730	155	196	1660	0	0	0	0
Future Volume (vph)	0	0	0	0	1730	155	196	1660	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.8		6.1	6.1				
Lane Util. Factor					0.86		1.00	0.91				
Frt					0.99		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6329		1770	5085				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6329		1770	5085				
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	0	0	0	1880	168	213	1804	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	23	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2038	0	190	1804	0	0	0	0
Turn Type					NA		Perm	NA				
Protected Phases					2			4				
Permitted Phases							4					
Actuated Green, G (s)					54.2		68.9	68.9				
Effective Green, g (s)					54.2		68.9	68.9				
Actuated g/C Ratio					0.39		0.49	0.49				
Clearance Time (s)					5.8		6.1	6.1				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					2450		871	2502				
v/s Ratio Prot					c0.32			c0.35				
v/s Ratio Perm							0.11					
v/c Ratio					0.83		0.22	0.72				
Uniform Delay, d1					38.8		20.2	28.0				
Progression Factor					1.00		0.86	0.87				
Incremental Delay, d2					3.5		0.5	1.6				
Delay (s)					42.2		17.8	26.0				
Level of Service					D		B	C				
Approach Delay (s)		0.0			42.2			25.1			0.0	
Approach LOS		A			D			C			A	

## Intersection Summary

HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.9
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



# Queues

## 109: Florida Ave & Brorein St

01/20/2022



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	2048	213	1804
v/c Ratio	0.83	0.24	0.72
Control Delay	42.2	14.3	26.2
Queue Delay	0.0	0.0	0.0
Total Delay	42.2	14.3	26.2
Queue Length 50th (ft)	483	81	406
Queue Length 95th (ft)	532	m130	468
Internal Link Dist (ft)	416		237
Turn Bay Length (ft)			
Base Capacity (vph)	2461	893	2502
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.83	0.24	0.72

### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM Signalized Intersection Capacity Analysis

## 110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/20/2022



Movement	WBL	WBT	NBL	NBT	NBR2	SBL	SBT	SBR	SWR	SWR2
Lane Configurations		↕↕	↗	↕	↗	↗	↗		↗	↗
Traffic Volume (vph)	4	1150	645	480	384	494	16	551	471	96
Future Volume (vph)	4	1150	645	480	384	494	16	551	471	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.5	6.0	6.0	5.5	6.0		5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	1.00	1.00	0.85	1.00	0.85		1.00	0.85
Flt Protected		1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00
Satd. Flow (prot)		3539	1770	1863	1583	1770	1591		1863	1583
Flt Permitted		1.00	0.19	1.00	1.00	0.36	1.00		1.00	1.00
Satd. Flow (perm)		3539	352	1863	1583	669	1591		1863	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
Adj. Flow (vph)	4	1250	701	522	417	537	17	599	512	104
RTOR Reduction (vph)	0	0	0	0	32	0	1	0	0	70
Lane Group Flow (vph)	0	1254	701	522	385	537	615	0	512	34
Turn Type	Perm	NA	pm+pt	NA	Perm	pm+pt	NA		Prot	Perm
Protected Phases		2!	7	4		3	8		2!	
Permitted Phases	2		4		4	8				2
Actuated Green, G (s)		46.3	82.0	71.0	71.0	69.5	64.0		46.3	46.3
Effective Green, g (s)		46.3	82.0	71.0	71.0	69.5	64.0		46.3	46.3
Actuated g/C Ratio		0.33	0.59	0.51	0.51	0.50	0.46		0.33	0.33
Clearance Time (s)		5.7	5.5	6.0	6.0	5.5	6.0		5.7	5.7
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1170	332	944	802	375	727		616	523
v/s Ratio Prot			c0.19	0.28		0.06	0.39		0.27	
v/s Ratio Perm		0.35	c1.05		0.24	0.65				0.02
v/c Ratio		1.07	2.11	0.55	0.48	1.43	0.85		0.83	0.07
Uniform Delay, d1		46.9	25.9	23.6	22.5	37.7	33.7		43.2	32.1
Progression Factor		0.66	1.22	1.04	1.02	1.00	1.00		1.00	1.00
Incremental Delay, d2		39.3	505.7	1.3	1.1	208.6	11.3		12.4	0.2
Delay (s)		70.0	537.2	25.8	24.0	246.4	44.8		55.6	32.3
Level of Service		E	F	C	C	F	D		E	C
Approach Delay (s)		70.0		244.0			138.7			
Approach LOS		E		F			F			

### Intersection Summary

HCM 2000 Control Delay	145.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	150.8%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Queues

110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/20/2022



Lane Group	WBT	NBL	NBT	NBR2	SBL	SBT	SWR	SWR2
Lane Group Flow (vph)	1254	701	522	417	537	616	512	104
v/c Ratio	1.07	2.10	0.55	0.50	1.42	0.85	0.83	0.17
Control Delay	70.2	519.2	26.3	20.8	232.1	45.7	56.3	5.8
Queue Delay	11.7	0.0	18.6	3.6	0.2	11.4	0.0	0.0
Total Delay	81.9	519.2	44.9	24.4	232.3	57.1	56.3	5.8
Queue Length 50th (ft)	~658	~1026	396	267	~523	512	430	0
Queue Length 95th (ft)	m#626	m#1121	m435	m314	#843	#713	#610	39
Internal Link Dist (ft)	507		424			563		
Turn Bay Length (ft)		250		10				
Base Capacity (vph)	1170	334	944	834	377	727	616	596
Starvation Cap Reductn	70	0	417	319	0	98	0	0
Spillback Cap Reductn	0	0	0	18	7	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.14	2.10	0.99	0.81	1.45	0.98	0.83	0.17

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCM 6th Signalized Intersection Summary

111: Jefferson St & Brorein St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕		↖	↕		↖	↗	↖
Traffic Volume (veh/h)	456	538	27	6	790	660	172	303	405	147	92	192
Future Volume (veh/h)	456	538	27	6	790	660	172	303	405	147	92	192
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	496	585	29	7	859	717	187	329	440	160	100	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	439	1165	58	376	758	600	299	296	264	147	298	
Arrive On Green	0.22	0.66	0.66	0.80	0.80	0.80	0.06	0.17	0.17	0.02	0.05	0.00
Sat Flow, veh/h	1781	1767	88	808	1886	1492	1781	1777	1585	1781	1870	1585
Grp Volume(v), veh/h	496	0	614	7	807	769	187	329	440	160	100	0
Grp Sat Flow(s),veh/h/ln	1781	0	1855	808	1777	1602	1781	1777	1585	1781	1870	1585
Q Serve(g_s), s	30.5	0.0	23.6	0.2	56.3	56.3	8.5	23.3	23.3	7.5	7.2	0.0
Cycle Q Clear(g_c), s	30.5	0.0	23.6	0.2	56.3	56.3	8.5	23.3	23.3	7.5	7.2	0.0
Prop In Lane	1.00		0.05	1.00		0.93	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	439	0	1223	376	715	644	299	296	264	147	298	
V/C Ratio(X)	1.13	0.00	0.50	0.02	1.13	1.19	0.63	1.11	1.67	1.09	0.34	
Avail Cap(c_a), veh/h	439	0	1223	376	715	644	299	296	264	147	298	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(l)	0.09	0.00	0.09	0.70	0.70	0.70	0.97	0.97	0.97	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.0	0.0	12.1	8.2	13.7	13.7	50.3	58.4	58.4	54.7	59.2	0.0
Incr Delay (d2), s/veh	60.9	0.0	0.1	0.1	70.6	98.3	9.2	85.3	316.3	100.2	3.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.8	0.0	9.5	0.1	20.7	23.6	2.8	17.5	32.5	5.6	3.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	107.9	0.0	12.3	8.3	84.3	112.0	59.5	143.7	374.6	155.0	62.2	0.0
LnGrp LOS	F	A	B	A	F	F	E	F	F	F	E	
Approach Vol, veh/h		1110			1583			956			260	A
Approach Delay, s/veh		55.0			97.4			233.5			119.3	
Approach LOS		E			F			F			F	
Timer - Assigned Phs	1	2	3	4	6	7	8					
Phs Duration (G+Y+Rc), s	36.0	62.0	13.0	29.0	98.0	14.0	28.0					
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 5.7	* 5.7	5.5	* 5.7					
Max Green Setting (Gmax), s	30.5	* 56	7.5	* 23	* 92	8.5	* 22					
Max Q Clear Time (g_c+I1), s	32.5	58.3	9.5	25.3	25.6	10.5	9.2					
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	5.0	0.0	0.3					

## Intersection Summary

HCM 6th Ctrl Delay	120.1
HCM 6th LOS	F

## Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Queues

111: Jefferson St & Brorein St

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	496	614	7	1576	187	769	160	100	209
v/c Ratio	1.13	0.50	0.02	1.10	0.62	1.08	1.08	0.34	0.49
Control Delay	103.5	6.7	28.7	82.3	52.5	94.6	145.4	66.8	18.4
Queue Delay	0.0	55.5	0.0	1.4	0.0	8.3	0.0	0.0	0.2
Total Delay	103.5	62.2	28.7	83.6	52.5	102.9	145.4	66.8	18.5
Queue Length 50th (ft)	~467	208	3	~450	137	~321	~151	90	17
Queue Length 95th (ft)	m#438	m118	m6	m#597	212	#454	m#257	m149	m96
Internal Link Dist (ft)		507		143		434		68	
Turn Bay Length (ft)	150		50		100		50		
Base Capacity (vph)	439	1221	323	1434	303	712	148	296	427
Starvation Cap Reductn	0	413	0	302	0	0	0	0	0
Spillback Cap Reductn	0	783	0	313	0	44	0	0	19
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	1.40	0.02	1.41	0.62	1.15	1.08	0.34	0.51

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 112: Nebraska Ave & Brorein St/Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕			↕			↕	
Traffic Volume (veh/h)	7	818	265	50	1045	109	200	60	264	30	17	210
Future Volume (veh/h)	7	818	265	50	1045	109	200	60	264	30	17	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	8	889	288	54	1136	118	217	65	287	33	18	228
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	737	239	59	1771	184	209	52	229	79	58	485
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	443	1353	438	476	3249	337	463	139	612	135	155	1298
Grp Volume(v), veh/h	8	0	1177	54	620	634	569	0	0	279	0	0
Grp Sat Flow(s),veh/h/ln	443	0	1791	476	1777	1810	1214	0	0	1588	0	0
Q Serve(g_s), s	0.0	0.0	74.1	2.2	0.0	0.0	34.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	74.1	76.3	0.0	0.0	52.3	0.0	0.0	18.3	0.0	0.0
Prop In Lane	1.00		0.24	1.00		0.19	0.38		0.50	0.12		0.82
Lane Grp Cap(c), veh/h	293	0	976	59	968	986	489	0	0	622	0	0
V/C Ratio(X)	0.03	0.00	1.21	0.92	0.64	0.64	1.16	0.00	0.00	0.45	0.00	0.00
Avail Cap(c_a), veh/h	293	0	976	59	968	986	489	0	0	622	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.00	0.74	0.65	0.65	0.65	0.80	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	38.0	0.0	0.0	48.1	0.0	0.0	33.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	99.9	73.7	2.1	2.1	90.5	0.0	0.0	2.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	27.1	3.0	0.6	0.6	30.0	0.0	0.0	7.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.1	0.0	99.9	111.7	2.1	2.1	138.6	0.0	0.0	35.5	0.0	0.0
LnGrp LOS	A	A	F	F	A	A	F	A	A	D	A	A
Approach Vol, veh/h		1185			1308			569				279
Approach Delay, s/veh		99.2			6.6			138.6				35.5
Approach LOS		F			A			F				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		82.0		58.0		82.0		58.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7		* 5.7				
Max Green Setting (Gmax), s		* 76		* 52		* 76		* 52				
Max Q Clear Time (g_c+I1), s		78.3		54.3		76.1		20.3				
Green Ext Time (p_c), s		0.0		0.0		0.2		2.1				

Intersection Summary

HCM 6th Ctrl Delay	64.4
HCM 6th LOS	E

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

112: Nebraska Ave & Brorein St/Cumberland Ave

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	8	1177	54	1254	569	279
v/c Ratio	0.06	1.19	1.04	0.66	1.23	0.47
Control Delay	20.3	125.4	151.0	22.3	150.0	35.8
Queue Delay	0.0	1.3	0.0	17.0	6.5	7.7
Total Delay	20.3	126.7	151.0	39.3	156.6	43.5
Queue Length 50th (ft)	4	~1261	~53	501	~616	182
Queue Length 95th (ft)	m6	m#1307	m#95	m520	#835	m196
Internal Link Dist (ft)		143		195	464	798
Turn Bay Length (ft)	50		70			
Base Capacity (vph)	132	985	52	1907	462	593
Starvation Cap Reductn	0	140	0	583	0	0
Spillback Cap Reductn	0	213	0	670	208	266
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	1.52	1.04	1.01	2.24	0.85

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 701: Old Water St & Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	928	77	32	541	51	515	85	52	50	47	148
Future Volume (veh/h)	107	928	77	32	541	51	515	85	52	50	47	148
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	116	1009	84	35	588	55	560	92	57	54	51	161
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	494	960	80	52	1851	173	438	436	270	209	63	199
Arrive On Green	0.75	0.75	0.75	1.00	1.00	1.00	0.34	0.67	0.67	0.16	0.16	0.16
Sat Flow, veh/h	787	1703	142	516	3285	307	1781	1080	669	1239	396	1250
Grp Volume(v), veh/h	116	0	1093	35	318	325	560	0	149	54	0	212
Grp Sat Flow(s),veh/h/ln	787	0	1845	516	1777	1815	1781	0	1750	1239	0	1645
Q Serve(g_s), s	6.5	0.0	78.9	0.2	0.0	0.0	28.5	0.0	4.5	5.6	0.0	17.4
Cycle Q Clear(g_c), s	6.7	0.0	78.9	78.9	0.0	0.0	28.5	0.0	4.5	10.1	0.0	17.4
Prop In Lane	1.00		0.08	1.00		0.17	1.00		0.38	1.00		0.76
Lane Grp Cap(c), veh/h	494	0	1040	52	1001	1023	438	0	706	209	0	262
V/C Ratio(X)	0.23	0.00	1.05	0.67	0.32	0.32	1.28	0.00	0.21	0.26	0.00	0.81
Avail Cap(c_a), veh/h	494	0	1040	52	1001	1023	438	0	706	209	0	262
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.00	0.09	0.72	0.72	0.72	0.96	0.00	0.96	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.5	0.0	17.5	39.4	0.0	0.0	43.7	0.0	14.4	55.8	0.0	56.8
Incr Delay (d2), s/veh	0.1	0.0	25.9	39.9	0.6	0.6	141.1	0.0	0.7	3.0	0.0	22.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	31.9	1.8	0.2	0.2	29.5	0.0	1.9	1.9	0.0	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.6	0.0	43.4	79.4	0.6	0.6	184.8	0.0	15.0	58.8	0.0	79.7
LnGrp LOS	A	A	F	E	A	A	F	A	B	E	A	E
Approach Vol, veh/h		1209			678			709				266
Approach Delay, s/veh		40.1			4.7			149.1				75.5
Approach LOS		D			A			F				E
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		84.8		62.2		84.8	34.2	28.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s		* 72		* 56		* 72	* 29	* 22				
Max Q Clear Time (g_c+I1), s		80.9		6.5		80.9	30.5	19.4				
Green Ext Time (p_c), s		0.0		1.0		0.0	0.0	0.4				

Intersection Summary

HCM 6th Ctrl Delay	62.0
HCM 6th LOS	E

Notes

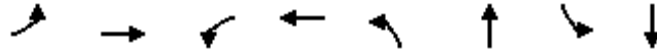
\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Queues

701: Old Water St & Cumberland Ave

01/20/2022























Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	116	1093	35	643	560	149	54	212
v/c Ratio	0.34	1.15	0.67	0.36	1.10	0.21	0.30	0.62
Control Delay	12.2	90.5	68.9	15.1	112.9	21.7	57.2	37.8
Queue Delay	2.0	1.7	0.0	0.0	12.3	0.0	1.0	0.6
Total Delay	14.2	92.2	68.9	15.1	125.2	21.8	58.2	38.4
Queue Length 50th (ft)	36	~1159	17	127	~535	71	44	98
Queue Length 95th (ft)	m28	m659	m#66	m143	#813	123	89	188
Internal Link Dist (ft)		195		457		461		758
Turn Bay Length (ft)	70		70		150		150	
Base Capacity (vph)	337	952	52	1808	510	722	180	344
Starvation Cap Reductn	121	246	0	0	0	0	0	0
Spillback Cap Reductn	0	19	0	2	319	60	38	20
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	1.55	0.67	0.36	2.93	0.23	0.38	0.65

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 102: Florida Ave & Whiting St

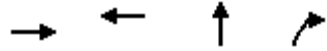
01/20/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			  					
Traffic Volume (vph)	180	461	0	0	168	288	135	2067	129	0	0	0	
Future Volume (vph)	180	461	0	0	168	288	135	2067	129	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.0			6.0			5.7	5.7				
Lane Util. Factor		0.95			0.95			0.91	1.00				
Frt		1.00			0.91			1.00	0.85				
Flt Protected		0.99			1.00			1.00	1.00				
Satd. Flow (prot)		3490			3204			5070	1583				
Flt Permitted		0.63			1.00			1.00	1.00				
Satd. Flow (perm)		2242			3204			5070	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)	196	501	0	0	183	313	147	2247	140	0	0	0	
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	26	0	0	0	
Lane Group Flow (vph)	0	697	0	0	485	0	0	2394	114	0	0	0	
Turn Type	Perm	NA			NA		Perm	NA	Perm				
Protected Phases		4			4			2					
Permitted Phases	4						2		2				
Actuated Green, G (s)		49.0			49.0			74.3	74.3				
Effective Green, g (s)		49.0			49.0			74.3	74.3				
Actuated g/C Ratio		0.35			0.35			0.53	0.53				
Clearance Time (s)		6.0			6.0			5.7	5.7				
Vehicle Extension (s)		3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)		784			1121			2690	840				
v/s Ratio Prot					0.15								
v/s Ratio Perm		c0.31						0.47	0.07				
v/c Ratio		0.89			0.43			0.89	0.14				
Uniform Delay, d1		42.9			34.9			29.2	16.6				
Progression Factor		1.00			1.02			0.89	1.18				
Incremental Delay, d2		14.3			1.0			4.1	0.3				
Delay (s)		57.2			36.4			30.2	19.9				
Level of Service		E			D			C	B				
Approach Delay (s)		57.2			36.4			29.6			0.0		
Approach LOS		E			D			C			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			35.7									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.88										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	15.7
Intersection Capacity Utilization			89.3%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

# Queues

## 102: Florida Ave & Whiting St

01/20/2022



Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	697	496	2394	140
v/c Ratio	0.89	0.44	0.89	0.16
Control Delay	57.7	35.4	30.5	12.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	57.7	35.4	30.5	12.3
Queue Length 50th (ft)	314	191	435	30
Queue Length 95th (ft)	#430	230	498	m64
Internal Link Dist (ft)	994	519	567	
Turn Bay Length (ft)				75
Base Capacity (vph)	784	1132	2690	865
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.89	0.44	0.89	0.16

### Intersection Summary





















# 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.

HCM Signalized Intersection Capacity Analysis  
103: Morgan St & Whiting St

01/20/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	138	401	125	115	245	275	124	354	195	33	432	44	
Future Volume (vph)	138	401	125	115	245	275	124	354	195	33	432	44	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.8	5.8		5.8	5.8			5.7			5.7		
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95		
Frt	1.00	0.96		1.00	0.92			0.96			0.99		
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00		
Satd. Flow (prot)	1770	1796		1770	1715			3355			3482		
Flt Permitted	0.25	1.00		0.25	1.00			0.71			0.87		
Satd. Flow (perm)	471	1796		458	1715			2406			3045		
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)	150	436	136	125	266	299	135	385	212	36	470	48	
RTOR Reduction (vph)	0	16	0	0	58	0	0	63	0	0	10	0	
Lane Group Flow (vph)	150	556	0	125	507	0	0	669	0	0	544	0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			4			2			2		
Permitted Phases	4			4			2			2			
Actuated Green, G (s)	29.2	29.2		29.2	29.2			29.3			29.3		
Effective Green, g (s)	29.2	29.2		29.2	29.2			29.3			29.3		
Actuated g/C Ratio	0.42	0.42		0.42	0.42			0.42			0.42		
Clearance Time (s)	5.8	5.8		5.8	5.8			5.7			5.7		
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0		
Lane Grp Cap (vph)	196	749		191	715			1007			1274		
v/s Ratio Prot		0.31			0.30								
v/s Ratio Perm	c0.32			0.27				c0.28			0.18		
v/c Ratio	0.77	0.74		0.65	0.71			0.66			0.43		
Uniform Delay, d1	17.5	17.2		16.4	16.9			16.4			14.4		
Progression Factor	1.69	1.67		0.95	0.91			0.80			1.00		
Incremental Delay, d2	19.2	5.0		13.9	5.0			3.2			1.0		
Delay (s)	48.8	33.7		29.4	20.4			16.3			15.5		
Level of Service	D	C		C	C			B			B		
Approach Delay (s)		36.8			22.1			16.3			15.5		
Approach LOS		D			C			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			23.1									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.71										
Actuated Cycle Length (s)			70.0									Sum of lost time (s)	11.5
Intersection Capacity Utilization			91.2%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													



Queues

103: Morgan St & Whiting St

01/20/2022






















Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	150	572	125	565	732	554
v/c Ratio	0.77	0.75	0.65	0.73	0.68	0.43
Control Delay	51.2	32.9	30.9	18.1	14.6	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	51.2	32.9	30.9	18.1	14.6	15.3
Queue Length 50th (ft)	123	460	37	140	120	82
Queue Length 95th (ft)	m157	m543	m65	m201	203	122
Internal Link Dist (ft)		519		503	563	1059
Turn Bay Length (ft)						
Base Capacity (vph)	196	765	191	773	1070	1284
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	81
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.75	0.65	0.73	0.68	0.46

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 104: Jefferson St & Whiting St

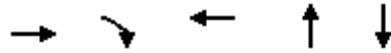
01/20/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	149	323	360	24	257	128	189	363	11	97	385	42	
Future Volume (vph)	149	323	360	24	257	128	189	363	11	97	385	42	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.7	5.7		5.7			5.7			5.7		
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95		
Frt		1.00	0.85		0.96			1.00			0.99		
Flt Protected		0.98	1.00		1.00			0.98			0.99		
Satd. Flow (prot)		1834	1583		1779			3471			3464		
Flt Permitted		0.61	1.00		0.79			0.64			0.74		
Satd. Flow (perm)		1144	1583		1403			2272			2579		
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)	162	351	391	26	279	139	205	395	12	105	418	46	
RTOR Reduction (vph)	0	0	255	0	21	0	0	2	0	0	8	0	
Lane Group Flow (vph)	0	513	136	0	423	0	0	610	0	0	561	0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA		
Protected Phases		8			4			6			2		
Permitted Phases	8		8	4			6			2			
Actuated Green, G (s)		24.3	24.3		24.3			34.3			34.3		
Effective Green, g (s)		24.3	24.3		24.3			34.3			34.3		
Actuated g/C Ratio		0.35	0.35		0.35			0.49			0.49		
Clearance Time (s)		5.7	5.7		5.7			5.7			5.7		
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0		
Lane Grp Cap (vph)		397	549		487			1113			1263		
v/s Ratio Prot													
v/s Ratio Perm		c0.45	0.09		0.30			c0.27			0.22		
v/c Ratio		1.29	0.25		0.87			0.55			0.44		
Uniform Delay, d1		22.9	16.3		21.4			12.4			11.6		
Progression Factor		1.51	4.22		1.00			1.10			1.00		
Incremental Delay, d2		146.8	0.2		15.1			0.2			1.1		
Delay (s)		181.2	69.1		36.5			13.8			12.8		
Level of Service		F	E		D			B			B		
Approach Delay (s)		132.7			36.5			13.8			12.8		
Approach LOS		F			D			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			60.1									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			0.95										
Actuated Cycle Length (s)			70.0									Sum of lost time (s)	17.4
Intersection Capacity Utilization			97.6%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													

# Queues

## 104: Jefferson St & Whiting St

01/20/2022



Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	513	391	444	612	569
v/c Ratio	1.29	0.49	0.87	0.55	0.45
Control Delay	178.0	8.2	40.9	14.0	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	178.0	8.2	40.9	14.0	12.7
Queue Length 50th (ft)	~528	62	165	102	76
Queue Length 95th (ft)	#838	62	#332	m92	115
Internal Link Dist (ft)	503		431	509	207
Turn Bay Length (ft)					
Base Capacity (vph)	397	804	508	1114	1270
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.29	0.49	0.87	0.55	0.45

### Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCS7 Two-Way Stop-Control Report

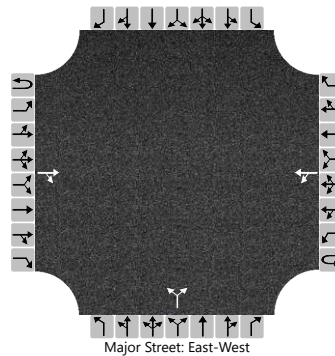
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2026
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWhitingSt&Nebraska Ave
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Nebraska Ave
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			222	214		99	61			376		147				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.12				6.42		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						104						551				
Capacity, c (veh/h)						1102						462				
v/c Ratio						0.09						1.19				
95% Queue Length, Q <sub>95</sub> (veh)						0.3						58.5				
Control Delay (s/veh)						8.6						402.1				
Level of Service (LOS)						A						F				
Approach Delay (s/veh)						5.6				402.1						
Approach LOS						A				F						



HCM Signalized Intersection Capacity Analysis  
 107: Meridian Ave & Whiting St

01/20/2022



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations	W		W	↑↑↑		W	↑↑↑
Traffic Volume (vph)	53	69	0	1531	146	131	494
Future Volume (vph)	53	69	0	1531	146	131	494
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.2			6.6		6.4	6.6
Lane Util. Factor	1.00			0.91		1.00	0.91
Fr <sub>t</sub>	0.92			0.99		1.00	1.00
Fl <sub>t</sub> Protected	0.98			1.00		0.95	1.00
Satd. Flow (prot)	1684			5019		1770	5085
Fl <sub>t</sub> Permitted	0.98			1.00		0.09	1.00
Satd. Flow (perm)	1684			5019		159	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	75	0	1664	159	142	537
RTOR Reduction (vph)	42	0	0	5	0	0	0
Lane Group Flow (vph)	91	0	0	1818	0	142	537
Turn Type	Perm		Perm	NA		pm+pt	NA
Protected Phases				6		5	2
Permitted Phases	4		6			2	
Actuated Green, G (s)	13.5			95.3		112.7	112.7
Effective Green, g (s)	13.5			95.3		112.7	112.7
Actuated g/C Ratio	0.10			0.68		0.81	0.81
Clearance Time (s)	7.2			6.6		6.4	6.6
Vehicle Extension (s)	3.0			3.0		3.0	3.0
Lane Grp Cap (vph)	162			3416		254	4093
v/s Ratio Prot				0.36		c0.04	0.11
v/s Ratio Perm	c0.05					c0.41	
v/c Ratio	0.56			0.53		0.56	0.13
Uniform Delay, d <sub>1</sub>	60.4			11.2		10.2	3.0
Progression Factor	1.00			1.46		1.00	1.00
Incremental Delay, d <sub>2</sub>	4.4			0.1		2.7	0.1
Delay (s)	65.1			16.4		12.8	3.0
Level of Service	E			B		B	A
Approach Delay (s)	65.1			16.4			5.1
Approach LOS	E			B			A

Intersection Summary

HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# Queues

## 107: Meridian Ave & Whiting St

01/20/2022



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	133	1823	142	537
v/c Ratio	0.65	0.53	0.56	0.13
Control Delay	54.2	17.8	17.8	3.3
Queue Delay	0.0	0.4	0.0	0.0
Total Delay	54.2	18.2	17.8	3.3
Queue Length 50th (ft)	79	391	22	31
Queue Length 95th (ft)	145	m332	88	51
Internal Link Dist (ft)	876	709		494
Turn Bay Length (ft)			225	
Base Capacity (vph)	488	3420	292	4092
Starvation Cap Reductn	0	935	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.73	0.49	0.13

### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCS7 Two-Way Stop-Control Report

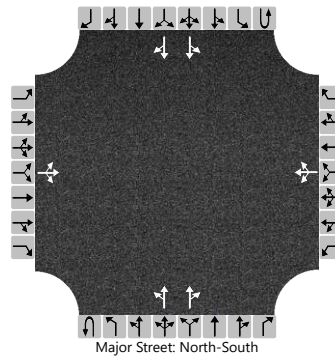
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2026
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWashingtonSt&JeffersonSt
Jurisdiction	FDOT, District 7
East/West Street	E Washington St
North/South Street	Jefferson St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0		0	2	0		0	2	0	
Configuration			LTR				LTR			LT		TR		LT		TR	
Volume (veh/h)		17	78	114		93	49	95		61	530	50		6	317	76	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.54	6.54	6.94		7.54	6.54	6.94		4.14				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

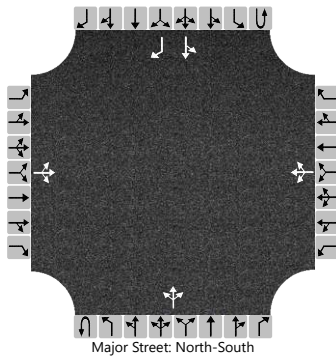
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			220				249				64				6		
Capacity, c (veh/h)			313				194				1142				964		
v/c Ratio			0.70				1.29				0.06				0.01		
95% Queue Length, Q <sub>95</sub> (veh)			6.3				37.7				0.2				0.0		
Control Delay (s/veh)			42.4				611.2				8.3				8.8		
Level of Service (LOS)			E				F				A				A		
Approach Delay (s/veh)		42.4				611.2				1.0				0.2			
Approach LOS		E				F											

# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	H.W. Lochner	Intersection	EWashingtonSt&BrushSt
Agency/Co.		Jurisdiction	FDOT, District 7
Date Performed	09/24/2021	East/West Street	E Washington St
Analysis Year	2026	North/South Street	Brush St
Time Analyzed	PM Peak Hour	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	Whiting PD&E Study		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0		0	1	0		0	1	1	
Configuration			LTR				LTR				LTR			LT		R	
Volume (veh/h)		109	5	10		11	21	5		84	303	5		11	119	51	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																Yes	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

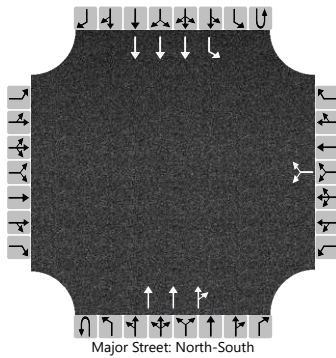
Flow Rate, v (veh/h)			131				39				88				12		
Capacity, c (veh/h)			352				375				1461				1236		
v/c Ratio			0.37				0.10				0.06				0.01		
95% Queue Length, Q <sub>95</sub> (veh)			1.7				0.3				0.2				0.0		
Control Delay (s/veh)			21.2				15.7				7.6				7.9		
Level of Service (LOS)			C				C				A				A		
Approach Delay (s/veh)		21.2				15.7				2.1				0.5			
Approach LOS		C				C				A				A			



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	H.W. Lochner	Intersection	MeridianAve&EWashingtonSt
Agency/Co.		Jurisdiction	FDOT, District 7
Date Performed	09/24/2021	East/West Street	Meridian Ave
Analysis Year	2026	North/South Street	E Washington St
Time Analyzed	PM Peak Hour	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	Whiting PD&E Study		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0		0	3	0		0	1	3
Configuration							LR				T	TR		L	T	
Volume (veh/h)						25		70			1455	145	0	20	600	
Percent Heavy Vehicles (%)						2		2					2	2		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type   Storage							Left Only								1	

## Critical and Follow-up Headways




















Base Critical Headway (sec)						6.4		7.1							5.3	
Critical Headway (sec)						5.74		7.14							5.34	
Base Follow-Up Headway (sec)						3.8		3.9							3.1	
Follow-Up Headway (sec)						3.82		3.92							3.12	

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							100								21	
Capacity, c (veh/h)							177								180	
v/c Ratio							0.56								0.12	
95% Queue Length, Q <sub>95</sub> (veh)							3.6								0.4	
Control Delay (s/veh)							50.8								27.6	
Level of Service (LOS)							F								D	
Approach Delay (s/veh)							50.8								0.9	
Approach LOS							F									

HCM Signalized Intersection Capacity Analysis  
 114: Florida Ave & Channelside Dr

01/20/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  						 					
Traffic Volume (vph)	927	1328	446	0	0	0	0	251	92	0	0	0	
Future Volume (vph)	927	1328	446	0	0	0	0	251	92	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.0	6.0						5.7	5.7				
Lane Util. Factor	0.86	0.86						0.95	1.00				
Frt	1.00	0.97						1.00	0.85				
Flt Protected	0.95	0.99						1.00	1.00				
Satd. Flow (prot)	1522	4618						3539	1583				
Flt Permitted	0.95	0.99						1.00	1.00				
Satd. Flow (perm)	1522	4618						3539	1583				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1008	1443	485	0	0	0	0	273	100	0	0	0	
RTOR Reduction (vph)	89	46	0	0	0	0	0	0	45	0	0	0	
Lane Group Flow (vph)	647	2154	0	0	0	0	0	273	55	0	0	0	
Turn Type	Split	NA						NA	Perm				
Protected Phases	6	6						4					
Permitted Phases									4				
Actuated Green, G (s)	93.0	93.0						35.3	35.3				
Effective Green, g (s)	93.0	93.0						35.3	35.3				
Actuated g/C Ratio	0.66	0.66						0.25	0.25				
Clearance Time (s)	6.0	6.0						5.7	5.7				
Vehicle Extension (s)	3.0	3.0						3.0	3.0				
Lane Grp Cap (vph)	1011	3067						892	399				
v/s Ratio Prot	0.42	c0.47						c0.08					
v/s Ratio Perm									0.03				
v/c Ratio	0.64	0.70						0.31	0.14				
Uniform Delay, d1	13.7	14.8						42.4	40.6				
Progression Factor	1.00	1.00						1.00	1.00				
Incremental Delay, d2	3.1	1.4						0.9	0.7				
Delay (s)	16.8	16.2						43.3	41.3				
Level of Service	B	B						D	D				
Approach Delay (s)		16.3			0.0			42.8			0.0		
Approach LOS		B			A			D			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			19.3		HCM 2000 Level of Service					B			
HCM 2000 Volume to Capacity ratio			0.59										
Actuated Cycle Length (s)			140.0		Sum of lost time (s)					11.7			
Intersection Capacity Utilization			115.6%		ICU Level of Service					H			
Analysis Period (min)			15										
c Critical Lane Group													

Queues

114: Florida Ave & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	736	2200	273	100
v/c Ratio	0.67	0.71	0.31	0.23
Control Delay	11.8	15.3	43.6	19.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.8	15.3	43.6	19.7
Queue Length 50th (ft)	276	430	106	28
Queue Length 95th (ft)	431	485	148	78
Internal Link Dist (ft)		924	937	
Turn Bay Length (ft)				
Base Capacity (vph)	1100	3114	892	444
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.67	0.71	0.31	0.23

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/20/2022

Movement	EBL	EBT	EBR	WBL	WBR2	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations												
Traffic Volume (vph)	479	891	50	85	614	120	4	3	68	246	819	69
Future Volume (vph)	479	891	50	85	614	120	4	3	68	246	819	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.2		5.9	5.9	5.9	5.9	5.9	5.9		6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.85	1.00	0.85	1.00	1.00		0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	1.00	0.95	1.00		0.96	
Satd. Flow (prot)	1770	3511		1770	1583	1863	1583	1770	1863		1765	
Flt Permitted	0.95	1.00		0.27	1.00	1.00	1.00	0.53	1.00		0.96	
Satd. Flow (perm)	1770	3511		499	1583	1863	1583	986	1863		1765	
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)	521	968	54	92	667	130	4	3	74	267	890	75
RTOR Reduction (vph)	0	3	0	0	183	0	4	0	0	0	0	0
Lane Group Flow (vph)	521	1019	0	92	484	130	0	3	74	0	1232	0
Turn Type	pm+pt	NA		Perm	Perm	NA	Perm	Perm	NA	Prot	Prot	
Protected Phases	1	6				4			8	9	9	
Permitted Phases	6			2	2		4	8				
Actuated Green, G (s)	68.8	68.8		47.1	47.1	17.1	17.1	17.1	17.1		35.4	
Effective Green, g (s)	68.8	68.8		47.1	47.1	17.1	17.1	17.1	17.1		35.4	
Actuated g/C Ratio	0.49	0.49		0.34	0.34	0.12	0.12	0.12	0.12		0.25	
Clearance Time (s)	5.5	6.2		5.9	5.9	5.9	5.9	5.9	5.9		6.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		4.5	
Lane Grp Cap (vph)	869	1725		167	532	227	193	120	227		446	
v/s Ratio Prot	c0.07	0.29				c0.07			0.04		c0.70	
v/s Ratio Perm	0.22			0.18	c0.31		0.00	0.00				
v/c Ratio	0.60	0.59		0.55	0.91	0.57	0.00	0.03	0.33		2.76	
Uniform Delay, d1	25.7	25.5		37.8	44.4	58.0	54.0	54.1	56.2		52.3	
Progression Factor	1.03	1.04		0.54	1.01	1.00	1.00	0.54	0.58		1.00	
Incremental Delay, d2	2.2	1.1		6.3	12.7	10.1	0.0	0.3	2.5		799.3	
Delay (s)	28.6	27.7		26.8	57.7	68.1	54.0	29.7	35.1		851.6	
Level of Service	C	C		C	E	E	D	C	D		F	
Approach Delay (s)		28.0				67.7			34.8		851.6	
Approach LOS		C				E			C		F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			305.8			HCM 2000 Level of Service				F		
HCM 2000 Volume to Capacity ratio			1.40									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)				23.9		
Intersection Capacity Utilization			121.7%			ICU Level of Service				H		
Analysis Period (min)			15									

c Critical Lane Group



Queues

115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/20/2022



Lane Group	EBL	EBT	WBL	WBR2	NBT	NBR	SBL	SBT	SEL
Lane Group Flow (vph)	521	1022	92	667	130	4	3	74	1232
v/c Ratio	0.59	0.59	0.55	0.93	0.57	0.01	0.03	0.33	2.76
Control Delay	28.6	27.8	28.0	38.9	68.8	0.0	30.0	35.4	820.0
Queue Delay	2.7	0.5	0.0	46.3	140.1	0.0	0.0	0.0	619.2
Total Delay	31.3	28.3	28.0	85.2	208.9	0.0	30.0	35.4	1439.3
Queue Length 50th (ft)	256	267	72	562	114	0	3	69	~1906
Queue Length 95th (ft)	357	343	m74	m#682	185	0	m4	m99	#2173
Internal Link Dist (ft)		523			969			424	319
Turn Bay Length (ft)				10			100		
Base Capacity (vph)	878	1728	167	715	227	297	120	227	446
Starvation Cap Reductn	143	288	0	203	0	0	0	0	0
Spillback Cap Reductn	240	265	0	185	208	0	0	0	446
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.71	0.55	1.30	6.84	0.01	0.03	0.33	1232.00

