

Appendix D

Signal Timing Plans



Timingsheet, Controller Operation and Load Switch Page

SECID: 74 Timing Date: 2/6/2014 Phasing Date: 10/30/2000

Shop Number: 1752 Drop:

Major Street **JEFFERSON**

Orientation: North / South

Controller Type **COBALT**

Minor Street **KENNEDY / TWIGGS (MID)**

Orientation: East / West

Computer System **CENT**

Last Date Sent **4/2/2014**

Controller Timings (seconds)							
Controller Phase Number		2		4			
Direction		N/S		PED			
Minimum Green		10		31			
Vehicle Extention		3.0		---			
Yellow Clr/Alt Clr		3.7		3			
Red Clr/Alt Red Clr		2					
Max Green I		80		31			
Max Green II		100		31			
Walk				16			
Walk - XGuard							
FDW				15			
FDW - XGuard							
Detector Memory		---		---			
Phase Recall		MAX		---			
Ped Recall		ON		---			
Flash Operation		YEL		---			

Controller Operation	
RXR Preempt:	No FDOT SOP: 17 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

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

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

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
 Comments: *can DP - 172, 19, 257, 186*
SUB - 255, 255, 255, 248
Gateway - 172, 19, 257, 185

Submitted By: *CAB* Date: *11/16/2018* Review By: *MF* Date: *11-16-18* Approved By: *BC* Date: *11/16/2018*
 Implemented By: *MF* Date: *11/19/18* Notes:



Coordination Pattern Page

Ver. E

Print Date: 11/15/2018

Major Street: JEFFERSON

Section Id: 74

Record Number: 559

Coord Date: 3/30/2017

Minor Street: KENNEDY / TWIGGS (MID)

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

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

Coord Free:

Coord Sp Ops:

Direction:		N/S		PED				
Ø Number:		2		4				

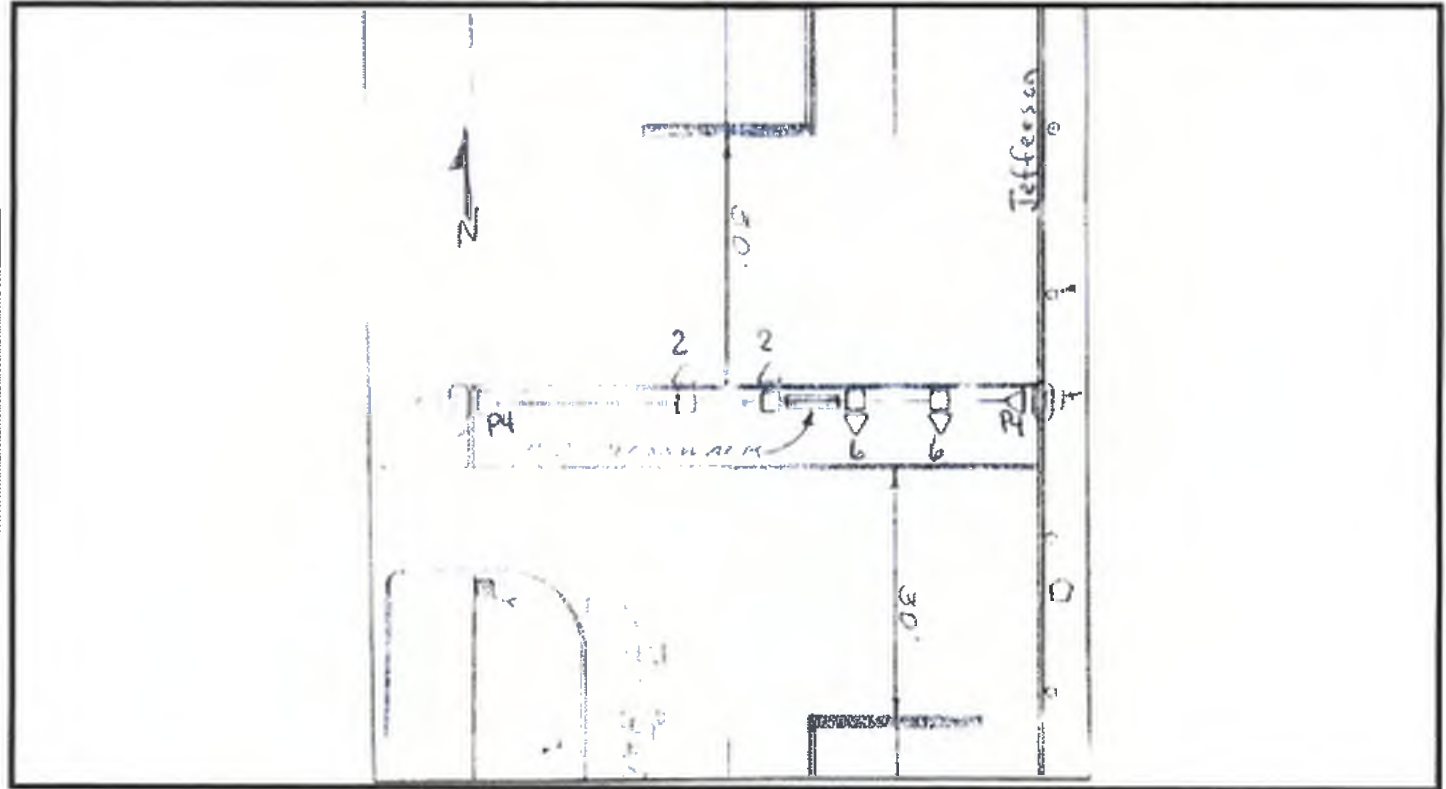
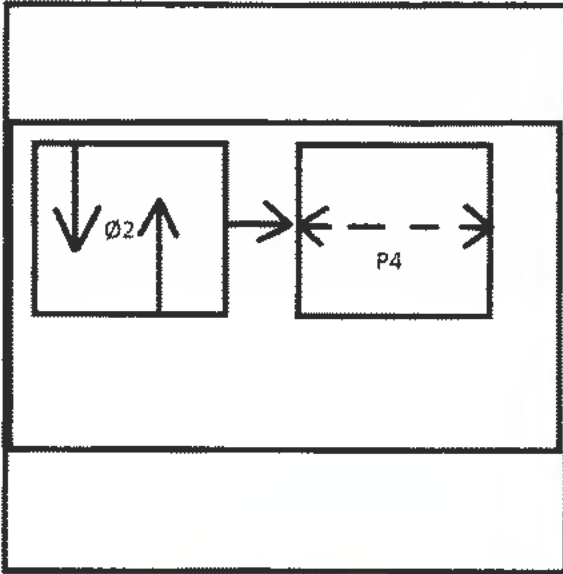
	Patterns	Sequence	Cycle	Offset								
1.	0615 - 0900 AM	1	140	128		105		35				
2.	0900 - 1115 AM Off	1	60	39		25		35				
3.	1115 - 1330 Noon	1	60	39		25		35				
4.	1330 - 1515 PM Off	1	60	39		25		35				
5.	1515 - 1830 PM	1	140	128		105		35				
6.	1830 - 2000 Evening	1	60	39		25		35				
7.	2000 - 0615 Late	1	60	39		25		35				
8.		1	60	39		25		35				
9.	Convention Center - Out	1	120	9		85		35				
10.	Arena - In	1	120	9		85		35				
11.	Arena - Out Florida Closed	1	240	56		205		35				
12.	Art Festival - In	1	120	11		85		35				
13.	Arena - Out Florida Open	1	240	56		205		35				
14.	P.A.C. - Out	1	120	9		85		35				
15.	Arena Lg/ P.A.C. - Out	1	120	39		85		35				
16.	Hurricane	1	100	2		65		35				

Section Id 74 Controller Type ASC2S

Major Street JEFFERSON

Minor Street KENNEDY / TWIGGS (MID)

Coord Date 3/30/2017 FDOT SOP: 17 MOD



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



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



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: 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)		2	4				
Controller Phase Number	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	
Sequence 1	Ring 1: 2 4 Ring 2:
Sequence 2	Ring 1: Ring 2:
Sequence 3	Ring 1: Ring 2:
Sequence 5	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: *K. Nel* 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

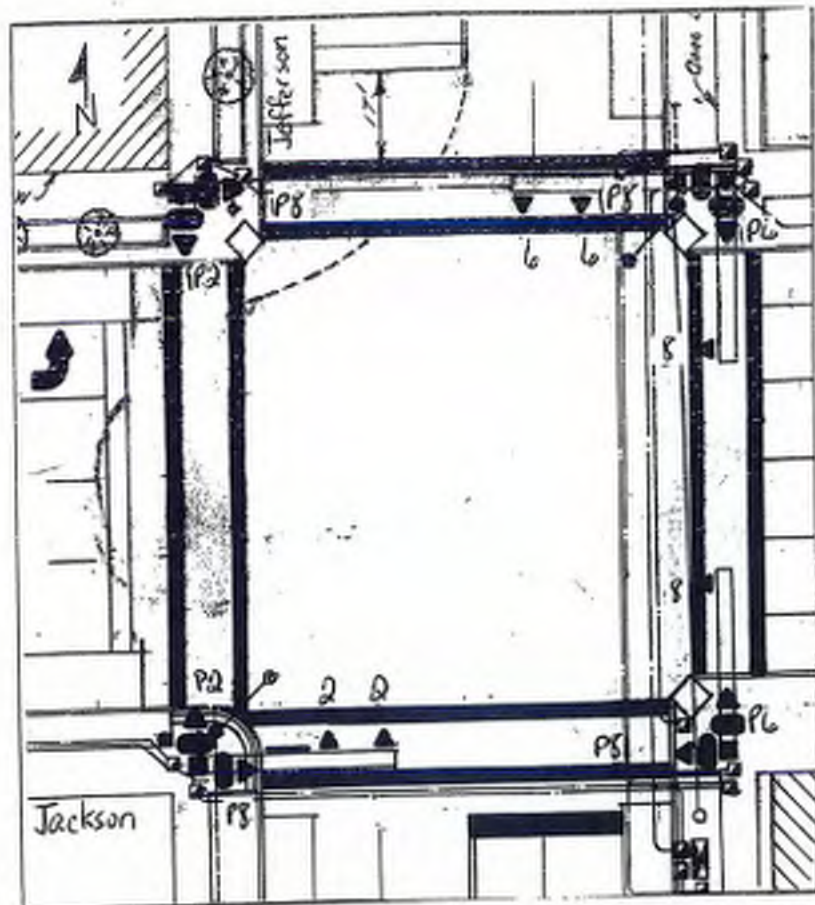
Timing Date: 12/10/2014	MIN	10	10
MSX: M CCU: 4 Drop: 4	YEL	3.7	3.7
Structures: 1	RED	2	2
Lead / Lag:	WLK	7	7
	FDW	13	13
	Min - 42	26	16
Pat	CYC	OS	
			2 4
1 Am 0615 - 0900	140	22	46 94
2 Am off 0900 - 1115	120	32	50 70
3 Noon 1115 - 1330	120	32	50 70
4 Pm off 1330 - 1515	120	32	50 70
5 Pm 1515 - 1830	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

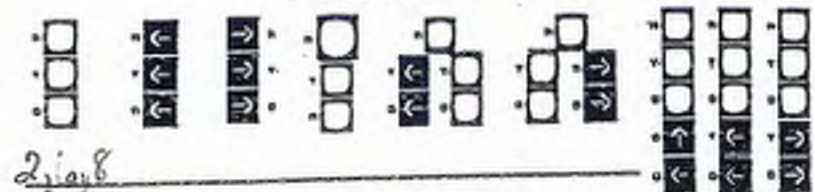
Location: Jefferson + Jackson

Prep By: SK

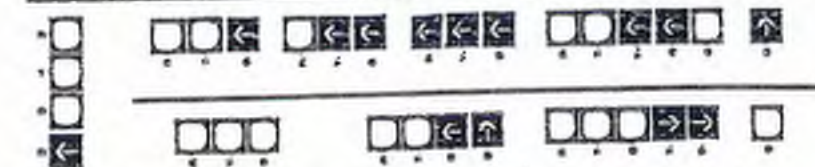
Date: 10/30/00



SIGNAL HEADS



2/10/08



Notes: 8 phase controller w/ 2 phase fixed-time operation. Concurrent ped phase w/ ped heads, no buttons

Vehicle Movements	Signal Head		Display Sequence			
	Number	Flashing Operation	Phase	Interval	Sequence	Sequence
2 ↓ ↓ ↑ ↑ ↓ ↓ ← → ← → ← → ← →	2					
	Y					
	G					
	R					
4 ← → ← → ← → ← →	4					
	Y					
	G					
	R					



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:						EB		SB
Ø Number:						6		8

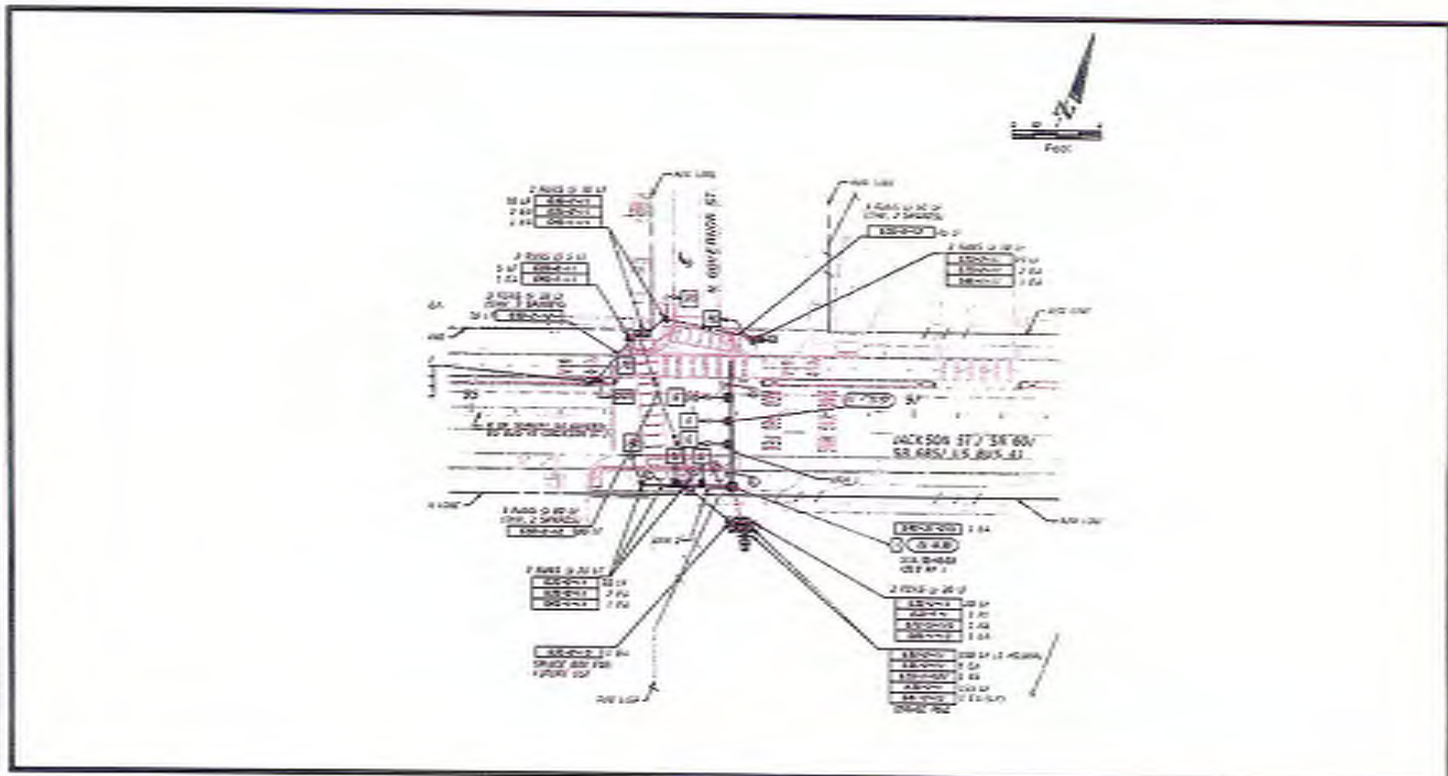
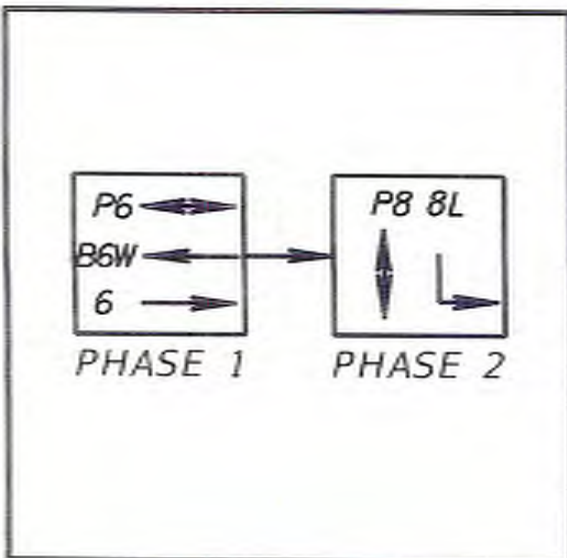
	Patterns	Sequence	Cycle	Offset								
1.	0615 - 0900 AM Peak	1	140	54						100		40
2.	0900 - 1115 AM Off Peak	1	120	65						80		40
3.	1115 - 1330 Noon	1	120	65						80		40
4.	1330 - 1515 PM Off Peak	1	120	65						80		40
5.	1515 - 1830 PM Peak	1	140	54						100		40
6.	1830 - 2000 Evening	1	120	65			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

Section Id 77 Controller Type Cobalt

Major Street JACKSON

Minor Street GOVERNOR

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



<p>Ped 1 Selector</p> <p>1ped-wlk-fdw-count</p> <p>PED Signal 1:</p>	<p>Sig 1 Selector</p> <p>3-section-ball-vertical</p> <p>Signal Head 1:</p>	<p>Sig 2 Selector</p> <p>3-section-gl-yl-rl-vert</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>

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	<i>W/B</i>
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: KS 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: ML

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



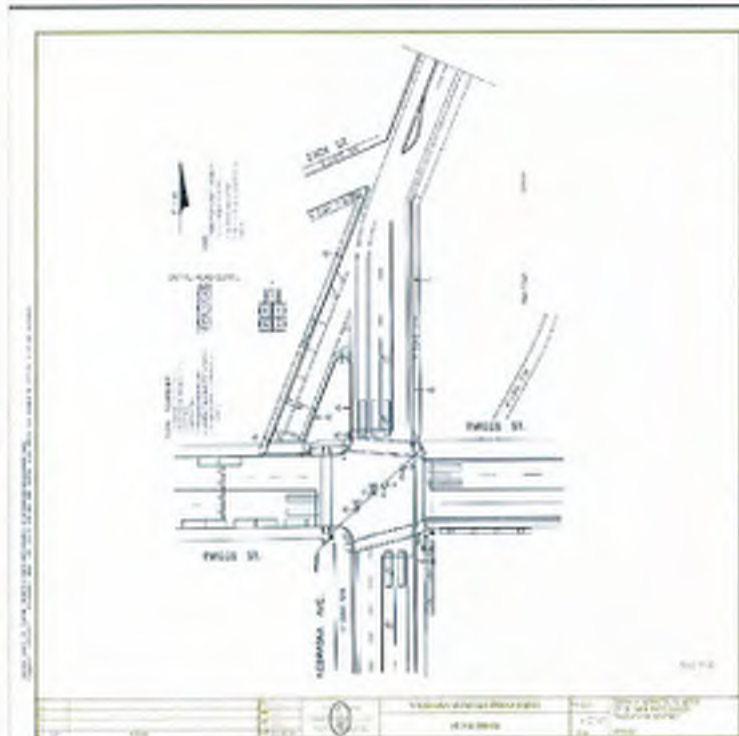
City of Tampa - Phasing Diagram



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	Overlaps					Signal Head Numbers	2	6	8	5/2	
Controller:	Econolite	Flashing Operation	Y	Y	R	Y						
Vehicle Movements	Phase	Interval	Display Sequence									
	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
			<p>Signal Head # 2 6 8 5/2</p> <p>Econolite Overlaps</p> <p>Load Switch # LS2 LS6 LS8 LS5 LS2</p> <p>Peek Overlaps</p>									



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	SBRT	WB	NB		
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 HITS HERE 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		