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 116: Channelside Dr & Jefferson St

01/20/2022

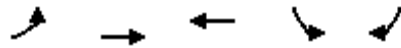


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↙	↘
Traffic Volume (veh/h)	413	1305	667	168	5	32
Future Volume (veh/h)	413	1305	667	168	5	32
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	449	1418	725	183	5	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	437	1488	807	204	218	194
Arrive On Green	0.06	0.26	0.18	0.18	0.12	0.12
Sat Flow, veh/h	1781	1870	1441	364	1781	1585
Grp Volume(v), veh/h	449	1418	0	908	5	35
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1805	1781	1585
Q Serve(g_s), s	27.0	104.4	0.0	68.8	0.3	2.8
Cycle Q Clear(g_c), s	27.0	104.4	0.0	68.8	0.3	2.8
Prop In Lane	1.00			0.20	1.00	1.00
Lane Grp Cap(c), veh/h	437	1488	0	1011	218	194
V/C Ratio(X)	1.03	0.95	0.00	0.90	0.02	0.18
Avail Cap(c_a), veh/h	437	1488	0	1011	218	194
HCM Platoon Ratio	0.33	0.33	0.33	0.33	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.00	0.36	0.09	0.09
Uniform Delay (d), s/veh	55.2	49.0	0.0	53.2	54.1	55.2
Incr Delay (d2), s/veh	20.7	2.0	0.0	5.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.8	52.8	0.0	34.7	0.2	1.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	76.0	51.0	0.0	58.3	54.1	55.3
LnGrp LOS	F	D	A	E	D	E
Approach Vol, veh/h		1867	908		40	
Approach Delay, s/veh		57.0	58.3		55.2	
Approach LOS		E	E		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	33.0	84.4			117.4	22.6
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	27.0	78.4			111.4	17.1
Max Q Clear Time (g_c+I1), s	29.0	70.8			106.4	4.8
Green Ext Time (p_c), s	0.0	3.8			4.2	0.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			57.4			
HCM 6th LOS			E			

Queues

116: Channelside Dr & Jefferson St

01/20/2022



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	449	1418	908	5	35
v/c Ratio	1.03	0.96	0.89	0.02	0.16
Control Delay	78.9	16.4	21.4	38.4	25.8
Queue Delay	24.4	43.6	48.8	0.0	0.0
Total Delay	103.3	60.0	70.2	38.4	25.8
Queue Length 50th (ft)	~348	582	629	5	19
Queue Length 95th (ft)	m262	m167	m#989	m5	m18
Internal Link Dist (ft)		315	140	434	
Turn Bay Length (ft)				100	
Base Capacity (vph)	435	1482	1021	216	224
Starvation Cap Reductn	35	339	231	0	0
Spillback Cap Reductn	0	254	369	0	6
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.12	1.24	1.39	0.02	0.16

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 117: Channelside Dr & Nebraska Ave

01/20/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	243	1062	726	207	32	109
Future Volume (veh/h)	243	1062	726	207	32	109
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	264	1154	789	225	35	118
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	608	1483	890	254	46	156
Arrive On Green	0.23	1.00	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1781	1870	1399	399	370	1247
Grp Volume(v), veh/h	264	1154	0	1014	154	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1799	1627	0
Q Serve(g_s), s	6.1	0.0	0.0	0.0	12.8	0.0
Cycle Q Clear(g_c), s	6.1	0.0	0.0	0.0	12.8	0.0
Prop In Lane	1.00			0.22	0.23	0.77
Lane Grp Cap(c), veh/h	608	1483	0	1143	203	0
V/C Ratio(X)	0.43	0.78	0.00	0.89	0.76	0.00
Avail Cap(c_a), veh/h	608	1483	0	1143	203	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.20	0.20	0.00	0.11	0.09	0.00
Uniform Delay (d), s/veh	4.0	0.0	0.0	0.0	59.2	0.0
Incr Delay (d2), s/veh	0.5	0.8	0.0	1.3	2.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.3	0.0	0.4	5.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.5	0.8	0.0	1.3	61.6	0.0
LnGrp LOS	A	A	A	A	E	A
Approach Vol, veh/h		1418	1014		154	
Approach Delay, s/veh		1.5	1.3		61.6	
Approach LOS		A	A		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	22.0	95.0			117.0	23.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	16.0	89.0			111.0	17.5
Max Q Clear Time (g_c+I1), s	8.1	2.0			2.0	14.8
Green Ext Time (p_c), s	0.5	11.3			15.2	0.1
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			5.0			
HCM 6th LOS			A			



# Queues

## 117: Channelside Dr & Nebraska Ave

01/20/2022



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	264	1154	1014	153
v/c Ratio	0.83	0.78	0.88	0.52
Control Delay	45.7	5.2	7.6	19.3
Queue Delay	53.3	17.2	47.9	71.9
Total Delay	99.1	22.4	55.5	91.3
Queue Length 50th (ft)	148	198	72	48
Queue Length 95th (ft)	m159	m198	m81	m106
Internal Link Dist (ft)		140	194	464
Turn Bay Length (ft)	80			
Base Capacity (vph)	317	1477	1156	293
Starvation Cap Reductn	76	340	143	0
Spillback Cap Reductn	0	129	297	168
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.10	1.01	1.18	1.22

### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 119: Old Water St & Channelside Dr

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	94	966	34	118	894	169	12	43	40	27	5	26
Future Volume (veh/h)	94	966	34	118	894	169	12	43	40	27	5	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	102	1050	37	128	972	184	13	47	43	29	5	28
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	521	1263	45	614	1152	218	196	111	102	150	30	170
Arrive On Green	0.23	1.00	1.00	0.32	1.00	1.00	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1781	1796	63	1781	1529	289	1376	899	823	1307	246	1377
Grp Volume(v), veh/h	102	0	1087	128	0	1156	13	0	90	29	0	33
Grp Sat Flow(s),veh/h/ln	1781	0	1859	1781	0	1818	1376	0	1722	1307	0	1623
Q Serve(g_s), s	2.6	0.0	0.0	0.0	0.0	0.0	1.2	0.0	6.8	2.9	0.0	2.5
Cycle Q Clear(g_c), s	2.6	0.0	0.0	0.0	0.0	0.0	3.7	0.0	6.8	9.7	0.0	2.5
Prop In Lane	1.00		0.03	1.00		0.16	1.00		0.48	1.00		0.85
Lane Grp Cap(c), veh/h	521	0	1308	614	0	1370	196	0	213	150	0	201
V/C Ratio(X)	0.20	0.00	0.83	0.21	0.00	0.84	0.07	0.00	0.42	0.19	0.00	0.16
Avail Cap(c_a), veh/h	521	0	1308	614	0	1370	196	0	213	150	0	201
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.58	0.00	0.58	0.09	0.00	0.09	1.00	0.00	1.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	6.8	0.0	0.0	6.7	0.0	0.0	56.6	0.0	56.7	61.2	0.0	54.9
Incr Delay (d2), s/veh	0.5	0.0	3.7	0.1	0.0	0.6	0.6	0.0	6.1	2.8	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.4	1.1	0.0	0.2	0.5	0.0	3.3	1.1	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.3	0.0	3.7	6.7	0.0	0.6	57.2	0.0	62.8	64.1	0.0	56.6
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1189			1284			103				62
Approach Delay, s/veh		4.0			1.2			62.1				60.1
Approach LOS		A			A			E				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.0	112.5		23.0	29.5	105.0		23.0				
Change Period (Y+Rc), s	6.0	6.5		* 5.7	6.5	* 6.5		* 5.7				
Max Green Setting (Gmax), s	16.0	88.5		* 17	6.0	* 99		* 17				
Max Q Clear Time (g_c+I1), s	4.6	2.0		8.8	2.0	2.0		11.7				
Green Ext Time (p_c), s	0.2	15.7		0.4	0.1	13.0		0.1				

Intersection Summary

HCM 6th Ctrl Delay	6.3
HCM 6th LOS	A

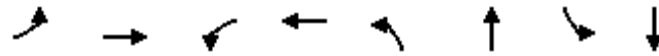
Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

119: Old Water St & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	102	1087	128	1156	13	90	29	33
v/c Ratio	0.40	0.83	0.51	1.00	0.08	0.38	0.19	0.15
Control Delay	30.2	12.9	17.6	36.5	55.8	44.3	40.2	13.2
Queue Delay	0.4	1.2	0.0	35.6	0.0	0.0	0.0	0.0
Total Delay	30.5	14.1	17.6	72.1	55.8	44.3	40.2	13.2
Queue Length 50th (ft)	35	361	42	~589	11	53	22	10
Queue Length 95th (ft)	m63	521	m40	m481	33	110	m36	m16
Internal Link Dist (ft)		194		425		945		461
Turn Bay Length (ft)	80		100				150	
Base Capacity (vph)	255	1304	253	1154	169	237	153	225
Starvation Cap Reductn	20	77	0	186	0	0	0	0
Spillback Cap Reductn	0	53	0	12	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.89	0.51	1.19	0.08	0.38	0.19	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 118: Beneficial Dr/Meridian Ave & Channelside Dr

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	515	406	112	97	567	71	185	469	67	75	277	429
Future Volume (vph)	515	406	112	97	567	71	185	469	67	75	277	429
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.2		6.2	6.2		6.4	6.4	6.4	6.4	6.4	6.4
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1802		1770	1832		1770	1863	1583	1770	1863	1583
Flt Permitted	0.09	1.00		0.39	1.00		0.26	1.00	1.00	0.48	1.00	1.00
Satd. Flow (perm)	170	1802		723	1832		480	1863	1583	886	1863	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)	560	441	122	105	616	77	201	510	73	82	301	466
RTOR Reduction (vph)	0	7	0	0	3	0	0	0	39	0	0	302
Lane Group Flow (vph)	560	556	0	105	690	0	201	510	34	82	301	164
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6			2			4		4	8		8
Actuated Green, G (s)	61.8	61.8		37.8	37.8		65.6	65.6	65.6	32.6	32.6	32.6
Effective Green, g (s)	61.8	61.8		37.8	37.8		65.6	65.6	65.6	32.6	32.6	32.6
Actuated g/C Ratio	0.44	0.44		0.27	0.27		0.47	0.47	0.47	0.23	0.23	0.23
Clearance Time (s)	6.0	6.2		6.2	6.2		6.4	6.4	6.4	6.4	6.4	6.4
Vehicle Extension (s)	2.0	3.0		3.0	3.0		2.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	280	795		195	494		470	872	741	206	433	368
v/s Ratio Prot	c0.26	0.31			0.38		0.08	c0.27			c0.16	
v/s Ratio Perm	c0.62			0.15			0.12		0.02	0.09		0.10
v/c Ratio	2.00	0.70		0.54	1.40		0.43	0.58	0.05	0.40	0.70	0.44
Uniform Delay, d1	44.0	31.6		43.6	51.1		24.3	27.2	20.2	45.4	49.2	46.0
Progression Factor	1.02	0.67		1.00	1.00		1.00	1.00	1.00	0.85	0.88	2.79
Incremental Delay, d2	457.3	3.0		10.3	190.6		2.8	2.9	0.1	5.2	8.2	3.5
Delay (s)	502.0	24.1		53.9	241.7		27.2	30.1	20.3	43.9	51.5	131.7
Level of Service	F	C		D	F		C	C	C	D	D	F
Approach Delay (s)		262.4			217.0			28.4			94.8	
Approach LOS		F			F			C			F	

Intersection Summary

HCM 2000 Control Delay	160.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	116.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Queues

118: Beneficial Dr/Meridian Ave & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	560	563	105	693	201	510	73	82	301	466
v/c Ratio	1.99	0.70	0.54	1.39	0.43	0.58	0.09	0.40	0.70	0.70
Control Delay	479.4	24.1	55.5	227.7	25.4	30.6	4.6	45.0	52.1	29.8
Queue Delay	0.0	5.1	0.0	0.0	0.4	0.0	0.0	0.0	0.0	53.0
Total Delay	479.4	29.1	55.5	227.7	25.8	30.6	4.6	45.0	52.1	82.8
Queue Length 50th (ft)	~742	360	82	~842	108	334	0	74	290	273
Queue Length 95th (ft)	m#963	m454	150	#1090	163	450	28	m133	m390	m312
Internal Link Dist (ft)		425		125		927			460	
Turn Bay Length (ft)	150		150				400	200		
Base Capacity (vph)	281	802	195	497	470	872	780	206	433	670
Starvation Cap Reductn	0	175	0	0	0	0	0	0	0	63
Spillback Cap Reductn	0	0	0	0	58	0	0	0	0	245
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.99	0.90	0.54	1.39	0.49	0.58	0.09	0.40	0.70	1.10

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCS7 Two-Way Stop-Control Report

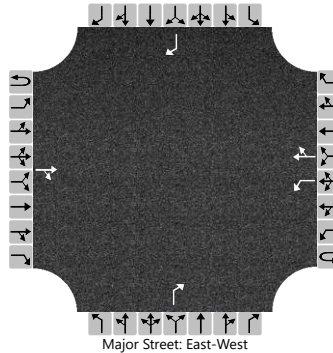
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2036
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Whiting PD&E Study

## Site Information

Intersection	ChannelsideDr&12thSt
Jurisdiction	FDOT, District 7
East/West Street	Channelside Dr
North/South Street	12th St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	1	1	0		0	0	1		0	0	1
Configuration				TR		L		TR				R				R
Volume (veh/h)			390	158		10	458	2				89				277
Percent Heavy Vehicles (%)						2						2				2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized										No				No		
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)					4.1							6.2				6.2
Critical Headway (sec)					4.12							6.22				6.22
Base Follow-Up Headway (sec)					2.2							3.3				3.3
Follow-Up Headway (sec)					2.22							3.32				3.32

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					11							94				292
Capacity, c (veh/h)					997							576				583
v/c Ratio					0.01							0.16				0.50
95% Queue Length, Q <sub>95</sub> (veh)					0.0							0.6				2.9
Control Delay (s/veh)					8.7							12.5				17.3
Level of Service (LOS)					A							B				C
Approach Delay (s/veh)					0.2				12.5				17.3			
Approach LOS									B				C			

# MOVEMENT SUMMARY

**Site: 8 [Channelside Drive at Cumberland Avenue\_NB2036-AM  
(Site Folder: General)]**

No-Build 2036 Year -  
AM Peak Hour  
Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h ]	[ HV ] %	[ Total veh/h ]	[ HV ] %				[ Veh. veh ]	[ Dist ] ft				
South: Channelside Drive														
3	L2	94	2.0	99	2.0	0.454	7.5	LOS A	2.7	67.4	0.35	0.20	0.35	36.7
8	T1	397	2.0	418	2.0	0.454	7.5	LOS A	2.7	67.4	0.35	0.20	0.35	37.4
18	R2	51	2.0	54	2.0	0.454	7.5	LOS A	2.7	67.4	0.35	0.20	0.35	36.2
Approach		542	2.0	571	2.0	0.454	7.5	LOS A	2.7	67.4	0.35	0.20	0.35	37.2
East: E Cumberland Avenue														
1	L2	7	2.0	7	2.0	0.055	4.7	LOS A	0.2	4.9	0.48	0.40	0.48	39.5
6	T1	5	2.0	5	2.0	0.055	4.7	LOS A	0.2	4.9	0.48	0.40	0.48	36.6
16	R2	33	2.0	35	2.0	0.055	4.7	LOS A	0.2	4.9	0.48	0.40	0.48	36.4
Approach		45	2.0	47	2.0	0.055	4.7	LOS A	0.2	4.9	0.48	0.40	0.48	36.9
North: Channelside Drive														
7	L2	53	2.0	56	2.0	0.426	7.1	LOS A	2.4	60.9	0.32	0.18	0.32	36.7
4	T1	458	2.0	482	2.0	0.426	7.1	LOS A	2.4	60.9	0.32	0.18	0.32	38.4
14	R2	254	2.0	267	2.0	0.224	5.0	LOS A	1.0	25.5	0.26	0.14	0.26	34.4
Approach		765	2.0	805	2.0	0.426	6.4	LOS A	2.4	60.9	0.30	0.17	0.30	36.9
West: E Cumberland Avenue														
5	L2	39	2.0	41	2.0	0.082	4.9	LOS A	0.3	7.4	0.48	0.41	0.48	34.3
2	T1	20	2.0	21	2.0	0.082	4.9	LOS A	0.3	7.4	0.48	0.41	0.48	34.0
12	R2	9	2.0	9	2.0	0.082	4.9	LOS A	0.3	7.4	0.48	0.41	0.48	33.0
Approach		68	2.0	72	2.0	0.082	4.9	LOS A	0.3	7.4	0.48	0.41	0.48	34.0
All Vehicles		1420	2.0	1495	2.0	0.454	6.7	LOS A	2.7	67.4	0.33	0.20	0.33	36.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Organisation: H. W. LOCHNER, INC. | Licence: PLUS / Enterprise | Processed: Monday, November 29, 2021 2:12:21 AM

Project: C:\Users\kshams\Desktop\April\Tampa Office\Whitting\PTAR-Working\HCS\_SIDRA\No-Build\2036\Channelside Drive\_Cumberland Avenue\_Existing\_NB2036\_AM.sip9

# HCS7 Two-Way Stop-Control Report

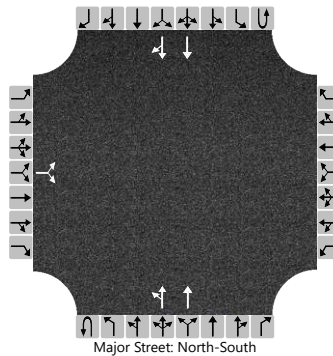
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2036
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	ChannelsideDr&E WhitingSt
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Channelside Dr
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	0	0		0	2	0		0	2	0	
Configuration			LR							LT	T				T	TR	
Volume (veh/h)		41		1						27	442				764	64	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.84		6.94						4.14						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						




















## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			44							28								
Capacity, c (veh/h)			191							769								
v/c Ratio			0.23							0.04								
95% Queue Length, Q <sub>95</sub> (veh)			0.9							0.1								
Control Delay (s/veh)			29.4							9.9								
Level of Service (LOS)			D							A								
Approach Delay (s/veh)		29.4									0.8							
Approach LOS		D									A							



HCM Signalized Intersection Capacity Analysis  
 130: Channelside Dr & E Washington St/E York St

01/20/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	14	85	5	8	5	61	3	464	8	46	809	121	
Future Volume (vph)	14	85	5	8	5	61	3	464	8	46	809	121	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.9			8.4	8.4	6.0	6.0		6.0	6.0		
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95		
Frt		0.99			1.00	0.85	1.00	1.00		1.00	0.98		
Flt Protected		0.99			0.97	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)		1839			1805	1583	1770	3530		1770	3470		
Flt Permitted		0.29			0.74	1.00	0.28	1.00		0.95	1.00		
Satd. Flow (perm)		530			1377	1583	528	3530		1770	3470		
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)	15	92	5	9	5	66	3	504	9	50	879	132	
RTOR Reduction (vph)	0	1	0	0	0	62	0	1	0	0	7	0	
Lane Group Flow (vph)	0	111	0	0	14	4	3	512	0	50	1004	0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Prot	NA		
Protected Phases		4			3			2		1	12		
Permitted Phases	4			3		3	2						
Actuated Green, G (s)		23.1			7.9	7.9	60.8	60.8		21.9	88.7		
Effective Green, g (s)		23.1			7.9	7.9	60.8	60.8		21.9	88.7		
Actuated g/C Ratio		0.17			0.06	0.06	0.43	0.43		0.16	0.63		
Clearance Time (s)		5.9			8.4	8.4	6.0	6.0		6.0			
Vehicle Extension (s)		2.0			4.0	4.0	3.0	3.0		2.0			
Lane Grp Cap (vph)		87			77	89	229	1533		276	2198		
v/s Ratio Prot								0.15		0.03	c0.29		
v/s Ratio Perm		c0.21			c0.01	0.00	0.01						
v/c Ratio		1.28			0.18	0.04	0.01	0.33		0.18	0.46		
Uniform Delay, d1		58.5			63.0	62.5	22.5	26.2		51.3	13.2		
Progression Factor		1.00			1.00	1.00	1.00	1.00		0.71	2.47		
Incremental Delay, d2		187.8			1.6	0.3	0.1	0.6		0.1	0.0		
Delay (s)		246.2			64.5	62.7	22.6	26.8		36.4	32.7		
Level of Service		F			E	E	C	C		D	C		
Approach Delay (s)		246.2			63.0			26.8			32.9		
Approach LOS		F			E			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			46.0									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.63										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	26.3
Intersection Capacity Utilization			60.4%									ICU Level of Service	B
Analysis Period (min)			15										

c Critical Lane Group

Queues

130: Channelside Dr & E Washington St/E York St

01/20/2022



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	112	14	66	3	513	50	1011
v/c Ratio	1.27	0.18	0.33	0.01	0.33	0.18	0.46
Control Delay	230.8	67.7	5.0	23.3	27.1	38.0	33.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Total Delay	230.8	67.7	5.0	23.3	27.1	38.0	34.1
Queue Length 50th (ft)	~127	12	0	2	161	40	414
Queue Length 95th (ft)	#258	36	4	8	207	81	491
Internal Link Dist (ft)	922	976			474		596
Turn Bay Length (ft)			430	160		280	
Base Capacity (vph)	88	212	342	228	1533	277	2203
Starvation Cap Reductn	0	0	0	0	0	0	794
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.27	0.07	0.19	0.01	0.33	0.18	0.72

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
























Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis  
 129: Channelside Dr & Kennedy Blvd

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	417	45	73	13	23	8	61	455	23	34	898	1022
Future Volume (vph)	417	45	73	13	23	8	61	455	23	34	898	1022
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1701	1583		1830	1583	1770	3514		1770	3539	1583
Flt Permitted	0.95	0.96	1.00		0.77	1.00	0.23	1.00		0.43	1.00	1.00
Satd. Flow (perm)	1681	1701	1583		1440	1583	423	3514		807	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	453	49	79	14	25	9	66	495	25	37	976	1111
RTOR Reduction (vph)	0	0	65	0	0	9	0	3	0	0	0	429
Lane Group Flow (vph)	249	253	14	0	39	0	66	517	0	37	976	682
Turn Type	Split	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	3	3			1			2			2	
Permitted Phases			3	1		1	2			2		2
Actuated Green, G (s)	24.5	24.5	24.5		6.4	6.4	79.3	79.3		79.3	79.3	79.3
Effective Green, g (s)	24.5	24.5	24.5		6.4	6.4	79.3	79.3		79.3	79.3	79.3
Actuated g/C Ratio	0.18	0.18	0.18		0.05	0.05	0.57	0.57		0.57	0.57	0.57
Clearance Time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3
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)	294	297	277		65	72	239	1990		457	2004	896
v/s Ratio Prot	0.15	c0.15						0.15			0.28	
v/s Ratio Perm			0.01		c0.03	0.00	0.16			0.05		c0.43
v/c Ratio	0.85	0.85	0.05		0.60	0.01	0.28	0.26		0.08	0.49	0.76
Uniform Delay, d1	55.9	56.0	48.1		65.5	63.8	15.6	15.4		13.8	18.2	23.1
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.62	1.55		1.00	1.00	1.00
Incremental Delay, d2	19.6	20.3	0.1		14.0	0.0	2.7	0.3		0.3	0.8	6.1
Delay (s)	75.6	76.3	48.1		79.6	63.8	28.0	24.3		14.1	19.0	29.2
Level of Service	E	E	D		E	E	C	C		B	B	C
Approach Delay (s)		72.1			76.6			24.7			24.3	
Approach LOS		E			E			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			33.4									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			140.0								22.4	
Intersection Capacity Utilization			96.1%									ICU Level of Service F
Analysis Period (min)			15									

c Critical Lane Group

Queues

129: Channelside Dr & Kennedy Blvd

01/20/2022



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	249	253	79	39	9	66	520	37	976	1111
v/c Ratio	0.85	0.85	0.22	0.51	0.05	0.27	0.26	0.08	0.48	0.83
Control Delay	80.8	81.0	5.7	86.6	0.5	28.3	23.1	13.8	18.3	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.8	81.0	5.7	86.6	0.5	28.3	23.1	13.8	18.3	9.2
Queue Length 50th (ft)	229	233	0	35	0	52	212	14	262	49
Queue Length 95th (ft)	#363	#367	27	76	0	m108	m267	32	316	266
Internal Link Dist (ft)		903		909			596		1256	
Turn Bay Length (ft)			140			280		75		375
Base Capacity (vph)	320	324	384	84	184	243	2028	465	2039	1331
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.78	0.21	0.46	0.05	0.27	0.26	0.08	0.48	0.83

Intersection Summary

# 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.

# HCM Signalized Intersection Capacity Analysis

109: Florida Ave & Brorein St

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↑		↘	↑↑↑↑				
Traffic Volume (vph)	0	0	0	0	2093	629	260	1969	0	0	0	0
Future Volume (vph)	0	0	0	0	2093	629	260	1969	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.8		6.1	6.1				
Lane Util. Factor					0.86		1.00	0.91				
Frt					0.97		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6186		1770	5085				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6186		1770	5085				
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	0	0	0	2275	684	283	2140	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	20	0	23	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2939	0	260	2140	0	0	0	0
Turn Type					NA		Perm	NA				
Protected Phases					2			4				
Permitted Phases							4					
Actuated Green, G (s)					54.2		68.9	68.9				
Effective Green, g (s)					54.2		68.9	68.9				
Actuated g/C Ratio					0.39		0.49	0.49				
Clearance Time (s)					5.8		6.1	6.1				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					2394		871	2502				
v/s Ratio Prot					c0.48			c0.42				
v/s Ratio Perm							0.15					
v/c Ratio					1.23		0.30	0.86				
Uniform Delay, d1					42.9		21.2	31.2				
Progression Factor					1.00		0.98	0.98				
Incremental Delay, d2					106.3		0.8	3.9				
Delay (s)					149.2		21.7	34.5				
Level of Service					F		C	C				
Approach Delay (s)		0.0			149.2			33.0			0.0	
Approach LOS		A			F			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			96.9		HCM 2000 Level of Service			F				
HCM 2000 Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			140.0		Sum of lost time (s)			14.9				
Intersection Capacity Utilization			88.8%		ICU Level of Service			E				
Analysis Period (min)			15									
c Critical Lane Group												



# Queues

## 109: Florida Ave & Brorein St

01/20/2022



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	2959	283	2140
v/c Ratio	1.23	0.32	0.86
Control Delay	142.7	18.6	34.8
Queue Delay	0.3	0.0	0.0
Total Delay	142.9	18.6	34.8
Queue Length 50th (ft)	~961	129	589
Queue Length 95th (ft)	#1023	197	644
Internal Link Dist (ft)	416		237
Turn Bay Length (ft)			
Base Capacity (vph)	2414	893	2502
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	246	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.36	0.32	0.86

### Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

## 110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/20/2022



Movement	WBL	WBT	NBL	NBT	NBR2	SBL	SBT	SBR	SWR	SWR2
Lane Configurations		↔↔	↔	↑	↔	↔	↔		↔	↔
Traffic Volume (vph)	2	2176	263	746	424	483	82	305	813	638
Future Volume (vph)	2	2176	263	746	424	483	82	305	813	638
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.5	6.0	6.0	5.5	6.0		5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	1.00	1.00	0.85	1.00	0.88		1.00	0.85
Flt Protected		1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00
Satd. Flow (prot)		3539	1770	1863	1583	1770	1642		1863	1583
Flt Permitted		1.00	0.16	1.00	1.00	0.15	1.00		1.00	1.00
Satd. Flow (perm)		3539	292	1863	1583	287	1642		1863	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
Adj. Flow (vph)	2	2365	286	811	461	525	89	332	884	693
RTOR Reduction (vph)	0	0	0	0	50	0	5	0	0	222
Lane Group Flow (vph)	0	2367	286	811	411	525	416	0	884	471
Turn Type	Perm	NA	pm+pt	NA	Perm	pm+pt	NA		Prot	Perm
Protected Phases		2!	7	4		3	8		2!	
Permitted Phases	2		4		4	8				2
Actuated Green, G (s)		60.3	38.0	38.0	38.0	50.5	50.0		60.3	60.3
Effective Green, g (s)		60.3	38.0	38.0	38.0	50.5	50.0		60.3	60.3
Actuated g/C Ratio		0.43	0.27	0.27	0.27	0.36	0.36		0.43	0.43
Clearance Time (s)		5.7	5.5	6.0	6.0	5.5	6.0		5.7	5.7
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1524	211	505	429	363	586		802	681
v/s Ratio Prot			0.12	c0.44		c0.25	0.25		0.47	
v/s Ratio Perm		0.67	0.25		0.26	0.27				0.30
v/c Ratio		1.55	1.36	1.61	0.96	1.45	0.71		1.10	0.69
Uniform Delay, d1		39.9	45.7	51.0	50.2	53.5	38.7		39.9	32.3
Progression Factor		0.46	1.19	1.15	1.18	1.02	1.06		1.00	1.00
Incremental Delay, d2		249.2	162.8	273.5	6.5	207.2	3.0		63.5	5.7
Delay (s)		267.7	217.3	332.3	65.9	261.9	44.0		103.4	38.0
Level of Service		F	F	F	E	F	D		F	D
Approach Delay (s)		267.7		232.4			164.9			
Approach LOS		F		F			F			

### Intersection Summary

HCM 2000 Control Delay	196.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.55		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	195.7%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Queues

110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/20/2022



Lane Group	WBT	NBL	NBT	NBR2	SBL	SBT	SWR	SWR2
Lane Group Flow (vph)	2367	286	811	461	525	421	884	693
v/c Ratio	1.55	1.35	1.61	0.96	1.45	0.71	1.10	0.77
Control Delay	270.6	199.3	310.4	56.1	246.4	44.0	101.3	20.4
Queue Delay	0.2	0.0	0.6	2.6	0.0	0.2	0.0	0.0
Total Delay	270.8	199.3	310.9	58.7	246.4	44.3	101.3	20.4
Queue Length 50th (ft)	~1593	~297	~1067	359	~644	321	~912	247
Queue Length 95th (ft)	m#1270	m#329	m#1040	m372	m#710	m371	#1167	427
Internal Link Dist (ft)	507		424			563		
Turn Bay Length (ft)		250		10				
Base Capacity (vph)	1524	212	505	479	363	591	802	903
Starvation Cap Reductn	79	0	32	7	0	12	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.64	1.35	1.71	0.98	1.45	0.73	1.10	0.77

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCM 6th Signalized Intersection Summary

## 111: Jefferson St & Brorein St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↘		↗	↕		↗	↕		↗	↘	↗
Traffic Volume (veh/h)	333	210	35	35	2010	367	39	261	135	320	467	129
Future Volume (veh/h)	333	210	35	35	2010	367	39	261	135	320	467	129
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	362	228	38	38	2185	399	42	284	147	348	508	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	51	986	164	683	1903	337	121	364	184	245	391	
Arrive On Green	0.63	0.63	0.63	0.42	0.42	0.42	0.04	0.16	0.16	0.18	0.42	0.00
Sat Flow, veh/h	121	1563	260	1113	3017	534	1781	2287	1152	1781	1870	1585
Grp Volume(v), veh/h	362	0	266	38	1259	1325	42	219	212	348	508	0
Grp Sat Flow(s),veh/h/ln	121	0	1823	1113	1777	1774	1781	1777	1663	1781	1870	1585
Q Serve(g_s), s	0.0	0.0	8.8	3.0	88.3	88.3	2.7	16.5	17.2	12.5	29.3	0.0
Cycle Q Clear(g_c), s	88.3	0.0	8.8	11.9	88.3	88.3	2.7	16.5	17.2	12.5	29.3	0.0
Prop In Lane	1.00		0.14	1.00		0.30	1.00		0.69	1.00		1.00
Lane Grp Cap(c), veh/h	51	0	1150	683	1121	1119	121	283	265	245	391	
V/C Ratio(X)	7.04	0.00	0.23	0.06	1.12	1.18	0.35	0.77	0.80	1.42	1.30	
Avail Cap(c_a), veh/h	51	0	1150	683	1121	1119	121	283	265	245	391	
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.09	0.00	0.09	0.37	0.37	0.37	0.09	0.09	0.09	1.00	1.00	0.00
Uniform Delay (d), s/veh	70.0	0.0	11.2	21.2	40.4	40.4	47.8	56.4	56.7	46.0	40.7	0.0
Incr Delay (d2), s/veh	2721.2	0.0	0.0	0.1	60.5	86.6	0.7	1.9	2.4	210.7	151.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	40.7	0.0	3.6	0.9	58.6	66.7	1.2	7.6	7.4	17.1	27.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2791.2	0.0	11.2	21.2	100.9	127.0	48.5	58.3	59.1	256.7	192.4	0.0
LnGrp LOS	F	A	B	C	F	F	D	E	E	F	F	
Approach Vol, veh/h		628			2622			473			856	A
Approach Delay, s/veh		1613.7			112.9			57.8			218.5	
Approach LOS		F			F			E			F	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		94.0	18.0	28.0		94.0	11.0	35.0				
Change Period (Y+Rc), s		* 5.7	5.5	* 5.7		* 5.7	5.5	* 5.7				
Max Green Setting (Gmax), s		* 88	12.5	* 22		* 88	5.5	* 29				
Max Q Clear Time (g_c+I1), s		90.3	14.5	19.2		90.3	4.7	31.3				
Green Ext Time (p_c), s		0.0	0.0	0.6		0.0	0.0	0.0				

### Intersection Summary

HCM 6th Ctrl Delay	332.8
HCM 6th LOS	F

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Queues

111: Jefferson St & Brorein St

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	362	266	38	2584	42	431	348	508	140
v/c Ratio	6.96	0.23	0.06	1.18	0.34	0.74	1.50	1.31	0.37
Control Delay	2694.2	3.5	9.2	108.5	31.5	44.2	269.1	188.0	23.8
Queue Delay	0.0	0.0	0.0	1.6	0.0	0.0	2.3	0.0	0.1
Total Delay	2694.2	3.5	9.2	110.0	31.5	44.2	271.4	188.0	23.9
Queue Length 50th (ft)	~624	53	13	~1263	31	178	~378	~584	44
Queue Length 95th (ft)	m#521	m41	m12	m#553	m32	m182	m#458	m#685	m59
Internal Link Dist (ft)		507		143		434		68	
Turn Bay Length (ft)	150		50		100		50		
Base Capacity (vph)	52	1154	672	2191	123	582	232	389	381
Starvation Cap Reductn	0	0	0	514	0	0	0	0	0
Spillback Cap Reductn	0	0	0	877	0	0	33	0	15
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	6.96	0.23	0.06	1.97	0.34	0.74	1.75	1.31	0.38

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



HCM 6th Signalized Intersection Summary  
 112: Nebraska Ave & Brorein St/Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↘		↗	↕			↕			↕	
Traffic Volume (veh/h)	105	473	88	19	1948	1	317	203	101	139	24	148
Future Volume (veh/h)	105	473	88	19	1948	1	317	203	101	139	24	148
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	514	96	21	2117	1	345	221	110	151	26	161
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	1054	197	609	2507	1	174	87	43	171	25	145
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	192	1533	286	811	3645	2	587	376	187	579	110	626
Grp Volume(v), veh/h	114	0	610	21	1032	1086	676	0	0	338	0	0
Grp Sat Flow(s),veh/h/ln	192	0	1819	811	1777	1870	1150	0	0	1315	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	32.3	0.0	0.0	32.3	0.0	0.0
Prop In Lane	1.00		0.16	1.00		0.00	0.51		0.16	0.45		0.48
Lane Grp Cap(c), veh/h	183	0	1251	609	1222	1286	304	0	0	341	0	0
V/C Ratio(X)	0.62	0.00	0.49	0.03	0.84	0.84	2.22	0.00	0.00	0.99	0.00	0.00
Avail Cap(c_a), veh/h	183	0	1251	609	1222	1286	304	0	0	341	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.21	0.00	0.21	0.21	0.21	0.21	0.44	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	55.9	0.0	0.0	55.5	0.0	0.0
Incr Delay (d2), s/veh	3.3	0.0	0.3	0.0	1.6	1.6	554.8	0.0	0.0	46.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.1	0.0	0.6	0.6	57.9	0.0	0.0	16.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.3	0.0	0.3	0.0	1.6	1.6	610.7	0.0	0.0	102.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	F	A	A	F	A	A
Approach Vol, veh/h		724			2139			676				338
Approach Delay, s/veh		0.8			1.6			610.7				102.3
Approach LOS		A			A			F				F
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		102.0		38.0		102.0		38.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7		* 5.7				
Max Green Setting (Gmax), s		* 96		* 32		* 96		* 32				
Max Q Clear Time (g_c+I1), s		2.0		34.3		2.0		34.3				
Green Ext Time (p_c), s		45.5		0.0		13.7		0.0				

Intersection Summary

HCM 6th Ctrl Delay	116.4
HCM 6th LOS	F

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

112: Nebraska Ave & Brorein St/Cumberland Ave

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	114	610	21	2118	676	338
v/c Ratio	2.15	0.49	0.05	0.87	2.49	1.15
Control Delay	556.7	1.6	3.1	5.2	703.8	143.6
Queue Delay	0.0	27.0	0.0	27.4	5.5	5.1
Total Delay	556.7	28.6	3.1	32.6	709.4	148.7
Queue Length 50th (ft)	~168	4	2	94	~1027	~354
Queue Length 95th (ft)	m#192	m3	m2	m102	m#1253	m#490
Internal Link Dist (ft)		143		195	464	798
Turn Bay Length (ft)	50		70			
Base Capacity (vph)	53	1255	458	2434	271	293
Starvation Cap Reductn	0	661	0	291	0	0
Spillback Cap Reductn	0	95	0	425	86	91
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	2.15	1.03	0.05	1.05	3.65	1.67

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
701: Old Water St & Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕	↗	↖	↗		↖	↗	
Traffic Volume (veh/h)	14	377	322	10	1874	252	74	48	35	57	25	20
Future Volume (veh/h)	14	377	322	10	1874	252	74	48	35	57	25	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	410	350	11	2037	274	80	52	38	62	27	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	167	678	579	564	2298	302	288	240	176	187	145	118
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.02	0.08	0.08	0.15	0.15	0.15
Sat Flow, veh/h	158	932	795	706	3157	415	1781	1004	734	1307	954	777
Grp Volume(v), veh/h	15	0	760	11	1126	1185	80	0	90	62	0	49
Grp Sat Flow(s),veh/h/ln	158	0	1727	706	1777	1796	1781	0	1738	1307	0	1731
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	6.3	0.0	3.5
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	6.8	13.0	0.0	3.5
Prop In Lane	1.00		0.46	1.00		0.23	1.00		0.42	1.00		0.45
Lane Grp Cap(c), veh/h	167	0	1257	564	1293	1307	288	0	416	187	0	263
V/C Ratio(X)	0.09	0.00	0.60	0.02	0.87	0.91	0.28	0.00	0.22	0.33	0.00	0.19
Avail Cap(c_a), veh/h	167	0	1257	564	1293	1307	288	0	416	187	0	263
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.00	0.87	0.09	0.09	0.09	0.93	0.00	0.93	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	54.4	0.0	52.2	59.0	0.0	51.8
Incr Delay (d2), s/veh	0.9	0.0	1.9	0.0	0.8	1.2	2.2	0.0	1.1	4.7	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.7	0.0	0.3	0.4	2.8	0.0	3.3	2.3	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.9	0.0	1.9	0.0	0.8	1.2	56.6	0.0	53.3	63.8	0.0	53.3
LnGrp LOS	A	A	A	A	A	A	E	A	D	E	A	D
Approach Vol, veh/h		775			2322			170				111
Approach Delay, s/veh		1.9			1.0			54.8				59.2
Approach LOS		A			A			D				E
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		107.8		39.2		107.8	12.2	27.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s		* 95		* 33		* 95	* 6.5	* 21				
Max Q Clear Time (g_c+I1), s		2.2		8.8		2.2	2.0	15.0				
Green Ext Time (p_c), s		57.4		0.5		8.7	0.1	0.2				

Intersection Summary

HCM 6th Ctrl Delay	5.8
HCM 6th LOS	A

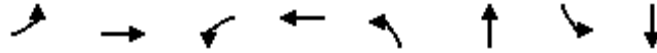
Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

701: Old Water St & Cumberland Ave

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	15	760	11	2311	80	90	62	49
v/c Ratio	0.28	0.63	0.03	0.97	0.23	0.21	0.31	0.17
Control Delay	18.9	14.9	3.5	10.1	47.7	34.6	57.8	34.0
Queue Delay	0.0	0.6	0.0	42.4	0.0	0.0	0.0	0.0
Total Delay	18.9	15.5	3.5	52.5	47.7	34.6	57.8	34.0
Queue Length 50th (ft)	5	545	2	319	61	35	51	21
Queue Length 95th (ft)	m10	m442	m1	m192	m85	m75	99	61
Internal Link Dist (ft)		195		457		461		758
Turn Bay Length (ft)	70		70		150		150	
Base Capacity (vph)	53	1202	342	2373	342	434	198	283
Starvation Cap Reductn	0	161	0	565	0	0	0	0
Spillback Cap Reductn	0	0	0	41	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.73	0.03	1.28	0.23	0.21	0.31	0.17

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 120: Meridian Ave & Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖	↗	↖	↗		↖	↗	↖
Traffic Volume (veh/h)	310	94	65	11	458	130	225	676	154	67	705	1482
Future Volume (veh/h)	310	94	65	11	458	130	225	676	154	67	705	1482
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	337	102	71	12	498	0	245	735	167	73	766	1611
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	343	239	33	615		164	1409	320	366	1741	777
Arrive On Green	0.11	0.11	0.11	0.33	0.33	0.00	0.08	0.98	0.98	0.01	0.16	0.16
Sat Flow, veh/h	900	1027	715	19	1841	1585	1781	2876	653	1781	3554	1585
Grp Volume(v), veh/h	337	0	173	510	0	0	245	454	448	73	766	1611
Grp Sat Flow(s),veh/h/ln	900	0	1742	1860	0	1585	1781	1777	1753	1781	1777	1585
Q Serve(g_s), s	11.7	0.0	12.8	9.0	0.0	0.0	5.6	1.5	1.5	3.2	27.2	68.6
Cycle Q Clear(g_c), s	46.8	0.0	12.8	35.1	0.0	0.0	5.6	1.5	1.5	3.2	27.2	68.6
Prop In Lane	1.00		0.41	0.02		1.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	180	0	582	648	0		164	871	859	366	1741	777
V/C Ratio(X)	1.87	0.00	0.30	0.79	0.00		1.49	0.52	0.52	0.20	0.44	2.07
Avail Cap(c_a), veh/h	180	0	582	648	0		164	871	859	366	1741	777
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(l)	0.76	0.00	0.76	1.00	0.00	0.00	0.09	0.09	0.09	0.76	0.76	0.76
Uniform Delay (d), s/veh	74.6	0.0	47.1	42.7	0.0	0.0	57.8	0.7	0.7	22.0	41.3	58.7
Incr Delay (d2), s/veh	408.7	0.0	1.0	9.3	0.0	0.0	223.6	0.2	0.2	0.9	0.6	486.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	27.2	0.0	6.2	18.0	0.0	0.0	15.7	0.3	0.3	1.5	13.1	134.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	483.2	0.0	48.1	52.0	0.0	0.0	281.4	0.9	0.9	23.0	42.0	545.5
LnGrp LOS	F	A	D	D	A		F	A	A	C	D	F
Approach Vol, veh/h		510			510	A		1147			2450	
Approach Delay, s/veh		335.6			52.0			60.8			372.5	
Approach LOS		F			D			E			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	75.0		53.0	12.0	75.0		53.0				
Change Period (Y+Rc), s	6.4	6.4		* 6.2	6.4	6.4		* 6.2				
Max Green Setting (Gmax), s	5.6	68.6		* 47	5.6	68.6		* 47				
Max Q Clear Time (g_c+I1), s	7.6	70.6		48.8	5.2	3.5		37.1				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	6.6		2.4				

Intersection Summary

HCM 6th Ctrl Delay	255.6
HCM 6th LOS	F

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.  
 Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Queues

120: Meridian Ave & Cumberland Ave

01/20/2022



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	337	173	510	141	245	902	73	766	1611
v/c Ratio	3.34	0.29	0.83	0.23	0.67	0.53	0.32	0.44	1.88
Control Delay	1090.6	43.6	55.6	8.0	32.8	24.9	24.6	24.1	421.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.1
Total Delay	1090.6	43.6	55.6	8.0	32.8	25.6	24.6	24.1	422.0
Queue Length 50th (ft)	~557	116	427	9	137	277	28	167	~2195
Queue Length 95th (ft)	#759	181	#603	58	m123	m213	m77	328	#2404
Internal Link Dist (ft)		457	882			460		709	
Turn Bay Length (ft)	100			100	200		250		
Base Capacity (vph)	101	601	617	613	363	1699	228	1734	857
Starvation Cap Reductn	0	0	0	0	0	444	0	0	4
Spillback Cap Reductn	0	0	0	0	0	0	0	2	19
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	3.34	0.29	0.83	0.23	0.67	0.72	0.32	0.44	1.92





















Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCM Signalized Intersection Capacity Analysis

## 102: Florida Ave & Whiting St

01/20/2022

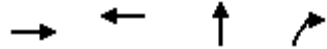
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  				
Traffic Volume (vph)	115	467	0	0	462	225	113	1962	107	0	0	0
Future Volume (vph)	115	467	0	0	462	225	113	1962	107	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			5.7	5.7			
Lane Util. Factor		0.95			0.95			0.91	1.00			
Frt		1.00			0.95			1.00	0.85			
Flt Protected		0.99			1.00			1.00	1.00			
Satd. Flow (prot)		3505			3365			5071	1583			
Flt Permitted		0.59			1.00			1.00	1.00			
Satd. Flow (perm)		2079			3365			5071	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)	125	508	0	0	502	245	123	2133	116	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	30	0	0	0
Lane Group Flow (vph)	0	633	0	0	737	0	0	2256	86	0	0	0
Turn Type	Perm	NA			NA		Perm	NA	Perm			
Protected Phases		4			4			2				
Permitted Phases	4						2		2			
Actuated Green, G (s)		59.0			59.0			64.3	64.3			
Effective Green, g (s)		59.0			59.0			64.3	64.3			
Actuated g/C Ratio		0.42			0.42			0.46	0.46			
Clearance Time (s)		6.0			6.0			5.7	5.7			
Vehicle Extension (s)		3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)		876			1418			2329	727			
v/s Ratio Prot					0.22							
v/s Ratio Perm		c0.30						0.44	0.05			
v/c Ratio		0.72			0.52			0.97	0.12			
Uniform Delay, d1		33.7			30.0			36.9	21.6			
Progression Factor		1.00			0.91			1.31	1.87			
Incremental Delay, d2		5.1			0.1			5.7	0.1			
Delay (s)		38.8			27.4			53.8	40.6			
Level of Service		D			C			D	D			
Approach Delay (s)		38.8			27.4			53.2			0.0	
Approach LOS		D			C			D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			45.6					HCM 2000 Level of Service		D		
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		15.7		
Intersection Capacity Utilization			91.2%					ICU Level of Service		F		
Analysis Period (min)			15									

c Critical Lane Group

# Queues

## 102: Florida Ave & Whiting St

01/20/2022



Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	633	747	2256	116
v/c Ratio	0.72	0.52	0.97	0.15
Control Delay	39.5	26.9	53.5	22.2
Queue Delay	0.0	0.0	27.5	0.0
Total Delay	39.5	26.9	81.0	22.2
Queue Length 50th (ft)	249	236	653	44
Queue Length 95th (ft)	327	m242	m671	m52
Internal Link Dist (ft)	994	519	567	
Turn Bay Length (ft)				75
Base Capacity (vph)	875	1428	2328	756
Starvation Cap Reductn	0	0	209	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.72	0.52	1.06	0.15

### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCM Signalized Intersection Capacity Analysis

## 103: Morgan St & Whiting St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↕			↕	
Traffic Volume (vph)	58	145	288	218	613	217	170	537	92	63	522	109
Future Volume (vph)	58	145	288	218	613	217	170	537	92	63	522	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8		5.8	5.8			5.7			5.7	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	0.90		1.00	0.96			0.98			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1677		1770	1790			3441			3440	
Flt Permitted	0.18	1.00		0.25	1.00			0.58			0.63	
Satd. Flow (perm)	336	1677		458	1790			2011			2180	
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)	63	158	313	237	666	236	185	584	100	68	567	118
RTOR Reduction (vph)	0	96	0	0	18	0	0	15	0	0	22	0
Lane Group Flow (vph)	63	375	0	237	884	0	0	854	0	0	731	0
Turn Type	Perm	NA		D.P+P	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	3 4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	22.2	22.2		31.4	37.2			21.3			21.3	
Effective Green, g (s)	22.2	22.2		31.4	37.2			21.3			21.3	
Actuated g/C Ratio	0.32	0.32		0.45	0.53			0.30			0.30	
Clearance Time (s)	5.8	5.8		5.8				5.7			5.7	
Vehicle Extension (s)	3.0	3.0		3.0				3.0			3.0	
Lane Grp Cap (vph)	106	531		377	951			611			663	
v/s Ratio Prot		0.22		0.08	c0.49							
v/s Ratio Perm	0.19			0.20				c0.42			0.34	
v/c Ratio	0.59	0.71		0.63	0.93			1.40			1.10	
Uniform Delay, d1	20.1	21.0		13.5	15.2			24.4			24.4	
Progression Factor	0.91	1.13		1.26	1.29			1.58			1.00	
Incremental Delay, d2	17.8	6.1		6.4	14.2			180.2			66.7	
Delay (s)	36.2	29.8		23.4	33.8			218.7			91.0	
Level of Service	D	C		C	C			F			F	
Approach Delay (s)		30.5			31.7			218.7			91.0	
Approach LOS		C			C			F			F	

### Intersection Summary

HCM 2000 Control Delay	94.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	17.3
Intersection Capacity Utilization	115.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues

103: Morgan St & Whiting St

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	63	471	237	902	869	753
v/c Ratio	0.59	0.75	0.63	0.93	1.39	1.10
Control Delay	38.6	23.3	18.5	34.0	207.0	91.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.6	23.3	18.5	34.0	207.0	91.0
Queue Length 50th (ft)	22	220	58	380	~526	~193
Queue Length 95th (ft)	m38	241	m76	m#606	m#328	#301
Internal Link Dist (ft)		519		503	563	1059
Turn Bay Length (ft)						
Base Capacity (vph)	106	627	377	969	626	684
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	0.59	0.75	0.63	0.93	1.39	1.10

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



# HCM Signalized Intersection Capacity Analysis

## 104: Jefferson St & Whiting St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔			↕			↖	↗
Traffic Volume (vph)	45	120	195	34	390	60	195	376	1	190	704	148
Future Volume (vph)	45	120	195	34	390	60	195	376	1	190	704	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7			5.7			5.7	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.98			1.00			0.98	
Flt Protected		0.99	1.00		1.00			0.98			0.99	
Satd. Flow (prot)		1838	1583		1825			3479			3432	
Flt Permitted		0.74	1.00		0.97			0.53			0.69	
Satd. Flow (perm)		1372	1583		1772			1879			2405	
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)	49	130	212	37	424	65	212	409	1	207	765	161
RTOR Reduction (vph)	0	0	138	0	7	0	0	0	0	0	17	0
Lane Group Flow (vph)	0	179	74	0	519	0	0	622	0	0	1116	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)		24.3	24.3		24.3			34.3			34.3	
Effective Green, g (s)		24.3	24.3		24.3			34.3			34.3	
Actuated g/C Ratio		0.35	0.35		0.35			0.49			0.49	
Clearance Time (s)		5.7	5.7		5.7			5.7			5.7	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		476	549		615			920			1178	
v/s Ratio Prot												
v/s Ratio Perm		0.13	0.05		c0.29			0.33			c0.46	
v/c Ratio		0.38	0.13		0.84			1.43dl			0.95	
Uniform Delay, d1		17.2	15.6		21.1			13.6			17.0	
Progression Factor		1.12	2.54		1.00			1.22			1.00	
Incremental Delay, d2		0.3	0.1		10.3			0.4			16.3	
Delay (s)		19.5	39.8		31.4			17.0			33.3	
Level of Service		B	D		C			B			C	
Approach Delay (s)		30.5			31.4			17.0			33.3	
Approach LOS		C			C			B			C	

### Intersection Summary

HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		

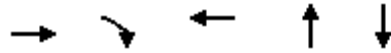
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Queues

104: Jefferson St & Whiting St

01/20/2022



Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	179	212	526	622	1133
v/c Ratio	0.38	0.31	0.85	1.43dl	0.95
Control Delay	20.8	5.7	36.0	17.4	34.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.8	5.7	36.0	17.4	34.7
Queue Length 50th (ft)	72	20	202	125	224
Queue Length 95th (ft)	m74	m22	#372	m92	#374
Internal Link Dist (ft)	503		431	509	207
Turn Bay Length (ft)					
Base Capacity (vph)	476	687	621	920	1195
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.38	0.31	0.85	0.68	0.95

Intersection Summary

# 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.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

# HCS7 Two-Way Stop-Control Report

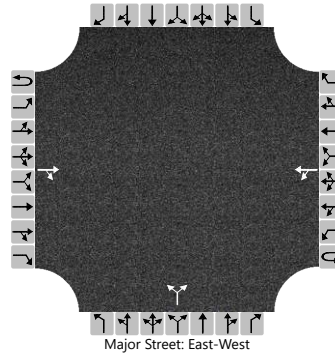
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2036
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWhitingSt&Nebraska Ave
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Nebraska Ave
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			89	235		152	322			159		237				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

















Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.12				6.42		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						160						417				
Capacity, c (veh/h)						1218						449				
v/c Ratio						0.13						0.93				
95% Queue Length, Q <sub>95</sub> (veh)						0.5						18.3				
Control Delay (s/veh)						8.4						81.4				
Level of Service (LOS)						A						F				
Approach Delay (s/veh)					3.6				81.4							
Approach LOS									F							

HCM Signalized Intersection Capacity Analysis  
 107: Meridian Ave & Whiting St

01/20/2022

							
Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations				  			  
Traffic Volume (vph)	116	62	0	1033	83	22	2138
Future Volume (vph)	116	62	0	1033	83	22	2138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.2			6.6		6.4	6.6
Lane Util. Factor	1.00			0.91		1.00	0.91
Fr <sub>t</sub>	0.95			0.99		1.00	1.00
Fl <sub>t</sub> Protected	0.97			1.00		0.95	1.00
Satd. Flow (prot)	1719			5029		1770	5085
Fl <sub>t</sub> Permitted	0.97			1.00		0.19	1.00
Satd. Flow (perm)	1719			5029		353	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	126	67	0	1123	90	24	2324
RTOR Reduction (vph)	16	0	0	4	0	0	0
Lane Group Flow (vph)	177	0	0	1209	0	24	2324
Turn Type	Perm		Perm	NA		pm+pt	NA
Protected Phases				6		5	2
Permitted Phases	4		6			2	
Actuated Green, G (s)	19.7			96.3		106.5	106.5
Effective Green, g (s)	19.7			96.3		106.5	106.5
Actuated g/C Ratio	0.14			0.69		0.76	0.76
Clearance Time (s)	7.2			6.6		6.4	6.6
Vehicle Extension (s)	3.0			3.0		3.0	3.0
Lane Grp Cap (vph)	241			3459		306	3868
v/s Ratio Prot				0.24		0.00	c0.46
v/s Ratio Perm	c0.10					0.06	
v/c Ratio	0.73			0.35		0.08	0.60
Uniform Delay, d <sub>1</sub>	57.6			9.0		4.8	7.4
Progression Factor	0.97			0.88		1.00	1.00
Incremental Delay, d <sub>2</sub>	10.9			0.0		0.1	0.7
Delay (s)	66.6			7.9		4.9	8.1
Level of Service	E			A		A	A
Approach Delay (s)	66.6			7.9			8.0
Approach LOS	E			A			A

Intersection Summary

HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

# Queues

## 107: Meridian Ave & Whiting St

01/20/2022



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	193	1213	24	2324
v/c Ratio	0.75	0.34	0.07	0.60
Control Delay	67.2	8.0	5.5	8.7
Queue Delay	0.4	0.0	0.0	0.1
Total Delay	67.6	8.0	5.5	8.9
Queue Length 50th (ft)	160	112	5	299
Queue Length 95th (ft)	239	m202	15	421
Internal Link Dist (ft)	876	709		494
Turn Bay Length (ft)			225	
Base Capacity (vph)	477	3555	355	3867
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	71	0	0	432
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.34	0.07	0.68

### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



# HCS7 Two-Way Stop-Control Report

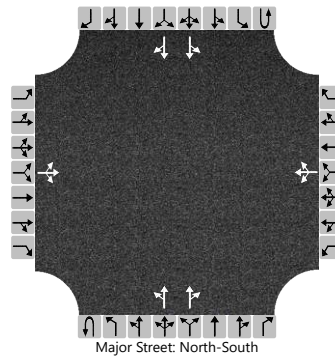
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2036
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWashingtonSt&JeffersonSt
Jurisdiction	FDOT, District 7
East/West Street	E Washington St
North/South Street	Jefferson St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0	0	0	2	0	0	0	2	0	
Configuration			LTR				LTR			LT		TR		LT		TR	
Volume (veh/h)		1	17	171		39	72	235		29	452	5		36	832	135	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.54	6.54	6.94		7.54	6.54	6.94		4.14				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			199				364				31				38		
Capacity, c (veh/h)			328				218				677				1078		
v/c Ratio			0.61				1.67				0.05				0.04		
95% Queue Length, Q <sub>95</sub> (veh)			4.3				80.0				0.1				0.1		
Control Delay (s/veh)			32.5				1269.7				10.6				8.5		
Level of Service (LOS)			D				F				B				A		
Approach Delay (s/veh)		32.5				1269.7				0.9				0.6			
Approach LOS		D				F											

# HCS7 Two-Way Stop-Control Report

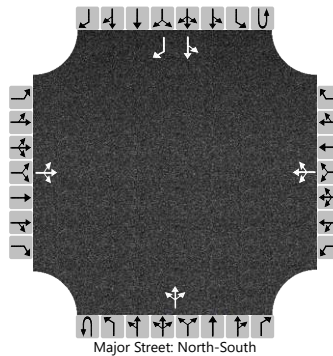
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2036
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWashingtonSt&BrushSt
Jurisdiction	FDOT, District 7
East/West Street	E Washington St
North/South Street	Brush St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0		0	1	0		0	1	1	
Configuration			LTR				LTR				LTR			LT		R	
Volume (veh/h)		36	4	22		34	5	1		104	128	7		10	443	202	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																Yes	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			65				42				109				11		
Capacity, c (veh/h)			318				213				1095				1441		
v/c Ratio			0.21				0.20				0.10				0.01		
95% Queue Length, Q <sub>95</sub> (veh)			0.8				0.7				0.3				0.0		
Control Delay (s/veh)			19.2				26.1				8.7				7.5		
Level of Service (LOS)			C				D				A				A		
Approach Delay (s/veh)		19.2				26.1				4.3				0.2			
Approach LOS		C				D											

# HCS7 Two-Way Stop-Control Report

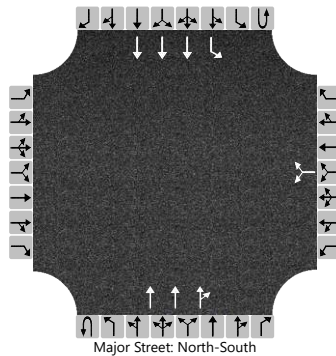
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2036
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	MeridianAve&EWashingtonSt
Jurisdiction	FDOT, District 7
East/West Street	Meridian Ave
North/South Street	E WashingtonSt
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0		0	3	0		0	1	3
Configuration							LR				T	TR		L	T	
Volume (veh/h)						126		170			1029	66	0	54	2034	
Percent Heavy Vehicles (%)						2		2					2	2		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type   Storage							Left Only								1	

## Critical and Follow-up Headways




















Base Critical Headway (sec)						6.4		7.1							5.3	
Critical Headway (sec)						5.74		7.14							5.34	
Base Follow-Up Headway (sec)						3.8		3.9							3.1	
Follow-Up Headway (sec)						3.82		3.92							3.12	

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							312								57	
Capacity, c (veh/h)							215								330	
v/c Ratio							1.45								0.17	
95% Queue Length, Q <sub>95</sub> (veh)							56.6								0.6	
Control Delay (s/veh)							881.6								18.2	
Level of Service (LOS)							F								C	
Approach Delay (s/veh)							881.6								0.5	
Approach LOS							F									

HCM Signalized Intersection Capacity Analysis  
 114: Florida Ave & Channelside Dr

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 				
Traffic Volume (vph)	1032	2111	221	0	0	0	0	532	136	0	0	0
Future Volume (vph)	1032	2111	221	0	0	0	0	532	136	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0						5.7	5.7			
Lane Util. Factor	0.86	0.86						0.95	1.00			
Frt	1.00	0.99						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1522	4724						3539	1583			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1522	4724						3539	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1122	2295	240	0	0	0	0	578	148	0	0	0
RTOR Reduction (vph)	17	14	0	0	0	0	0	0	17	0	0	0
Lane Group Flow (vph)	881	2745	0	0	0	0	0	578	131	0	0	0
Turn Type	Split	NA						NA	Perm			
Protected Phases	6	6						4				
Permitted Phases									4			
Actuated Green, G (s)	93.0	93.0						35.3	35.3			
Effective Green, g (s)	93.0	93.0						35.3	35.3			
Actuated g/C Ratio	0.66	0.66						0.25	0.25			
Clearance Time (s)	6.0	6.0						5.7	5.7			
Vehicle Extension (s)	3.0	3.0						3.0	3.0			
Lane Grp Cap (vph)	1011	3138						892	399			
v/s Ratio Prot	0.58	c0.58						c0.16				
v/s Ratio Perm									0.08			
v/c Ratio	0.87	0.87						0.65	0.33			
Uniform Delay, d1	18.7	18.8						46.8	42.7			
Progression Factor	1.00	1.00						1.00	1.00			
Incremental Delay, d2	10.3	3.8						3.6	2.2			
Delay (s)	29.0	22.6						50.4	44.9			
Level of Service	C	C						D	D			
Approach Delay (s)		24.2			0.0			49.3			0.0	
Approach LOS		C			A			D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			28.3					HCM 2000 Level of Service			C	
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)			11.7	
Intersection Capacity Utilization			107.6%					ICU Level of Service			G	
Analysis Period (min)			15									

c Critical Lane Group

# Queues

## 114: Florida Ave & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	898	2759	578	148
v/c Ratio	0.87	0.88	0.65	0.36
Control Delay	29.1	22.7	50.8	38.9
Queue Delay	0.0	0.3	0.0	0.0
Total Delay	29.1	23.0	50.8	38.9
Queue Length 50th (ft)	680	719	248	94
Queue Length 95th (ft)	#1024	799	315	159
Internal Link Dist (ft)		924	937	
Turn Bay Length (ft)				
Base Capacity (vph)	1027	3152	892	416
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	72	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.87	0.90	0.65	0.36

### Intersection Summary

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



HCM Signalized Intersection Capacity Analysis  
 115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/20/2022

Movement	EBL	EBT	EBR	WBL	WBR2	NBT	NBR	SBL	SBT	SEL2	SEL	SER	
Lane Configurations													
Traffic Volume (vph)	643	1546	58	1	792	197	11	1	26	225	548	11	
Future Volume (vph)	643	1546	58	1	792	197	11	1	26	225	548	11	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.5	6.2		5.9	5.9	5.9	5.9	5.9	5.9		6.6		
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00		1.00		
Flt	1.00	0.99		1.00	0.85	1.00	0.85	1.00	1.00		1.00		
Flt Protected	0.95	1.00		0.95	1.00	1.00	1.00	0.95	1.00		0.95		
Satd. Flow (prot)	1770	3520		1770	1583	1863	1583	1770	1863		1772		
Flt Permitted	0.95	1.00		0.07	1.00	1.00	1.00	0.23	1.00		0.95		
Satd. Flow (perm)	1770	3520		122	1583	1863	1583	436	1863		1772		
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)	699	1680	63	1	861	214	12	1	28	245	596	12	
RTOR Reduction (vph)	0	2	0	0	95	0	11	0	0	0	0	0	
Lane Group Flow (vph)	699	1741	0	1	766	214	1	1	28	0	853	0	
Turn Type	pm+pt	NA		Perm	Perm	NA	Perm	Perm	NA	Prot	Prot		
Protected Phases	1	6				4			8	9	9		
Permitted Phases	6			2	2		4	8					
Actuated Green, G (s)	78.8	78.8		61.1	61.1	17.1	17.1	17.1	17.1		25.4		
Effective Green, g (s)	78.8	78.8		61.1	61.1	17.1	17.1	17.1	17.1		25.4		
Actuated g/C Ratio	0.56	0.56		0.44	0.44	0.12	0.12	0.12	0.12		0.18		
Clearance Time (s)	5.5	6.2		5.9	5.9	5.9	5.9	5.9	5.9		6.6		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		4.5		
Lane Grp Cap (vph)	996	1981		53	690	227	193	53	227		321		
v/s Ratio Prot	0.06	c0.49				c0.11			0.02		c0.48		
v/s Ratio Perm	0.33			0.01	c0.48		0.00	0.00					
v/c Ratio	0.70	0.88		0.02	1.11	0.94	0.01	0.02	0.12		2.66		
Uniform Delay, d1	22.1	26.5		22.4	39.5	61.0	54.0	54.1	54.8		57.3		
Progression Factor	0.96	0.88		1.15	0.65	1.00	1.00	1.50	1.29		1.00		
Incremental Delay, d2	2.1	3.2		0.6	66.5	46.5	0.1	0.2	0.4		754.7		
Delay (s)	23.4	26.5		26.4	92.1	107.5	54.1	81.2	70.9		812.0		
Level of Service	C	C		C	F	F	D	F	E		F		
Approach Delay (s)		25.6				104.7			71.3		812.0		
Approach LOS		C				F			E		F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			195.0			HCM 2000 Level of Service			F				
HCM 2000 Volume to Capacity ratio			1.42										
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			23.9				
Intersection Capacity Utilization			114.0%			ICU Level of Service			H				
Analysis Period (min)			15										

c Critical Lane Group

Queues

115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/20/2022



Lane Group	EBL	EBT	WBL	WBR2	NBT	NBR	SBL	SBT	SEL
Lane Group Flow (vph)	699	1743	1	861	214	12	1	28	853
v/c Ratio	0.70	0.88	0.02	1.10	0.94	0.04	0.02	0.12	2.66
Control Delay	23.4	26.9	27.0	81.8	107.0	0.3	82.0	71.6	776.9
Queue Delay	3.7	37.6	0.0	3.3	51.9	0.0	0.0	0.0	0.9
Total Delay	27.2	64.5	27.0	85.1	158.8	0.3	82.0	71.6	777.7
Queue Length 50th (ft)	296	398	0	~601	196	0	1	22	~1308
Queue Length 95th (ft)	m391	537	m0	#1073	#356	0	m1	m24	#1561
Internal Link Dist (ft)		523			969			424	319
Turn Bay Length (ft)				10			100		
Base Capacity (vph)	1005	1984	52	785	227	297	53	227	321
Starvation Cap Reductn	166	185	0	2	0	0	0	0	0
Spillback Cap Reductn	218	368	0	207	98	0	0	0	23
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	1.08	0.02	1.49	1.66	0.04	0.02	0.12	2.86

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 116: Channelside Dr & Jefferson St

01/20/2022

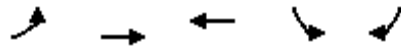


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↕	↗	↖		↘	↗
Traffic Volume (veh/h)	160	1946	656	13	7	137
Future Volume (veh/h)	160	1946	656	13	7	137
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	174	2115	713	14	8	149
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	637	1470	1280	25	235	209
Arrive On Green	0.01	0.26	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1781	1870	1828	36	1781	1585
Grp Volume(v), veh/h	174	2115	0	727	8	149
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1864	1781	1585
Q Serve(g_s), s	3.5	110.0	0.0	0.0	0.5	12.6
Cycle Q Clear(g_c), s	3.5	110.0	0.0	0.0	0.5	12.6
Prop In Lane	1.00			0.02	1.00	1.00
Lane Grp Cap(c), veh/h	637	1470	0	1305	235	209
V/C Ratio(X)	0.27	1.44	0.00	0.56	0.03	0.71
Avail Cap(c_a), veh/h	637	1470	0	1305	235	209
HCM Platoon Ratio	0.33	0.33	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.00	0.72	0.84	0.84
Uniform Delay (d), s/veh	4.7	51.8	0.0	0.0	53.0	58.2
Incr Delay (d2), s/veh	0.1	198.0	0.0	1.2	0.2	15.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	135.6	0.0	0.5	0.3	6.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.8	249.8	0.0	1.2	53.2	74.0
LnGrp LOS	A	F	A	A	D	E
Approach Vol, veh/h		2289	727		157	
Approach Delay, s/veh		231.2	1.2		73.0	
Approach LOS		F	A		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	12.0	104.0			116.0	24.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	6.0	98.0			110.0	18.5
Max Q Clear Time (g_c+I1), s	5.5	2.0			112.0	14.6
Green Ext Time (p_c), s	0.0	5.7			0.0	0.2
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			170.7			
HCM 6th LOS			F			

# Queues

## 116: Channelside Dr & Jefferson St

01/20/2022



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	174	2115	727	8	149
v/c Ratio	0.37	1.45	0.56	0.03	0.44
Control Delay	4.8	226.9	2.1	51.6	38.6
Queue Delay	0.0	1.4	0.3	0.0	1.5
Total Delay	4.8	228.3	2.4	51.6	40.2
Queue Length 50th (ft)	36	~2608	21	7	104
Queue Length 95th (ft)	m32	m#2142	44	m14	163
Internal Link Dist (ft)		315	140	434	
Turn Bay Length (ft)				100	
Base Capacity (vph)	467	1463	1300	233	338
Starvation Cap Reductn	0	427	155	0	0
Spillback Cap Reductn	0	220	171	0	79
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.37	2.04	0.64	0.03	0.58

### Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 117: Channelside Dr & Nebraska Ave

01/20/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↙	↘
Traffic Volume (veh/h)	440	1513	614	64	8	55
Future Volume (veh/h)	440	1513	614	64	8	55
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	478	1645	667	70	9	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	441	1470	1034	109	27	183
Arrive On Green	0.24	1.00	0.21	0.21	0.13	0.13
Sat Flow, veh/h	1781	1870	1664	175	207	1381
Grp Volume(v), veh/h	478	1645	0	737	70	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1839	1611	0
Q Serve(g_s), s	17.0	0.0	0.0	51.4	5.5	0.0
Cycle Q Clear(g_c), s	17.0	0.0	0.0	51.4	5.5	0.0
Prop In Lane	1.00			0.09	0.13	0.86
Lane Grp Cap(c), veh/h	441	1470	0	1143	213	0
V/C Ratio(X)	1.08	1.12	0.00	0.64	0.33	0.00
Avail Cap(c_a), veh/h	441	1470	0	1143	213	0
HCM Platoon Ratio	2.00	2.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.00	0.78	0.79	0.00
Uniform Delay (d), s/veh	42.1	0.0	0.0	41.5	55.1	0.0
Incr Delay (d2), s/veh	42.3	54.7	0.0	2.2	3.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.1	22.3	0.0	26.0	2.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	84.4	54.7	0.0	43.7	58.4	0.0
LnGrp LOS	F	F	A	D	E	A
Approach Vol, veh/h		2123	737		70	
Approach Delay, s/veh		61.4	43.7		58.4	
Approach LOS		E	D		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	23.0	93.0			116.0	24.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	17.0	87.0			110.0	18.5
Max Q Clear Time (g_c+I1), s	19.0	53.4			2.0	7.5
Green Ext Time (p_c), s	0.0	5.6			62.4	0.1
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			56.9			
HCM 6th LOS			E			



# Queues

## 117: Channelside Dr & Nebraska Ave

01/20/2022



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	478	1645	737	69
v/c Ratio	0.90	1.12	0.64	0.26
Control Delay	23.2	71.7	16.1	38.7
Queue Delay	51.6	1.3	51.9	0.0
Total Delay	74.8	73.0	68.1	38.7
Queue Length 50th (ft)	156	~1775	256	28
Queue Length 95th (ft)	m20	m244	499	m23
Internal Link Dist (ft)		140	194	464
Turn Bay Length (ft)	80			
Base Capacity (vph)	534	1463	1145	268
Starvation Cap Reductn	212	406	232	0
Spillback Cap Reductn	202	371	494	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.48	1.56	1.13	0.26

### Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 119: Old Water St & Channelside Dr

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	31	1433	57	9	524	165	95	31	94	48	6	60
Future Volume (veh/h)	31	1433	57	9	524	165	95	31	94	48	6	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	34	1558	62	10	570	179	103	34	102	52	7	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	381	1270	51	325	1136	357	161	51	153	107	19	179
Arrive On Green	0.05	0.95	0.95	0.10	0.56	0.56	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1781	1786	71	1781	1365	429	1328	412	1236	1253	156	1452
Grp Volume(v), veh/h	34	0	1620	10	0	749	103	0	136	52	0	72
Grp Sat Flow(s),veh/h/ln	1781	0	1858	1781	0	1793	1328	0	1648	1253	0	1609
Q Serve(g_s), s	0.9	0.0	99.5	0.0	0.0	35.9	10.8	0.0	11.0	5.8	0.0	5.7
Cycle Q Clear(g_c), s	0.9	0.0	99.5	0.0	0.0	35.9	16.5	0.0	11.0	16.8	0.0	5.7
Prop In Lane	1.00		0.04	1.00		0.24	1.00		0.75	1.00		0.90
Lane Grp Cap(c), veh/h	381	0	1320	325	0	1492	161	0	204	107	0	199
V/C Ratio(X)	0.09	0.00	1.23	0.03	0.00	0.50	0.64	0.00	0.67	0.48	0.00	0.36
Avail Cap(c_a), veh/h	381	0	1320	325	0	1492	161	0	204	107	0	199
HCM Platoon Ratio	1.33	1.33	1.33	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.00	0.09	0.72	0.00	0.72	1.00	0.00	1.00	0.65	0.00	0.65
Uniform Delay (d), s/veh	12.6	0.0	3.8	53.2	0.0	13.1	63.9	0.0	58.6	66.6	0.0	56.3
Incr Delay (d2), s/veh	0.0	0.0	102.8	0.1	0.0	0.9	17.9	0.0	16.1	9.8	0.0	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	40.0	0.3	0.0	15.9	4.5	0.0	5.6	2.2	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.6	0.0	106.7	53.3	0.0	14.0	81.8	0.0	74.7	76.4	0.0	59.6
LnGrp LOS	B	A	F	D	A	B	F	A	E	E	A	E
Approach Vol, veh/h		1654			759			239				124
Approach Delay, s/veh		104.7			14.5			77.7				66.7
Approach LOS		F			B			E				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.0	123.5		23.0	28.5	106.0		23.0				
Change Period (Y+Rc), s	6.0	6.5		* 5.7	6.5	* 6.5		* 5.7				
Max Green Setting (Gmax), s	5.0	99.5		* 17	5.0	* 1E2		* 17				
Max Q Clear Time (g_c+I1), s	2.9	37.9		18.5	2.0	101.5		18.8				
Green Ext Time (p_c), s	0.0	6.2		0.0	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	76.1
HCM 6th LOS	E

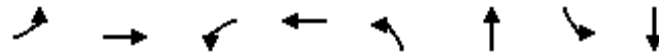
Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