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

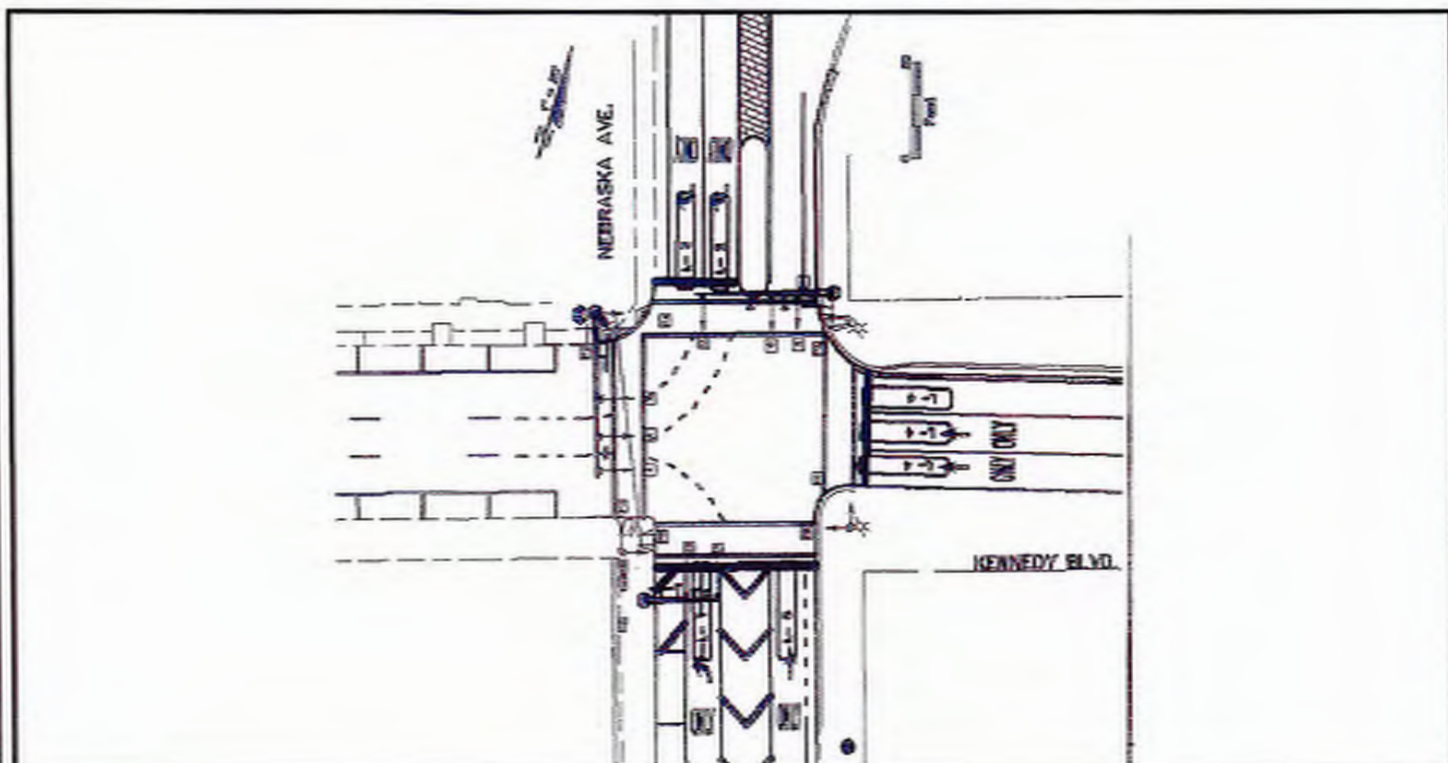
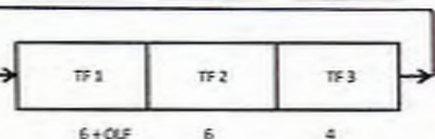
	Patterns	Cycle	Offset							
1.	0615 - 0900 AM Peak	140	15		50		90		50	
2.	0900 - 1115 AM Off Peak	120	86		60		60		60	
3.	1115 - 1330 Noon	120	86		60		60		60	
4.	1330 - 1515 PM Off Peak	120	86		60		60		60	
5.	1515 - 1830 PM Peak	140	60		50		90		50	
6.	1830 - 2000 Evening	120	86		60		60		60	
7.	2000 - 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-vertical Signal Head 1: 4, 6	Sig 2 Selector 3-section-ylfl-yl-rl Signal Head 2: 6L	Sig 3 Selector 3-section-gr-yr-r-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 SIGNAL 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 Extention	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

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: LS8:
 LS9: P2 LS10: P4 LS11: LS12: LS13: LS14: LS15: LS16:

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: 06/13/2018
 Implemented By: PW 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				

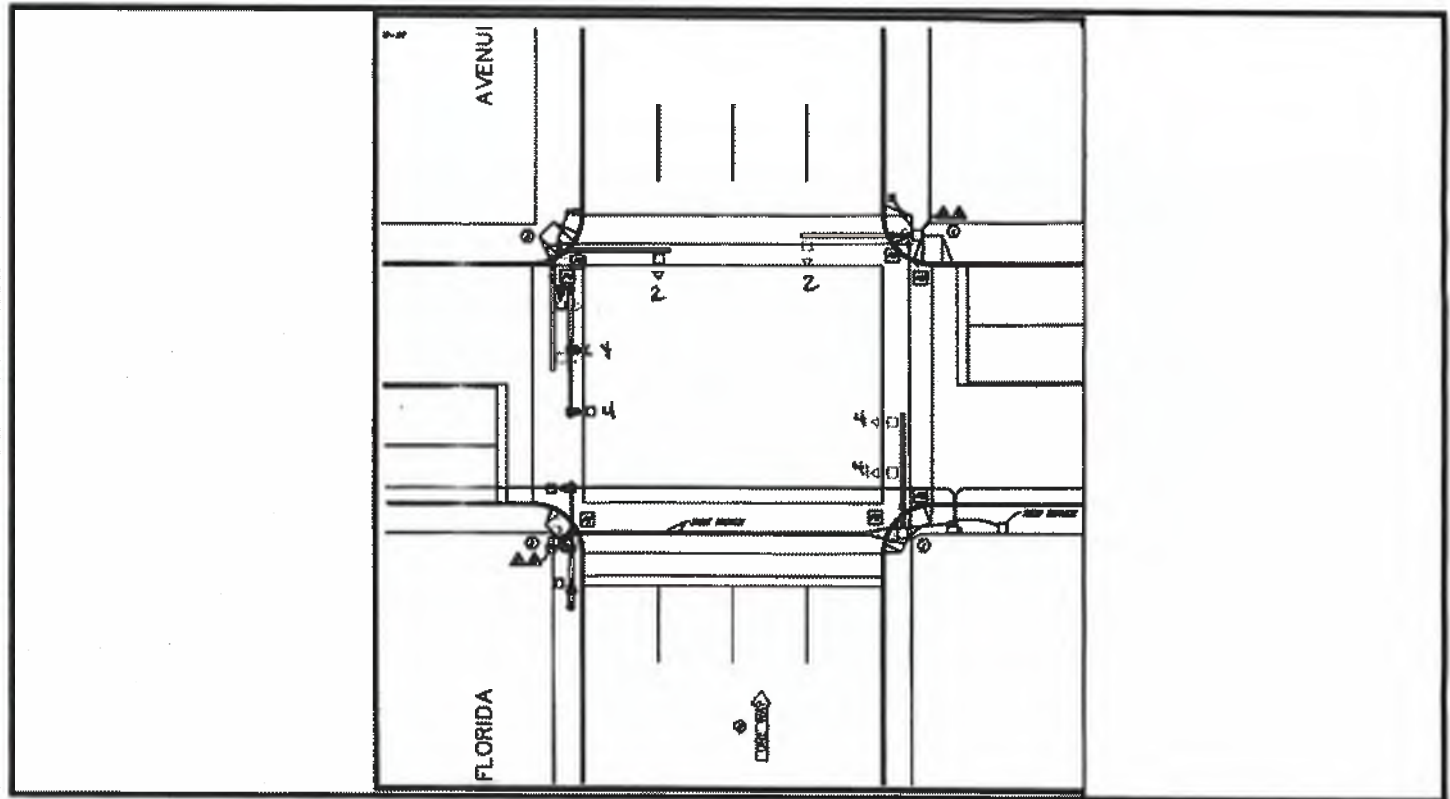
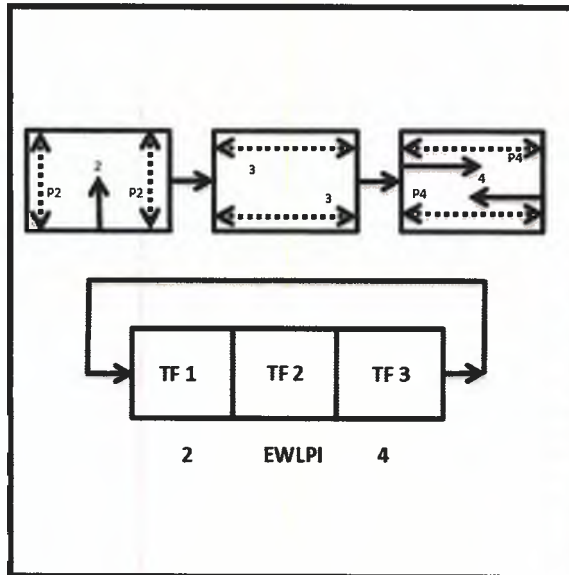
	Patterns	Cycle	Offset							
1.	0615 - 0900 AM Peak	140	121		70		70			
2.	0900 - 1115 AM Off	120	32		70		50			
3.	1115 - 1330 Noon	120	32		70		50			
4.	1330 - 1515 PM Off	120	32		70		50			
5.	1515 - 1830 PM Peak	140	121		80		60			
6.	1830 - 2000 Evening	120	32		70		50			
7.	2000 - 0615 Late	120	32		70		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
1ped-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**

Orientation: North-South

Controller Type **Cobalt**

Minor Street **WHITING**

Orientation: East-West

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 Extension	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 Assignments

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: 10/30/20
 Implemented By: *DCW* 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

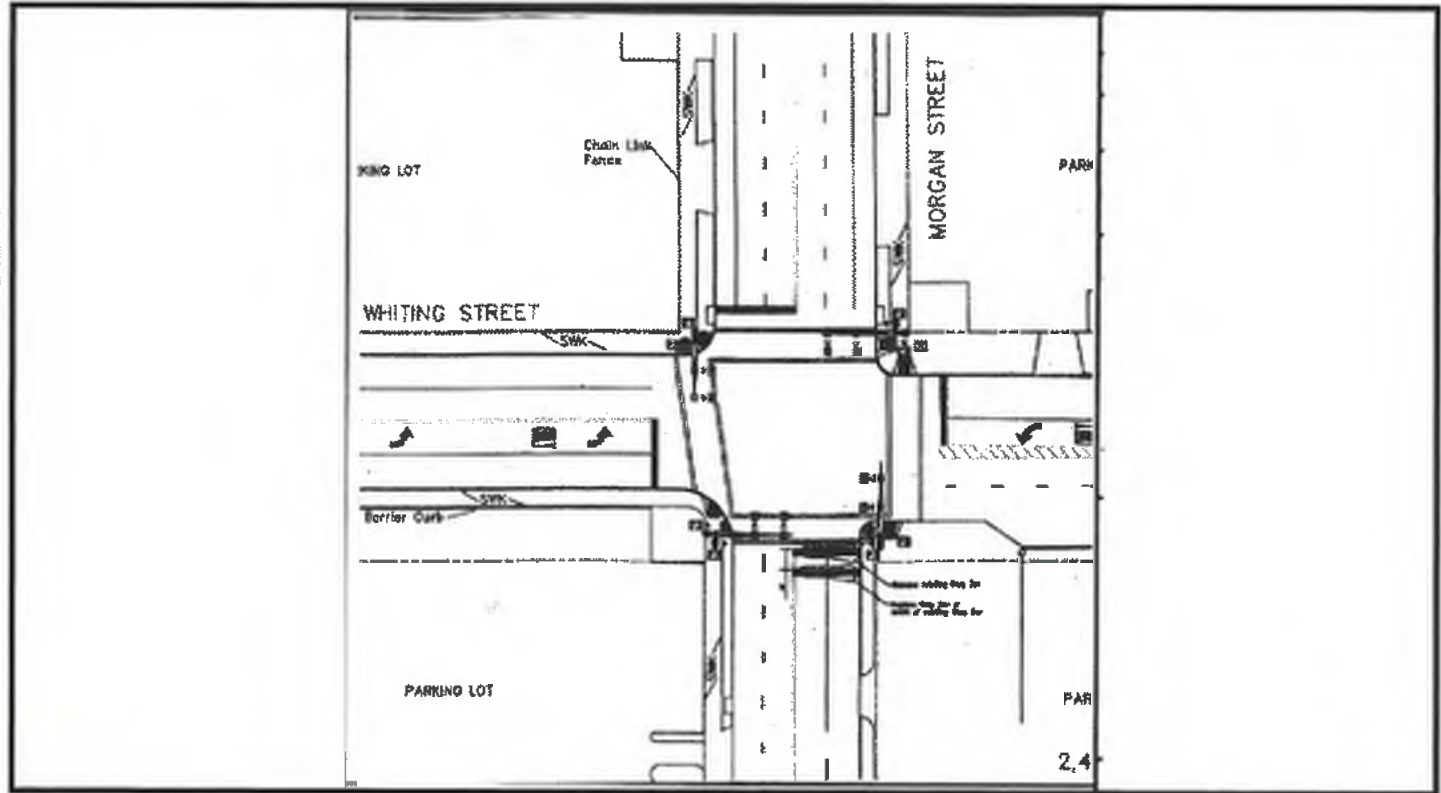
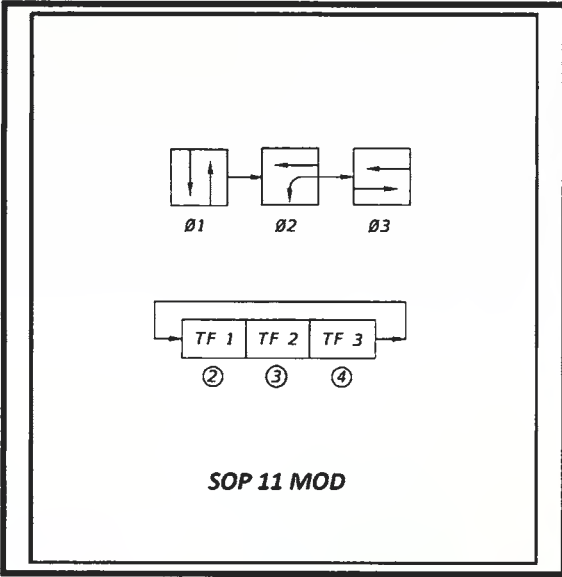
Minor Street: **WHITING**

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-gl-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 LSS: 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: 10-25-18 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

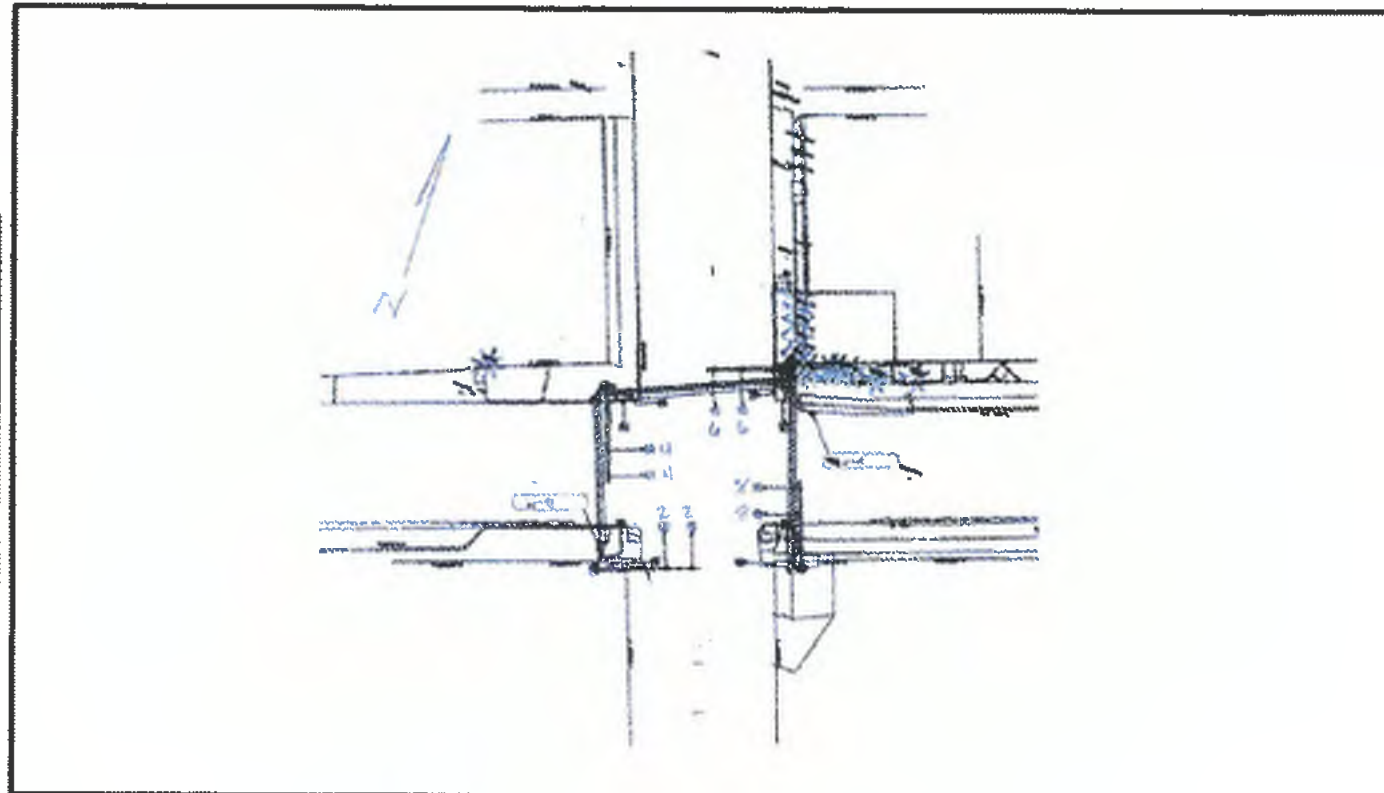
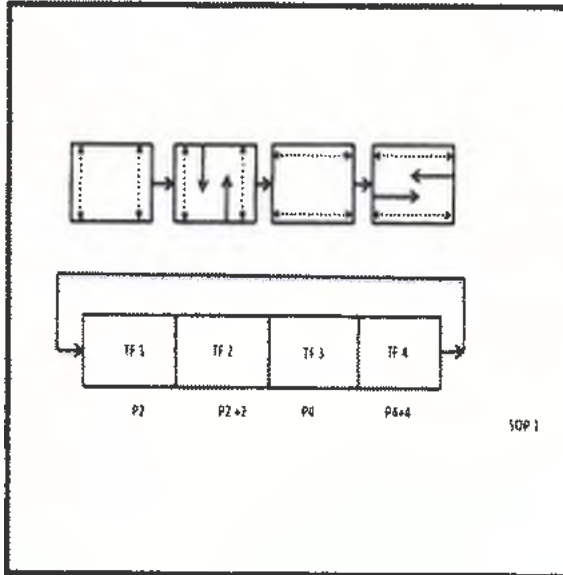
	Patterns	Sequence	Cycle	Offset								
1.	0615 - 0900 AM Peak	1	70	18		40		30		40		30
2.	0900 - 1115 AM Off Peak	1	60	30		30		30		30		30
3.	1115 - 1330 Noon	1	60	30		30		30		30		40
4.	1330 - 1515 PM Off Peak	1	60	30		30		30		30		30
5.	1515 - 1830 PM Peak	1	70	18		40		30		40		30
6.	1830 - 2000 Evening	1	60	30		30		30		30		30
7.	2000 - 0615 Late	1	60	30		30		30		30		40
8.												
9.	Convention Ctr - Outbound	1	120	30		40		80		40		40
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		40
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



Ped 1 Selector
1ped-wlk-fdw-count
PED Signal 1:
P2, P4, P6, P8



Ped 2 Selector
PED Signal 2:

Sig 1 Selector
3-section-ball-vertica
Signal Head 1:
2, 4, 6, 8



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: 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:

Direction:		WB		NB				
Ø Number:		2		4				

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

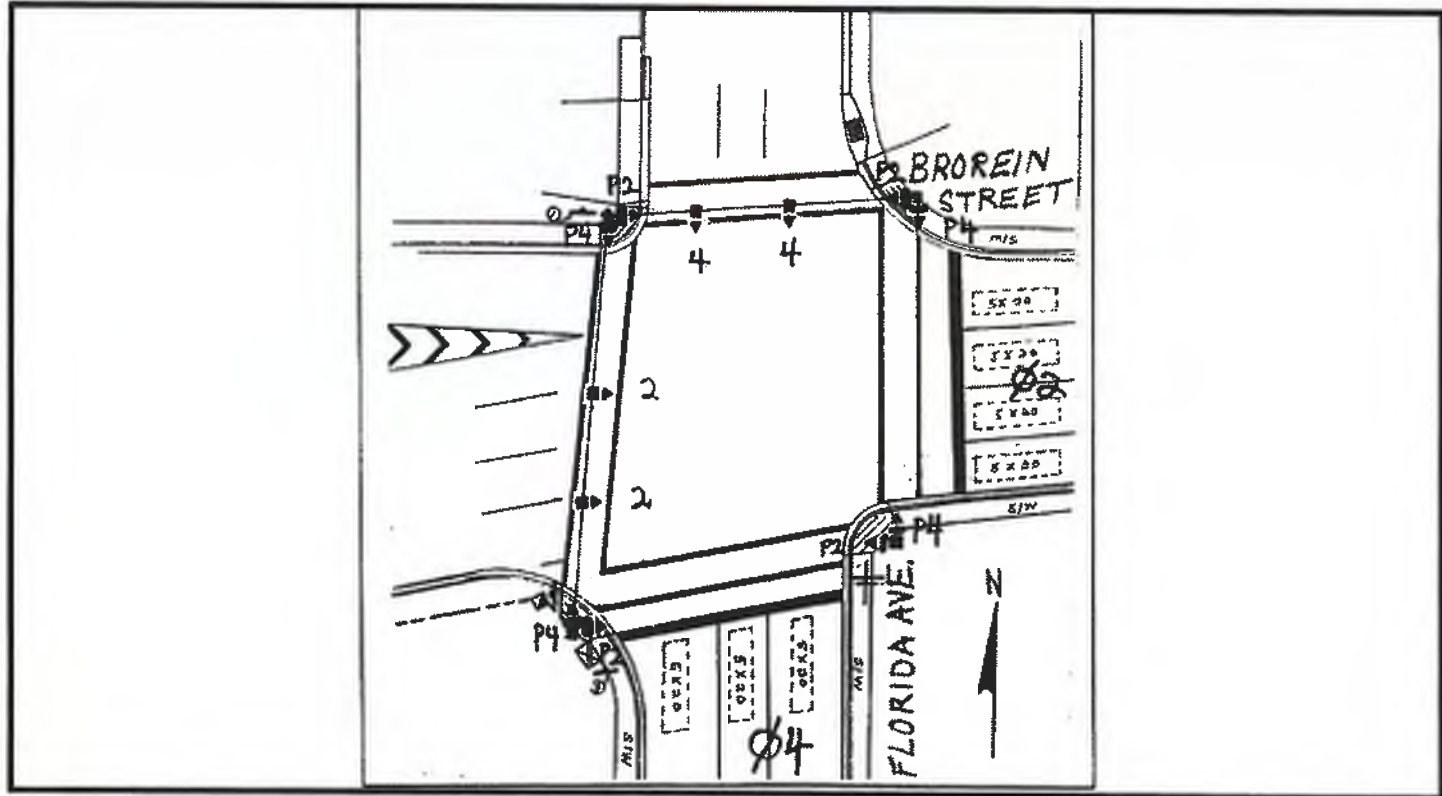
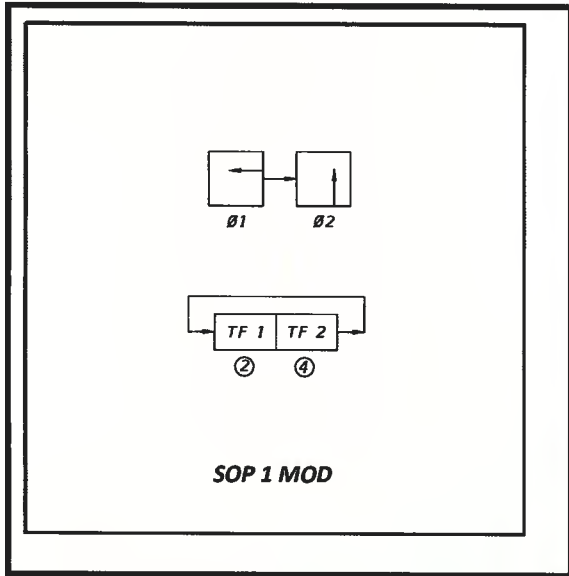
Day Plan #2 - Fri - patt 1 - 7 w/5 @ 14:45

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

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

	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: P2, P4 	Sig 1 Selector 3-section-ball-vertica 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 L 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 Assienments

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				

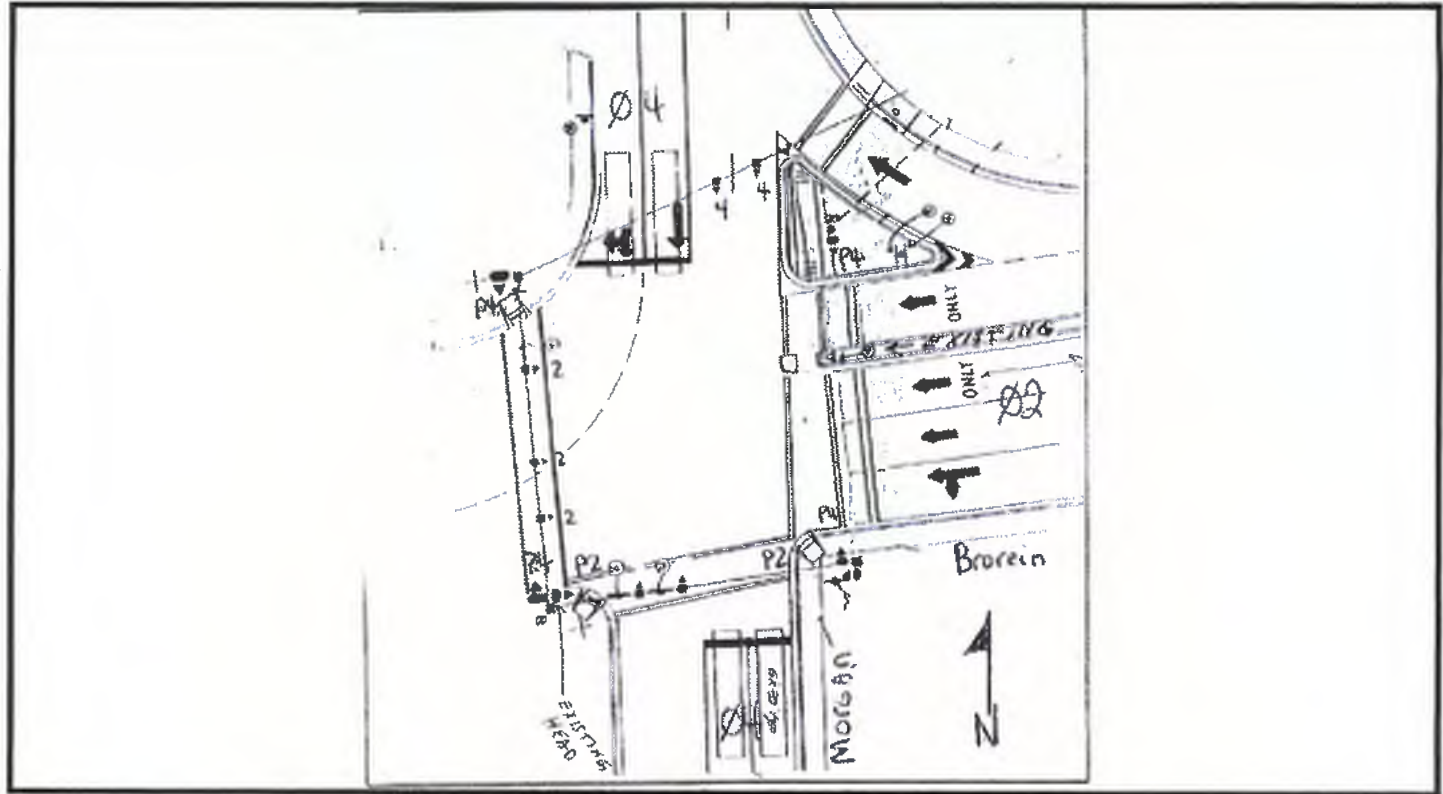
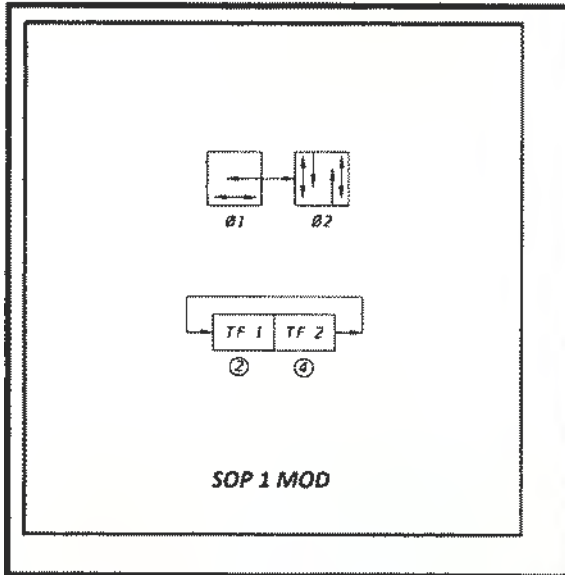
	Patterns	Sequence	Cycle	Offset							
1.	0615 - 0900 AM Peak	1	140	35		94		46			
2.	0900 - 1115 AM Off Peak	1	120	75		80		40			
3.	1115 - 1330 Noon	1	120	75		80		40			
4.	1330 - 1515 PM Off Peak	1	120	75		80		40			
5.	1515 - 1830 PM Peak	1	140	29		94		46			
6.	1830 - 2000 Evening	1	120	75		80		30			
7.	2000 - 0615 Late	1	120	75		80		30			
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		30		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-vertica 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 L 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 Clr/Alt Clr	3.7	3.7		
Red Clr/Alt Red Clr	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	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

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: 4/6/2018

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				
--	---	--	---	--	--	--	--