119: Old Water St & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	1620	10	749	103	136	52	72
v/c Ratio	0.09	1.23	0.09	0.58	0.63	0.48	0.45	0.28
Control Delay	7.6	123.6	5.6	4.5	76.4	28.4	42.2	9.4
Queue Delay	0.0	2.3	0.0	1.0	2.6	106.5	671.2	0.3
Total Delay	7.6	125.9	5.6	5.5	79.0	134.9	713.4	9.7
Queue Length 50th (ft)	10	~1813	0	24	91	40	50	21
Queue Length 95th (ft)	m9	m#1476	m3	137	#165	109	m59	m24
Internal Link Dist (ft)		194		425		945		461
Turn Bay Length (ft)	80		100				150	
Base Capacity (vph)	400	1317	116	1284	163	281	115	256
Starvation Cap Reductn	0	213	0	213	0	0	0	0
Spillback Cap Reductn	13	513	0	283	16	242	115	31
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	2.01	0.09	0.75	0.70	3.49	52.00	0.32

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 118: Beneficial Dr/Meridian Ave & Channelside Dr

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	872	637	66	103	247	167	78	555	104	112	290	373
Future Volume (vph)	872	637	66	103	247	167	78	555	104	112	290	373
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.2		6.2	6.2		6.4	6.4	6.4	6.4	6.4	6.4
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1836		1770	1750		1770	1863	1583	1770	1863	1583
Flt Permitted	0.22	1.00		0.35	1.00		0.24	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	405	1836		660	1750		441	1863	1583	229	1863	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)	948	692	72	112	268	182	85	603	113	122	315	405
RTOR Reduction (vph)	0	2	0	0	18	0	0	0	76	0	0	311
Lane Group Flow (vph)	948	762	0	112	432	0	85	603	37	122	315	94
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6			2			4		4	8		8
Actuated Green, G (s)	81.8	81.8		47.8	47.8		45.6	45.6	45.6	32.6	32.6	32.6
Effective Green, g (s)	81.8	81.8		47.8	47.8		45.6	45.6	45.6	32.6	32.6	32.6
Actuated g/C Ratio	0.58	0.58		0.34	0.34		0.33	0.33	0.33	0.23	0.23	0.23
Clearance Time (s)	6.0	6.2		6.2	6.2		6.4	6.4	6.4	6.4	6.4	6.4
Vehicle Extension (s)	2.0	3.0		3.0	3.0		2.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	509	1072		225	597		206	606	515	53	433	368
v/s Ratio Prot	c0.37	0.41			0.25		0.02	c0.32			0.17	
v/s Ratio Perm	c0.71			0.17			0.11		0.02	c0.53		0.06
v/c Ratio	1.86	0.71		0.50	0.72		0.41	1.00	0.07	2.30	0.73	0.26
Uniform Delay, d1	30.3	20.7		36.6	40.3		35.4	47.1	32.6	53.7	49.6	43.8
Progression Factor	1.56	0.96		1.00	1.00		1.00	1.00	1.00	1.50	1.52	9.74
Incremental Delay, d2	388.8	0.4		7.7	7.5		6.0	35.4	0.3	613.6	5.2	0.8
Delay (s)	436.0	20.3		44.2	47.8		41.4	82.5	32.9	694.3	80.6	427.7
Level of Service	F	C		D	D		D	F	C	F	F	F
Approach Delay (s)		250.5			47.1			71.1			336.4	
Approach LOS		F			D			E			F	

Intersection Summary

HCM 2000 Control Delay	203.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.02		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	129.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues

118: Beneficial Dr/Meridian Ave & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	948	764	112	450	85	603	113	122	315	405
v/c Ratio	1.86	0.71	0.50	0.73	0.41	1.00	0.19	2.30	0.73	0.60
Control Delay	415.2	20.8	45.8	46.2	40.0	82.2	6.4	643.5	81.7	42.3
Queue Delay	0.0	30.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Total Delay	415.2	51.4	45.8	46.2	40.0	82.2	6.4	643.5	81.7	43.5
Queue Length 50th (ft)	~1163	328	81	339	55	548	0	~185	302	260
Queue Length 95th (ft)	m#878	m279	148	473	98	#800	44	m#214	m328	m287
Internal Link Dist (ft)		425		125		927			460	
Turn Bay Length (ft)	150		150				400	200		
Base Capacity (vph)	509	1075	225	614	206	606	591	53	433	679
Starvation Cap Reductn	0	345	0	0	0	0	0	0	0	112
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.86	1.05	0.50	0.73	0.41	1.00	0.19	2.30	0.73	0.71

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



# HCS7 Two-Way Stop-Control Report

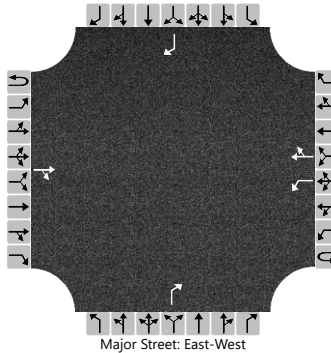
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2036
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Whiting PD&E Study

## Site Information

Intersection	ChannelsideDr&12thSt
Jurisdiction	FDOT, District 7
East/West Street	Channelside Dr
North/South Street	12th St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	1	1	0		0	0	1		0	0	1
Configuration				TR		L		TR				R				R
Volume (veh/h)			744	109		12	406	25				124				111
Percent Heavy Vehicles (%)						2						2				2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized										No				No		
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)					4.1							6.2				6.2
Critical Headway (sec)					4.12							6.22				6.22
Base Follow-Up Headway (sec)					2.2							3.3				3.3
Follow-Up Headway (sec)					2.22							3.32				3.32

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					13							131				117			
Capacity, c (veh/h)					756							365				617			
v/c Ratio					0.02							0.36				0.19			
95% Queue Length, Q <sub>95</sub> (veh)					0.1							1.6				0.7			
Control Delay (s/veh)					9.8							20.3				12.2			
Level of Service (LOS)					A							C				B			
Approach Delay (s/veh)					0.3						20.3					12.2			
Approach LOS					C						C					B			

# MOVEMENT SUMMARY

**Site: 8 [Channelside Drive at Cumberland Avenue\_NB2036-PM  
(Site Folder: General)]**

No-Build 2036 Year -  
PM Peak Hour  
Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Channelside Drive														
3	L2	123	2.0	129	2.0	0.729	13.9	LOS B	7.0	178.0	0.61	0.39	0.61	33.4
8	T1	711	2.0	748	2.0	0.729	13.9	LOS B	7.0	178.0	0.61	0.39	0.61	34.1
18	R2	25	2.0	26	2.0	0.729	13.9	LOS B	7.0	178.0	0.61	0.39	0.61	33.1
Approach		859	2.0	904	2.0	0.729	13.9	LOS B	7.0	178.0	0.61	0.39	0.61	34.0
East: E Cumberland Avenue														
1	L2	16	2.0	17	2.0	0.147	7.5	LOSA	0.5	12.9	0.61	0.61	0.61	37.6
6	T1	5	2.0	5	2.0	0.147	7.5	LOSA	0.5	12.9	0.61	0.61	0.61	35.0
16	R2	66	2.0	69	2.0	0.147	7.5	LOSA	0.5	12.9	0.61	0.61	0.61	34.8
Approach		87	2.0	92	2.0	0.147	7.5	LOSA	0.5	12.9	0.61	0.61	0.61	35.3
North: Channelside Drive														
7	L2	30	2.0	32	2.0	0.392	6.8	LOSA	2.1	52.4	0.36	0.23	0.36	37.0
4	T1	425	2.0	447	2.0	0.392	6.8	LOSA	2.1	52.4	0.36	0.23	0.36	38.7
14	R2	231	2.0	243	2.0	0.212	5.0	LOSA	0.9	23.5	0.31	0.19	0.31	34.4
Approach		686	2.0	722	2.0	0.392	6.2	LOSA	2.1	52.4	0.34	0.21	0.34	37.1
West: E Cumberland Avenue														
5	L2	46	2.0	48	2.0	0.127	5.2	LOSA	0.5	11.8	0.48	0.41	0.48	34.6
2	T1	50	2.0	53	2.0	0.127	5.2	LOSA	0.5	11.8	0.48	0.41	0.48	34.4
12	R2	13	2.0	14	2.0	0.127	5.2	LOSA	0.5	11.8	0.48	0.41	0.48	33.3
Approach		109	2.0	115	2.0	0.127	5.2	LOSA	0.5	11.8	0.48	0.41	0.48	34.3
All Vehicles		1741	2.0	1833	2.0	0.729	10.0	LOSA	7.0	178.0	0.50	0.33	0.50	35.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# HCS7 Two-Way Stop-Control Report

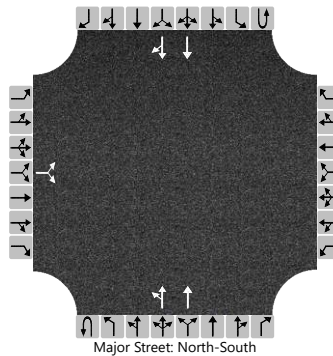
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2036
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	ChannelsideDr&E WhitingSt
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Channelside Dr
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	0	0		0	2	0		0	2	0	
Configuration			LR							LT	T				T	TR	
Volume (veh/h)		5		1						41	782				684	55	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways




















Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.84		6.94						4.14						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			6							43								
Capacity, c (veh/h)			171							835								
v/c Ratio			0.04							0.05								
95% Queue Length, Q <sub>95</sub> (veh)			0.1							0.2								
Control Delay (s/veh)			26.8							9.5								
Level of Service (LOS)			D							A								
Approach Delay (s/veh)		26.8									0.9							
Approach LOS		D									A							

HCM Signalized Intersection Capacity Analysis  
 130: Channelside Dr & E Washington St/E York St

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	13	5	17	5	137	5	783	3	64	707	16
Future Volume (vph)	21	13	5	17	5	137	5	783	3	64	707	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.9			8.4	8.4	6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.98			1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.97			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1784			1793	1583	1770	3537		1770	3528	
Flt Permitted		0.18			0.74	1.00	0.35	1.00		0.95	1.00	
Satd. Flow (perm)		338			1387	1583	660	3537		1770	3528	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	14	5	18	5	149	5	851	3	70	768	17
RTOR Reduction (vph)	0	4	0	0	0	139	0	0	0	0	1	0
Lane Group Flow (vph)	0	38	0	0	23	10	5	854	0	70	784	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases		4			3			2		1	1 2	
Permitted Phases	4			3		3	2					
Actuated Green, G (s)		16.8			9.3	9.3	71.1	71.1		16.5	93.6	
Effective Green, g (s)		16.8			9.3	9.3	71.1	71.1		16.5	93.6	
Actuated g/C Ratio		0.12			0.07	0.07	0.51	0.51		0.12	0.67	
Clearance Time (s)		5.9			8.4	8.4	6.0	6.0		6.0		
Vehicle Extension (s)		2.0			4.0	4.0	3.0	3.0		2.0		
Lane Grp Cap (vph)		40			92	105	335	1796		208	2358	
v/s Ratio Prot								c0.24		0.04	c0.22	
v/s Ratio Perm		c0.11			c0.02	0.01	0.01					
v/c Ratio		0.96			0.25	0.09	0.01	0.48		0.34	0.33	
Uniform Delay, d1		61.3			62.0	61.4	17.1	22.4		56.7	9.9	
Progression Factor		0.94			1.00	1.00	1.00	1.00		1.01	1.59	
Incremental Delay, d2		107.3			1.9	0.5	0.1	0.9		0.3	0.0	
Delay (s)		165.0			64.0	61.9	17.2	23.3		57.6	15.7	
Level of Service		F			E	E	B	C		E	B	
Approach Delay (s)		165.0			62.2			23.2			19.1	
Approach LOS		F			E			C			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			28.0									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			140.0								26.3	Sum of lost time (s)
Intersection Capacity Utilization			52.1%									ICU Level of Service A
Analysis Period (min)			15									

c Critical Lane Group

Queues

130: Channelside Dr & E Washington St/E York St

01/20/2022



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	23	149	5	854	70	785
v/c Ratio	0.89	0.25	0.61	0.01	0.47	0.34	0.33
Control Delay	136.3	67.4	20.0	23.2	25.6	60.3	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	136.3	67.4	20.0	23.2	25.6	60.3	17.9
Queue Length 50th (ft)	36	20	0	3	293	67	158
Queue Length 95th (ft)	m#58	50	68	12	371	m108	240
Internal Link Dist (ft)	922	976			474		596
Turn Bay Length (ft)			430	160		280	
Base Capacity (vph)	58	214	370	341	1826	209	2361
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.11	0.40	0.01	0.47	0.33	0.33

Intersection Summary

# 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.



HCM Signalized Intersection Capacity Analysis  
 129: Channelside Dr & Kennedy Blvd

01/20/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	790	18	71	20	27	60	84	854	3	27	672	399
Future Volume (vph)	790	18	71	20	27	60	84	854	3	27	672	399
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1689	1583		1823	1583	1770	3538		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.66	1.00	0.21	1.00		0.10	1.00	1.00
Satd. Flow (perm)	1681	1689	1583		1221	1583	389	3538		192	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	859	20	77	22	29	65	91	928	3	29	730	434
RTOR Reduction (vph)	0	0	47	0	0	60	0	0	0	0	0	296
Lane Group Flow (vph)	438	441	30	0	51	5	91	931	0	29	730	138
Turn Type	Split	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	3	3			1			2			2	
Permitted Phases			3	1		1	2			2		2
Actuated Green, G (s)	54.7	54.7	54.7		9.7	9.7	44.4	44.4		44.4	44.4	44.4
Effective Green, g (s)	54.7	54.7	54.7		9.7	9.7	44.4	44.4		44.4	44.4	44.4
Actuated g/C Ratio	0.39	0.39	0.39		0.07	0.07	0.32	0.32		0.32	0.32	0.32
Clearance Time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3
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)	656	659	618		84	109	123	1122		60	1122	502
v/s Ratio Prot	0.26	c0.26						c0.26				0.21
v/s Ratio Perm			0.02		c0.04	0.00	0.23			0.15		0.09
v/c Ratio	0.67	0.67	0.05		0.61	0.04	0.74	0.83		0.48	0.65	0.27
Uniform Delay, d1	35.2	35.2	26.5		63.3	60.8	42.6	44.3		38.5	41.1	35.7
Progression Factor	1.00	1.00	1.00		1.00	1.00	0.62	0.67		1.00	1.00	1.00
Incremental Delay, d2	5.3	5.3	0.1		11.8	0.2	29.9	6.5		25.3	2.9	1.3
Delay (s)	40.5	40.5	26.6		75.1	61.0	56.3	36.0		63.9	44.1	37.1
Level of Service	D	D	C		E	E	E	D		E	D	D
Approach Delay (s)		39.4			67.2			37.8			42.0	
Approach LOS		D			E			D			D	

Intersection Summary

HCM 2000 Control Delay	40.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.4
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Queues

129: Channelside Dr & Kennedy Blvd

01/20/2022



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	438	441	77	51	65	91	931	29	730	434
v/c Ratio	0.67	0.67	0.11	0.54	0.31	0.72	0.81	0.47	0.63	0.54
Control Delay	41.2	41.3	2.5	81.5	7.0	56.1	34.5	65.6	43.0	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.2	41.3	2.5	81.5	7.0	56.1	34.5	65.6	43.0	5.6
Queue Length 50th (ft)	343	346	0	45	0	77	431	21	297	0
Queue Length 95th (ft)	476	477	19	90	18	m#137	523	#67	366	78
Internal Link Dist (ft)		903		909			596		1256	
Turn Bay Length (ft)			140			280		75		375
Base Capacity (vph)	656	659	680	132	259	126	1155	62	1155	809
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.67	0.11	0.39	0.25	0.72	0.81	0.47	0.63	0.54

Intersection Summary

# 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.

# HCM Signalized Intersection Capacity Analysis

109: Florida Ave & Brorein St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑↑		↘	↑↑↑↑					
Traffic Volume (vph)	0	0	0	0	2163	200	248	1997	0	0	0	0	
Future Volume (vph)	0	0	0	0	2163	200	248	1997	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					5.8		6.1	6.1					
Lane Util. Factor					0.86		1.00	0.91					
Frt					0.99		1.00	1.00					
Flt Protected					1.00		0.95	1.00					
Satd. Flow (prot)					6327		1770	5085					
Flt Permitted					1.00		0.95	1.00					
Satd. Flow (perm)					6327		1770	5085					
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	0	0	0	2351	217	270	2171	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	10	0	23	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	2558	0	247	2171	0	0	0	0	
Turn Type					NA		Perm	NA					
Protected Phases					2			4					
Permitted Phases							4						
Actuated Green, G (s)					54.2		68.9	68.9					
Effective Green, g (s)					54.2		68.9	68.9					
Actuated g/C Ratio					0.39		0.49	0.49					
Clearance Time (s)					5.8		6.1	6.1					
Vehicle Extension (s)					3.0		3.0	3.0					
Lane Grp Cap (vph)					2449		871	2502					
v/s Ratio Prot					c0.40			c0.43					
v/s Ratio Perm							0.14						
v/c Ratio					1.04		0.28	0.87					
Uniform Delay, d1					42.9		21.0	31.5					
Progression Factor					1.00		0.83	0.84					
Incremental Delay, d2					31.1		0.7	3.7					
Delay (s)					74.0		18.2	30.3					
Level of Service					E		B	C					
Approach Delay (s)		0.0			74.0			29.0			0.0		
Approach LOS		A			E			C			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			52.0		HCM 2000 Level of Service				D				
HCM 2000 Volume to Capacity ratio			0.93										
Actuated Cycle Length (s)			140.0		Sum of lost time (s)				14.9				
Intersection Capacity Utilization			83.2%		ICU Level of Service				E				
Analysis Period (min)			15										

c Critical Lane Group

# Queues

## 109: Florida Ave & Brorein St

01/20/2022



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	2568	270	2171
v/c Ratio	1.04	0.30	0.87
Control Delay	72.4	15.4	30.6
Queue Delay	15.7	0.0	0.2
Total Delay	88.1	15.4	30.8
Queue Length 50th (ft)	~733	105	531
Queue Length 95th (ft)	#802	m149	635
Internal Link Dist (ft)	416		237
Turn Bay Length (ft)			
Base Capacity (vph)	2459	893	2502
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	87	0	37
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.08	0.30	0.88

### Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/20/2022



Movement	WBL	WBT	NBL	NBT	NBR2	SBL	SBT	SBR	SWR	SWR2
Lane Configurations		↕↕	↙	↕	↙	↙	↙		↙	↙
Traffic Volume (vph)	3	1405	707	513	652	432	21	668	785	163
Future Volume (vph)	3	1405	707	513	652	432	21	668	785	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.5	6.0	6.0	5.5	6.0		5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	1.00	1.00	0.85	1.00	0.85		1.00	0.85
Flt Protected		1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00
Satd. Flow (prot)		3539	1770	1863	1583	1770	1592		1863	1583
Flt Permitted		1.00	0.09	1.00	1.00	0.33	1.00		1.00	1.00
Satd. Flow (perm)		3539	162	1863	1583	609	1592		1863	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
Adj. Flow (vph)	3	1527	768	558	709	470	23	726	853	177
RTOR Reduction (vph)	0	0	0	0	46	0	0	0	0	73
Lane Group Flow (vph)	0	1530	768	558	663	470	749	0	853	104
Turn Type	Perm	NA	pm+pt	NA	Perm	pm+pt	NA		Prot	Perm
Protected Phases		2!	7	4		3	8		2!	
Permitted Phases	2		4		4	8				2
Actuated Green, G (s)		46.3	82.0	71.0	71.0	69.5	64.0		46.3	46.3
Effective Green, g (s)		46.3	82.0	71.0	71.0	69.5	64.0		46.3	46.3
Actuated g/C Ratio		0.33	0.59	0.51	0.51	0.50	0.46		0.33	0.33
Clearance Time (s)		5.7	5.5	6.0	6.0	5.5	6.0		5.7	5.7
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1170	238	944	802	347	727		616	523
v/s Ratio Prot			c0.29	0.30		0.05	0.47		c0.46	
v/s Ratio Perm		0.43	c1.60		0.42	0.62				0.07
v/c Ratio		1.31	3.23	0.59	0.83	1.35	1.03		1.38	0.20
Uniform Delay, d1		46.9	39.4	24.3	29.3	38.2	38.0		46.9	33.6
Progression Factor		0.59	0.86	1.05	1.09	1.02	1.01		1.00	1.00
Incremental Delay, d2		139.0	1003.1	0.2	1.0	175.6	39.6		183.1	0.9
Delay (s)		166.9	1037.1	25.7	32.7	214.4	77.9		229.9	34.4
Level of Service		F	F	C	C	F	E		F	C
Approach Delay (s)		166.9		409.8			130.6			
Approach LOS		F		F			F			

Intersection Summary

HCM 2000 Control Delay	249.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.60		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	188.2%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Queues

110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/20/2022



Lane Group	WBT	NBL	NBT	NBR2	SBL	SBT	SWR	SWR2
Lane Group Flow (vph)	1530	768	558	709	470	749	853	177
v/c Ratio	1.31	3.21	0.59	0.84	1.34	1.03	1.38	0.30
Control Delay	166.1	1012.4	26.2	29.4	197.9	76.9	219.5	15.0
Queue Delay	0.2	0.0	54.0	51.0	0.1	26.9	0.0	0.0
Total Delay	166.3	1012.4	80.2	80.4	198.0	103.8	219.5	15.0
Queue Length 50th (ft)	~933	~1154	420	571	~387	~731	~1030	43
Queue Length 95th (ft)	m#750	m#1090	m407	m526	m#650	m#941	#1283	104
Internal Link Dist (ft)	507		424			563		
Turn Bay Length (ft)		250		10				
Base Capacity (vph)	1170	239	944	848	350	728	616	596
Starvation Cap Reductn	61	0	446	309	0	101	0	0
Spillback Cap Reductn	0	0	0	5	2	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.38	3.21	1.12	1.32	1.35	1.19	1.38	0.30

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCM 6th Signalized Intersection Summary

111: Jefferson St & Brorein St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕		↖	↕		↖	↗	↖
Traffic Volume (veh/h)	520	606	28	4	990	664	173	357	479	134	145	245
Future Volume (veh/h)	520	606	28	4	990	664	173	357	479	134	145	245
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	565	659	30	4	1076	722	188	388	521	146	158	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	439	1170	53	355	847	525	254	296	264	147	298	
Arrive On Green	0.22	0.66	0.66	0.80	0.80	0.80	0.06	0.17	0.17	0.02	0.05	0.00
Sat Flow, veh/h	1781	1775	81	754	2106	1306	1781	1777	1585	1781	1870	1585
Grp Volume(v), veh/h	565	0	689	4	894	904	188	388	521	146	158	0
Grp Sat Flow(s),veh/h/ln	1781	0	1856	754	1777	1635	1781	1777	1585	1781	1870	1585
Q Serve(g_s), s	30.5	0.0	28.2	0.1	56.3	56.3	8.5	23.3	23.3	7.5	11.5	0.0
Cycle Q Clear(g_c), s	30.5	0.0	28.2	0.1	56.3	56.3	8.5	23.3	23.3	7.5	11.5	0.0
Prop In Lane	1.00		0.04	1.00		0.80	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	439	0	1224	355	715	658	254	296	264	147	298	
V/C Ratio(X)	1.29	0.00	0.56	0.01	1.25	1.38	0.74	1.31	1.97	0.99	0.53	
Avail Cap(c_a), veh/h	439	0	1224	355	715	658	254	296	264	147	298	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(l)	0.09	0.00	0.09	0.64	0.64	0.64	0.94	0.94	0.94	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.0	0.0	12.9	8.2	13.7	13.7	52.1	58.4	58.4	54.6	61.2	0.0
Incr Delay (d2), s/veh	130.1	0.0	0.2	0.0	120.4	175.0	16.6	161.4	451.4	72.8	6.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	31.3	0.0	11.4	0.0	30.6	38.1	3.5	23.7	42.4	4.5	6.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	177.1	0.0	13.1	8.2	134.1	188.7	68.7	219.7	509.7	127.4	67.8	0.0
LnGrp LOS	F	A	B	A	F	F	E	F	F	F	E	
Approach Vol, veh/h		1254			1802			1097			304	A
Approach Delay, s/veh		87.0			161.2			331.6			96.4	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	36.0	62.0	13.0	29.0		98.0	14.0	28.0				
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 5.7		* 5.7	5.5	* 5.7				
Max Green Setting (Gmax), s	30.5	* 56	7.5	* 23		* 92	8.5	* 22				
Max Q Clear Time (g_c+I1), s	32.5	58.3	9.5	25.3		30.2	10.5	13.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0		5.9	0.0	0.5				

## Intersection Summary

HCM 6th Ctrl Delay	177.8
HCM 6th LOS	F

## Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Queues

111: Jefferson St & Brorein St

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	565	689	4	1798	188	909	146	158	266
v/c Ratio	1.29	0.56	0.01	1.27	0.74	1.28	0.99	0.53	0.56
Control Delay	167.0	4.6	30.5	153.8	61.6	169.2	115.8	69.9	16.5
Queue Delay	0.0	55.3	0.0	2.1	0.0	2.2	47.2	0.0	0.5
Total Delay	167.0	59.9	30.5	155.9	61.6	171.4	163.0	69.9	17.0
Queue Length 50th (ft)	~590	128	2	~1021	140	~463	122	145	26
Queue Length 95th (ft)	m#625	m111	m3	m#826	#234	#598	m#217	m216	m97
Internal Link Dist (ft)		507		143		434		68	
Turn Bay Length (ft)	150		50		100		50		
Base Capacity (vph)	439	1220	302	1421	254	712	148	296	475
Starvation Cap Reductn	0	434	0	278	0	0	0	0	0
Spillback Cap Reductn	0	780	0	547	0	188	68	0	43
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.29	1.57	0.01	2.06	0.74	1.73	1.82	0.53	0.62

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 112: Nebraska Ave & Brorein St/Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	141	813	265	46	1208	45	198	20	457	16	22	252
Future Volume (veh/h)	141	813	265	46	1208	45	198	20	457	16	22	252
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	153	884	288	50	1313	49	215	22	497	17	24	274
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	269	736	240	64	1904	71	162	13	297	45	62	535
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	399	1351	440	479	3494	130	344	35	795	47	167	1433
Grp Volume(v), veh/h	153	0	1172	50	667	695	734	0	0	315	0	0
Grp Sat Flow(s),veh/h/ln	399	0	1791	479	1777	1847	1174	0	0	1647	0	0
Q Serve(g_s), s	0.0	0.0	72.7	3.6	0.0	0.0	31.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	72.7	76.3	0.0	0.0	52.3	0.0	0.0	21.2	0.0	0.0
Prop In Lane	1.00		0.25	1.00		0.07	0.29		0.68	0.05		0.87
Lane Grp Cap(c), veh/h	269	0	976	64	968	1007	472	0	0	642	0	0
V/C Ratio(X)	0.57	0.00	1.20	0.79	0.69	0.69	1.56	0.00	0.00	0.49	0.00	0.00
Avail Cap(c_a), veh/h	269	0	976	64	968	1007	472	0	0	642	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.73	0.00	0.73	0.70	0.70	0.70	0.32	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	37.7	0.0	0.0	48.5	0.0	0.0	34.1	0.0	0.0
Incr Delay (d2), s/veh	6.2	0.0	97.7	48.4	2.8	2.7	253.5	0.0	0.0	2.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	26.5	2.5	0.8	0.8	50.3	0.0	0.0	9.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.2	0.0	97.7	86.1	2.8	2.7	301.9	0.0	0.0	36.8	0.0	0.0
LnGrp LOS	A	A	F	F	A	A	F	A	A	D	A	A
Approach Vol, veh/h		1325			1412			734				315
Approach Delay, s/veh		87.2			5.7			301.9				36.8
Approach LOS		F			A			F				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		82.0		58.0		82.0		58.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7		* 5.7				
Max Green Setting (Gmax), s		* 76		* 52		* 76		* 52				
Max Q Clear Time (g_c+I1), s		78.3		54.3		74.7		23.2				
Green Ext Time (p_c), s		0.0		0.0		1.3		2.4				

Intersection Summary

HCM 6th Ctrl Delay	94.2
HCM 6th LOS	F

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

112: Nebraska Ave & Brorein St/Cumberland Ave

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	153	1172	50	1362	734	315
v/c Ratio	1.46	1.19	0.96	0.71	1.52	0.52
Control Delay	256.7	122.5	128.8	19.7	269.7	39.5
Queue Delay	0.0	1.3	0.0	21.7	12.2	63.9
Total Delay	256.7	123.8	128.8	41.4	281.9	103.4
Queue Length 50th (ft)	~187	~1250	45	549	~868	238
Queue Length 95th (ft)	m#234	m#1195	m#94	m603	m#1063	m201
Internal Link Dist (ft)		143		195	464	798
Turn Bay Length (ft)	50		70			
Base Capacity (vph)	105	985	52	1921	483	607
Starvation Cap Reductn	0	178	0	258	0	0
Spillback Cap Reductn	0	214	0	600	304	400
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.46	1.52	0.96	1.03	4.10	1.52

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



HCM 6th Signalized Intersection Summary  
 701: Old Water St & Cumberland Ave

01/20/2022

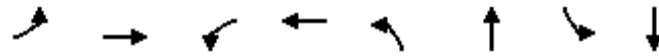


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	1242	28	32	742	51	461	172	49	58	98	96
Future Volume (veh/h)	16	1242	28	32	742	51	461	172	49	58	98	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	1350	30	35	807	55	501	187	53	63	107	104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	412	1027	23	52	1902	130	446	566	160	169	139	135
Arrive On Green	0.75	0.75	0.75	1.00	1.00	1.00	0.34	0.67	0.67	0.16	0.16	0.16
Sat Flow, veh/h	641	1823	41	393	3376	230	1781	1402	397	1140	871	847
Grp Volume(v), veh/h	17	0	1380	35	425	437	501	0	240	63	0	211
Grp Sat Flow(s),veh/h/ln	641	0	1863	393	1777	1829	1781	0	1799	1140	0	1718
Q Serve(g_s), s	1.0	0.0	78.9	0.2	0.0	0.0	28.5	0.0	7.8	7.3	0.0	16.5
Cycle Q Clear(g_c), s	1.2	0.0	78.9	78.9	0.0	0.0	28.5	0.0	7.8	15.2	0.0	16.5
Prop In Lane	1.00		0.02	1.00		0.13	1.00		0.22	1.00		0.49
Lane Grp Cap(c), veh/h	412	0	1050	52	1001	1031	446	0	726	169	0	274
V/C Ratio(X)	0.04	0.00	1.31	0.67	0.42	0.42	1.12	0.00	0.33	0.37	0.00	0.77
Avail Cap(c_a), veh/h	412	0	1050	52	1001	1031	446	0	726	169	0	274
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.00	0.09	0.09	0.09	0.09	0.92	0.00	0.92	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.8	0.0	17.5	39.4	0.0	0.0	43.4	0.0	14.9	59.6	0.0	56.4
Incr Delay (d2), s/veh	0.0	0.0	142.1	6.2	0.1	0.1	79.2	0.0	1.1	6.2	0.0	18.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	66.1	1.3	0.0	0.0	22.3	0.0	3.1	2.4	0.0	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.8	0.0	159.6	45.6	0.1	0.1	122.6	0.0	16.0	65.7	0.0	75.1
LnGrp LOS	A	A	F	D	A	A	F	A	B	E	A	E
Approach Vol, veh/h		1397			897			741				274
Approach Delay, s/veh		157.8			1.9			88.1				73.0
Approach LOS		F			A			F				E
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		84.8		62.2		84.8	34.2	28.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s		* 72		* 56		* 72	* 29	* 22				
Max Q Clear Time (g_c+I1), s		80.9		9.8		80.9	30.5	18.5				
Green Ext Time (p_c), s		0.0		1.7		0.0	0.0	0.5				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				92.9								
HCM 6th LOS				F								
<b>Notes</b>												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Queues

701: Old Water St & Cumberland Ave

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	17	1380	35	862	501	240	63	211
v/c Ratio	0.07	1.44	0.67	0.48	0.98	0.33	0.52	0.71
Control Delay	13.6	223.4	35.2	17.5	81.8	27.6	70.3	61.4
Queue Delay	0.0	1.3	0.0	0.5	46.1	0.0	0.0	0.3
Total Delay	13.6	224.7	35.2	18.0	127.9	27.6	70.3	61.7
Queue Length 50th (ft)	6	~1706	20	223	379	140	53	159
Queue Length 95th (ft)	m4	m#1124	m37	m184	#673	210	106	251
Internal Link Dist (ft)		195		457		461		758
Turn Bay Length (ft)	70		70		150		150	
Base Capacity (vph)	241	959	52	1812	510	731	122	299
Starvation Cap Reductn	0	197	0	477	0	0	0	0
Spillback Cap Reductn	0	0	0	1	292	0	0	5
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	1.81	0.67	0.65	2.30	0.33	0.52	0.72

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 120: Meridian Ave & Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↘			↖	↗	↖	↗↘		↖	↗↘	↗
Traffic Volume (veh/h)	1021	183	145	1	486	82	368	1092	134	139	629	3
Future Volume (veh/h)	1021	183	145	1	486	82	368	1092	134	139	629	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1110	199	158	1	528	0	400	1187	146	151	684	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	485	578	459	26	1119		177	719	88	123	701	312
Arrive On Green	1.00	1.00	1.00	0.60	0.60	0.00	0.07	0.23	0.23	0.01	0.07	0.07
Sat Flow, veh/h	875	966	767	0	1870	1585	1781	3186	391	1781	3554	1585
Grp Volume(v), veh/h	1110	0	357	529	0	0	400	660	673	151	684	3
Grp Sat Flow(s),veh/h/ln	875	0	1732	1870	0	1585	1781	1777	1800	1781	1777	1585
Q Serve(g_s), s	61.6	0.0	0.0	0.0	0.0	0.0	9.6	31.6	31.6	5.6	26.9	0.2
Cycle Q Clear(g_c), s	83.8	0.0	0.0	22.2	0.0	0.0	9.6	31.6	31.6	5.6	26.9	0.2
Prop In Lane	1.00		0.44	0.00		1.00	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	485	0	1037	1145	0		177	401	406	123	701	312
V/C Ratio(X)	2.29	0.00	0.34	0.46	0.00		2.26	1.65	1.66	1.23	0.98	0.01
Avail Cap(c_a), veh/h	485	0	1037	1145	0		177	401	406	123	701	312
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.09	0.00	0.09	1.00	0.00	0.00	0.09	0.09	0.09	0.95	0.95	0.95
Uniform Delay (d), s/veh	10.2	0.0	0.0	15.7	0.0	0.0	47.7	54.2	54.2	53.4	65.1	52.7
Incr Delay (d2), s/veh	580.4	0.0	0.1	1.3	0.0	0.0	566.6	292.1	295.9	154.0	27.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	89.1	0.0	0.0	10.0	0.0	0.0	29.5	46.4	47.4	6.8	15.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	590.6	0.0	0.1	17.1	0.0	0.0	614.3	346.3	350.1	207.5	93.0	52.7
LnGrp LOS	F	A	A	B	A		F	F	F	F	F	D
Approach Vol, veh/h		1467			529	A		1733				838
Approach Delay, s/veh		446.9			17.1			409.6				113.5
Approach LOS		F			B			F				F
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.0	34.0		90.0	12.0	38.0		90.0				
Change Period (Y+Rc), s	6.4	6.4		* 6.2	6.4	6.4		* 6.2				
Max Green Setting (Gmax), s	9.6	27.6		* 84	5.6	31.6		* 84				
Max Q Clear Time (g_c+I1), s	11.6	28.9		85.8	7.6	33.6		24.2				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		4.3				

Intersection Summary

HCM 6th Ctrl Delay	321.8
HCM 6th LOS	F

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.  
 Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Queues

120: Meridian Ave & Cumberland Ave

01/20/2022















Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	1110	357	529	89	400	1333	151	684	3
v/c Ratio	2.68	0.34	0.47	0.09	2.30	1.68	1.22	0.98	0.01
Control Delay	772.7	0.6	17.5	3.5	608.8	337.0	189.4	88.9	0.0
Queue Delay	1.7	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	774.4	1.7	17.5	3.5	608.8	337.0	189.4	88.9	0.0
Queue Length 50th (ft)	~1425	4	257	5	~546	~738	~117	343	0
Queue Length 95th (ft)	m#846	m2	347	28	m#377	m#602	#267	#474	m0
Internal Link Dist (ft)		457	882			460		709	
Turn Bay Length (ft)	100			100	200		250		
Base Capacity (vph)	414	1061	1115	978	174	793	124	697	372
Starvation Cap Reductn	0	466	0	0	0	0	0	0	0
Spillback Cap Reductn	65	0	0	150	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	3.18	0.60	0.47	0.11	2.30	1.68	1.22	0.98	0.01

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 102: Florida Ave & Whiting St

01/20/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔↔			↔↔			↔↔↔	↔				
Traffic Volume (vph)	194	487	0	0	210	322	152	2364	130	0	0	0	
Future Volume (vph)	194	487	0	0	210	322	152	2364	130	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.0			6.0			5.7	5.7				
Lane Util. Factor		0.95			0.95			0.91	1.00				
Frt		1.00			0.91			1.00	0.85				
Flt Protected		0.99			1.00			1.00	1.00				
Satd. Flow (prot)		3489			3218			5070	1583				
Flt Permitted		0.60			1.00			1.00	1.00				
Satd. Flow (perm)		2113			3218			5070	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)	211	529	0	0	228	350	165	2570	141	0	0	0	
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	26	0	0	0	
Lane Group Flow (vph)	0	740	0	0	568	0	0	2735	115	0	0	0	
Turn Type	Perm	NA			NA		Perm	NA	Perm				
Protected Phases		4			4			2					
Permitted Phases	4						2		2				
Actuated Green, G (s)		49.0			49.0			74.3	74.3				
Effective Green, g (s)		49.0			49.0			74.3	74.3				
Actuated g/C Ratio		0.35			0.35			0.53	0.53				
Clearance Time (s)		6.0			6.0			5.7	5.7				
Vehicle Extension (s)		3.0			3.0			3.0	3.0				
Lane Grp Cap (vph)		739			1126			2690	840				
v/s Ratio Prot					0.18								
v/s Ratio Perm		c0.35						0.54	0.07				
v/c Ratio		1.00			0.50			1.02	0.14				
Uniform Delay, d1		45.5			35.9			32.9	16.6				
Progression Factor		1.00			1.01			1.00	1.56				
Incremental Delay, d2		33.4			1.0			18.5	0.2				
Delay (s)		78.9			37.3			51.4	26.2				
Level of Service		E			D			D	C				
Approach Delay (s)		78.9			37.3			50.2			0.0		
Approach LOS		E			D			D			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			53.5									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			1.00										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	15.7
Intersection Capacity Utilization			98.8%									ICU Level of Service	F
Analysis Period (min)			15										

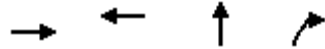
c Critical Lane Group



# Queues

## 102: Florida Ave & Whiting St

01/20/2022



Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	740	578	2735	141
v/c Ratio	1.00	0.51	1.02	0.16
Control Delay	78.6	36.6	51.2	16.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	78.6	36.6	51.2	16.2
Queue Length 50th (ft)	~354	223	~571	40
Queue Length 95th (ft)	#497	m274	m#1012	m62
Internal Link Dist (ft)	994	519	567	
Turn Bay Length (ft)				75
Base Capacity (vph)	739	1136	2690	865
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.00	0.51	1.02	0.16

### Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 103: Morgan St & Whiting St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↘		↗	↘			↕			↕	
Traffic Volume (vph)	139	468	93	155	293	306	150	400	243	51	515	55
Future Volume (vph)	139	468	93	155	293	306	150	400	243	51	515	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8		5.8	5.8			5.7			5.7	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	0.98		1.00	0.92			0.95			0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1816		1770	1720			3345			3478	
Flt Permitted	0.17	1.00		0.21	1.00			0.66			0.79	
Satd. Flow (perm)	317	1816		390	1720			2216			2760	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	151	509	101	168	318	333	163	435	264	55	560	60
RTOR Reduction (vph)	0	10	0	0	54	0	0	72	0	0	10	0
Lane Group Flow (vph)	151	600	0	168	597	0	0	790	0	0	665	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	29.2	29.2		29.2	29.2			29.3			29.3	
Effective Green, g (s)	29.2	29.2		29.2	29.2			29.3			29.3	
Actuated g/C Ratio	0.42	0.42		0.42	0.42			0.42			0.42	
Clearance Time (s)	5.8	5.8		5.8	5.8			5.7			5.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	132	757		162	717			927			1155	
v/s Ratio Prot		0.33			0.35							
v/s Ratio Perm	c0.48			0.43				c0.36			0.24	
v/c Ratio	1.14	0.79		1.04	0.83			0.85			0.58	
Uniform Delay, d1	20.4	17.8		20.4	18.2			18.4			15.6	
Progression Factor	1.90	1.73		1.01	0.97			0.82			1.00	
Incremental Delay, d2	108.3	5.7		31.5	1.1			9.0			2.1	
Delay (s)	147.0	36.4		52.0	18.7			24.2			17.7	
Level of Service	F	D		D	B			C			B	
Approach Delay (s)		58.4			25.5			24.2			17.7	
Approach LOS		E			C			C			B	

Intersection Summary

HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Queues

103: Morgan St & Whiting St

01/20/2022






















Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	151	610	168	651	862	675
v/c Ratio	1.14	0.79	1.04	0.85	0.86	0.58
Control Delay	145.1	36.2	56.6	17.0	22.7	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.9
Total Delay	145.1	36.2	56.6	17.0	22.7	18.5
Queue Length 50th (ft)	~103	504	~86	208	151	110
Queue Length 95th (ft)	m#95	m543	m#115	m170	264	161
Internal Link Dist (ft)		519		503	563	1059
Turn Bay Length (ft)						
Base Capacity (vph)	132	768	162	770	998	1165
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	1	0	0	0	232
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.14	0.80	1.04	0.85	0.86	0.72

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 104: Jefferson St & Whiting St

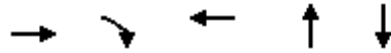
01/20/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	215	411	389	35	276	134	211	452	7	112	468	70	
Future Volume (vph)	215	411	389	35	276	134	211	452	7	112	468	70	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.7	5.7		5.7			5.7			5.7		
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95		
Frt		1.00	0.85		0.96			1.00			0.98		
Flt Protected		0.98	1.00		1.00			0.98			0.99		
Satd. Flow (prot)		1831	1583		1780			3479			3452		
Flt Permitted		0.57	1.00		0.34			0.60			0.68		
Satd. Flow (perm)		1062	1583		600			2133			2365		
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)	234	447	423	38	300	146	229	491	8	122	509	76	
RTOR Reduction (vph)	0	0	213	0	20	0	0	1	0	0	12	0	
Lane Group Flow (vph)	0	681	210	0	464	0	0	727	0	0	695	0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA		
Protected Phases		8			4			6			2		
Permitted Phases	8		8	4			6			2			
Actuated Green, G (s)		24.3	24.3		24.3			34.3			34.3		
Effective Green, g (s)		24.3	24.3		24.3			34.3			34.3		
Actuated g/C Ratio		0.35	0.35		0.35			0.49			0.49		
Clearance Time (s)		5.7	5.7		5.7			5.7			5.7		
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0		
Lane Grp Cap (vph)		368	549		208			1045			1158		
v/s Ratio Prot													
v/s Ratio Perm		0.64	0.13		c0.77			c0.34			0.29		
v/c Ratio		1.85	0.38		2.23			0.70			0.60		
Uniform Delay, d1		22.9	17.2		22.9			13.8			12.9		
Progression Factor		1.43	2.10		1.00			1.07			1.00		
Incremental Delay, d2		391.1	0.4		568.6			0.4			2.3		
Delay (s)		423.9	36.5		591.5			15.2			15.2		
Level of Service		F	D		F			B			B		
Approach Delay (s)		275.4			591.5			15.2			15.2		
Approach LOS		F			F			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			202.5									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.48										
Actuated Cycle Length (s)			70.0									Sum of lost time (s)	17.4
Intersection Capacity Utilization			114.4%									ICU Level of Service	H
Analysis Period (min)			15										
c Critical Lane Group													

Queues

104: Jefferson St & Whiting St

01/20/2022



Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	681	423	484	728	707
v/c Ratio	1.85	0.55	2.12	0.70	0.60
Control Delay	415.6	11.2	539.1	15.5	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	415.6	11.2	539.1	15.5	15.2
Queue Length 50th (ft)	~959	77	~336	143	105
Queue Length 95th (ft)	m#1194	m87	#427	m98	158
Internal Link Dist (ft)	503		431	509	207
Turn Bay Length (ft)					
Base Capacity (vph)	368	763	228	1046	1170
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.85	0.55	2.12	0.70	0.60

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



# HCS7 Two-Way Stop-Control Report

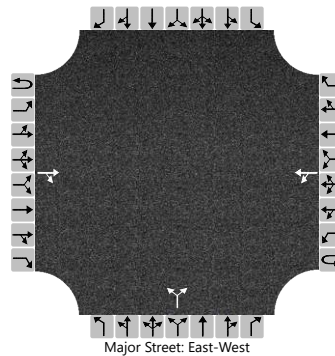
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2036
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWhitingSt&Nebraska Ave
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Nebraska Ave
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			276	266		91	82			400		154				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.12				6.42		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					96					583						
Capacity, c (veh/h)					1002					409						
v/c Ratio					0.10					1.43						
95% Queue Length, Q <sub>95</sub> (veh)					0.3					96.3						
Control Delay (s/veh)					9.0					810.8						
Level of Service (LOS)					A					F						
Approach Delay (s/veh)					5.1				810.8							
Approach LOS					A				F							

# HCM Signalized Intersection Capacity Analysis

## 107: Meridian Ave & Whiting St

01/20/2022



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	68	139	0	2046	149	133	703
Future Volume (vph)	68	139	0	2046	149	133	703
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.2			6.6		6.4	6.6
Lane Util. Factor	1.00			0.91		1.00	0.91
Fr <sub>t</sub>	0.91			0.99		1.00	1.00
Fl <sub>t</sub> Protected	0.98			1.00		0.95	1.00
Satd. Flow (prot)	1667			5034		1770	5085
Fl <sub>t</sub> Permitted	0.98			1.00		0.04	1.00
Satd. Flow (perm)	1667			5034		78	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	151	0	2224	162	145	764
RTOR Reduction (vph)	62	0	0	4	0	0	0
Lane Group Flow (vph)	163	0	0	2382	0	145	764
Turn Type	Perm		Perm	NA		pm+pt	NA
Protected Phases				6		5	2
Permitted Phases	4		6			2	
Actuated Green, G (s)	18.8			89.4		107.4	107.4
Effective Green, g (s)	18.8			89.4		107.4	107.4
Actuated g/C Ratio	0.13			0.64		0.77	0.77
Clearance Time (s)	7.2			6.6		6.4	6.6
Vehicle Extension (s)	3.0			3.0		3.0	3.0
Lane Grp Cap (vph)	223			3214		200	3900
v/s Ratio Prot				0.47		c0.06	0.15
v/s Ratio Perm	c0.10					c0.50	
v/c Ratio	0.73			0.74		0.72	0.20
Uniform Delay, d1	58.2			17.4		40.0	4.5
Progression Factor	1.09			1.89		1.00	1.00
Incremental Delay, d2	11.3			0.1		12.3	0.1
Delay (s)	74.5			32.9		52.2	4.6
Level of Service	E			C		D	A
Approach Delay (s)	74.5			32.9			12.2
Approach LOS	E			C			B

### Intersection Summary

HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# Queues

## 107: Meridian Ave & Whiting St

01/20/2022



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	225	2386	145	764
v/c Ratio	0.79	0.74	0.73	0.20
Control Delay	61.3	36.6	52.1	5.0
Queue Delay	0.0	8.9	0.0	0.0
Total Delay	61.3	45.5	52.1	5.0
Queue Length 50th (ft)	142	746	78	60
Queue Length 95th (ft)	226	m338	153	97
Internal Link Dist (ft)	876	709		494
Turn Bay Length (ft)			225	
Base Capacity (vph)	502	3219	236	3900
Starvation Cap Reductn	0	825	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.45	1.00	0.61	0.20

### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCS7 Two-Way Stop-Control Report

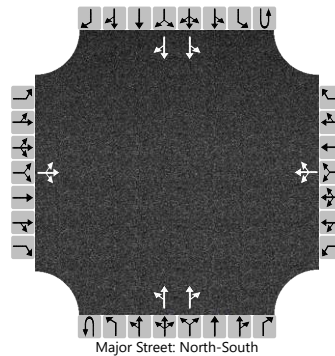
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2036
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWashingtonSt&JeffersonSt
Jurisdiction	FDOT, District 7
East/West Street	E Washington St
North/South Street	Jefferson St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0		0	2	0		0	2	0	
Configuration			LTR				LTR			LT		TR		LT		TR	
Volume (veh/h)		17	86	115		136	50	122		61	614	126		13	399	111	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.54	6.54	6.94		7.54	6.54	6.94		4.14				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

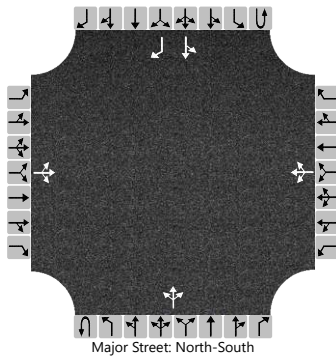
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			229				324				64				14		
Capacity, c (veh/h)			205				85				1027				834		
v/c Ratio			1.12				3.81				0.06				0.02		
95% Queue Length, Q <sub>95</sub> (veh)			25.6				123.5				0.2				0.1		
Control Delay (s/veh)			346.5				5160.8				8.7				9.4		
Level of Service (LOS)			F				F				A				A		
Approach Delay (s/veh)		346.5				5160.8				1.0				0.3			
Approach LOS		F				F				A				A			

# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	H.W. Lochner	Intersection	EWashingtonSt&BrushSt
Agency/Co.		Jurisdiction	FDOT, District 7
Date Performed	09/24/2021	East/West Street	E Washington St
Analysis Year	2036	North/South Street	Brush St
Time Analyzed	PM Peak Hour	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	Whiting PD&E Study		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0		0	1	0		0	1	1	
Configuration			LTR				LTR				LTR			LT		R	
Volume (veh/h)		181	5	13		15	21	5		112	311	5		26	119	102	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																Yes	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			209				43				118				27		
Capacity, c (veh/h)			289				307				1461				1227		
v/c Ratio			0.73				0.14				0.08				0.02		
95% Queue Length, Q <sub>95</sub> (veh)			6.8				0.5				0.3				0.1		
Control Delay (s/veh)			48.5				18.7				7.7				8.0		
Level of Service (LOS)			E				C				A				A		
Approach Delay (s/veh)		48.5				18.7				2.6				0.9			
Approach LOS		E				C											



# HCS7 Two-Way Stop-Control Report

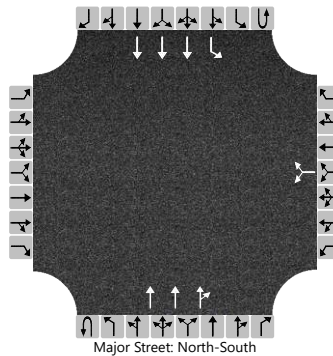
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2036
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	MeridianAve&EWashingtonSt
Jurisdiction	FDOT, District 3
East/West Street	Meridian Ave
North/South Street	E Washington St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0		0	3	0		0	1	3
Configuration							LR				T	TR		L	T	
Volume (veh/h)						18		117			1867	318	0	27	818	
Percent Heavy Vehicles (%)						2		2					2	2		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type   Storage							Left Only								1	

## Critical and Follow-up Headways

Base Critical Headway (sec)						6.4		7.1							5.3	
Critical Headway (sec)						5.74		7.14							5.34	
Base Follow-Up Headway (sec)						3.8		3.9							3.1	
Follow-Up Headway (sec)						3.82		3.92							3.12	

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							142								28	
Capacity, c (veh/h)							119								88	
v/c Ratio							1.20								0.32	
95% Queue Length, Q <sub>95</sub> (veh)							21.6								1.4	
Control Delay (s/veh)							526.9								65.3	
Level of Service (LOS)							F								F	
Approach Delay (s/veh)							526.9								2.1	
Approach LOS							F									

HCM 6th Signalized Intersection Summary  
 111: Jefferson St & Brorein St

01/21/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↘		↗	↕		↗	↕		↗	↘	↗
Traffic Volume (veh/h)	520	606	28	4	990	664	173	357	479	134	145	245
Future Volume (veh/h)	520	606	28	4	990	664	173	357	479	134	145	245
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	565	659	30	4	1076	722	188	388	521	146	158	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	439	1170	53	355	847	525	254	296	264	147	298	
Arrive On Green	0.22	0.66	0.66	0.80	0.80	0.80	0.06	0.17	0.17	0.02	0.05	0.00
Sat Flow, veh/h	1781	1775	81	754	2106	1306	1781	1777	1585	1781	1870	1585
Grp Volume(v), veh/h	565	0	689	4	894	904	188	388	521	146	158	0
Grp Sat Flow(s),veh/h/ln	1781	0	1856	754	1777	1635	1781	1777	1585	1781	1870	1585
Q Serve(g_s), s	30.5	0.0	28.2	0.1	56.3	56.3	8.5	23.3	23.3	7.5	11.5	0.0
Cycle Q Clear(g_c), s	30.5	0.0	28.2	0.1	56.3	56.3	8.5	23.3	23.3	7.5	11.5	0.0
Prop In Lane	1.00		0.04	1.00		0.80	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	439	0	1224	355	715	658	254	296	264	147	298	
V/C Ratio(X)	1.29	0.00	0.56	0.01	1.25	1.38	0.74	1.31	1.97	0.99	0.53	
Avail Cap(c_a), veh/h	439	0	1224	355	715	658	254	296	264	147	298	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.09	0.00	0.09	0.64	0.64	0.64	0.94	0.94	0.94	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.0	0.0	12.9	8.2	13.7	13.7	52.1	58.4	58.4	54.6	61.2	0.0
Incr Delay (d2), s/veh	130.1	0.0	0.2	0.0	120.4	175.0	16.6	161.4	451.4	72.8	6.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	31.3	0.0	11.4	0.0	30.6	38.1	3.5	23.7	42.4	4.5	6.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	177.1	0.0	13.1	8.2	134.1	188.7	68.7	219.7	509.7	127.4	67.8	0.0
LnGrp LOS	F	A	B	A	F	F	E	F	F	F	E	
Approach Vol, veh/h		1254			1802			1097			304	A
Approach Delay, s/veh		87.0			161.2			331.6			96.4	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2	3	4	6	7	8					
Phs Duration (G+Y+Rc), s	36.0	62.0	13.0	29.0	98.0	14.0	28.0					
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 5.7	* 5.7	5.5	* 5.7					
Max Green Setting (Gmax), s	30.5	* 56	7.5	* 23	* 92	8.5	* 22					
Max Q Clear Time (g_c+I1), s	32.5	58.3	9.5	25.3	30.2	10.5	13.5					
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	5.9	0.0	0.5					

Intersection Summary




















HCM 6th Ctrl Delay	177.8
HCM 6th LOS	F

Notes

- \* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
- Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Signalized Intersection Capacity Analysis  
 114: Florida Ave & Channelside Dr

01/20/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  						 					
Traffic Volume (vph)	1007	1536	525	0	0	0	0	300	124	0	0	0	
Future Volume (vph)	1007	1536	525	0	0	0	0	300	124	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.0	6.0						5.7	5.7				
Lane Util. Factor	0.86	0.86						0.95	1.00				
Frt	1.00	0.97						1.00	0.85				
Flt Protected	0.95	0.99						1.00	1.00				
Satd. Flow (prot)	1522	4617						3539	1583				
Flt Permitted	0.95	0.99						1.00	1.00				
Satd. Flow (perm)	1522	4617						3539	1583				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	1095	1670	571	0	0	0	0	326	135	0	0	0	
RTOR Reduction (vph)	67	46	0	0	0	0	0	0	28	0	0	0	
Lane Group Flow (vph)	765	2458	0	0	0	0	0	326	107	0	0	0	
Turn Type	Split	NA						NA	Perm				
Protected Phases	6	6						4					
Permitted Phases									4				
Actuated Green, G (s)	93.0	93.0						35.3	35.3				
Effective Green, g (s)	93.0	93.0						35.3	35.3				
Actuated g/C Ratio	0.66	0.66						0.25	0.25				
Clearance Time (s)	6.0	6.0						5.7	5.7				
Vehicle Extension (s)	3.0	3.0						3.0	3.0				
Lane Grp Cap (vph)	1011	3067						892	399				
v/s Ratio Prot	0.50	c0.53						c0.09					
v/s Ratio Perm									0.07				
v/c Ratio	0.76	0.80						0.37	0.27				
Uniform Delay, d1	15.9	16.9						43.1	42.0				
Progression Factor	1.00	1.00						1.00	1.00				
Incremental Delay, d2	5.3	2.3						1.2	1.7				
Delay (s)	21.1	19.2						44.3	43.7				
Level of Service	C	B						D	D				
Approach Delay (s)		19.7			0.0			44.1			0.0		
Approach LOS		B			A			D			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			22.6									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.68										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	11.7
Intersection Capacity Utilization			129.4%									ICU Level of Service	H
Analysis Period (min)			15										

c Critical Lane Group

# Queues

## 114: Florida Ave & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	832	2504	326	135
v/c Ratio	0.77	0.80	0.37	0.32
Control Delay	17.7	18.4	44.5	32.9
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	17.7	18.5	44.5	33.0
Queue Length 50th (ft)	439	565	129	72
Queue Length 95th (ft)	667	634	176	134
Internal Link Dist (ft)		924	937	
Turn Bay Length (ft)				
Base Capacity (vph)	1078	3114	892	426
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	20	0	32
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.81	0.37	0.34
<b>Intersection Summary</b>				

HCM Signalized Intersection Capacity Analysis  
 115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBR2	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations												
Traffic Volume (vph)	632	974	54	91	728	132	25	4	69	413	1059	103
Future Volume (vph)	632	974	54	91	728	132	25	4	69	413	1059	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.2		5.9	5.9	5.9	5.9	5.9	5.9		6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.85	1.00	0.85	1.00	1.00		0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	1.00	0.95	1.00		0.96	
Satd. Flow (prot)	1770	3511		1770	1583	1863	1583	1770	1863		1764	
Flt Permitted	0.95	1.00		0.22	1.00	1.00	1.00	0.48	1.00		0.96	
Satd. Flow (perm)	1770	3511		410	1583	1863	1583	899	1863		1764	
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)	687	1059	59	99	791	143	27	4	75	449	1151	112
RTOR Reduction (vph)	0	3	0	0	102	0	24	0	0	0	0	0
Lane Group Flow (vph)	687	1115	0	99	689	143	3	4	75	0	1712	0
Turn Type	pm+pt	NA		Perm	Perm	NA	Perm	Perm	NA	Prot	Prot	
Protected Phases	1	6				4			8	9	9	
Permitted Phases	6			2	2		4	8				
Actuated Green, G (s)	68.8	68.8		47.1	47.1	17.1	17.1	17.1	17.1		35.4	
Effective Green, g (s)	68.8	68.8		47.1	47.1	17.1	17.1	17.1	17.1		35.4	
Actuated g/C Ratio	0.49	0.49		0.34	0.34	0.12	0.12	0.12	0.12		0.25	
Clearance Time (s)	5.5	6.2		5.9	5.9	5.9	5.9	5.9	5.9		6.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		4.5	
Lane Grp Cap (vph)	869	1725		137	532	227	193	109	227		446	
v/s Ratio Prot	c0.09	0.32				c0.08			0.04		c0.97	
v/s Ratio Perm	0.30			0.24	c0.44		0.00	0.00				
v/c Ratio	0.79	0.65		0.72	1.29	0.63	0.02	0.04	0.33		3.84	
Uniform Delay, d1	29.6	26.5		40.7	46.5	58.4	54.1	54.2	56.2		52.3	
Progression Factor	1.09	1.16		0.55	0.80	1.00	1.00	0.48	0.53		1.00	
Incremental Delay, d2	4.6	1.2		7.3	135.9	12.6	0.2	0.3	1.7		1282.8	
Delay (s)	36.9	32.0		29.8	173.2	71.0	54.2	26.3	31.3		1335.1	
Level of Service	D	C		C	F	E	D	C	C		F	
Approach Delay (s)		33.9				68.3			31.0		1335.1	
Approach LOS		C				E			C		F	

Intersection Summary

HCM 2000 Control Delay	537.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.9
Intersection Capacity Utilization	150.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Queues

115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/20/2022



Lane Group	EBL	EBT	WBL	WBR2	NBT	NBR	SBL	SBT	SEL
Lane Group Flow (vph)	687	1118	99	791	143	27	4	75	1712
v/c Ratio	0.78	0.65	0.72	1.25	0.63	0.09	0.04	0.33	3.85
Control Delay	37.0	32.2	32.6	142.3	71.7	0.6	26.5	31.6	1301.8
Queue Delay	51.6	9.5	0.0	2.6	671.0	0.4	0.0	0.0	619.2
Total Delay	88.6	41.7	32.6	144.9	742.7	1.0	26.5	31.6	1921.0
Queue Length 50th (ft)	388	332	80	~821	126	0	4	70	~2814
Queue Length 95th (ft)	504	408	m76	m#787	201	0	m3	m79	#3076
Internal Link Dist (ft)		523			969			424	319
Turn Bay Length (ft)				10			100		
Base Capacity (vph)	878	1728	137	634	227	297	109	227	445
Starvation Cap Reductn	113	309	0	172	0	0	0	0	0
Spillback Cap Reductn	310	583	0	178	227	122	0	0	445
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.98	0.72	1.73	143.00	0.15	0.04	0.33	1712.00

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 116: Channelside Dr & Jefferson St

01/20/2022

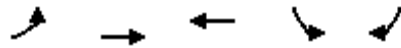


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↙	↘
Traffic Volume (veh/h)	512	1550	797	167	5	22
Future Volume (veh/h)	512	1550	797	167	5	22
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	557	1685	866	182	5	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	395	1488	839	176	218	194
Arrive On Green	0.06	0.26	0.38	0.38	0.12	0.12
Sat Flow, veh/h	1781	1870	1499	315	1781	1585
Grp Volume(v), veh/h	557	1685	0	1048	5	24
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1814	1781	1585
Q Serve(g_s), s	27.0	111.4	0.0	78.4	0.3	1.9
Cycle Q Clear(g_c), s	27.0	111.4	0.0	78.4	0.3	1.9
Prop In Lane	1.00			0.17	1.00	1.00
Lane Grp Cap(c), veh/h	395	1488	0	1016	218	194
V/C Ratio(X)	1.41	1.13	0.00	1.03	0.02	0.12
Avail Cap(c_a), veh/h	395	1488	0	1016	218	194
HCM Platoon Ratio	0.33	0.33	0.67	0.67	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.00	0.13	0.09	0.09
Uniform Delay (d), s/veh	59.5	51.6	0.0	43.7	54.1	54.8
Incr Delay (d2), s/veh	186.0	60.4	0.0	19.7	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	35.1	80.5	0.0	41.4	0.2	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	245.6	112.0	0.0	63.5	54.1	54.9
LnGrp LOS	F	F	A	F	D	D
Approach Vol, veh/h		2242	1048		29	
Approach Delay, s/veh		145.2	63.5		54.8	
Approach LOS		F	E		D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	33.0	84.4			117.4	22.6
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	27.0	78.4			111.4	17.1
Max Q Clear Time (g_c+I1), s	29.0	80.4			113.4	3.9
Green Ext Time (p_c), s	0.0	0.0			0.0	0.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			118.6			
HCM 6th LOS			F			

# Queues

## 116: Channelside Dr & Jefferson St

01/20/2022



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	557	1685	1048	5	24
v/c Ratio	1.41	1.14	1.02	0.02	0.11
Control Delay	234.8	82.9	41.7	37.2	25.5
Queue Delay	0.9	3.3	32.3	0.0	0.0
Total Delay	235.7	86.2	73.9	37.2	25.5
Queue Length 50th (ft)	~635	~1800	~1030	5	13
Queue Length 95th (ft)	m#342	m141	m#1071	m5	m13
Internal Link Dist (ft)		315	140	434	
Turn Bay Length (ft)				100	
Base Capacity (vph)	394	1482	1024	216	214
Starvation Cap Reductn	32	354	201	0	0
Spillback Cap Reductn	0	749	473	0	5
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.54	2.30	1.90	0.02	0.11

### Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 117: Channelside Dr & Nebraska Ave

01/20/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	330	1220	856	194	14	108
Future Volume (veh/h)	330	1220	856	194	14	108
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	359	1326	930	211	15	117
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	568	1483	938	213	23	177
Arrive On Green	0.23	1.00	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1781	1870	1475	335	181	1414
Grp Volume(v), veh/h	359	1326	0	1141	133	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1810	1607	0
Q Serve(g_s), s	9.7	0.0	0.0	0.0	11.1	0.0
Cycle Q Clear(g_c), s	9.7	0.0	0.0	0.0	11.1	0.0
Prop In Lane	1.00			0.18	0.11	0.88
Lane Grp Cap(c), veh/h	568	1483	0	1151	201	0
V/C Ratio(X)	0.63	0.89	0.00	0.99	0.66	0.00
Avail Cap(c_a), veh/h	568	1483	0	1151	201	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	4.4	0.0	0.0	0.0	58.4	0.0
Incr Delay (d2), s/veh	0.5	0.9	0.0	6.3	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.4	0.0	2.0	4.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.9	0.9	0.0	6.3	60.0	0.0
LnGrp LOS	A	A	A	A	E	A
Approach Vol, veh/h		1685	1141		133	
Approach Delay, s/veh		1.8	6.3		60.0	
Approach LOS		A	A		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	22.0	95.0			117.0	23.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	16.0	89.0			111.0	17.5
Max Q Clear Time (g_c+I1), s	11.7	2.0			2.0	13.1
Green Ext Time (p_c), s	0.5	15.2			24.2	0.1
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			6.1			
HCM 6th LOS			A			

# Queues

## 117: Channelside Dr & Nebraska Ave

01/20/2022



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	359	1326	1141	132
v/c Ratio	1.41	0.90	0.98	0.43
Control Delay	226.5	6.5	12.0	13.6
Queue Delay	5.2	46.8	39.9	74.6
Total Delay	231.7	53.3	52.0	88.2
Queue Length 50th (ft)	~399	218	93	26
Queue Length 95th (ft)	m#315	m192	m91	m50
Internal Link Dist (ft)		140	194	464
Turn Bay Length (ft)	80			
Base Capacity (vph)	255	1477	1160	306
Starvation Cap Reductn	75	373	130	0
Spillback Cap Reductn	0	141	299	192
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.99	1.20	1.33	1.16

### Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



HCM 6th Signalized Intersection Summary  
 119: Old Water St & Channelside Dr

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	1117	23	143	1000	169	17	53	59	18	18	33
Future Volume (veh/h)	94	1117	23	143	1000	169	17	53	59	18	18	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	102	1214	25	155	1087	184	18	58	64	20	20	36
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	493	1285	26	577	1175	199	177	100	111	123	74	133
Arrive On Green	0.23	1.00	1.00	0.32	1.00	1.00	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1781	1826	38	1781	1559	264	1348	812	897	1269	599	1078
Grp Volume(v), veh/h	102	0	1239	155	0	1271	18	0	122	20	0	56
Grp Sat Flow(s),veh/h/ln	1781	0	1864	1781	0	1823	1348	0	1709	1269	0	1676
Q Serve(g_s), s	2.6	0.0	0.0	0.0	0.0	0.0	1.7	0.0	9.4	2.1	0.0	4.2
Cycle Q Clear(g_c), s	2.6	0.0	0.0	0.0	0.0	0.0	6.0	0.0	9.4	11.5	0.0	4.2
Prop In Lane	1.00		0.02	1.00		0.14	1.00		0.52	1.00		0.64
Lane Grp Cap(c), veh/h	493	0	1311	577	0	1374	177	0	211	123	0	207
V/C Ratio(X)	0.21	0.00	0.94	0.27	0.00	0.93	0.10	0.00	0.58	0.16	0.00	0.27
Avail Cap(c_a), veh/h	493	0	1311	577	0	1374	177	0	211	123	0	207
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.40	0.00	0.40	0.09	0.00	0.09	1.00	0.00	1.00	0.87	0.00	0.87
Uniform Delay (d), s/veh	6.8	0.0	0.0	7.4	0.0	0.0	58.3	0.0	57.9	63.4	0.0	55.6
Incr Delay (d2), s/veh	0.4	0.0	7.3	0.1	0.0	1.4	1.1	0.0	11.0	2.5	0.0	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	2.7	1.5	0.0	0.5	0.7	0.0	4.8	0.8	0.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.2	0.0	7.3	7.5	0.0	1.4	59.5	0.0	68.9	65.8	0.0	58.4
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1341			1426			140				76
Approach Delay, s/veh		7.3			2.1			67.7				60.4
Approach LOS		A			A			E				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.0	112.5		23.0	29.5	105.0		23.0				
Change Period (Y+Rc), s	6.0	6.5		* 5.7	6.5	* 6.5		* 5.7				
Max Green Setting (Gmax), s	16.0	88.5		* 17	6.0	* 99		* 17				
Max Q Clear Time (g_c+I1), s	4.6	2.0		11.4	2.0	2.0		13.5				
Green Ext Time (p_c), s	0.2	21.0		0.4	0.1	19.0		0.1				

Intersection Summary

HCM 6th Ctrl Delay	9.0
HCM 6th LOS	A

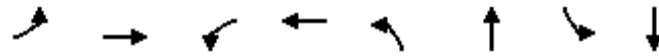
Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

119: Old Water St & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	102	1239	155	1271	18	122	20	56
v/c Ratio	0.40	0.95	1.12	1.10	0.11	0.51	0.16	0.23
Control Delay	30.7	19.0	102.6	69.7	56.5	50.1	52.4	25.3
Queue Delay	0.4	43.9	0.0	1.2	0.0	0.1	0.0	0.0
Total Delay	31.0	62.9	102.6	70.9	56.5	50.2	52.4	25.3
Queue Length 50th (ft)	36	481	~105	~1337	15	77	16	18
Queue Length 95th (ft)	m48	#1365	m#119	m571	40	145	m26	m42
Internal Link Dist (ft)		194		425		945		461
Turn Bay Length (ft)	80		100				150	
Base Capacity (vph)	255	1307	138	1156	165	240	127	239
Starvation Cap Reductn	20	74	0	214	0	0	0	0
Spillback Cap Reductn	0	224	0	39	0	3	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	1.14	1.12	1.35	0.11	0.51	0.16	0.23

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 118: Beneficial Dr/Meridian Ave & Channelside Dr

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	532	501	161	99	607	78	259	513	68	100	302	446
Future Volume (vph)	532	501	161	99	607	78	259	513	68	100	302	446
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.2		6.2	6.2		6.4	6.4	6.4	6.4	6.4	6.4
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1795		1770	1831		1770	1863	1583	1770	1863	1583
Flt Permitted	0.09	1.00		0.16	1.00		0.22	1.00	1.00	0.46	1.00	1.00
Satd. Flow (perm)	170	1795		306	1831		405	1863	1583	848	1863	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)	578	545	175	108	660	85	282	558	74	109	328	485
RTOR Reduction (vph)	0	8	0	0	4	0	0	0	39	0	0	260
Lane Group Flow (vph)	578	712	0	108	741	0	282	558	35	109	328	225
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6			2			4		4	8		8
Actuated Green, G (s)	61.8	61.8		37.8	37.8		65.6	65.6	65.6	32.6	32.6	32.6
Effective Green, g (s)	61.8	61.8		37.8	37.8		65.6	65.6	65.6	32.6	32.6	32.6
Actuated g/C Ratio	0.44	0.44		0.27	0.27		0.47	0.47	0.47	0.23	0.23	0.23
Clearance Time (s)	6.0	6.2		6.2	6.2		6.4	6.4	6.4	6.4	6.4	6.4
Vehicle Extension (s)	2.0	3.0		3.0	3.0		2.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	280	792		82	494		449	872	741	197	433	368
v/s Ratio Prot	c0.26	0.40			0.40		0.12	c0.30			c0.18	
v/s Ratio Perm	c0.64			0.35			0.18		0.02	0.13		0.14
v/c Ratio	2.06	0.90		1.32	1.50		0.63	0.64	0.05	0.55	0.76	0.61
Uniform Delay, d1	44.0	36.2		51.1	51.1		26.3	28.2	20.2	47.3	50.0	48.0
Progression Factor	1.00	0.66		1.00	1.00		1.00	1.00	1.00	0.89	0.89	1.94
Incremental Delay, d2	483.7	6.8		205.9	235.8		6.5	3.6	0.1	9.7	10.6	6.6
Delay (s)	527.7	30.7		257.0	286.9		32.8	31.8	20.3	51.7	55.3	99.6
Level of Service	F	C		F	F		C	C	C	D	E	F
Approach Delay (s)		252.0			283.1			31.2			78.2	
Approach LOS		F			F			C			E	

Intersection Summary

HCM 2000 Control Delay	167.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.43		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	122.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues

118: Beneficial Dr/Meridian Ave & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	578	720	108	745	282	558	74	109	328	485
v/c Ratio	2.06	0.90	1.32	1.50	0.63	0.64	0.09	0.55	0.76	0.77
Control Delay	504.9	31.1	246.3	269.5	30.4	32.4	4.6	53.0	55.9	37.1
Queue Delay	0.0	47.4	0.0	0.0	1.3	0.0	0.0	0.0	0.0	54.6
Total Delay	504.9	78.5	246.3	269.5	31.7	32.4	4.6	53.0	55.9	91.7
Queue Length 50th (ft)	~778	542	~126	~940	159	379	0	96	319	276
Queue Length 95th (ft)	m#851	m591	#255	#1192	230	509	28	m170	m418	m450
Internal Link Dist (ft)		425		125		927			460	
Turn Bay Length (ft)	150		150				400	200		
Base Capacity (vph)	281	801	82	498	448	872	781	197	433	628
Starvation Cap Reductn	0	152	0	0	0	0	0	0	0	44
Spillback Cap Reductn	0	0	0	1	53	0	0	0	0	254
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.06	1.11	1.32	1.50	0.71	0.64	0.09	0.55	0.76	1.30

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCS7 Two-Way Stop-Control Report

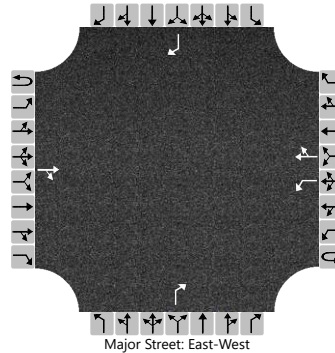
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2046
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Whiting PD&E Study

## Site Information

Intersection	ChannelsideDr&12thSt
Jurisdiction	FDOT, District 7
East/West Street	Channelside Dr
North/South Street	12th St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	1	1	0		0	0	1		0	0	1
Configuration				TR		L		TR				R				R
Volume (veh/h)			456	213		12	495	3				119				289
Percent Heavy Vehicles (%)						2						2				2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized										No				No		
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)					4.1							6.2				6.2
Critical Headway (sec)					4.12							6.22				6.22
Base Follow-Up Headway (sec)					2.2							3.3				3.3
Follow-Up Headway (sec)					2.22							3.32				3.32

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					13							125				304		
Capacity, c (veh/h)					894							506				554		
v/c Ratio					0.01							0.25				0.55		
95% Queue Length, Q <sub>95</sub> (veh)					0.0							1.0				3.5		
Control Delay (s/veh)					9.1							14.4				19.3		
Level of Service (LOS)					A							B				C		
Approach Delay (s/veh)					0.2						14.4				19.3			
Approach LOS					A						B				C			



# MOVEMENT SUMMARY

**Site: 8 [Channelside Drive at Cumberland Avenue\_NB2046-AM  
(Site Folder: General)]**

No-Build 2046 Year -  
AM Peak Hour  
Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[ Total veh/h ]	[ HV ] %	[ Total veh/h ]	[ HV ] %				[ Veh. veh ]	[ Dist ] ft				
South: Channelside Drive														
3	L2	94	2.0	99	2.0	0.543	9.0	LOS A	3.6	91.4	0.43	0.27	0.43	35.9
8	T1	477	2.0	502	2.0	0.543	9.0	LOS A	3.6	91.4	0.43	0.27	0.43	36.7
18	R2	67	2.0	71	2.0	0.543	9.0	LOS A	3.6	91.4	0.43	0.27	0.43	35.5
Approach		638	2.0	672	2.0	0.543	9.0	LOS A	3.6	91.4	0.43	0.27	0.43	36.4
East: E Cumberland Avenue														
1	L2	9	2.0	9	2.0	0.083	5.3	LOS A	0.3	7.4	0.52	0.47	0.52	39.2
6	T1	5	2.0	5	2.0	0.083	5.3	LOS A	0.3	7.4	0.52	0.47	0.52	36.3
16	R2	49	2.0	52	2.0	0.083	5.3	LOS A	0.3	7.4	0.52	0.47	0.52	36.2
Approach		63	2.0	66	2.0	0.083	5.3	LOS A	0.3	7.4	0.52	0.47	0.52	36.6
North: Channelside Drive														
7	L2	61	2.0	64	2.0	0.465	7.6	LOS A	2.8	70.3	0.35	0.20	0.35	36.4
4	T1	496	2.0	522	2.0	0.465	7.6	LOS A	2.8	70.3	0.35	0.20	0.35	38.0
14	R2	249	2.0	262	2.0	0.220	5.0	LOS A	1.0	24.9	0.27	0.14	0.27	34.4
Approach		806	2.0	848	2.0	0.465	6.8	LOS A	2.8	70.3	0.32	0.18	0.32	36.7
West: E Cumberland Avenue														
5	L2	40	2.0	42	2.0	0.099	5.3	LOS A	0.4	8.9	0.51	0.46	0.51	34.3
2	T1	29	2.0	31	2.0	0.099	5.3	LOS A	0.4	8.9	0.51	0.46	0.51	34.0
12	R2	9	2.0	9	2.0	0.099	5.3	LOS A	0.4	8.9	0.51	0.46	0.51	32.9
Approach		78	2.0	82	2.0	0.099	5.3	LOS A	0.4	8.9	0.51	0.46	0.51	34.0
All Vehicles		1585	2.0	1668	2.0	0.543	7.6	LOS A	3.6	91.4	0.38	0.24	0.38	36.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Organisation: H. W. LOCHNER, INC. | Licence: PLUS / Enterprise | Processed: Sunday, November 21, 2021 8:12:27 AM

Project: C:\Users\kshams\Desktop\April\Tampa Office\Whitting\PTAR-Working\HCS\_SIDRA\No-Build\2046\Channelside Drive\_Cumberland Avenue\_Existing\_NB2046\_AM.sip9

# HCS7 Two-Way Stop-Control Report

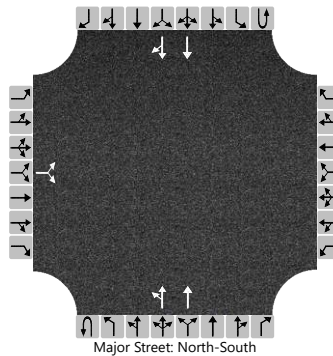
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2046
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	ChannelsideDr&E WhitingSt
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Channelside Dr
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	0	0		0	2	0		0	2	0	
Configuration			LR							LT	T				T	TR	
Volume (veh/h)		41		1						42	524				805	60	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways




















Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.84		6.94						4.14						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			44							44								
Capacity, c (veh/h)			155							744								
v/c Ratio			0.29							0.06								
95% Queue Length, Q <sub>95</sub> (veh)			1.2							0.2								
Control Delay (s/veh)			37.4							10.1								
Level of Service (LOS)			E							B								
Approach Delay (s/veh)		37.4									1.1							
Approach LOS		E									B							

HCM Signalized Intersection Capacity Analysis  
 130: Channelside Dr & E Washington St/E York St

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	112	5	8	5	85	1	545	9	58	847	171
Future Volume (vph)	14	112	5	8	5	85	1	545	9	58	847	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.9			8.4	8.4	6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00			1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected		0.99			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1844			1805	1583	1770	3530		1770	3450	
Flt Permitted		0.29			0.72	1.00	0.26	1.00		0.95	1.00	
Satd. Flow (perm)		531			1345	1583	480	3530		1770	3450	
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)	15	122	5	9	5	92	1	592	10	63	921	186
RTOR Reduction (vph)	0	1	0	0	0	87	0	1	0	0	10	0
Lane Group Flow (vph)	0	141	0	0	14	5	1	601	0	63	1097	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases		4			3			2		1	1 2	
Permitted Phases	4			3		3	2					
Actuated Green, G (s)		23.1			7.9	7.9	60.4	60.4		22.3	88.7	
Effective Green, g (s)		23.1			7.9	7.9	60.4	60.4		22.3	88.7	
Actuated g/C Ratio		0.17			0.06	0.06	0.43	0.43		0.16	0.63	
Clearance Time (s)		5.9			8.4	8.4	6.0	6.0		6.0		
Vehicle Extension (s)		2.0			4.0	4.0	3.0	3.0		2.0		
Lane Grp Cap (vph)		87			75	89	207	1522		281	2185	
v/s Ratio Prot								0.17		0.04	c0.32	
v/s Ratio Perm		c0.27			c0.01	0.00	0.00					
v/c Ratio		1.62			0.19	0.06	0.00	0.40		0.22	0.50	
Uniform Delay, d1		58.5			63.0	62.5	22.7	27.3		51.3	13.8	
Progression Factor		0.94			1.00	1.00	1.00	1.00		0.71	2.45	
Incremental Delay, d2		325.6			1.6	0.4	0.0	0.8		0.1	0.1	
Delay (s)		380.3			64.6	62.9	22.7	28.1		36.8	33.9	
Level of Service		F			E	E	C	C		D	C	
Approach Delay (s)		380.3			63.1			28.0			34.0	
Approach LOS		F			E			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			58.1				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			26.3		
Intersection Capacity Utilization			65.8%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

130: Channelside Dr & E Washington St/E York St

01/20/2022

























Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	142	14	92	1	602	63	1107
v/c Ratio	1.61	0.18	0.46	0.00	0.40	0.22	0.50
Control Delay	356.2	67.8	13.0	23.0	28.3	38.9	34.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Total Delay	356.2	67.8	13.0	23.0	28.3	38.9	35.5
Queue Length 50th (ft)	~185	12	0	1	196	50	456
Queue Length 95th (ft)	#330	36	34	4	246	m99	537
Internal Link Dist (ft)	922	976			474		596
Turn Bay Length (ft)			430	160		280	
Base Capacity (vph)	88	207	342	207	1523	281	2194
Starvation Cap Reductn	0	0	0	0	0	0	768
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.61	0.07	0.27	0.00	0.40	0.22	0.78

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 129: Channelside Dr & Kennedy Blvd

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	438	59	94	18	36	11	85	524	35	40	975	1191
Future Volume (vph)	438	59	94	18	36	11	85	524	35	40	975	1191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1704	1583		1832	1583	1770	3506		1770	3539	1583
Flt Permitted	0.95	0.96	1.00		0.77	1.00	0.20	1.00		0.39	1.00	1.00
Satd. Flow (perm)	1681	1704	1583		1443	1583	370	3506		718	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	476	64	102	20	39	12	92	570	38	43	1060	1295
RTOR Reduction (vph)	0	0	84	0	0	11	0	3	0	0	0	412
Lane Group Flow (vph)	267	273	18	0	59	1	92	605	0	43	1060	883
Turn Type	Split	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	3	3			1			2				2
Permitted Phases			3	1		1	2			2		2
Actuated Green, G (s)	25.3	25.3	25.3		6.7	6.7	79.3	79.3		79.3	79.3	79.3
Effective Green, g (s)	25.3	25.3	25.3		6.7	6.7	79.3	79.3		79.3	79.3	79.3
Actuated g/C Ratio	0.18	0.18	0.18		0.05	0.05	0.57	0.57		0.57	0.57	0.57
Clearance Time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3
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)	303	307	286		69	75	209	1985		406	2004	896
v/s Ratio Prot	0.16	c0.16						0.17				0.30
v/s Ratio Perm			0.01		c0.04	0.00	0.25			0.06		c0.56
v/c Ratio	0.88	0.89	0.06		0.86	0.01	0.44	0.30		0.11	0.53	0.99
Uniform Delay, d1	55.9	56.0	47.5		66.2	63.5	17.5	15.9		14.0	18.8	29.8
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.65	1.52		1.00	1.00	1.00
Incremental Delay, d2	24.4	25.2	0.1		60.6	0.0	6.2	0.4		0.5	1.0	26.7
Delay (s)	80.3	81.2	47.6		126.8	63.5	35.1	24.6		14.5	19.8	56.5
Level of Service	F	F	D		F	E	D	C		B	B	E
Approach Delay (s)		75.5			116.1			26.0			39.5	
Approach LOS		E			F			C			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			44.5									D
HCM 2000 Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			140.0							22.4		
Intersection Capacity Utilization			106.6%									G
Analysis Period (min)			15									

c Critical Lane Group



Queues

129: Channelside Dr & Kennedy Blvd

01/20/2022



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	267	273	102	59	12	92	608	43	1060	1295
v/c Ratio	0.88	0.89	0.28	0.71	0.07	0.43	0.30	0.10	0.52	0.98
Control Delay	84.4	85.4	10.5	105.6	0.7	36.1	23.3	14.3	19.1	30.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.4	85.4	10.5	105.6	0.7	36.1	23.3	14.3	19.1	30.0
Queue Length 50th (ft)	249	254	0	54	0	81	254	17	295	484
Queue Length 95th (ft)	#403	#412	51	#130	0	m138	m307	37	353	#1082
Internal Link Dist (ft)		903		909			596		1256	
Turn Bay Length (ft)			140			280		75		375
Base Capacity (vph)	320	324	384	85	185	213	2024	414	2039	1315
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.84	0.27	0.69	0.06	0.43	0.30	0.10	0.52	0.98

Intersection Summary

# 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.

# HCM Signalized Intersection Capacity Analysis

109: Florida Ave & Brorein St

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑↑↑		↘	↑↑↑↑				
Traffic Volume (vph)	0	0	0	0	2304	761	302	2204	0	0	0	0
Future Volume (vph)	0	0	0	0	2304	761	302	2204	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.8		6.1	6.1				
Lane Util. Factor					0.86		1.00	0.91				
Frt					0.96		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6169		1770	5085				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6169		1770	5085				
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	0	0	0	2504	827	328	2396	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	20	0	23	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	3311	0	305	2396	0	0	0	0
Turn Type					NA		Perm	NA				
Protected Phases					2			4				
Permitted Phases							4					
Actuated Green, G (s)					54.2		68.9	68.9				
Effective Green, g (s)					54.2		68.9	68.9				
Actuated g/C Ratio					0.39		0.49	0.49				
Clearance Time (s)					5.8		6.1	6.1				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					2388		871	2502				
v/s Ratio Prot					c0.54			c0.47				
v/s Ratio Perm							0.17					
v/c Ratio					1.39		0.35	0.96				
Uniform Delay, d1					42.9		21.8	34.1				
Progression Factor					1.00		0.94	0.96				
Incremental Delay, d2					176.7		1.1	10.1				
Delay (s)					219.6		21.6	42.9				
Level of Service					F		C	D				
Approach Delay (s)		0.0			219.6			40.3			0.0	
Approach LOS		A			F			D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			138.9				HCM 2000 Level of Service		F			
HCM 2000 Volume to Capacity ratio			1.13									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)		14.9			
Intersection Capacity Utilization			98.6%				ICU Level of Service		F			
Analysis Period (min)			15									
c	Critical Lane Group											

# Queues

## 109: Florida Ave & Brorein St

01/20/2022



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	3331	328	2396
v/c Ratio	1.38	0.37	0.96
Control Delay	209.3	19.0	43.1
Queue Delay	0.5	0.0	0.0
Total Delay	209.8	19.0	43.1
Queue Length 50th (ft)	~1170	158	724
Queue Length 95th (ft)	#1225	m221	#876
Internal Link Dist (ft)	416		237
Turn Bay Length (ft)			
Base Capacity (vph)	2408	893	2502
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	442	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.69	0.37	0.96

### Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCM Signalized Intersection Capacity Analysis

## 110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/20/2022



Movement	WBL	WBT	NBL	NBT	NBR2	SBL	SBT	SBR	SWR	SWR2
Lane Configurations		↕↕	↙	↕	↙	↙	↕		↙	↙
Traffic Volume (vph)	2	2458	390	848	637	414	83	385	969	695
Future Volume (vph)	2	2458	390	848	637	414	83	385	969	695
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.5	6.0	6.0	5.5	6.0		5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	1.00	1.00	0.85	1.00	0.88		1.00	0.85
Flt Protected		1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00
Satd. Flow (prot)		3539	1770	1863	1583	1770	1633		1863	1583
Flt Permitted		1.00	0.16	1.00	1.00	0.15	1.00		1.00	1.00
Satd. Flow (perm)		3539	292	1863	1583	287	1633		1863	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
Adj. Flow (vph)	2	2672	424	922	692	450	90	418	1053	755
RTOR Reduction (vph)	0	0	0	0	50	0	1	0	0	203
Lane Group Flow (vph)	0	2674	424	922	642	450	507	0	1053	552
Turn Type	Perm	NA	pm+pt	NA	Perm	pm+pt	NA		Prot	Perm
Protected Phases		2!	7	4		3	8		2!	
Permitted Phases	2		4		4	8				2
Actuated Green, G (s)		60.3	38.0	38.0	38.0	50.5	50.0		60.3	60.3
Effective Green, g (s)		60.3	38.0	38.0	38.0	50.5	50.0		60.3	60.3
Actuated g/C Ratio		0.43	0.27	0.27	0.27	0.36	0.36		0.43	0.43
Clearance Time (s)		5.7	5.5	6.0	6.0	5.5	6.0		5.7	5.7
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1524	211	505	429	363	583		802	681
v/s Ratio Prot			0.18	c0.49		c0.22	0.31		0.57	
v/s Ratio Perm		0.76	c0.37		0.41	0.23				0.35
v/c Ratio		1.75	2.01	1.83	1.50	1.24	0.87		1.31	0.81
Uniform Delay, d1		39.9	45.7	51.0	51.0	53.5	42.0		39.9	34.9
Progression Factor		0.46	1.22	1.18	1.21	1.06	1.09		1.00	1.00
Incremental Delay, d2		339.8	455.8	372.3	225.0	110.1	1.8		149.7	10.1
Delay (s)		358.2	511.7	432.2	286.5	166.8	47.4		189.5	45.0
Level of Service		F	F	F	F	F	D		F	D
Approach Delay (s)		358.2		399.3			103.5			
Approach LOS		F		F			F			

### Intersection Summary

HCM 2000 Control Delay	281.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	214.7%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Queues

110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/20/2022



Lane Group	WBT	NBL	NBT	NBR2	SBL	SBT	SWR	SWR2
Lane Group Flow (vph)	2674	424	922	692	450	508	1053	755
v/c Ratio	1.75	2.00	1.83	1.44	1.24	0.87	1.31	0.85
Control Delay	360.5	479.6	405.1	239.2	156.5	47.8	183.7	29.1
Queue Delay	0.1	0.0	0.7	0.1	0.0	0.9	0.0	0.0
Total Delay	360.6	479.6	405.9	239.4	156.5	48.7	183.7	29.1
Queue Length 50th (ft)	~1901	~565	~1270	~718	~473	441	~1232	363
Queue Length 95th (ft)	m#1361	m#458	m#960	m#596	m#427	m419	#1494	#587
Internal Link Dist (ft)	507		424			563		
Turn Bay Length (ft)		250		10				
Base Capacity (vph)	1524	212	505	479	363	584	802	884
Starvation Cap Reductn	61	0	42	6	0	11	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.83	2.00	1.99	1.46	1.24	0.89	1.31	0.85

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



# HCM 6th Signalized Intersection Summary

## 111: Jefferson St & Brorein St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕		↖	↕		↖	↗	↖
Traffic Volume (veh/h)	427	241	37	35	2278	320	28	390	148	320	476	154
Future Volume (veh/h)	427	241	37	35	2278	320	28	390	148	320	476	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	464	262	40	38	2476	348	30	424	161	348	517	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	51	1000	153	652	1980	272	121	402	151	210	391	
Arrive On Green	0.63	0.63	0.63	0.42	0.42	0.42	0.04	0.16	0.16	0.18	0.42	0.00
Sat Flow, veh/h	95	1585	242	1077	3139	431	1781	2527	950	1781	1870	1585
Grp Volume(v), veh/h	464	0	302	38	1376	1448	30	297	288	348	517	0
Grp Sat Flow(s),veh/h/ln	95	0	1827	1077	1777	1793	1781	1777	1699	1781	1870	1585
Q Serve(g_s), s	0.0	0.0	10.2	3.2	88.3	88.3	1.9	22.3	22.3	12.5	29.3	0.0
Cycle Q Clear(g_c), s	88.3	0.0	10.2	13.4	88.3	88.3	1.9	22.3	22.3	12.5	29.3	0.0
Prop In Lane	1.00		0.13	1.00		0.24	1.00		0.56	1.00		1.00
Lane Grp Cap(c), veh/h	51	0	1152	652	1121	1131	121	283	271	210	391	
V/C Ratio(X)	9.02	0.00	0.26	0.06	1.23	1.28	0.25	1.05	1.06	1.65	1.32	
Avail Cap(c_a), veh/h	51	0	1152	652	1121	1131	121	283	271	210	391	
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.09	0.00	0.09	0.17	0.17	0.17	0.09	0.09	0.09	1.00	1.00	0.00
Uniform Delay (d), s/veh	70.0	0.0	11.4	22.1	40.4	40.4	47.5	58.8	58.9	43.0	40.7	0.0
Incr Delay (d2), s/veh	3613.5	0.0	0.0	0.0	103.9	127.6	0.4	30.8	36.8	314.3	161.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	53.5	0.0	4.2	0.9	72.1	80.2	0.9	12.5	12.4	23.9	28.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3683.5	0.0	11.5	22.1	144.3	168.0	47.9	89.6	95.6	357.3	202.0	0.0
LnGrp LOS	F	A	B	C	F	F	D	F	F	F	F	
Approach Vol, veh/h		766			2862			615			865	A
Approach Delay, s/veh		2235.8			154.7			90.4			264.5	
Approach LOS		F			F			F			F	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		94.0	18.0	28.0		94.0	11.0	35.0				
Change Period (Y+Rc), s		* 5.7	5.5	* 5.7		* 5.7	5.5	* 5.7				
Max Green Setting (Gmax), s		* 88	12.5	* 22		* 88	5.5	* 29				
Max Q Clear Time (g_c+I1), s		90.3	14.5	24.3		90.3	3.9	31.3				
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.0	0.0				

### Intersection Summary

HCM 6th Ctrl Delay	477.6
HCM 6th LOS	F

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Queues

111: Jefferson St & Brorein St

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	464	302	38	2824	30	585	348	517	167
v/c Ratio	8.92	0.26	0.06	1.28	0.24	1.03	1.65	1.33	0.44
Control Delay	3575.2	5.1	8.8	154.6	28.7	67.0	333.1	195.5	27.2
Queue Delay	0.0	0.0	0.0	1.9	0.0	0.0	4.0	0.0	0.1
Total Delay	3575.2	5.1	8.8	156.5	28.7	67.0	337.1	195.5	27.4
Queue Length 50th (ft)	~822	92	12	~1733	24	~288	~417	~603	64
Queue Length 95th (ft)	m#584	m57	m11	m#1431	m18	m205	m#445	m#627	m75
Internal Link Dist (ft)		507		143		434		68	
Turn Bay Length (ft)	150		50		100		50		
Base Capacity (vph)	52	1155	640	2200	123	568	211	389	381
Starvation Cap Reductn	0	0	0	528	0	0	0	0	0
Spillback Cap Reductn	0	0	0	988	0	0	46	0	17
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	8.92	0.26	0.06	2.33	0.24	1.03	2.11	1.33	0.46

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 112: Nebraska Ave & Brorein St/Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕			↕			↕	
Traffic Volume (veh/h)	64	585	60	19	2159	1	304	285	107	117	35	170
Future Volume (veh/h)	64	585	60	19	2159	1	304	285	107	117	35	170
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	70	636	65	21	2347	1	330	310	116	127	38	185
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	1148	117	564	2507	1	145	101	38	138	37	158
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	153	1669	171	745	3645	2	468	439	164	448	161	684
Grp Volume(v), veh/h	70	0	701	21	1144	1204	756	0	0	350	0	0
Grp Sat Flow(s),veh/h/ln	153	0	1840	745	1777	1870	1072	0	0	1293	0	0
Q Serve(g_s), 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
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	32.3	0.0	0.0	32.3	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.00	0.44		0.15	0.36		0.53
Lane Grp Cap(c), veh/h	156	0	1265	564	1222	1286	284	0	0	333	0	0
V/C Ratio(X)	0.45	0.00	0.55	0.04	0.94	0.94	2.66	0.00	0.00	1.05	0.00	0.00
Avail Cap(c_a), veh/h	156	0	1265	564	1222	1286	284	0	0	333	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.00	0.09	0.09	0.09	0.09	0.09	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	55.9	0.0	0.0	55.4	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.2	0.0	1.8	1.7	748.1	0.0	0.0	62.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	0.0	0.6	0.6	69.3	0.0	0.0	17.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.8	0.0	0.2	0.0	1.8	1.7	804.0	0.0	0.0	118.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	F	A	A	F	A	A
Approach Vol, veh/h		771			2369			756				350
Approach Delay, s/veh		0.2			1.8			804.0				118.3
Approach LOS		A			A			F				F
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		102.0		38.0		102.0		38.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7		* 5.7				
Max Green Setting (Gmax), s		* 96		* 32		* 96		* 32				
Max Q Clear Time (g_c+I1), s		2.0		34.3		2.0		34.3				
Green Ext Time (p_c), s		59.4		0.0		13.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	153.9
HCM 6th LOS	F

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

112: Nebraska Ave & Brorein St/Cumberland Ave

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	70	701	21	2348	756	350
v/c Ratio	1.32	0.55	0.05	0.96	2.89	1.25
Control Delay	179.1	2.1	2.4	5.7	870.9	181.1
Queue Delay	0.0	52.7	0.0	32.5	5.4	5.1
Total Delay	179.1	54.8	2.4	38.3	876.3	186.2
Queue Length 50th (ft)	~83	239	1	81	~1195	~393
Queue Length 95th (ft)	m#95	m5	m1	m74	m#1062	m#522
Internal Link Dist (ft)		143		195	464	798
Turn Bay Length (ft)	50		70			
Base Capacity (vph)	53	1266	393	2434	262	279
Starvation Cap Reductn	0	655	0	251	0	0
Spillback Cap Reductn	0	91	0	23	80	84
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.32	1.15	0.05	1.08	4.15	1.79

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 701: Old Water St & Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕		↖	↗		↖	↗	
Traffic Volume (veh/h)	14	542	253	10	2120	256	39	94	44	57	112	20
Future Volume (veh/h)	14	542	253	10	2120	256	39	94	44	57	112	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	589	275	11	2304	278	42	102	48	62	122	22
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	53	878	410	516	2330	275	215	288	135	140	235	42
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.02	0.08	0.08	0.15	0.15	0.15
Sat Flow, veh/h	121	1206	563	640	3201	378	1781	1203	566	1237	1542	278
Grp Volume(v), veh/h	15	0	864	11	1258	1324	42	0	150	62	0	144
Grp Sat Flow(s),veh/h/ln	121	0	1769	640	1777	1802	1781	0	1768	1237	0	1820
Q Serve(g_s), s	1.6	0.0	0.0	0.0	0.0	101.9	0.0	0.0	11.3	6.9	0.0	10.2
Cycle Q Clear(g_c), s	101.9	0.0	0.0	0.2	0.0	101.9	0.0	0.0	11.3	18.1	0.0	10.2
Prop In Lane	1.00		0.32	1.00		0.21	1.00		0.32	1.00		0.15
Lane Grp Cap(c), veh/h	53	0	1288	516	1293	1312	215	0	423	140	0	277
V/C Ratio(X)	0.28	0.00	0.67	0.02	0.97	1.01	0.20	0.00	0.35	0.44	0.00	0.52
Avail Cap(c_a), veh/h	53	0	1288	516	1293	1312	215	0	423	140	0	277
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.00	0.81	0.09	0.09	0.09	0.89	0.00	0.89	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.9	0.0	0.0	0.0	0.0	0.0	59.1	0.0	54.2	63.5	0.0	54.6
Incr Delay (d2), s/veh	10.6	0.0	2.3	0.0	3.5	9.9	1.8	0.0	2.1	9.8	0.0	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.8	0.0	1.2	3.6	1.5	0.0	5.6	2.6	0.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.5	0.0	2.3	0.0	3.5	9.9	60.9	0.0	56.3	73.3	0.0	61.5
LnGrp LOS	E	A	A	A	A	F	E	A	E	E	A	E
Approach Vol, veh/h		879			2593			192			206	
Approach Delay, s/veh		3.3			6.7			57.3			65.0	
Approach LOS		A			A			E			E	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		107.8		39.2		107.8	12.2	27.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s		* 95		* 33		* 95	* 6.5	* 21				
Max Q Clear Time (g_c+I1), s		103.9		13.3		103.9	2.0	20.1				
Green Ext Time (p_c), s		0.0		0.8		0.0	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay	11.6
HCM 6th LOS	B

Notes

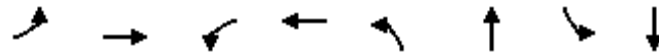
\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Queues

701: Old Water St & Cumberland Ave

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	15	864	11	2582	42	150	62	144
v/c Ratio	0.28	0.71	0.04	1.09	0.15	0.35	0.41	0.51
Control Delay	13.6	13.9	3.0	50.4	46.4	43.9	62.8	59.8
Queue Delay	0.0	0.4	0.0	6.6	0.0	0.0	0.0	0.0
Total Delay	13.6	14.3	3.0	57.1	46.4	43.9	62.8	59.8
Queue Length 50th (ft)	4	615	1	~1380	32	103	52	118
Queue Length 95th (ft)	m7	m457	m1	m160	m45	m133	102	191
Internal Link Dist (ft)		195		457		461		758
Turn Bay Length (ft)	70		70		150		150	
Base Capacity (vph)	53	1219	272	2377	280	433	152	281
Starvation Cap Reductn	0	83	0	595	0	0	0	0
Spillback Cap Reductn	0	0	0	28	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.76	0.04	1.45	0.15	0.35	0.41	0.51

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 120: Meridian Ave & Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	472	103	68	11	486	130	172	780	171	76	768	1758
Future Volume (veh/h)	472	103	68	11	486	130	172	780	171	76	768	1758
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	513	112	74	12	528	0	187	848	186	83	835	1911
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	351	232	32	616		150	1420	311	252	1741	777
Arrive On Green	0.11	0.11	0.11	0.33	0.33	0.00	0.05	0.65	0.65	0.01	0.16	0.16
Sat Flow, veh/h	875	1051	694	18	1842	1585	1781	2897	635	1781	3554	1585
Grp Volume(v), veh/h	513	0	186	540	0	0	187	520	514	83	835	1911
Grp Sat Flow(s),veh/h/ln	875	0	1745	1860	0	1585	1781	1777	1756	1781	1777	1585
Q Serve(g_s), s	8.8	0.0	13.8	12.0	0.0	0.0	5.6	23.4	23.4	3.7	29.9	68.6
Cycle Q Clear(g_c), s	46.8	0.0	13.8	38.0	0.0	0.0	5.6	23.4	23.4	3.7	29.9	68.6
Prop In Lane	1.00		0.40	0.02		1.00	1.00		0.36	1.00		1.00
Lane Grp Cap(c), veh/h	160	0	583	648	0		150	871	860	252	1741	777
V/C Ratio(X)	3.21	0.00	0.32	0.83	0.00		1.25	0.60	0.60	0.33	0.48	2.46
Avail Cap(c_a), veh/h	160	0	583	648	0		150	871	860	252	1741	777
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.33	1.33	1.33	0.33	0.33	0.33
Upstream Filter(I)	0.67	0.00	0.67	1.00	0.00	0.00	0.09	0.09	0.09	0.59	0.59	0.59
Uniform Delay (d), s/veh	74.9	0.0	47.6	43.6	0.0	0.0	61.5	16.5	16.5	24.9	42.5	58.7
Incr Delay (d2), s/veh	1007.0	0.0	1.0	12.0	0.0	0.0	117.8	0.3	0.3	2.1	0.6	659.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	50.7	0.0	6.6	19.8	0.0	0.0	10.1	7.8	7.7	1.7	14.4	171.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1081.9	0.0	48.5	55.6	0.0	0.0	179.3	16.8	16.8	27.0	43.0	718.2
LnGrp LOS	F	A	D	E	A		F	B	B	C	D	F
Approach Vol, veh/h		699			540	A		1221			2829	
Approach Delay, s/veh		806.9			55.6			41.7			498.6	
Approach LOS		F			E			D			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	75.0		53.0	12.0	75.0		53.0				
Change Period (Y+Rc), s	6.4	6.4		* 6.2	6.4	6.4		* 6.2				
Max Green Setting (Gmax), s	5.6	68.6		* 47	5.6	68.6		* 47				
Max Q Clear Time (g_c+I1), s	7.6	70.6		48.8	5.7	25.4		40.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	7.8		2.0				

Intersection Summary

HCM 6th Ctrl Delay	388.6
HCM 6th LOS	F

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.  
 Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Queues

120: Meridian Ave & Cumberland Ave

01/20/2022



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	513	186	540	141	187	1034	83	835	1911
v/c Ratio	6.41	0.31	0.88	0.23	0.56	0.61	0.44	0.48	2.24
Control Delay	2464.9	44.7	60.3	8.0	29.3	25.7	34.8	33.7	582.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.3
Total Delay	2464.9	44.7	60.3	8.0	29.3	27.0	34.8	33.7	582.9
Queue Length 50th (ft)	~920	134	462	9	100	316	51	302	~2717
Queue Length 95th (ft)	#1140	m199	#665	58	m95	m246	m85	420	#2988
Internal Link Dist (ft)		457	882			460		709	
Turn Bay Length (ft)	100			100	200		250		
Base Capacity (vph)	80	602	617	613	333	1700	189	1734	853
Starvation Cap Reductn	0	0	0	0	0	420	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	14	38
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	6.41	0.31	0.88	0.23	0.56	0.81	0.44	0.49	2.34





















Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCM Signalized Intersection Capacity Analysis

## 102: Florida Ave & Whiting St

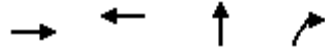
01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  				
Traffic Volume (vph)	116	474	0	0	560	278	153	2157	127	0	0	0
Future Volume (vph)	116	474	0	0	560	278	153	2157	127	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			5.7	5.7			
Lane Util. Factor		0.95			0.95			0.91	1.00			
Frt		1.00			0.95			1.00	0.85			
Flt Protected		0.99			1.00			1.00	1.00			
Satd. Flow (prot)		3505			3363			5069	1583			
Flt Permitted		0.54			1.00			1.00	1.00			
Satd. Flow (perm)		1904			3363			5069	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)	126	515	0	0	609	302	166	2345	138	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	30	0	0	0
Lane Group Flow (vph)	0	641	0	0	901	0	0	2511	108	0	0	0
Turn Type	Perm	NA			NA		Perm	NA	Perm			
Protected Phases		4			4			2				
Permitted Phases	4						2		2			
Actuated Green, G (s)		59.0			59.0			64.3	64.3			
Effective Green, g (s)		59.0			59.0			64.3	64.3			
Actuated g/C Ratio		0.42			0.42			0.46	0.46			
Clearance Time (s)		6.0			6.0			5.7	5.7			
Vehicle Extension (s)		3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)		802			1417			2328	727			
v/s Ratio Prot					0.27							
v/s Ratio Perm		c0.34						0.50	0.07			
v/c Ratio		0.85dl			0.64			1.08	0.15			
Uniform Delay, d1		35.3			32.0			37.9	22.0			
Progression Factor		1.00			0.91			1.29	1.73			
Incremental Delay, d2		8.2			0.2			36.3	0.0			
Delay (s)		43.5			29.4			85.1	38.1			
Level of Service		D			C			F	D			
Approach Delay (s)		43.5			29.4			82.7			0.0	
Approach LOS		D			C			F			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			65.1				HCM 2000 Level of Service		E			
HCM 2000 Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)		15.7			
Intersection Capacity Utilization			100.4%				ICU Level of Service		G			
Analysis Period (min)			15									
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

# Queues

## 102: Florida Ave & Whiting St

01/20/2022



Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	641	911	2511	138
v/c Ratio	0.85dl	0.64	1.08	0.18
Control Delay	44.3	29.1	82.0	23.1
Queue Delay	0.0	1.0	9.3	0.0
Total Delay	44.3	30.1	91.4	23.1
Queue Length 50th (ft)	265	321	~919	57
Queue Length 95th (ft)	352	m253	m#854	m54
Internal Link Dist (ft)	994	519	567	
Turn Bay Length (ft)				75
Base Capacity (vph)	802	1426	2328	756
Starvation Cap Reductn	0	261	219	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.80	0.78	1.19	0.18

### Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.



# HCM Signalized Intersection Capacity Analysis

## 103: Morgan St & Whiting St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	229	231	266	726	247	192	631	109	77	543	114
Future Volume (vph)	69	229	231	266	726	247	192	631	109	77	543	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8		5.8	5.8			5.7			5.7	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	0.92		1.00	0.96			0.98			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	1722		1770	1792			3442			3439	
Flt Permitted	0.18	1.00		0.21	1.00			0.56			0.53	
Satd. Flow (perm)	336	1722		387	1792			1956			1825	
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)	75	249	251	289	789	268	209	686	118	84	590	124
RTOR Reduction (vph)	0	52	0	0	17	0	0	15	0	0	22	0
Lane Group Flow (vph)	75	448	0	289	1040	0	0	998	0	0	776	0
Turn Type	Perm	NA		D.P+P	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	3 4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	22.2	22.2		31.4	37.2			21.3			21.3	
Effective Green, g (s)	22.2	22.2		31.4	37.2			21.3			21.3	
Actuated g/C Ratio	0.32	0.32		0.45	0.53			0.30			0.30	
Clearance Time (s)	5.8	5.8		5.8				5.7			5.7	
Vehicle Extension (s)	3.0	3.0		3.0				3.0			3.0	
Lane Grp Cap (vph)	106	546		355	952			595			555	
v/s Ratio Prot		0.26		0.11	c0.58							
v/s Ratio Perm	0.22			0.26				c0.51			0.43	
v/c Ratio	0.71	0.82		0.81	1.09			1.68			1.40	
Uniform Delay, d1	21.0	22.1		14.4	16.4			24.4			24.4	
Progression Factor	0.92	1.00		1.11	1.25			1.55			1.00	
Incremental Delay, d2	25.3	9.9		14.3	54.3			305.8			190.3	
Delay (s)	44.6	32.0		30.3	74.9			343.5			214.6	
Level of Service	D	C		C	E			F			F	
Approach Delay (s)		33.7			65.3			343.5			214.6	
Approach LOS		C			E			F			F	

### Intersection Summary

HCM 2000 Control Delay	167.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.45		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	17.3
Intersection Capacity Utilization	128.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues

103: Morgan St & Whiting St

01/20/2022






















Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	75	500	289	1057	1013	798
v/c Ratio	0.71	0.84	0.81	1.09	1.66	1.38
Control Delay	48.2	29.5	28.3	75.3	325.5	207.2
Queue Delay	0.0	1.5	0.5	0.0	0.0	0.1
Total Delay	48.2	31.0	28.8	75.3	325.5	207.3
Queue Length 50th (ft)	25	194	72	~807	~715	~243
Queue Length 95th (ft)	m47	#281	m86	m#969	m#442	#353
Internal Link Dist (ft)		519		503	563	1059
Turn Bay Length (ft)						
Base Capacity (vph)	106	598	355	969	610	577
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	25	5	0	0	6
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.87	0.83	1.09	1.66	1.40

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 104: Jefferson St & Whiting St

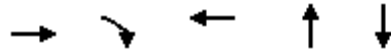
01/20/2022

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	58	193	225	42	426	94	227	423	1	190	730	197		
Future Volume (vph)	58	193	225	42	426	94	227	423	1	190	730	197		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		5.7	5.7		5.7			5.7			5.7			
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95			
Frt		1.00	0.85		0.98			1.00			0.97			
Flt Protected		0.99	1.00		1.00			0.98			0.99			
Satd. Flow (prot)		1841	1583		1814			3478			3417			
Flt Permitted		0.67	1.00		0.95			0.54			0.67			
Satd. Flow (perm)		1257	1583		1737			1896			2305			
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)	63	210	245	46	463	102	247	460	1	207	793	214		
RTOR Reduction (vph)	0	0	136	0	9	0	0	0	0	0	23	0		
Lane Group Flow (vph)	0	273	109	0	602	0	0	708	0	0	1191	0		
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA			
Protected Phases		8			4			6			2			
Permitted Phases	8		8	4			6			2				
Actuated Green, G (s)		24.3	24.3		24.3			34.3			34.3			
Effective Green, g (s)		24.3	24.3		24.3			34.3			34.3			
Actuated g/C Ratio		0.35	0.35		0.35			0.49			0.49			
Clearance Time (s)		5.7	5.7		5.7			5.7			5.7			
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0			
Lane Grp Cap (vph)		436	549		602			929			1129			
v/s Ratio Prot														
v/s Ratio Perm		0.22	0.07		c0.35			0.37			c0.52			
v/c Ratio		0.63	0.20		1.00			1.99dl			1.05			
Uniform Delay, d1		19.1	16.0		22.8			14.5			17.9			
Progression Factor		1.09	1.94		1.00			1.34			1.00			
Incremental Delay, d2		0.3	0.0		36.3			0.6			42.5			
Delay (s)		21.0	31.2		59.2			20.0			60.4			
Level of Service		C	C		E			C			E			
Approach Delay (s)		25.8			59.2			20.0			60.4			
Approach LOS		C			E			C			E			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			44.9									HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio			1.15											
Actuated Cycle Length (s)			70.0								17.4			
Intersection Capacity Utilization			113.1%										ICU Level of Service	H
Analysis Period (min)			15											
dl Defacto Left Lane. Recode with 1 though lane as a left lane.														
c Critical Lane Group														

Queues

104: Jefferson St & Whiting St

01/20/2022



Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	273	245	611	708	1214
v/c Ratio	0.63	0.36	1.00	1.99dl	1.05
Control Delay	21.8	6.7	61.9	20.5	61.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	21.8	6.7	61.9	20.5	61.8
Queue Length 50th (ft)	103	28	253	168	~302
Queue Length 95th (ft)	m98	m23	#466	m113	#426
Internal Link Dist (ft)	503		431	509	207
Turn Bay Length (ft)					
Base Capacity (vph)	436	685	611	929	1152
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.63	0.36	1.00	0.76	1.05

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

# HCS7 Two-Way Stop-Control Report

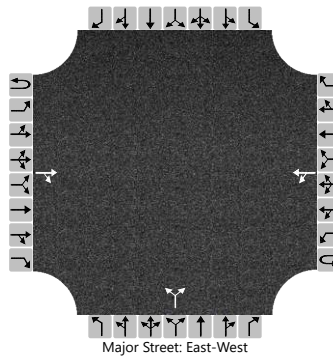
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2046
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWhitingSt&Nebraska Ave
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Nebraska Ave
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			90	308		177	366			198		289				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.12				6.42		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						186						513				
Capacity, c (veh/h)						1140						370				
v/c Ratio						0.16						1.39				
95% Queue Length, Q <sub>95</sub> (veh)						0.6						80.8				
Control Delay (s/veh)						8.8						741.9				
Level of Service (LOS)						A						F				
Approach Delay (s/veh)						4.1				741.9						
Approach LOS						A				F						



# HCM Signalized Intersection Capacity Analysis

## 107: Meridian Ave & Whiting St

01/20/2022



Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations	W	R	L	T	R	L	T
Traffic Volume (vph)	194	77	0	1299	83	23	2408
Future Volume (vph)	194	77	0	1299	83	23	2408
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.2			6.6		6.4	6.6
Lane Util. Factor	1.00			0.91		1.00	0.91
Fr <sub>t</sub>	0.96			0.99		1.00	1.00
Fl <sub>t</sub> Protected	0.97			1.00		0.95	1.00
Satd. Flow (prot)	1729			5040		1770	5085
Fl <sub>t</sub> Permitted	0.97			1.00		0.12	1.00
Satd. Flow (perm)	1729			5040		228	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	211	84	0	1412	90	25	2617
RTOR Reduction (vph)	11	0	0	4	0	0	0
Lane Group Flow (vph)	284	0	0	1498	0	25	2617
Turn Type	Perm		Perm	NA		pm+pt	NA
Protected Phases				6		5	2
Permitted Phases	4		6			2	
Actuated Green, G (s)	28.2			87.7		98.0	98.0
Effective Green, g (s)	28.2			87.7		98.0	98.0
Actuated g/C Ratio	0.20			0.63		0.70	0.70
Clearance Time (s)	7.2			6.6		6.4	6.6
Vehicle Extension (s)	3.0			3.0		3.0	3.0
Lane Grp Cap (vph)	348			3157		202	3559
v/s Ratio Prot				0.30		0.00	c0.51
v/s Ratio Perm	c0.16					0.08	
v/c Ratio	0.82			0.47		0.12	0.74
Uniform Delay, d <sub>1</sub>	53.4			13.9		8.4	13.0
Progression Factor	1.03			0.98		1.00	1.00
Incremental Delay, d <sub>2</sub>	13.6			0.0		0.3	1.4
Delay (s)	68.8			13.6		8.7	14.4
Level of Service	E			B		A	B
Approach Delay (s)	68.8			13.6			14.3
Approach LOS	E			B			B

### Intersection Summary

HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# Queues

## 107: Meridian Ave & Whiting St

01/20/2022



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	295	1502	25	2617
v/c Ratio	0.82	0.46	0.11	0.74
Control Delay	70.5	13.9	8.9	15.5
Queue Delay	12.4	0.0	0.0	1.2
Total Delay	82.9	13.9	8.9	16.7
Queue Length 50th (ft)	255	313	6	495
Queue Length 95th (ft)	342	m235	19	675
Internal Link Dist (ft)	876	709		494
Turn Bay Length (ft)			225	
Base Capacity (vph)	477	3252	255	3560
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	157	0	0	658
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.92	0.46	0.10	0.90

### Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

# HCS7 Two-Way Stop-Control Report

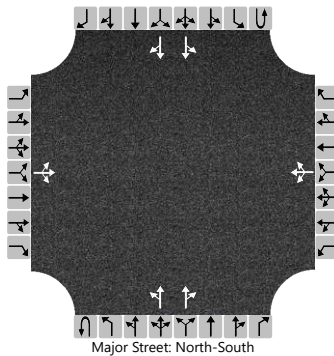
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2046
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWashingtonSt&JeffersonSt
Jurisdiction	FDOT, District 7
East/West Street	E Washington St
North/South Street	Jefferson St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0	0	0	2	0	0	0	2	0	
Configuration			LTR				LTR			LT		TR		LT		TR	
Volume (veh/h)		1	18	171		49	85	255		29	522	24		48	897	175	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.54	6.54	6.94		7.54	6.54	6.94		4.14				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			200				409				31				51	
Capacity, c (veh/h)							145				615				994	
v/c Ratio							2.83				0.05				0.05	
95% Queue Length, Q <sub>95</sub> (veh)							136.9				0.2				0.2	
Control Delay (s/veh)							3365.7				11.2				8.8	
Level of Service (LOS)							F				B				A	
Approach Delay (s/veh)							3365.7				0.9				0.8	
Approach LOS							F									

# HCS7 Two-Way Stop-Control Report

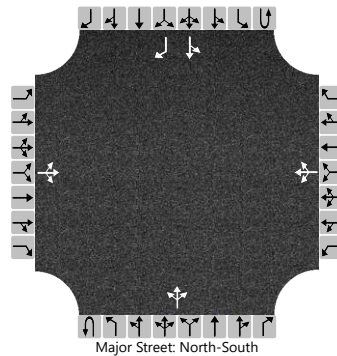
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2046
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWashingtonSt&BrushSt
Jurisdiction	FDOT, District 7
East/West Street	E Washington St
North/South Street	Brush St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound					
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R		
Movement																		
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6		
Number of Lanes		0	1	0		0	1	0		0	1	0		0	1	1		
Configuration			LTR				LTR				LTR			LT		R		
Volume (veh/h)		72	8	26		42	14	1		126	140	8		13	504	210		
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2				
Proportion Time Blocked																		
Percent Grade (%)		0				0												
Right Turn Channelized											Yes							
Median Type   Storage		Undivided																

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			112				60				133				14		
Capacity, c (veh/h)			229				168				1037				1424		
v/c Ratio			0.49				0.36				0.13				0.01		
95% Queue Length, Q <sub>95</sub> (veh)			2.7				1.6				0.4				0.0		
Control Delay (s/veh)			35.4				38.3				9.0				7.6		
Level of Service (LOS)			E				E				A				A		
Approach Delay (s/veh)		35.4				38.3				4.8				0.2			
Approach LOS		E				E				A				A			

# HCS7 Two-Way Stop-Control Report

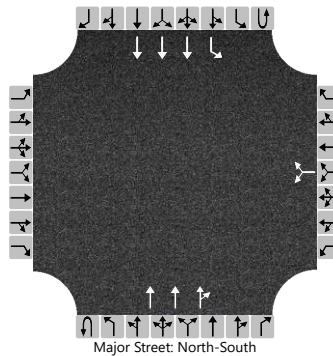
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2046
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	MeridianAve&EWashingtonSt
Jurisdiction	FDOT, District 7
East/West Street	Meridian Ave
North/South Street	E Washington St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0		0	3	0		0	1	3
Configuration							LR				T	TR		L	T	
Volume (veh/h)						80		205			1295	80	0	64	2351	
Percent Heavy Vehicles (%)						2		2					2	2		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type   Storage							Left Only								1	

## Critical and Follow-up Headways

Base Critical Headway (sec)						6.4		7.1							5.3	
Critical Headway (sec)						5.74		7.14							5.34	
Base Follow-Up Headway (sec)						3.8		3.9							3.1	
Follow-Up Headway (sec)						3.82		3.92							3.12	




















## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								300							67	
Capacity, c (veh/h)								179							237	
v/c Ratio								1.67							0.28	
95% Queue Length, Q <sub>95</sub> (veh)								67.0							1.2	
Control Delay (s/veh)								1282.5							26.2	
Level of Service (LOS)								F							D	
Approach Delay (s/veh)								1282.5							0.7	
Approach LOS								F								



HCM Signalized Intersection Capacity Analysis  
 114: Florida Ave & Channelside Dr

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  						 				
Traffic Volume (vph)	1169	2486	285	0	0	0	0	620	154	0	0	0
Future Volume (vph)	1169	2486	285	0	0	0	0	620	154	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0						5.7	5.7			
Lane Util. Factor	0.86	0.86						0.95	1.00			
Frt	1.00	0.99						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1522	4720						3539	1583			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1522	4720						3539	1583			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1271	2702	310	0	0	0	0	674	167	0	0	0
RTOR Reduction (vph)	10	14	0	0	0	0	0	0	17	0	0	0
Lane Group Flow (vph)	1032	3227	0	0	0	0	0	674	150	0	0	0
Turn Type	Split	NA						NA	Perm			
Protected Phases	6	6						4				
Permitted Phases									4			
Actuated Green, G (s)	93.0	93.0						35.3	35.3			
Effective Green, g (s)	93.0	93.0						35.3	35.3			
Actuated g/C Ratio	0.66	0.66						0.25	0.25			
Clearance Time (s)	6.0	6.0						5.7	5.7			
Vehicle Extension (s)	3.0	3.0						3.0	3.0			
Lane Grp Cap (vph)	1011	3135						892	399			
v/s Ratio Prot	0.68	c0.68						c0.19				
v/s Ratio Perm									0.09			
v/c Ratio	1.02	1.03						0.76	0.38			
Uniform Delay, d1	23.5	23.5						48.4	43.2			
Progression Factor	1.00	1.00						1.00	1.00			
Incremental Delay, d2	33.7	24.2						5.9	2.7			
Delay (s)	57.2	47.7						54.3	45.9			
Level of Service	E	D						D	D			
Approach Delay (s)		50.0			0.0			52.6			0.0	
Approach LOS		D			A			D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			50.4					HCM 2000 Level of Service			D	
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		11.7		
Intersection Capacity Utilization			128.1%					ICU Level of Service		H		
Analysis Period (min)			15									

c Critical Lane Group

# Queues

## 114: Florida Ave & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	NBT	NBR
Lane Group Flow (vph)	1042	3241	674	167
v/c Ratio	1.02	1.03	0.76	0.40
Control Delay	57.1	47.6	54.7	40.7
Queue Delay	0.0	28.9	0.0	0.8
Total Delay	57.1	76.5	54.7	41.5
Queue Length 50th (ft)	~1158	~1215	300	109
Queue Length 95th (ft)	#1465	#1292	374	182
Internal Link Dist (ft)		924	937	
Turn Bay Length (ft)				
Base Capacity (vph)	1020	3149	892	416
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	200	0	84
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.02	1.10	0.76	0.50
























### Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

## 115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBR2	NBT	NBR	SBL	SBT	SEL2	SEL	SER
Lane Configurations		 									 	
Traffic Volume (vph)	859	1692	88	1	781	262	7	1	35	323	811	17
Future Volume (vph)	859	1692	88	1	781	262	7	1	35	323	811	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	6.2		5.9	5.9	5.9	5.9	5.9	5.9		6.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.85	1.00	0.85	1.00	1.00		1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	1.00	0.95	1.00		0.95	
Satd. Flow (prot)	1770	3513		1770	1583	1863	1583	1770	1863		1772	
Flt Permitted	0.95	1.00		0.07	1.00	1.00	1.00	0.23	1.00		0.95	
Satd. Flow (perm)	1770	3513		122	1583	1863	1583	436	1863		1772	
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)	934	1839	96	1	849	285	8	1	38	351	882	18
RTOR Reduction (vph)	0	3	0	0	66	0	7	0	0	0	0	0
Lane Group Flow (vph)	934	1932	0	1	783	285	1	1	38	0	1251	0
Turn Type	pm+pt	NA		Perm	Perm	NA	Perm	Perm	NA	Prot	Prot	
Protected Phases	1	6				4			8	9	9	
Permitted Phases	6			2	2		4	8				
Actuated Green, G (s)	78.8	78.8		61.1	61.1	17.1	17.1	17.1	17.1		25.4	
Effective Green, g (s)	78.8	78.8		61.1	61.1	17.1	17.1	17.1	17.1		25.4	
Actuated g/C Ratio	0.56	0.56		0.44	0.44	0.12	0.12	0.12	0.12		0.18	
Clearance Time (s)	5.5	6.2		5.9	5.9	5.9	5.9	5.9	5.9		6.6	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0		4.5	
Lane Grp Cap (vph)	996	1977		53	690	227	193	53	227		321	
v/s Ratio Prot	0.08	c0.55				c0.15			0.02		c0.71	
v/s Ratio Perm	0.44			0.01	c0.49		0.00	0.00				
v/c Ratio	0.94	0.98		0.02	1.13	1.26	0.01	0.02	0.17		3.90	
Uniform Delay, d1	28.3	29.7		22.4	39.5	61.4	54.0	54.1	55.1		57.3	
Progression Factor	1.00	0.99		1.04	0.69	1.00	1.00	1.51	1.27		1.00	
Incremental Delay, d2	5.4	5.9		0.6	75.7	145.7	0.0	0.1	0.1		1311.2	
Delay (s)	33.9	35.5		23.8	103.1	207.2	54.0	81.5	70.0		1368.5	
Level of Service	C	D		C	F	F	D	F	E		F	
Approach Delay (s)		35.0				203.0			70.3		1368.5	
Approach LOS		C				F			E		F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			370.1			HCM 2000 Level of Service			F			
HCM 2000 Volume to Capacity ratio			1.76									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			23.9			
Intersection Capacity Utilization			147.5%			ICU Level of Service			H			
Analysis Period (min)			15									

c Critical Lane Group

Queues

115: Morgan St & Channelside Dr & Selmon Expy Off-Ramp

01/20/2022



Lane Group	EBL	EBT	WBL	WBR2	NBT	NBR	SBL	SBT	SEL
Lane Group Flow (vph)	934	1935	1	849	285	8	1	38	1251
v/c Ratio	0.93	0.98	0.02	1.12	1.26	0.03	0.02	0.17	3.90
Control Delay	33.4	35.6	25.0	94.6	194.2	0.1	82.0	70.7	1326.5
Queue Delay	47.3	41.5	0.0	5.0	9.7	0.0	0.0	0.0	2.0
Total Delay	80.7	77.0	25.0	99.6	203.9	0.1	82.0	70.7	1328.4
Queue Length 50th (ft)	485	633	0	~380	~324	0	1	29	~2060
Queue Length 95th (ft)	m455	m576	m0	#1091	#509	0	m1	m29	#2325
Internal Link Dist (ft)		523			969			424	319
Turn Bay Length (ft)				10			100		
Base Capacity (vph)	1005	1980	52	756	227	297	53	227	321
Starvation Cap Reductn	123	222	0	0	0	0	0	0	0
Spillback Cap Reductn	394	368	0	358	98	0	0	0	49
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.53	1.20	0.02	2.13	2.21	0.03	0.02	0.17	4.60

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 116: Channelside Dr & Jefferson St

01/20/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↙	↘
Traffic Volume (veh/h)	260	2252	650	14	7	132
Future Volume (veh/h)	260	2252	650	14	7	132
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	283	2448	707	15	8	143
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	639	1470	1277	27	235	209
Arrive On Green	0.01	0.26	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1781	1870	1825	39	1781	1585
Grp Volume(v), veh/h	283	2448	0	722	8	143
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1863	1781	1585
Q Serve(g_s), s	5.9	110.0	0.0	0.0	0.5	12.0
Cycle Q Clear(g_c), s	5.9	110.0	0.0	0.0	0.5	12.0
Prop In Lane	1.00			0.02	1.00	1.00
Lane Grp Cap(c), veh/h	639	1470	0	1304	235	209
V/C Ratio(X)	0.44	1.67	0.00	0.55	0.03	0.68
Avail Cap(c_a), veh/h	639	1470	0	1304	235	209
HCM Platoon Ratio	0.33	0.33	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.00	0.71	0.64	0.64
Uniform Delay (d), s/veh	5.0	51.8	0.0	0.0	53.0	58.0
Incr Delay (d2), s/veh	0.2	299.9	0.0	1.2	0.2	11.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	177.2	0.0	0.4	0.3	5.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.2	351.7	0.0	1.2	53.1	68.9
LnGrp LOS	A	F	A	A	D	E
Approach Vol, veh/h		2731	722		151	
Approach Delay, s/veh		315.8	1.2		68.1	
Approach LOS		F	A		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	12.0	104.0			116.0	24.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	6.0	98.0			110.0	18.5
Max Q Clear Time (g_c+I1), s	7.9	2.0			112.0	14.0
Green Ext Time (p_c), s	0.0	5.7			0.0	0.2

Intersection Summary

HCM 6th Ctrl Delay	242.4
HCM 6th LOS	F



# Queues

## 116: Channelside Dr & Jefferson St

01/20/2022



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	283	2448	722	8	143
v/c Ratio	0.60	1.67	0.56	0.03	0.43
Control Delay	9.6	328.8	1.9	50.7	38.3
Queue Delay	28.5	1.5	0.4	0.0	1.8
Total Delay	38.1	330.3	2.2	50.7	40.1
Queue Length 50th (ft)	76	~3220	17	7	102
Queue Length 95th (ft)	m56	m#2183	34	m11	m150
Internal Link Dist (ft)		315	140	434	
Turn Bay Length (ft)				100	
Base Capacity (vph)	470	1463	1300	233	333
Starvation Cap Reductn	188	429	160	0	0
Spillback Cap Reductn	0	452	191	0	87
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.00	2.42	0.65	0.03	0.58

### Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 117: Channelside Dr & Nebraska Ave

01/20/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↙	↘
Traffic Volume (veh/h)	532	1727	625	65	8	39
Future Volume (veh/h)	532	1727	625	65	8	39
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	578	1877	679	71	9	42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	433	1470	1035	108	37	173
Arrive On Green	0.24	1.00	0.21	0.21	0.13	0.13
Sat Flow, veh/h	1781	1870	1665	174	281	1309
Grp Volume(v), veh/h	578	1877	0	750	52	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1839	1621	0
Q Serve(g_s), s	17.0	0.0	0.0	52.4	4.0	0.0
Cycle Q Clear(g_c), s	17.0	0.0	0.0	52.4	4.0	0.0
Prop In Lane	1.00			0.09	0.17	0.81
Lane Grp Cap(c), veh/h	433	1470	0	1143	214	0
V/C Ratio(X)	1.33	1.28	0.00	0.66	0.24	0.00
Avail Cap(c_a), veh/h	433	1470	0	1143	214	0
HCM Platoon Ratio	2.00	2.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.00	0.76	0.74	0.00
Uniform Delay (d), s/veh	42.5	0.0	0.0	41.9	54.5	0.0
Incr Delay (d2), s/veh	151.7	125.3	0.0	2.3	2.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	30.0	51.1	0.0	26.5	1.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	194.2	125.3	0.0	44.2	56.5	0.0
LnGrp LOS	F	F	A	D	E	A
Approach Vol, veh/h		2455	750		52	
Approach Delay, s/veh		141.5	44.2		56.5	
Approach LOS		F	D		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	23.0	93.0			116.0	24.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	17.0	87.0			110.0	18.5
Max Q Clear Time (g_c+I1), s	19.0	54.4			2.0	6.0
Green Ext Time (p_c), s	0.0	5.7			98.0	0.1

Intersection Summary

HCM 6th Ctrl Delay	117.7
HCM 6th LOS	F

# Queues

## 117: Channelside Dr & Nebraska Ave

01/20/2022



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	578	1877	750	51
v/c Ratio	1.10	1.28	0.66	0.20
Control Delay	75.2	145.0	16.1	34.7
Queue Delay	6.4	1.4	54.6	0.0
Total Delay	81.7	146.3	70.7	34.7
Queue Length 50th (ft)	~321	~2227	219	15
Queue Length 95th (ft)	m21	m228	438	m16
Internal Link Dist (ft)		140	194	464
Turn Bay Length (ft)	80			
Base Capacity (vph)	524	1463	1145	253
Starvation Cap Reductn	203	419	240	0
Spillback Cap Reductn	246	390	688	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	2.08	1.80	1.64	0.20

### Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 119: Old Water St & Channelside Dr

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	31	1628	76	12	532	175	98	39	117	62	9	60
Future Volume (veh/h)	31	1628	76	12	532	175	98	39	117	62	9	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	34	1770	83	13	578	190	107	42	127	67	10	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	369	1260	59	325	1121	369	159	51	153	80	27	173
Arrive On Green	0.04	0.71	0.71	0.10	0.56	0.56	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1781	1772	83	1781	1348	443	1325	409	1238	1216	216	1402
Grp Volume(v), veh/h	34	0	1853	13	0	768	107	0	169	67	0	75
Grp Sat Flow(s),veh/h/ln	1781	0	1855	1781	0	1791	1325	0	1648	1216	0	1618
Q Serve(g_s), s	0.9	0.0	99.5	0.0	0.0	37.3	11.3	0.0	14.0	3.3	0.0	6.0
Cycle Q Clear(g_c), s	0.9	0.0	99.5	0.0	0.0	37.3	17.3	0.0	14.0	17.3	0.0	6.0
Prop In Lane	1.00		0.04	1.00		0.25	1.00		0.75	1.00		0.87
Lane Grp Cap(c), veh/h	369	0	1319	325	0	1490	159	0	204	80	0	200
V/C Ratio(X)	0.09	0.00	1.41	0.04	0.00	0.52	0.67	0.00	0.83	0.84	0.00	0.38
Avail Cap(c_a), veh/h	369	0	1319	325	0	1490	159	0	204	80	0	200
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.00	0.09	0.41	0.00	0.41	1.00	0.00	1.00	0.57	0.00	0.57
Uniform Delay (d), s/veh	13.1	0.0	20.3	53.2	0.0	13.4	64.3	0.0	59.9	69.3	0.0	56.4
Incr Delay (d2), s/veh	0.0	0.0	182.8	0.1	0.0	0.5	20.6	0.0	30.8	42.2	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	103.0	0.4	0.0	16.3	4.8	0.0	7.7	3.4	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	0.0	203.0	53.2	0.0	14.0	84.9	0.0	90.7	111.5	0.0	59.4
LnGrp LOS	B	A	F	D	A	B	F	A	F	F	A	E
Approach Vol, veh/h		1887			781			276				142
Approach Delay, s/veh		199.6			14.6			88.5				84.0
Approach LOS		F			B			F				F
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.0	123.5		23.0	28.5	106.0		23.0				
Change Period (Y+Rc), s	6.0	6.5		* 5.7	6.5	* 6.5		* 5.7				
Max Green Setting (Gmax), s	5.0	99.5		* 17	5.0	* 1E2		* 17				
Max Q Clear Time (g_c+I1), s	2.9	39.3		19.3	2.0	101.5		19.3				
Green Ext Time (p_c), s	0.0	6.5		0.0	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	137.5
HCM 6th LOS	F

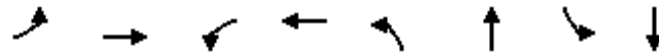
Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

119: Old Water St & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	1853	13	768	107	169	67	75
v/c Ratio	0.09	1.41	0.11	0.60	0.66	0.61	0.75	0.29
Control Delay	7.6	204.9	4.2	4.3	78.5	38.2	59.4	7.2
Queue Delay	0.0	3.4	0.0	1.1	4.4	113.7	658.9	0.4
Total Delay	7.6	208.4	4.2	5.4	82.9	151.9	718.2	7.6
Queue Length 50th (ft)	10	~2260	1	54	94	71	65	33
Queue Length 95th (ft)	m8	m#1485	m2	m80	#175	151	m85	m34
Internal Link Dist (ft)		194		425		945		461
Turn Bay Length (ft)	80		100				150	
Base Capacity (vph)	388	1315	116	1283	162	279	89	257
Starvation Cap Reductn	0	210	0	249	0	0	0	0
Spillback Cap Reductn	5	644	0	276	20	247	89	36
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	2.76	0.11	0.76	0.75	5.28	67.00	0.34

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



HCM Signalized Intersection Capacity Analysis  
 118: Beneficial Dr/Meridian Ave & Channelside Dr

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1045	681	80	110	314	107	200	552	135	100	367	205
Future Volume (vph)	1045	681	80	110	314	107	200	552	135	100	367	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.2		6.2	6.2		6.4	6.4	6.4	6.4	6.4	6.4
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1833		1770	1792		1770	1863	1583	1770	1863	1583
Flt Permitted	0.21	1.00		0.29	1.00		0.11	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	391	1833		532	1792		212	1863	1583	229	1863	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)	1136	740	87	120	341	116	217	600	147	109	399	223
RTOR Reduction (vph)	0	3	0	0	9	0	0	0	99	0	0	158
Lane Group Flow (vph)	1136	824	0	120	448	0	217	600	48	109	399	65
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2		7	4			8	
Permitted Phases	6			2			4		4	8		8
Actuated Green, G (s)	81.8	81.8		47.8	47.8		45.6	45.6	45.6	32.6	32.6	32.6
Effective Green, g (s)	81.8	81.8		47.8	47.8		45.6	45.6	45.6	32.6	32.6	32.6
Actuated g/C Ratio	0.58	0.58		0.34	0.34		0.33	0.33	0.33	0.23	0.23	0.23
Clearance Time (s)	6.0	6.2		6.2	6.2		6.4	6.4	6.4	6.4	6.4	6.4
Vehicle Extension (s)	2.0	3.0		3.0	3.0		2.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	504	1070		181	611		142	606	515	53	433	368
v/s Ratio Prot	c0.45	0.45			0.25		c0.07	0.32			0.21	
v/s Ratio Perm	c0.86			0.23			0.42		0.03	c0.48		0.04
v/c Ratio	2.25	0.77		0.66	0.73		1.53	0.99	0.09	2.06	0.92	0.18
Uniform Delay, d1	31.1	22.0		39.2	40.5		43.4	47.0	32.8	53.7	52.4	43.0
Progression Factor	1.51	0.94		1.00	1.00		1.00	1.00	1.00	1.53	1.52	5.69
Incremental Delay, d2	564.9	0.5		17.5	7.6		270.0	34.2	0.4	515.4	20.3	0.7
Delay (s)	611.7	21.2		56.8	48.2		313.4	81.2	33.2	597.5	100.1	245.3
Level of Service	F	C		E	D		F	F	C	F	F	F
Approach Delay (s)		362.9			49.9			126.1			218.6	
Approach LOS		F			D			F			F	

Intersection Summary

HCM 2000 Control Delay	241.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.22		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	139.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues

118: Beneficial Dr/Meridian Ave & Channelside Dr

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	1136	827	120	457	217	600	147	109	399	223
v/c Ratio	2.25	0.77	0.66	0.74	1.53	0.99	0.24	2.06	0.92	0.42
Control Delay	587.5	21.7	59.0	47.7	299.5	81.0	6.0	549.4	98.4	43.9
Queue Delay	0.0	50.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	587.5	72.3	59.0	47.7	299.5	81.0	6.0	549.4	98.4	43.9
Queue Length 50th (ft)	~1533	361	93	356	~220	544	0	~159	386	142
Queue Length 95th (ft)	m#991	m272	#187	491	#391	#795	49	m#217	m#513	m183
Internal Link Dist (ft)		425		125		927			460	
Turn Bay Length (ft)	150		150				400	200		
Base Capacity (vph)	504	1073	181	620	142	606	614	53	433	526
Starvation Cap Reductn	0	362	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.25	1.16	0.66	0.74	1.53	0.99	0.24	2.06	0.92	0.42

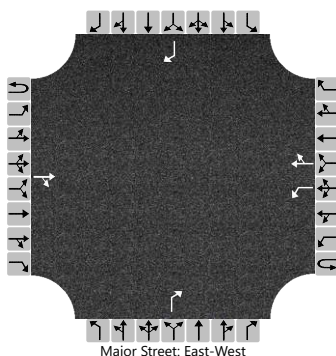
Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	H.W. Lochner	Intersection	ChannelsideDr&12thSt
Agency/Co.		Jurisdiction	FDOT, District 7
Date Performed	09/24/2021	East/West Street	Channelside Dr
Analysis Year	2046	North/South Street	12th St
Time Analyzed	PM Peak Hour	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	1.00
Project Description	Whiting PD&E Study		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	1	1	0		0	0	1		0	0	1
Configuration				TR		L		TR				R				R
Volume (veh/h)			777	139		17	390	25				163				141
Percent Heavy Vehicles (%)						2						2				2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized										No				No		
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)					4.1							6.2				6.2
Critical Headway (sec)					4.12							6.22				6.22
Base Follow-Up Headway (sec)					2.2							3.3				3.3
Follow-Up Headway (sec)					2.22							3.32				3.32

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					18							172				148
Capacity, c (veh/h)					714							341				630
v/c Ratio					0.03							0.50				0.24
95% Queue Length, Q <sub>95</sub> (veh)					0.1							2.9				0.9
Control Delay (s/veh)					10.2							26.1				12.5
Level of Service (LOS)					B							D				B
Approach Delay (s/veh)					0.4				26.1				12.5			
Approach LOS									D				B			

# MOVEMENT SUMMARY

**Site: 8 [Channelside Drive at Cumberland Avenue\_NB2046-PM  
(Site Folder: General)]**

No-Build 2046 Year -  
PM Peak Hour  
Site Category: (None)  
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[ Total veh/h	HV %	[ Total veh/h	HV %				[ Veh. veh	Dist ] ft				
South: Channelside Drive														
3	L2	123	2.0	129	2.0	0.814	18.6	LOS C	21.5	545.1	0.81	0.80	1.31	31.4
8	T1	783	2.0	824	2.0	0.814	18.6	LOS C	21.5	545.1	0.81	0.80	1.31	31.9
18	R2	25	2.0	26	2.0	0.814	18.6	LOS C	21.5	545.1	0.81	0.80	1.31	31.0
Approach		931	2.0	980	2.0	0.814	18.6	LOS C	21.5	545.1	0.81	0.80	1.31	31.8
East: E Cumberland Avenue														
1	L2	20	2.0	21	2.0	0.206	8.8	LOS A	0.7	18.3	0.64	0.64	0.64	36.9
6	T1	5	2.0	5	2.0	0.206	8.8	LOS A	0.7	18.3	0.64	0.64	0.64	34.4
16	R2	89	2.0	94	2.0	0.206	8.8	LOS A	0.7	18.3	0.64	0.64	0.64	34.2
Approach		114	2.0	120	2.0	0.206	8.8	LOS A	0.7	18.3	0.64	0.64	0.64	34.7
North: Channelside Drive														
7	L2	35	2.0	37	2.0	0.384	6.7	LOS A	2.0	50.7	0.36	0.23	0.36	37.0
4	T1	409	2.0	431	2.0	0.384	6.7	LOS A	2.0	50.7	0.36	0.23	0.36	38.7
14	R2	266	2.0	280	2.0	0.245	5.4	LOS A	1.1	28.1	0.32	0.20	0.32	34.2
Approach		710	2.0	747	2.0	0.384	6.2	LOS A	2.0	50.7	0.35	0.22	0.35	36.9
West: E Cumberland Avenue														
5	L2	46	2.0	48	2.0	0.159	5.5	LOS A	0.6	15.2	0.49	0.43	0.49	34.7
2	T1	78	2.0	82	2.0	0.159	5.5	LOS A	0.6	15.2	0.49	0.43	0.49	34.5
12	R2	14	2.0	15	2.0	0.159	5.5	LOS A	0.6	15.2	0.49	0.43	0.49	33.4
Approach		138	2.0	145	2.0	0.159	5.5	LOS A	0.6	15.2	0.49	0.43	0.49	34.4
All Vehicles		1893	2.0	1993	2.0	0.814	12.4	LOS B	21.5	545.1	0.60	0.55	0.85	33.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# HCS7 Two-Way Stop-Control Report

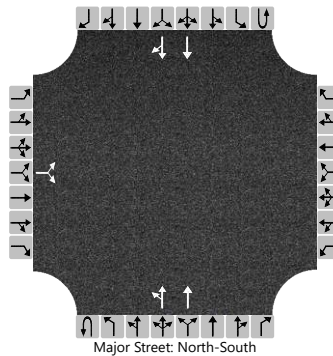
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2046
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	ChannelsideDr&E WhitingSt
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Channelside Dr
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	0	0		0	2	0		0	2	0	
Configuration			LR							LT	T				T	TR	
Volume (veh/h)		8		1						59	859				709	72	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways




















Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.84		6.94						4.14						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			9							62								
Capacity, c (veh/h)			129							803								
v/c Ratio			0.07							0.08								
95% Queue Length, Q <sub>95</sub> (veh)			0.2							0.3								
Control Delay (s/veh)			35.0							9.9								
Level of Service (LOS)			E							A								
Approach Delay (s/veh)		35.0									1.3							
Approach LOS		E																

HCM Signalized Intersection Capacity Analysis  
 130: Channelside Dr & E Washington St/E York St

01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	84	5	19	5	175	5	862	3	32	747	37
Future Volume (vph)	20	84	5	19	5	175	5	862	3	32	747	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.9			8.4	8.4	6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.99			1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.99			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1835			1790	1583	1770	3538		1770	3514	
Flt Permitted		0.20			0.69	1.00	0.33	1.00		0.95	1.00	
Satd. Flow (perm)		376			1283	1583	618	3538		1770	3514	
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)	22	91	5	21	5	190	5	937	3	35	812	40
RTOR Reduction (vph)	0	1	0	0	0	177	0	0	0	0	2	0
Lane Group Flow (vph)	0	117	0	0	26	13	5	940	0	35	850	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Prot	NA	
Protected Phases		4			3			2		1	1	2
Permitted Phases	4			3		3	2					
Actuated Green, G (s)		23.1			9.8	9.8	62.3	62.3		18.5	86.8	
Effective Green, g (s)		23.1			9.8	9.8	62.3	62.3		18.5	86.8	
Actuated g/C Ratio		0.17			0.07	0.07	0.44	0.44		0.13	0.62	
Clearance Time (s)		5.9			8.4	8.4	6.0	6.0		6.0		
Vehicle Extension (s)		2.0			4.0	4.0	3.0	3.0		2.0		
Lane Grp Cap (vph)		62			89	110	275	1574		233	2178	
v/s Ratio Prot								c0.27		0.02	c0.24	
v/s Ratio Perm		c0.31			c0.02	0.01	0.01					
v/c Ratio		1.89			0.29	0.12	0.02	0.60		0.15	0.39	
Uniform Delay, d1		58.5			61.8	61.1	21.7	29.4		53.8	13.3	
Progression Factor		0.98			1.00	1.00	1.00	1.00		1.07	1.59	
Incremental Delay, d2		433.9			2.5	0.7	0.1	1.7		0.1	0.0	
Delay (s)		491.2			64.3	61.7	21.9	31.0		57.8	21.3	
Level of Service		F			E	E	C	C		E	C	
Approach Delay (s)		491.2			62.0			31.0			22.7	
Approach LOS		F			E			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			55.8		HCM 2000 Level of Service					E		
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			140.0		Sum of lost time (s)					26.3		
Intersection Capacity Utilization			57.5%		ICU Level of Service					B		
Analysis Period (min)			15									
c Critical Lane Group												



Queues

130: Channelside Dr & E Washington St/E York St

01/20/2022


























Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	118	26	190	5	940	35	852
v/c Ratio	1.90	0.29	0.66	0.02	0.60	0.15	0.39
Control Delay	470.2	68.4	19.4	23.6	31.8	59.5	22.3
Queue Delay	0.5	0.0	0.1	0.0	0.1	0.0	0.0
Total Delay	470.7	68.4	19.4	23.6	31.9	59.5	22.3
Queue Length 50th (ft)	~165	23	0	3	346	34	187
Queue Length 95th (ft)	m#213	54	75	12	418	m52	267
Internal Link Dist (ft)	922	976			474		596
Turn Bay Length (ft)			430	160		280	
Base Capacity (vph)	62	197	404	274	1573	233	2179
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	1	0	6	0	48	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.93	0.13	0.48	0.02	0.62	0.15	0.39

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 129: Channelside Dr & Kennedy Blvd

01/20/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	838	23	37	26	34	74	113	937	8	41	726	425	
Future Volume (vph)	838	23	37	26	34	74	113	937	8	41	726	425	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3	
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00	
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85	
Flt Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1681	1690	1583		1823	1583	1770	3535		1770	3539	1583	
Flt Permitted	0.95	0.95	1.00		0.64	1.00	0.18	1.00		0.09	1.00	1.00	
Satd. Flow (perm)	1681	1690	1583		1197	1583	341	3535		163	3539	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	911	25	40	28	37	80	123	1018	9	45	789	462	
RTOR Reduction (vph)	0	0	24	0	0	73	0	1	0	0	0	311	
Lane Group Flow (vph)	465	471	16	0	65	7	123	1026	0	45	789	151	
Turn Type	Split	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm	
Protected Phases	3	3			1			2			2		
Permitted Phases			3	1		1	2			2		2	
Actuated Green, G (s)	54.7	54.7	54.7		12.1	12.1	45.7	45.7		45.7	45.7	45.7	
Effective Green, g (s)	54.7	54.7	54.7		12.1	12.1	45.7	45.7		45.7	45.7	45.7	
Actuated g/C Ratio	0.39	0.39	0.39		0.09	0.09	0.33	0.33		0.33	0.33	0.33	
Clearance Time (s)	6.3	6.3	6.3		6.8	6.8	6.3	6.3		6.3	6.3	6.3	
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)	656	660	618		103	136	111	1153		53	1155	516	
v/s Ratio Prot	0.28	c0.28						0.29				0.22	
v/s Ratio Perm			0.01		c0.05	0.00	c0.36			0.28		0.10	
v/c Ratio	0.71	0.71	0.03		0.63	0.05	1.11	0.89		0.85	0.68	0.29	
Uniform Delay, d1	35.9	36.0	26.2		61.8	58.7	47.1	44.8		43.9	40.9	35.1	
Progression Factor	1.00	1.00	1.00		1.00	1.00	0.59	0.59		1.00	1.00	1.00	
Incremental Delay, d2	6.4	6.5	0.1		11.9	0.2	108.5	8.6		84.9	3.3	1.4	
Delay (s)	42.3	42.5	26.3		73.7	58.8	136.3	35.1		128.8	44.2	36.5	
Level of Service	D	D	C		E	E	F	D		F	D	D	
Approach Delay (s)		41.7			65.5			45.9			44.4		
Approach LOS		D			E			D			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			45.0		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			0.83										
Actuated Cycle Length (s)			140.0		Sum of lost time (s)						22.4		
Intersection Capacity Utilization			84.9%		ICU Level of Service						E		
Analysis Period (min)			15										

c Critical Lane Group

Queues

129: Channelside Dr & Kennedy Blvd

01/20/2022



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	465	471	40	65	80	123	1027	45	789	462
v/c Ratio	0.71	0.71	0.06	0.62	0.35	1.11	0.89	0.85	0.68	0.56
Control Delay	43.1	43.3	0.2	86.6	10.8	139.3	35.6	132.7	44.5	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	43.3	0.2	86.6	10.8	139.3	35.6	132.7	44.5	5.7
Queue Length 50th (ft)	372	378	0	58	0	~108	492	38	327	0
Queue Length 95th (ft)	514	521	0	109	36	m#219	m583	#121	401	81
Internal Link Dist (ft)		903		909			596		1256	
Turn Bay Length (ft)			140			280		75		375
Base Capacity (vph)	656	660	680	130	259	111	1154	53	1155	827
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.71	0.06	0.50	0.31	1.11	0.89	0.85	0.68	0.56

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.













Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

# HCM Signalized Intersection Capacity Analysis

109: Florida Ave & Brorein St

01/20/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑↑↑↑		↘	↑↑↑↑					
Traffic Volume (vph)	0	0	0	0	2599	245	299	2332	0	0	0	0	
Future Volume (vph)	0	0	0	0	2599	245	299	2332	0	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					5.8		6.1	6.1					
Lane Util. Factor					0.86		1.00	0.91					
Frt					0.99		1.00	1.00					
Flt Protected					1.00		0.95	1.00					
Satd. Flow (prot)					6325		1770	5085					
Flt Permitted					1.00		0.95	1.00					
Satd. Flow (perm)					6325		1770	5085					
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	0	0	0	2825	266	325	2535	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	11	0	23	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	3080	0	302	2535	0	0	0	0	
Turn Type					NA		Perm	NA					
Protected Phases					2			4					
Permitted Phases							4						
Actuated Green, G (s)					54.2		68.9	68.9					
Effective Green, g (s)					54.2		68.9	68.9					
Actuated g/C Ratio					0.39		0.49	0.49					
Clearance Time (s)					5.8		6.1	6.1					
Vehicle Extension (s)					3.0		3.0	3.0					
Lane Grp Cap (vph)					2448		871	2502					
v/s Ratio Prot					c0.49			c0.50					
v/s Ratio Perm							0.17						
v/c Ratio					1.26		0.35	1.01					
Uniform Delay, d1					42.9		21.8	35.5					
Progression Factor					1.00		0.88	0.86					
Incremental Delay, d2					119.7		0.8	19.2					
Delay (s)					162.6		20.0	49.7					
Level of Service					F		B	D					
Approach Delay (s)		0.0			162.6			46.3			0.0		
Approach LOS		A			F			D			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			106.7		HCM 2000 Level of Service				F				
HCM 2000 Volume to Capacity ratio			1.10										
Actuated Cycle Length (s)			140.0		Sum of lost time (s)				14.9				
Intersection Capacity Utilization			96.7%		ICU Level of Service				F				
Analysis Period (min)			15										
c Critical Lane Group													

# Queues

## 109: Florida Ave & Brorein St

01/20/2022



Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	3091	325	2535
v/c Ratio	1.26	0.36	1.01
Control Delay	155.8	17.5	49.8
Queue Delay	0.4	0.0	17.5
Total Delay	156.2	17.5	67.3
Queue Length 50th (ft)	~1024	134	~723
Queue Length 95th (ft)	#1084	m183	m#912
Internal Link Dist (ft)	416		237
Turn Bay Length (ft)			
Base Capacity (vph)	2459	893	2502
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	369	0	112
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.48	0.36	1.06

### Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/20/2022



Movement	WBL	WBT	NBL	NBT	NBR2	SBL	SBT	SBR	SWR	SWR2
Lane Configurations		↕↕	↙	↕	↙	↙	↘		↙	↙
Traffic Volume (vph)	4	1659	768	587	889	404	27	783	1099	230
Future Volume (vph)	4	1659	768	587	889	404	27	783	1099	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.5	6.0	6.0	5.5	6.0		5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt		1.00	1.00	1.00	0.85	1.00	0.85		1.00	0.85
Flt Protected		1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00
Satd. Flow (prot)		3539	1770	1863	1583	1770	1593		1863	1583
Flt Permitted		1.00	0.06	1.00	1.00	0.26	1.00		1.00	1.00
Satd. Flow (perm)		3539	107	1863	1583	481	1593		1863	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
Adj. Flow (vph)	4	1803	835	638	966	439	29	851	1195	250
RTOR Reduction (vph)	0	0	0	0	55	0	0	0	0	73
Lane Group Flow (vph)	0	1807	835	638	911	439	880	0	1195	177
Turn Type	Perm	NA	pm+pt	NA	Perm	pm+pt	NA		Prot	Perm
Protected Phases		2!	7	4		3	8		2!	
Permitted Phases	2		4		4	8				2
Actuated Green, G (s)		46.3	82.0	71.0	71.0	69.5	64.0		46.3	46.3
Effective Green, g (s)		46.3	82.0	71.0	71.0	69.5	64.0		46.3	46.3
Actuated g/C Ratio		0.33	0.59	0.51	0.51	0.50	0.46		0.33	0.33
Clearance Time (s)		5.7	5.5	6.0	6.0	5.5	6.0		5.7	5.7
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1170	211	944	802	289	728		616	523
v/s Ratio Prot			c0.35	0.34		0.06	0.55		c0.64	
v/s Ratio Perm		0.51	c1.96		0.58	0.69				0.11
v/c Ratio		1.54	3.96	0.68	1.14	1.52	1.21		1.94	0.34
Uniform Delay, d1		46.9	47.0	25.9	34.5	39.1	38.0		46.9	35.3
Progression Factor		0.54	0.88	1.03	1.05	0.98	0.99		1.00	1.00
Incremental Delay, d2		245.4	1331.8	0.4	63.0	245.7	103.1		428.9	1.8
Delay (s)		270.8	1373.2	26.9	99.3	284.2	140.6		475.8	37.1
Level of Service		F	F	C	F	F	F		F	D
Approach Delay (s)		270.8		516.5			188.4			
Approach LOS		F		F			F			

Intersection Summary

HCM 2000 Control Delay	367.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	3.28		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	225.5%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Queues

110: Morgan St & Brorein St & Selmon Expy Off-Ramp

01/20/2022



Lane Group	WBT	NBL	NBT	NBR2	SBL	SBT	SWR	SWR2
Lane Group Flow (vph)	1807	835	638	966	439	880	1195	250
v/c Ratio	1.54	3.94	0.68	1.13	1.51	1.21	1.94	0.42
Control Delay	269.7	1337.0	27.5	89.7	265.9	137.3	456.3	22.3
Queue Delay	0.2	0.0	53.7	2.9	0.0	1.0	0.0	0.0
Total Delay	269.9	1337.0	81.3	92.5	265.9	138.3	456.3	22.3
Queue Length 50th (ft)	~1210	~1334	478	~971	~389	~985	~1676	97
Queue Length 95th (ft)	m#852	m#1116	m405	m685	m#518	m#1111	#1941	177
Internal Link Dist (ft)	507		424			563		
Turn Bay Length (ft)		250		10				
Base Capacity (vph)	1170	212	944	857	291	728	616	596
Starvation Cap Reductn	53	0	454	304	0	103	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.62	3.94	1.30	1.75	1.51	1.41	1.94	0.42

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

# HCM 6th Signalized Intersection Summary

## 111: Jefferson St & Brorein St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕	↗	↖	↕	↗	↖	↗	↖
Traffic Volume (veh/h)	720	565	28	3	1190	674	174	299	689	99	195	299
Future Volume (veh/h)	720	565	28	3	1190	674	174	299	689	99	195	299
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	783	614	30	3	1293	733	189	325	749	108	212	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	439	1166	57	368	911	471	215	296	264	147	298	
Arrive On Green	0.22	0.66	0.66	0.80	0.80	0.80	0.06	0.17	0.17	0.02	0.05	0.00
Sat Flow, veh/h	1781	1768	86	786	2266	1171	1781	1777	1585	1781	1870	1585
Grp Volume(v), veh/h	783	0	644	3	987	1039	189	325	749	108	212	0
Grp Sat Flow(s),veh/h/ln	1781	0	1855	786	1777	1660	1781	1777	1585	1781	1870	1585
Q Serve(g_s), s	30.5	0.0	25.4	0.1	56.3	56.3	8.5	23.3	23.3	7.1	15.6	0.0
Cycle Q Clear(g_c), s	30.5	0.0	25.4	0.1	56.3	56.3	8.5	23.3	23.3	7.1	15.6	0.0
Prop In Lane	1.00		0.05	1.00		0.71	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	439	0	1223	368	715	667	215	296	264	147	298	
V/C Ratio(X)	1.78	0.00	0.53	0.01	1.38	1.56	0.88	1.10	2.84	0.74	0.71	
Avail Cap(c_a), veh/h	439	0	1223	368	715	667	215	296	264	147	298	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(l)	0.09	0.00	0.09	0.49	0.49	0.49	0.77	0.77	0.77	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.0	0.0	12.4	8.2	13.7	13.7	53.8	58.4	58.4	49.8	63.2	0.0
Incr Delay (d2), s/veh	352.6	0.0	0.1	0.0	176.0	254.2	29.9	75.3	835.7	27.6	13.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	58.4	0.0	10.3	0.0	41.6	53.4	4.4	16.7	70.6	4.4	9.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	399.5	0.0	12.6	8.2	189.7	267.9	83.7	133.7	894.1	77.4	76.7	0.0
LnGrp LOS	F	A	B	A	F	F	F	F	F	E	E	
Approach Vol, veh/h		1427			2029			1263			320	A
Approach Delay, s/veh		224.9			229.4			577.1			76.9	
Approach LOS		F			F			F			E	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	36.0	62.0	13.0	29.0		98.0	14.0	28.0				
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 5.7		* 5.7	5.5	* 5.7				
Max Green Setting (Gmax), s	30.5	* 56	7.5	* 23		* 92	8.5	* 22				
Max Q Clear Time (g_c+I1), s	32.5	58.3	9.1	25.3		27.4	10.5	17.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0		5.3	0.0	0.4				

### Intersection Summary

HCM 6th Ctrl Delay	305.6
HCM 6th LOS	F

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Queues

111: Jefferson St & Brorein St

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	783	644	3	2026	189	1074	108	212	325
v/c Ratio	1.78	0.53	0.01	1.44	0.90	1.42dr	0.73	0.72	0.62
Control Delay	381.7	3.2	34.0	232.8	84.4	198.8	64.7	71.9	13.8
Queue Delay	0.0	55.8	0.0	3.4	0.0	0.5	0.0	0.0	1.2
Total Delay	381.7	59.0	34.0	236.2	84.4	199.3	64.7	71.9	14.9
Queue Length 50th (ft)	~1006	93	2	~1290	140	~543	88	198	32
Queue Length 95th (ft)	m#746	m67	m2	m#1309	#218	#680	m115	m256	m82
Internal Link Dist (ft)		507		143		434		68	
Turn Bay Length (ft)	150		50		100		50		
Base Capacity (vph)	439	1221	314	1403	210	790	148	296	525
Starvation Cap Reductn	0	502	0	291	0	0	0	0	0
Spillback Cap Reductn	0	800	0	699	0	67	0	0	67
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.78	1.53	0.01	2.88	0.90	1.49	0.73	0.72	0.71

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM 6th Signalized Intersection Summary  
 112: Nebraska Ave & Brorein St/Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕			↕			↕	
Traffic Volume (veh/h)	182	937	234	29	1382	41	211	23	549	10	72	274
Future Volume (veh/h)	182	937	234	29	1382	41	211	23	549	10	72	274
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	198	1018	254	32	1502	45	229	25	597	11	78	298
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	234	787	196	63	1920	57	137	11	273	35	137	487
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	334	1445	361	435	3523	105	280	31	731	22	368	1304
Grp Volume(v), veh/h	198	0	1272	32	756	791	851	0	0	387	0	0
Grp Sat Flow(s),veh/h/ln	334	0	1805	435	1777	1851	1041	0	0	1694	0	0
Q Serve(g_s), s	76.3	0.0	72.5	3.8	0.0	0.0	25.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	76.3	0.0	72.5	76.3	0.0	0.0	52.3	0.0	0.0	27.0	0.0	0.0
Prop In Lane	1.00		0.20	1.00		0.06	0.27		0.70	0.03		0.77
Lane Grp Cap(c), veh/h	234	0	984	63	968	1009	422	0	0	659	0	0
V/C Ratio(X)	0.85	0.00	1.29	0.51	0.78	0.78	2.02	0.00	0.00	0.59	0.00	0.00
Avail Cap(c_a), veh/h	234	0	984	63	968	1009	422	0	0	659	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.00	0.81	0.64	0.64	0.64	0.09	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.0	0.0	0.0	37.4	0.0	0.0	49.6	0.0	0.0	35.9	0.0	0.0
Incr Delay (d2), s/veh	25.3	0.0	138.0	17.3	4.1	4.0	458.9	0.0	0.0	3.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	37.7	1.4	1.1	1.1	69.0	0.0	0.0	11.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.3	0.0	138.0	54.7	4.1	4.0	508.5	0.0	0.0	39.7	0.0	0.0
LnGrp LOS	C	A	F	D	A	A	F	A	A	D	A	A
Approach Vol, veh/h		1470			1579			851				387
Approach Delay, s/veh		123.2			5.1			508.5				39.7
Approach LOS		F			A			F				D
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		82.0		58.0		82.0		58.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7		* 5.7				
Max Green Setting (Gmax), s		* 76		* 52		* 76		* 52				
Max Q Clear Time (g_c+I1), s		78.3		54.3		78.3		29.0				
Green Ext Time (p_c), s		0.0		0.0		0.0		2.9				

Intersection Summary

HCM 6th Ctrl Delay	148.6
HCM 6th LOS	F

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

112: Nebraska Ave & Brorein St/Cumberland Ave

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	198	1272	32	1547	851	387
v/c Ratio	3.09	1.28	0.62	0.80	1.88	0.62
Control Delay	971.0	161.7	54.3	19.9	427.4	44.8
Queue Delay	0.0	1.3	0.0	49.1	14.6	0.8
Total Delay	971.0	163.0	54.3	69.0	442.0	45.5
Queue Length 50th (ft)	~300	~1434	12	607	~1118	322
Queue Length 95th (ft)	m#326	m#1238	m38	m706	m#1097	m224
Internal Link Dist (ft)		143		195	464	798
Turn Bay Length (ft)	50		70			
Base Capacity (vph)	64	991	52	1922	452	621
Starvation Cap Reductn	0	166	0	148	0	0
Spillback Cap Reductn	0	213	0	912	301	66
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	3.09	1.63	0.62	1.53	5.64	0.70

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 701: Old Water St & Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕		↖	↗		↖	↗	
Traffic Volume (veh/h)	5	1497	5	32	951	51	435	217	49	56	143	66
Future Volume (veh/h)	5	1497	5	32	951	51	435	217	49	56	143	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	1627	5	35	1034	55	473	236	53	61	155	72
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	343	1050	3	52	1934	103	439	597	134	148	192	89
Arrive On Green	0.75	0.75	0.75	1.00	1.00	1.00	0.34	0.67	0.67	0.16	0.16	0.16
Sat Flow, veh/h	518	1864	6	308	3432	183	1781	1479	332	1090	1208	561
Grp Volume(v), veh/h	5	0	1632	35	535	554	473	0	289	61	0	227
Grp Sat Flow(s),veh/h/ln	518	0	1869	308	1777	1838	1781	0	1811	1090	0	1769
Q Serve(g_s), s	0.3	0.0	78.9	0.2	0.0	0.0	28.5	0.0	9.9	7.6	0.0	17.3
Cycle Q Clear(g_c), s	0.5	0.0	78.9	78.9	0.0	0.0	28.5	0.0	9.9	17.5	0.0	17.3
Prop In Lane	1.00		0.00	1.00		0.10	1.00		0.18	1.00		0.32
Lane Grp Cap(c), veh/h	343	0	1054	52	1001	1036	439	0	731	148	0	282
V/C Ratio(X)	0.01	0.00	1.55	0.67	0.53	0.53	1.08	0.00	0.40	0.41	0.00	0.81
Avail Cap(c_a), veh/h	343	0	1054	52	1001	1036	439	0	731	148	0	282
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.00	0.09	0.62	0.62	0.62	0.84	0.00	0.84	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.7	0.0	17.5	39.4	0.0	0.0	43.7	0.0	15.2	61.6	0.0	56.8
Incr Delay (d2), s/veh	0.0	0.0	247.5	35.9	1.3	1.2	62.2	0.0	1.3	8.3	0.0	21.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	97.2	1.7	0.4	0.4	19.9	0.0	3.8	2.5	0.0	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.8	0.0	265.1	75.3	1.3	1.2	105.9	0.0	16.6	69.9	0.0	78.0
LnGrp LOS	A	A	F	E	A	A	F	A	B	E	A	E
Approach Vol, veh/h		1637			1124			762			288	
Approach Delay, s/veh		264.3			3.6			72.0			76.3	
Approach LOS		F			A			E			E	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		84.8		62.2		84.8	34.2	28.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s		* 72		* 56		* 72	* 29	* 22				
Max Q Clear Time (g_c+I1), s		80.9		11.9		80.9	30.5	19.5				
Green Ext Time (p_c), s		0.0		2.1		0.0	0.0	0.4				

Intersection Summary

HCM 6th Ctrl Delay	134.7
HCM 6th LOS	F

Notes

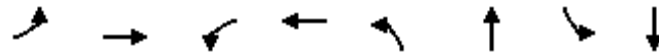
\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Queues

701: Old Water St & Cumberland Ave

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	5	1632	35	1089	473	289	61	227
v/c Ratio	0.03	1.70	0.67	0.60	0.95	0.39	0.66	0.77
Control Delay	13.2	337.3	66.9	20.5	75.3	28.6	88.6	71.0
Queue Delay	0.0	0.9	0.0	0.8	51.8	0.0	0.0	0.2
Total Delay	13.2	338.2	66.9	21.3	127.1	28.6	88.6	71.2
Queue Length 50th (ft)	2	~2186	20	316	346	173	53	189
Queue Length 95th (ft)	m1	m#1230	m#55	m348	#609	252	#126	#312
Internal Link Dist (ft)		195		457		461		758
Turn Bay Length (ft)	70		70		150		150	
Base Capacity (vph)	161	962	52	1816	497	734	92	294
Starvation Cap Reductn	0	144	0	392	0	0	0	0
Spillback Cap Reductn	0	0	0	1	293	0	0	2
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	2.00	0.67	0.76	2.32	0.39	0.66	0.78

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 6th Signalized Intersection Summary  
 120: Meridian Ave & Cumberland Ave

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖	↗	↖	↗		↖	↗	↖
Traffic Volume (veh/h)	1283	187	131	1	574	5	223	1345	136	171	540	269
Future Volume (veh/h)	1283	187	131	1	574	5	223	1345	136	171	540	269
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1395	203	142	1	624	0	242	1462	148	186	587	292
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	418	613	429	26	1119		195	736	74	123	701	312
Arrive On Green	1.00	1.00	1.00	0.60	0.60	0.00	0.07	0.23	0.23	0.01	0.07	0.07
Sat Flow, veh/h	801	1025	717	0	1870	1585	1781	3261	328	1781	3554	1585
Grp Volume(v), veh/h	1395	0	345	625	0	0	242	792	818	186	587	292
Grp Sat Flow(s),veh/h/ln	801	0	1741	1870	0	1585	1781	1777	1811	1781	1777	1585
Q Serve(g_s), s	55.6	0.0	0.0	0.0	0.0	0.0	9.6	31.6	31.6	5.6	22.9	25.7
Cycle Q Clear(g_c), s	83.8	0.0	0.0	28.2	0.0	0.0	9.6	31.6	31.6	5.6	22.9	25.7
Prop In Lane	1.00		0.41	0.00		1.00	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	418	0	1042	1145	0		195	401	409	123	701	312
V/C Ratio(X)	3.34	0.00	0.33	0.55	0.00		1.24	1.97	2.00	1.52	0.84	0.93
Avail Cap(c_a), veh/h	418	0	1042	1145	0		195	401	409	123	701	312
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.09	0.00	0.09	1.00	0.00	0.00	0.09	0.09	0.09	0.93	0.93	0.93
Uniform Delay (d), s/veh	12.7	0.0	0.0	16.9	0.0	0.0	49.4	54.2	54.2	53.4	63.2	64.5
Incr Delay (d2), s/veh	1053.2	0.0	0.1	1.9	0.0	0.0	112.8	439.2	451.4	267.1	10.8	35.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	135.4	0.0	0.0	12.7	0.0	0.0	8.3	62.8	65.4	10.7	12.0	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1065.9	0.0	0.1	18.8	0.0	0.0	162.3	493.4	505.6	320.6	74.0	99.5
LnGrp LOS	F	A	A	B	A		F	F	F	F	E	F
Approach Vol, veh/h		1740			625	A		1852			1065	
Approach Delay, s/veh		854.6			18.8			455.5			124.1	
Approach LOS		F			B			F			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.0	34.0		90.0	12.0	38.0		90.0				
Change Period (Y+Rc), s	6.4	6.4		* 6.2	6.4	6.4		* 6.2				
Max Green Setting (Gmax), s	9.6	27.6		* 84	5.6	31.6		* 84				
Max Q Clear Time (g_c+I1), s	11.6	27.7		85.8	7.6	33.6		30.2				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		5.4				

Intersection Summary

HCM 6th Ctrl Delay	468.5
HCM 6th LOS	F

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.  
 Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Queues

120: Meridian Ave & Cumberland Ave

01/20/2022















Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	1395	345	625	5	242	1610	186	587	292
v/c Ratio	4.08	0.32	0.56	0.01	1.33	2.03	1.50	0.84	0.56
Control Delay	1398.0	0.7	19.4	0.0	186.7	489.1	293.4	66.4	25.2
Queue Delay	7.9	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1405.8	1.8	19.4	0.0	186.7	489.1	293.4	66.4	25.2
Queue Length 50th (ft)	~2099	3	328	0	~226	~1190	~184	285	75
Queue Length 95th (ft)	m#1088	m2	439	0	m104	m#659	#345	#370	203
Internal Link Dist (ft)		457	882			460		709	
Turn Bay Length (ft)	100			100	200		250		
Base Capacity (vph)	342	1063	1115	978	182	793	124	697	525
Starvation Cap Reductn	0	491	0	0	0	0	0	0	0
Spillback Cap Reductn	152	0	0	0	0	1	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	7.34	0.60	0.56	0.01	1.33	2.03	1.50	0.84	0.56

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 102: Florida Ave & Whiting St

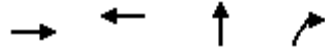
01/20/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔↔↔	↔			
Traffic Volume (vph)	208	512	0	0	249	358	168	2658	130	0	0	0
Future Volume (vph)	208	512	0	0	249	358	168	2658	130	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			5.7	5.7			
Lane Util. Factor		0.95			0.95			0.91	1.00			
Frt		1.00			0.91			1.00	0.85			
Flt Protected		0.99			1.00			1.00	1.00			
Satd. Flow (prot)		3489			3226			5070	1583			
Flt Permitted		0.57			1.00			1.00	1.00			
Satd. Flow (perm)		2001			3226			5070	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)	226	557	0	0	271	389	183	2889	141	0	0	0
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	26	0	0	0
Lane Group Flow (vph)	0	783	0	0	650	0	0	3072	115	0	0	0
Turn Type	Perm	NA			NA		Perm	NA	Perm			
Protected Phases		4			4			2				
Permitted Phases	4						2		2			
Actuated Green, G (s)		49.0			49.0			74.3	74.3			
Effective Green, g (s)		49.0			49.0			74.3	74.3			
Actuated g/C Ratio		0.35			0.35			0.53	0.53			
Clearance Time (s)		6.0			6.0			5.7	5.7			
Vehicle Extension (s)		3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)		700			1129			2690	840			
v/s Ratio Prot					0.20							
v/s Ratio Perm		c0.39						0.61	0.07			
v/c Ratio		1.28dl			0.58			1.14	0.14			
Uniform Delay, d1		45.5			37.0			32.9	16.6			
Progression Factor		1.00			1.02			1.07	1.73			
Incremental Delay, d2		71.5			0.8			66.0	0.1			
Delay (s)		117.0			38.6			101.3	29.0			
Level of Service		F			D			F	C			
Approach Delay (s)		117.0			38.6			98.1			0.0	
Approach LOS		F			D			F			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			92.8				HCM 2000 Level of Service		F			
HCM 2000 Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)		15.7			
Intersection Capacity Utilization			108.1%				ICU Level of Service		G			
Analysis Period (min)			15									
dl Defacto Left Lane. Recode with 1 though lane as a left lane.												
c Critical Lane Group												

# Queues

## 102: Florida Ave & Whiting St

01/20/2022



Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	783	660	3072	141
v/c Ratio	1.28dl	0.58	1.14	0.16
Control Delay	113.4	38.1	99.6	17.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	113.4	38.1	99.6	17.8
Queue Length 50th (ft)	~430	269	~1176	48
Queue Length 95th (ft)	#561	m280	m#1128	m52
Internal Link Dist (ft)	994	519	567	
Turn Bay Length (ft)				75
Base Capacity (vph)	700	1139	2690	865
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.12	0.58	1.14	0.16

### Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis  
 103: Morgan St & Whiting St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	516	70	195	342	331	172	451	312	80	588	65
Future Volume (vph)	139	516	70	195	342	331	172	451	312	80	588	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8		5.8	5.8			5.7			5.7	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95			0.95	
Frt	1.00	0.98		1.00	0.93			0.95			0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	1829		1770	1725			3331			3473	
Flt Permitted	0.14	1.00		0.18	1.00			0.61			0.63	
Satd. Flow (perm)	255	1829		341	1725			2059			2217	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	151	561	76	212	372	360	187	490	339	87	639	71
RTOR Reduction (vph)	0	7	0	0	50	0	0	89	0	0	10	0
Lane Group Flow (vph)	151	630	0	212	682	0	0	927	0	0	787	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	29.2	29.2		29.2	29.2			29.3			29.3	
Effective Green, g (s)	29.2	29.2		29.2	29.2			29.3			29.3	
Actuated g/C Ratio	0.42	0.42		0.42	0.42			0.42			0.42	
Clearance Time (s)	5.8	5.8		5.8	5.8			5.7			5.7	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	106	762		142	719			861			927	
v/s Ratio Prot		0.34			0.40							
v/s Ratio Perm	0.59			c0.62				c0.45			0.35	
v/c Ratio	1.42	0.83		1.49	0.95			1.08			0.85	
Uniform Delay, d1	20.4	18.1		20.4	19.7			20.4			18.3	
Progression Factor	1.96	1.78		1.05	1.01			0.99			1.00	
Incremental Delay, d2	218.2	5.7		225.2	3.6			51.5			9.5	
Delay (s)	258.2	38.1		246.7	23.6			71.6			27.9	
Level of Service	F	D		F	C			E			C	
Approach Delay (s)		80.2			73.7			71.6			27.9	
Approach LOS		F			E			E			C	

Intersection Summary

HCM 2000 Control Delay	64.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	113.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Queues

103: Morgan St & Whiting St

01/20/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	151	637	212	732	1016	797
v/c Ratio	1.42	0.83	1.49	0.95	1.07	0.85
Control Delay	250.5	38.1	248.6	22.8	67.0	28.9
Queue Delay	0.0	1.0	0.7	0.0	0.0	49.0
Total Delay	250.5	39.2	249.3	22.8	67.0	77.9
Queue Length 50th (ft)	~96	538	~270	285	~283	153
Queue Length 95th (ft)	m#209	m529	m#245	m197	#547	#262
Internal Link Dist (ft)		519		503	563	1059
Turn Bay Length (ft)						
Base Capacity (vph)	106	769	142	769	950	938
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	30	5	0	0	220
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.42	0.86	1.55	0.95	1.07	1.11

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis  
 104: Jefferson St & Whiting St

01/20/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Volume (vph)	279	523	410	46	286	161	239	562	10	137	539	97
Future Volume (vph)	279	523	410	46	286	161	239	562	10	137	539	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.7	5.7		5.7			5.7			5.7	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frt		1.00	0.85		0.96			1.00			0.98	
Flt Protected		0.98	1.00		1.00			0.99			0.99	
Satd. Flow (prot)		1831	1583		1772			3481			3442	
Flt Permitted		0.54	1.00		0.20			0.57			0.60	
Satd. Flow (perm)		997	1583		347			2019			2101	
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)	303	568	446	50	311	175	260	611	11	149	586	105
RTOR Reduction (vph)	0	0	185	0	22	0	0	1	0	0	14	0
Lane Group Flow (vph)	0	871	261	0	514	0	0	881	0	0	826	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)		24.3	24.3		24.3			34.3			34.3	
Effective Green, g (s)		24.3	24.3		24.3			34.3			34.3	
Actuated g/C Ratio		0.35	0.35		0.35			0.49			0.49	
Clearance Time (s)		5.7	5.7		5.7			5.7			5.7	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		346	549		120			989			1029	
v/s Ratio Prot												
v/s Ratio Perm		0.87	0.16		c1.48			c0.44			0.39	
v/c Ratio		2.52	0.47		4.28			1.02dl			0.80	
Uniform Delay, d1		22.9	17.9		22.9			16.2			15.0	
Progression Factor		1.32	1.53		1.00			1.52			1.00	
Incremental Delay, d2		689.0	0.5		1496.1			1.3			6.6	
Delay (s)		719.1	27.7		1518.9			25.8			21.6	
Level of Service		F	C		F			C			C	
Approach Delay (s)		485.0			1518.9			25.8			21.6	
Approach LOS		F			F			C			C	

Intersection Summary

HCM 2000 Control Delay	417.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.55		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	134.1%	ICU Level of Service	H
Analysis Period (min)	15		

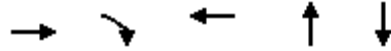
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Queues

104: Jefferson St & Whiting St

01/20/2022



Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	871	446	536	882	840
v/c Ratio	2.52	0.61	3.77	1.02dl	0.81
Control Delay	708.1	12.7	1278.5	26.5	22.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	708.1	12.7	1278.5	26.5	22.2
Queue Length 50th (ft)	~1343	88	~377	275	145
Queue Length 95th (ft)	m#1508	m91	#559	m131	#237
Internal Link Dist (ft)	503		431	509	207
Turn Bay Length (ft)					
Base Capacity (vph)	346	734	142	990	1043
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	2.52	0.61	3.77	0.89	0.81

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

# HCS7 Two-Way Stop-Control Report

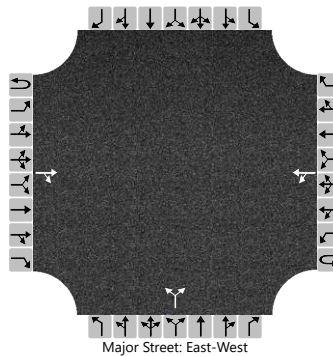
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2046
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	Whiting PD&E Study

## Site Information

Intersection	EWhitingSt&Nebraska Ave
Jurisdiction	FDOT, District 7
East/West Street	E Whiting St
North/South Street	Nebraska Ave
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			349	322		97	103			435		180				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways













Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.12				6.42		6.22				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.22				3.52		3.32				

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						102						647				
Capacity, c (veh/h)						892						337				
v/c Ratio						0.11						1.92				
95% Queue Length, Q <sub>95</sub> (veh)						0.4						161.4				
Control Delay (s/veh)						9.6						1699.2				
Level of Service (LOS)						A						F				
Approach Delay (s/veh)						5.2				1699.2						
Approach LOS						A				F						

HCM Signalized Intersection Capacity Analysis  
 107: Meridian Ave & Whiting St

01/20/2022

							
Movement	WBL	WBR	NBU	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	48	234	0	2477	152	133	932
Future Volume (vph)	48	234	0	2477	152	133	932
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.2			6.6		6.4	6.6
Lane Util. Factor	1.00			0.91		1.00	0.91
Fr <sub>t</sub>	0.89			0.99		1.00	1.00
Fl <sub>t</sub> Protected	0.99			1.00		0.95	1.00
Satd. Flow (prot)	1640			5041		1770	5085
Fl <sub>t</sub> Permitted	0.99			1.00		0.04	1.00
Satd. Flow (perm)	1640			5041		78	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	254	0	2692	165	145	1013
RTOR Reduction (vph)	149	0	0	3	0	0	0
Lane Group Flow (vph)	157	0	0	2854	0	145	1013
Turn Type	Perm		Perm	NA		pm+pt	NA
Protected Phases				6		5	2
Permitted Phases	4		6			2	
Actuated Green, G (s)	18.7			89.5		107.5	107.5
Effective Green, g (s)	18.7			89.5		107.5	107.5
Actuated g/C Ratio	0.13			0.64		0.77	0.77
Clearance Time (s)	7.2			6.6		6.4	6.6
Vehicle Extension (s)	3.0			3.0		3.0	3.0
Lane Grp Cap (vph)	219			3222		200	3904
v/s Ratio Prot				c0.57		c0.06	0.20
v/s Ratio Perm	c0.10					0.50	
v/c Ratio	0.72			0.89		0.72	0.26
Uniform Delay, d <sub>1</sub>	58.1			21.0		44.1	4.7
Progression Factor	1.11			1.96		1.00	1.00
Incremental Delay, d <sub>2</sub>	10.6			0.4		12.3	0.2
Delay (s)	75.2			41.5		56.3	4.9
Level of Service	E			D		E	A
Approach Delay (s)	75.2			41.5			11.3
Approach LOS	E			D			B

Intersection Summary

HCM 2000 Control Delay	35.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	92.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

# Queues

## 107: Meridian Ave & Whiting St

01/20/2022



Lane Group	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	306	2857	145	1013
v/c Ratio	0.83	0.89	0.73	0.26
Control Delay	46.7	42.6	52.1	5.4
Queue Delay	0.0	46.1	0.0	0.0
Total Delay	46.7	88.7	52.1	5.4
Queue Length 50th (ft)	128	1013	78	83
Queue Length 95th (ft)	229	m293	154	139
Internal Link Dist (ft)	876	709		494
Turn Bay Length (ft)			225	
Base Capacity (vph)	568	3227	236	3905
Starvation Cap Reductn	0	847	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	1.20	0.61	0.26

### Intersection Summary

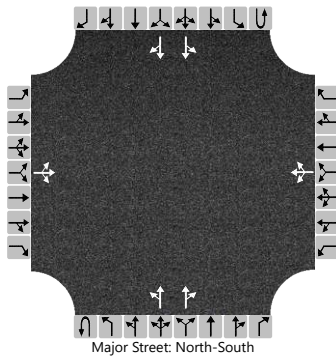
m Volume for 95th percentile queue is metered by upstream signal.



# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	H.W. Lochner	Intersection	EWashingtonST&JeffersonSt
Agency/Co.		Jurisdiction	FDOT, District 7
Date Performed	09/24/2021	East/West Street	E Washington St
Analysis Year	2046	North/South Street	Jefferson St
Time Analyzed	PM Peak Hour	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	Whiting PD&E Study		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0		0	2	0		0	2	0	
Configuration			LTR				LTR			LT		TR		LT		TR	
Volume (veh/h)		17	94	115		179	51	150		61	699	243		19	479	147	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.54	6.54	6.94		7.54	6.54	6.94		4.14				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

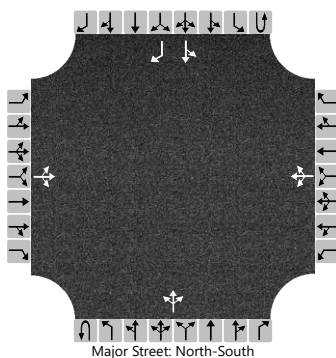
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			238				400				64				20			
Capacity, c (veh/h)			113								925				693			
v/c Ratio			2.10								0.07				0.03			
95% Queue Length, Q <sub>95</sub> (veh)			67.7								0.2				0.1			
Control Delay (s/veh)			2082.7								9.2				10.3			
Level of Service (LOS)			F								A				B			
Approach Delay (s/veh)		2082.7								1.0					0.5			
Approach LOS		F																

# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	H.W. Lochner	Intersection	EWashingtonSt&BrushSt
Agency/Co.		Jurisdiction	FDOT, District 7
Date Performed	09/24/2021	East/West Street	E Washington St
Analysis Year	2046	North/South Street	Brush St
Time Analyzed	PM Peak Hour	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	Whiting PD&E Study		

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0		0	1	0		0	1	1	
Configuration			LTR				LTR				LTR			LT		R	
Volume (veh/h)		221	76	16		19	21	6		143	326	27		41	127	151	
Percent Heavy Vehicles (%)		2	2	2		2	2	2		2				2			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																Yes	
Median Type   Storage		Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.22		4.12				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			329				48				151				43		
Capacity, c (veh/h)			226				198				1451				1187		
v/c Ratio			1.46				0.24				0.10				0.04		
95% Queue Length, Q <sub>95</sub> (veh)			60.1				1.0				0.3				0.1		
Control Delay (s/veh)			896.8				29.1				7.8				8.1		
Level of Service (LOS)			F				D				A				A		
Approach Delay (s/veh)		896.8				29.1				3.0				1.2			
Approach LOS		F				D											

# HCS7 Two-Way Stop-Control Report

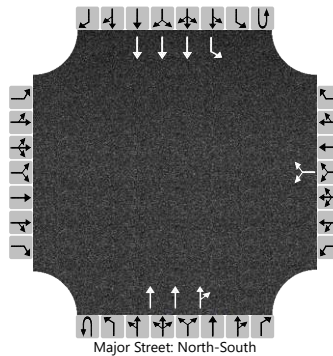
## General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2046
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	Whiting PD&E Study

## Site Information

Intersection	MeridianAve&EWashingtonSt
Jurisdiction	FDOT, District 7
East/West Street	Meridian Ave
North/South Street	E Washington St
Peak Hour Factor	0.95
Analysis Time Period (hrs)	1.00

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0		0	3	0		0	1	3
Configuration							LR				T	TR		L	T	
Volume (veh/h)						39		24			2397	314	0	27	1026	
Percent Heavy Vehicles (%)						2		2					2	2		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type   Storage							Left Only								1	

## Critical and Follow-up Headways

Base Critical Headway (sec)						6.4		7.1							5.3	
Critical Headway (sec)						5.74		7.14							5.34	
Base Follow-Up Headway (sec)						3.8		3.9							3.1	
Follow-Up Headway (sec)						3.82		3.92							3.12	

## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							66								28	
Capacity, c (veh/h)							26								45	
v/c Ratio							2.57								0.63	
95% Queue Length, Q <sub>95</sub> (veh)							24.3								3.6	
Control Delay (s/veh)							3180.7								199.6	
Level of Service (LOS)							F								F	
Approach Delay (s/veh)							3180.7								5.1	
Approach LOS							F									