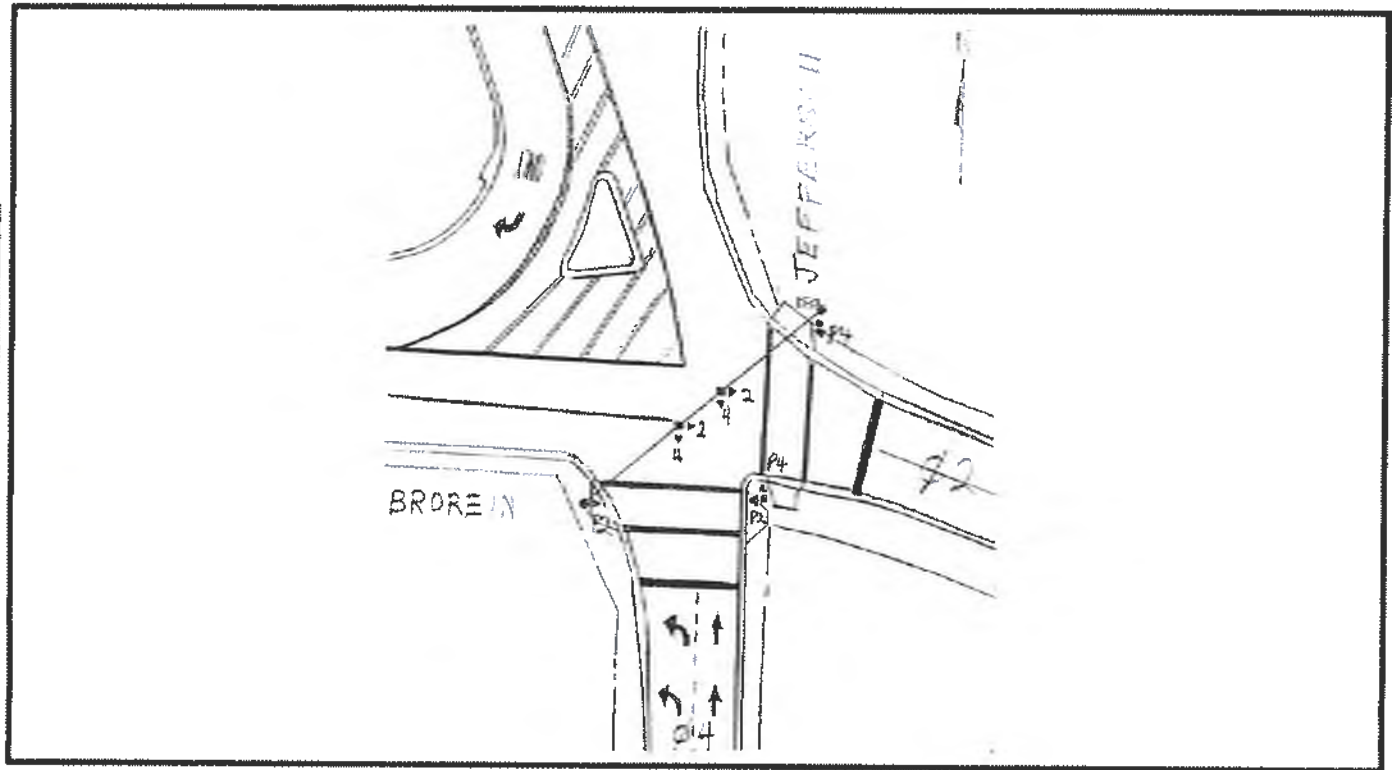
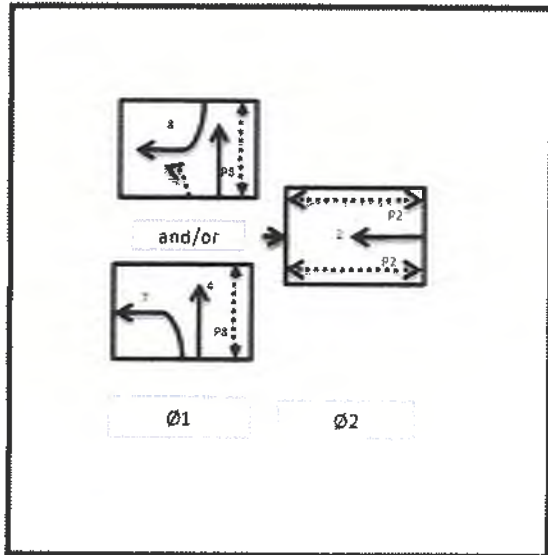
Patterns	Sequence	Cycle	Offset						
1. 0615 - 0900 AM Peak	1	140	30		115		25		
2. 0900 - 1130 AM Off Peak	1	120	70		95		25		
3. 1130 - 1330 Noon	1	120	70		95		25		
4. 1330 - 1515 PM Off Peak	1	120	70		95		25		
5. 1515 - 1830 PM Peak	1	140	45		95		45		
6. 1830 - 2000 Evening	1	120	70		95		25		
7. 2000 - 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

Print Date: 10/30/2018

Section id 1209 Controller Type COBALT
 Major Street BROREIN
 Minor Street JEFFERSON
 Coord Date 6/4/2018 FOOT 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 Assignments

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: ~~1 2 3 4 5 6 7 8~~ PØ2
 Sequence 2 Ring 1: _____
 Ring 2: _____
 Sequence 3 Ring 1: _____
 Ring 2: _____
 Sequence 4 Ring 1: _____
 Ring 2: _____

Comments
 UPDATED TIMINGS
 ACTUATED PRETIMED OPERATION

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		

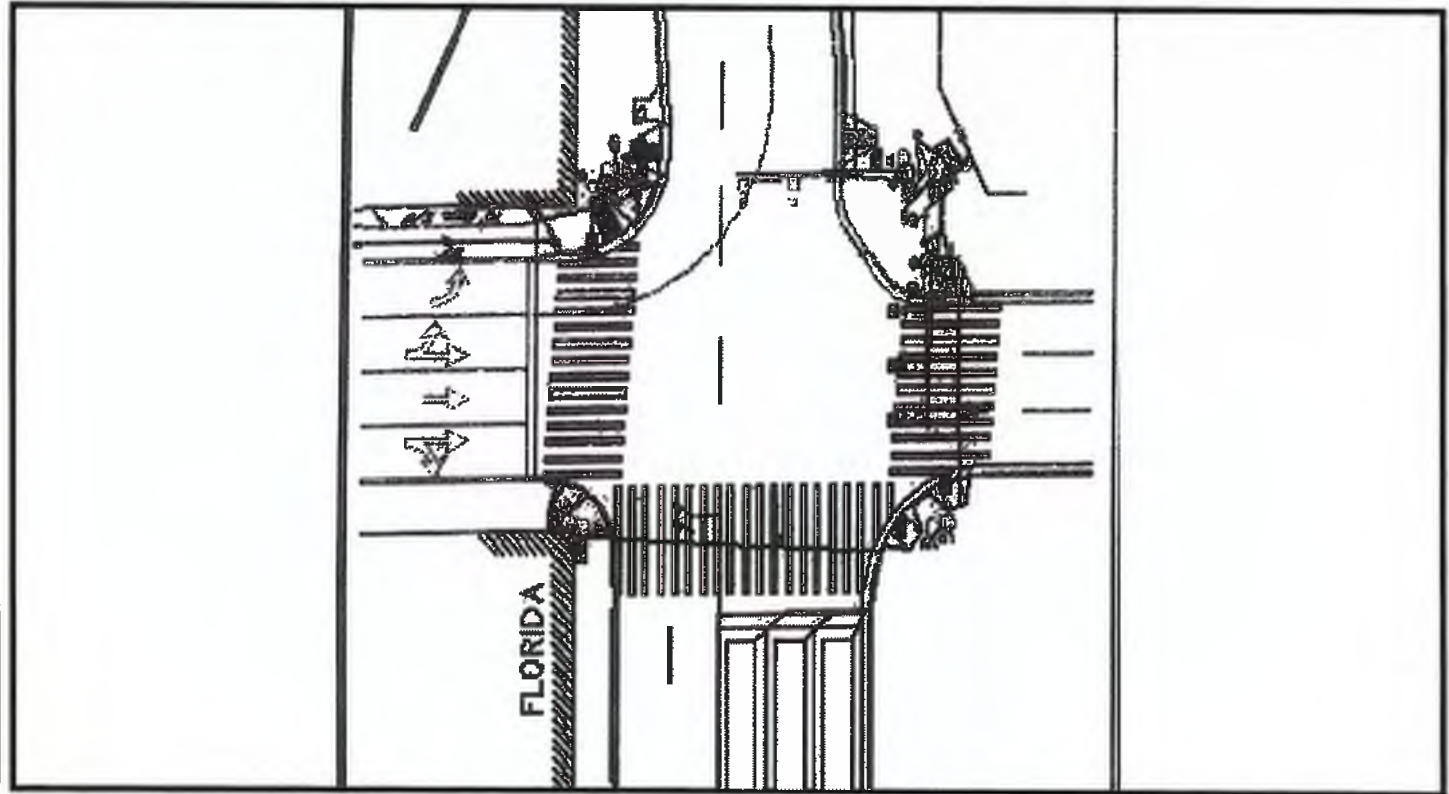
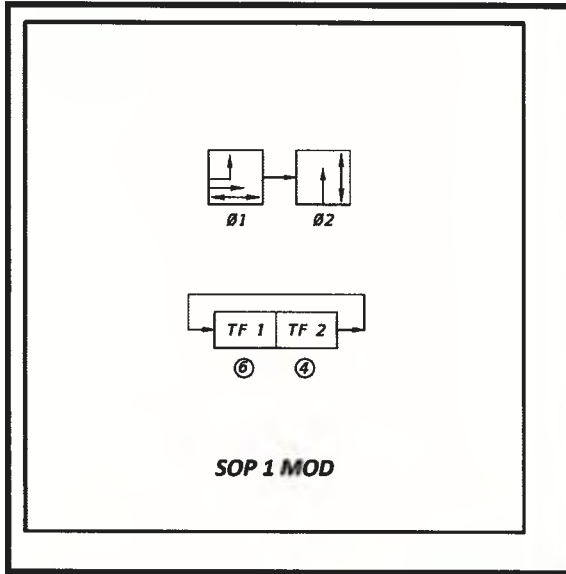
	Patterns	Cycle	Offset						
1.	0615 - 0900 AM Peak	140	83			41		99	
2.	0900 - 1130 AM Off Peak	120	80			30		90	
3.	1130 - 1330 Noon	120	80			30		90	
4.	1330 - 1515 PM Off Peak	120	80			30		90	
5.	1515 - 1830 PM Peak	140	88			41		99	
6.	1830 - 2000 Evening	120	80			50		70	
7.	2000 - 0615 Late	120	80			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>Ped 1 Selector 1ped-wlk-fdw-count PED Signal 1: P4, P6</p> 	<p>Sig 1 Selector 3-section-ball-vertica Signal Head 1: 4, 6</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 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:

Ø Number:

			NB	RAMP	EB		SB
			4	5	6		8

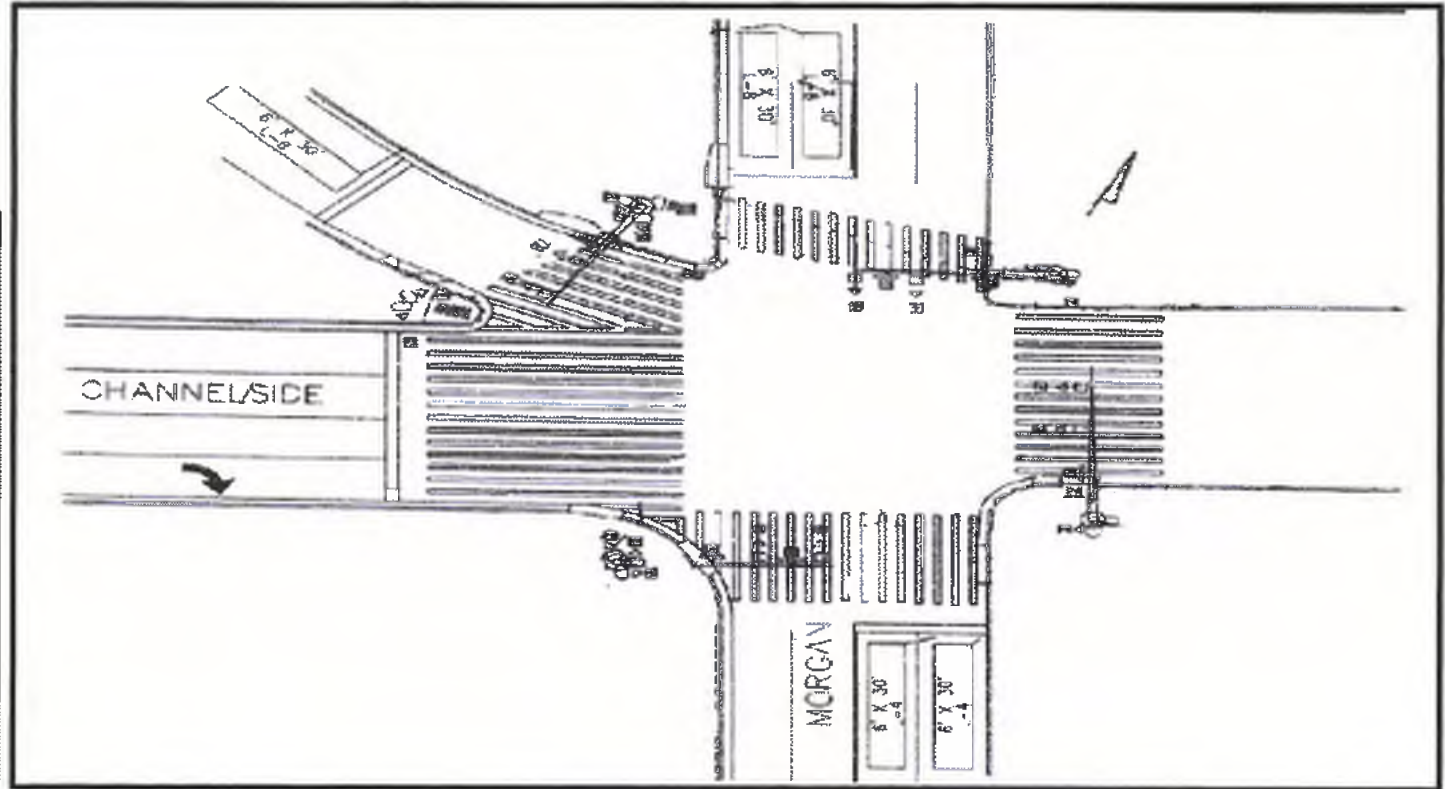
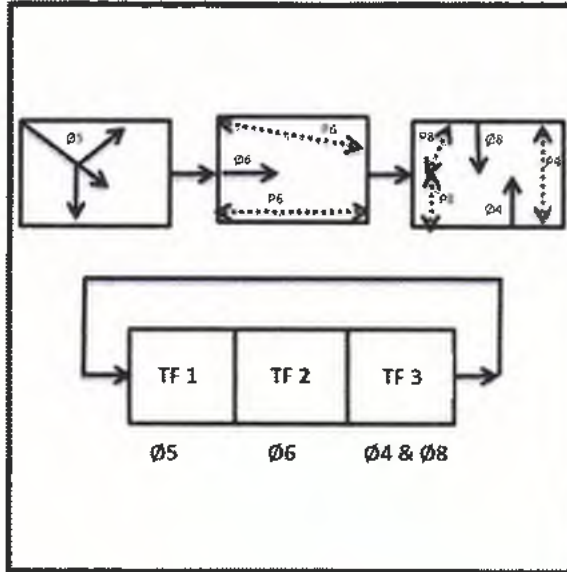
	Patterns	Sequence	Cycle	Offset								
1.	0615 - 0900 AM Peak	1	140	104				40	35	65		40
2.	0900 - 1130 AM Off Peak	1	120	94				30	25	65		30
3.	1130 - 1330 Noon	1	120	94				30	25	65		30
4.	1330 - 1515 PM Off Peak	1	120	94				30	25	65		30
5.	1515 - 1830 PM Peak	1	140	104				40	25	75		40
6.	1830 - 2000 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



Ped 1 Selector
1ped-wlk-fdw-count
PED Signal 1:
P4, P6, P8



Ped 2 Selector

PED Signal 2:

Sig 1 Selector
3-section-ball-vertica
Signal Head 1:
Ø4, Ø5, Ø6, Ø8



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 L HEAD 16



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 Extention	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:

Comments

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.

Submitted By: *[Signature]* Date: 5-20-19 Review By: *[Signature]* Date: 5-21-19 Approved By: *[Signature]* Date: 5/21/19

Implemented By: *[Signature]* 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

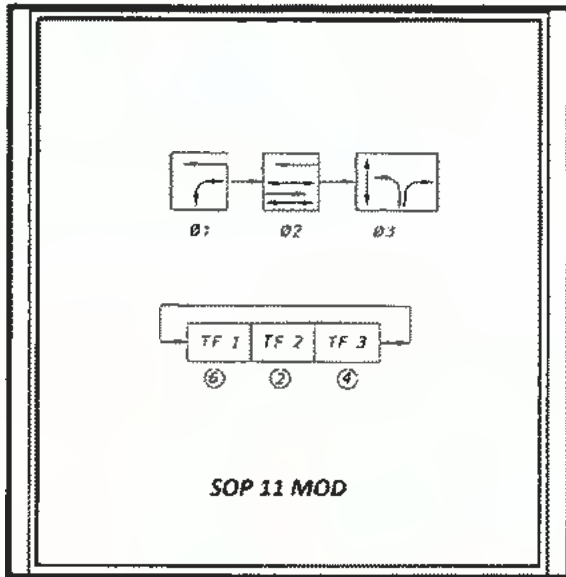
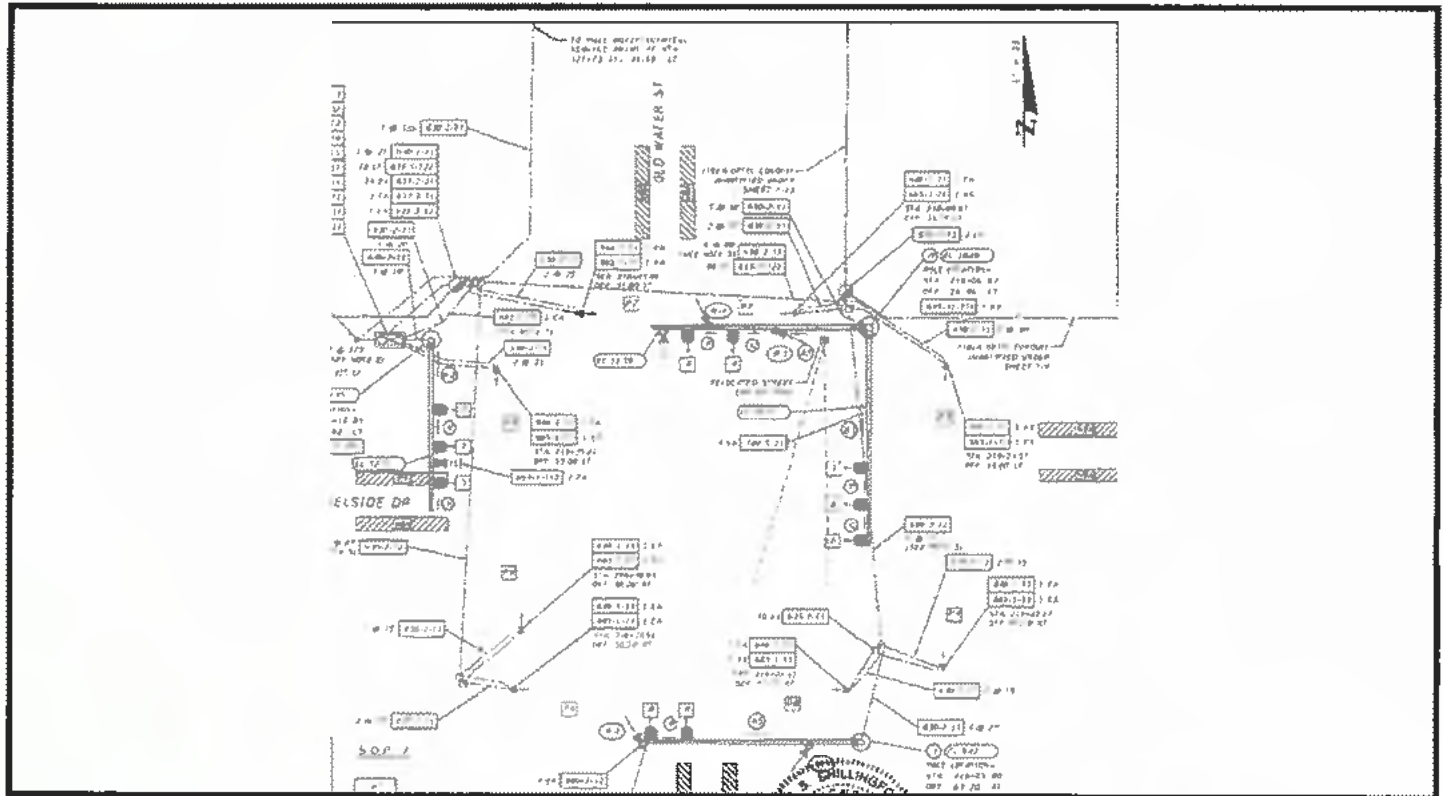
Coord Free:




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



Ped 1 Selector 1ped-wlk-fdw-count PED Signal 1: P2,P4,P6 	Sig 1 Selector 3-section-ball-vertica Signal Head 1: Ø4,Ø6 	Sig 2 Selector 2-section-Trolley-Sto Signal Head 2: Trolley - P2 	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: 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
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, 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: P11	LS2: P12	LS3: P-8	LS4: P14	LS5: N/A	LS6: P16	LS7: P17	LS8: P18
LS9: P2	LS10: P4	LS11: P6	LS12: TRUCKS	LS13:	LS14:	LS15:	LS16:

Comments

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

Submitted By: GS Date: 11-3-17 Review By: tm Date: 11/6/17 Approved By: BJ Date: 11.6.17
 Implemented By: mya 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

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

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

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 lg/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	6	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

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: _____

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:		

Comments

BACKUP PROTECTION APPLIED

ACTUATED PRETIMED OPERATION

*UPDATED FDOT CLEARANCES BY FALLER DAVIS

Submitted By: GS Date: 11-3-17 Review By: Tm Date: 11/6/17 Approved By: BJ Date: 11.6.17

Implemented By: mgf 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 Ctr/Alt Yel Cl	4.0	4.0	4.4	4.0	4.4	4.4
Red Ctr/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: ES

Approved By: BS

Implemented By: MJF

Date: 8.24.17

Date: 8.25.17

Date: 9.25.17

Date: 8/30/2017

Implemented as sent:

With the following revisions below:

Returned, not implemented:

COMPUTER PATTERN SHEET

1301 - TWIGGS & MERIDIAN

1301
1301
STRUCTURE 1

CITY OF TAMPA

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/S @ 14:45
 Day Plan 3: S-Su patt 7 and patt 6 all other times

COMPUTER PATTERN SHEET

1301 - TWIGGS & MERIDIAN

1301
1301
STRUCTURE 2

CITY OF TAMPA

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/S @ 14:45
 Day Plan 3: S-Su patt 7 and patt 6 all other times

City of Tampa - Phasing Diagram

Sect. I.D.# 1301

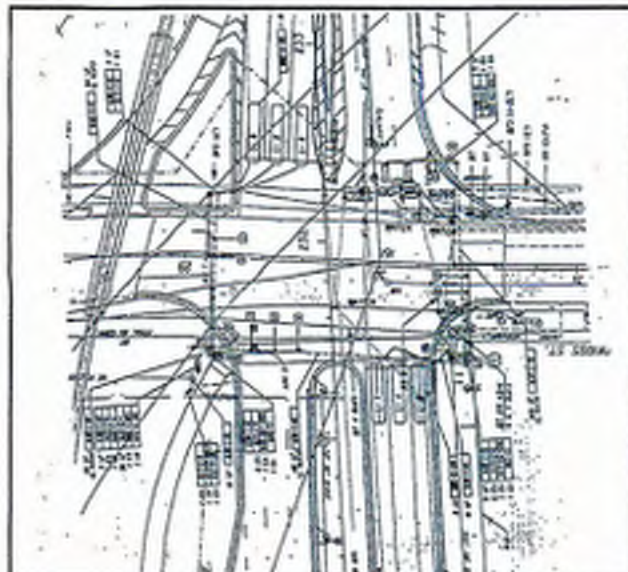
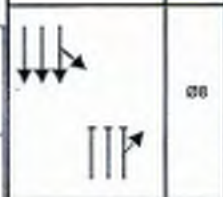
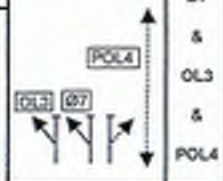
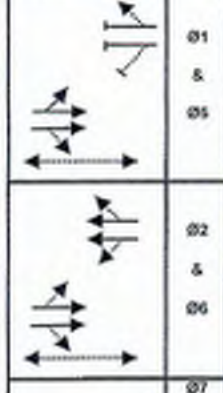
Location: Twigg's / Meridian

Date: 6/14/2006

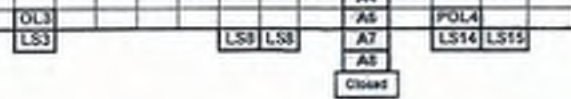
Prepared by GT Reviewed by [Signature]

Signal Head Numbers	1/5	2	4	5	OL3/4	7/4	8	8A/8
Overlaps					OL3			
Vehicle Movements	R	R	R	R	R	R	R	R

Phase	Interval	Display Sequence																
Ø1 & Ø5	ROW	←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	ON	DW	DW	W	DW			
			G	R	R	G	R	R	R	R	ON	DW	DW	W	DW			
Ø2 & Ø6	ROW		G	G	R	G	R	R	R	R	ON	DW	DW	W	DW			
	Clear Ped		G	G	R	G	R	R	R	R	ON	DW	DW	FWW	DW			
	Clear to All Other		Y	Y	R	Y	R	R	R	R	ON	DW	DW	DW	DW			
Ø7 & Ø4	ROW		R	R	R	R	←G	R	←G	R	R	R	R	ON	DW	W	DW	DW
	Clear Ped		R	R	R	R	←G	R	←G	R	R	R	R	ON	DW	FWW	DW	DW
	Clear to Ø4		R	R	R	R	←G	R	←Y	R	R	R	R	ON	DW	W	DW	DW
Ø3 & POL4	ROW		R	R	R	R	←Y	R	←Y	R	R	R	R	ON	DW	DW	DW	DW
	Clear to		R	R	R	R	←Y	R	←Y	R	R	R	R	ON	DW	DW	DW	DW
	All Other		R	R	R	R	R	R	R	R	R	R	R	ON	DW	DW	DW	DW
Ø8	ROW		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
	All Other		R	R	R	R	R	R	R	R	R			ON	DW	DW	DW	DW



Notes:
 5 Phase Controller in 5 phase semi-actuated concurrent/sequential operation. CNA applied to Ø2 & Ø6. Ped heads and buttons on POL4 & P6. Sequence - Ø1 - Ø5, Ø2 - Ø6, Ø7(Ø7 + OL3 + POL4), Ø8(Ø8 + POL4), Ø4(Ø4 + OL3 + POL4). Ped Overlap POL4 operates with Ø's 7, 4 & 5. 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 Ø5 by ACN. No Ped operation during Preemption.





City of Tampa - Phasing Diagram



Sect. LD.# 1301

Pg: 2 of 2

Location:

Twiggs / Meridian

Prepared by GT

Reviewed by

Date:

6/16/2006

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

Phase

Interval

OL3

POL4

POL4

POL4

POL4

POL4

POL4

POL4

Clear Ped

R

R

R

R

R

R

R

R

Clear to

R

R

R

R

R

R

R

R

All Other

R

R

R

R

R

R

R

R

P

POL

P

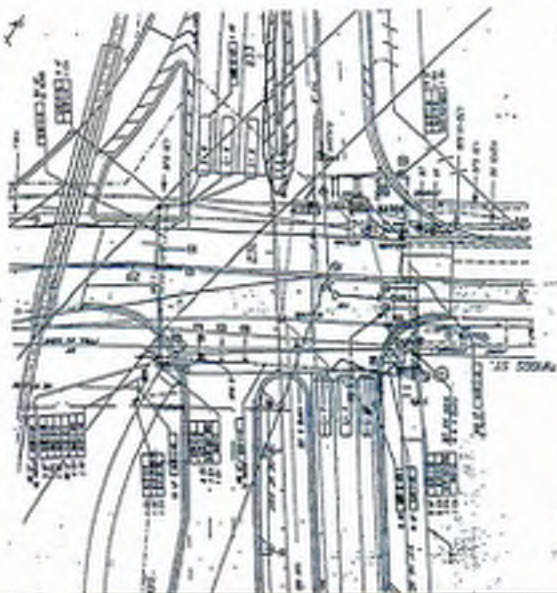
P

2

4

6

8



Signs A4, A7 & A5
on during gate-closed
operation.

Notes:

5 Phase Controller in 5 phase semi-actuated concurrent/sequential operation. CMA applied to 02 & 06. Ped heads and buttons on POL4 & P6. Sequence - 01 + 06, 02 + 06, 07/07 + OL3 + POL4, 03(03 + POL4), 04(04 + OL3 + POL4). Ped Overlap POL4 operates with 0's 7, 4 & 8. 01 & 04 will be omitted during gate-closed operation and 07 will be omitted during gate-open operation. Omits to be applied by THCEA ACN(Automated Control Node). Railroad Preemption Clearance - 06. Railroad Preemption Dwell - 04(OL3 terminates) or 08 by ACN. No Ped operation during Preemption.

Vehicle Movements	Phase	Interval	Display Sequence								Signal									
			1/6	2	4	6	OL3/4	7/4	8	8A/8	OL3	POL4	P	P						
	POL4	SW	R	R	R	R	G	G	G	R	R									
		Clear Ped	R	R	R	R	G	G	G	R	R									
		Clear to	R	R	R	R	Y	Y	Y	R	R									
		All Other	R	R	R	R	R	R	R	R	R									
	05	SW					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	
	08	SW	R	R	R	R	R	R	R	G	G					ON	DW	DW	DW	DW
		Clear to	R	R	R	R	R	R	R	Y	Y					ON	DW	DW	DW	DW
		Exit 02 & 06	R	R	R	R	R	R	R	R	R					ON	DW	DW	DW	DW
	04	SW	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 02 & 06	R	R	R	R	R	R	R	R						DW	DW	DW	DW	

OL3

LS3

LS8

LS9

A4

A5

A7

A5

Close

POL4

LS14

LS15



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	FDOT 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:

Comments
 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: Khe Date: 8-2-19 Notes:



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

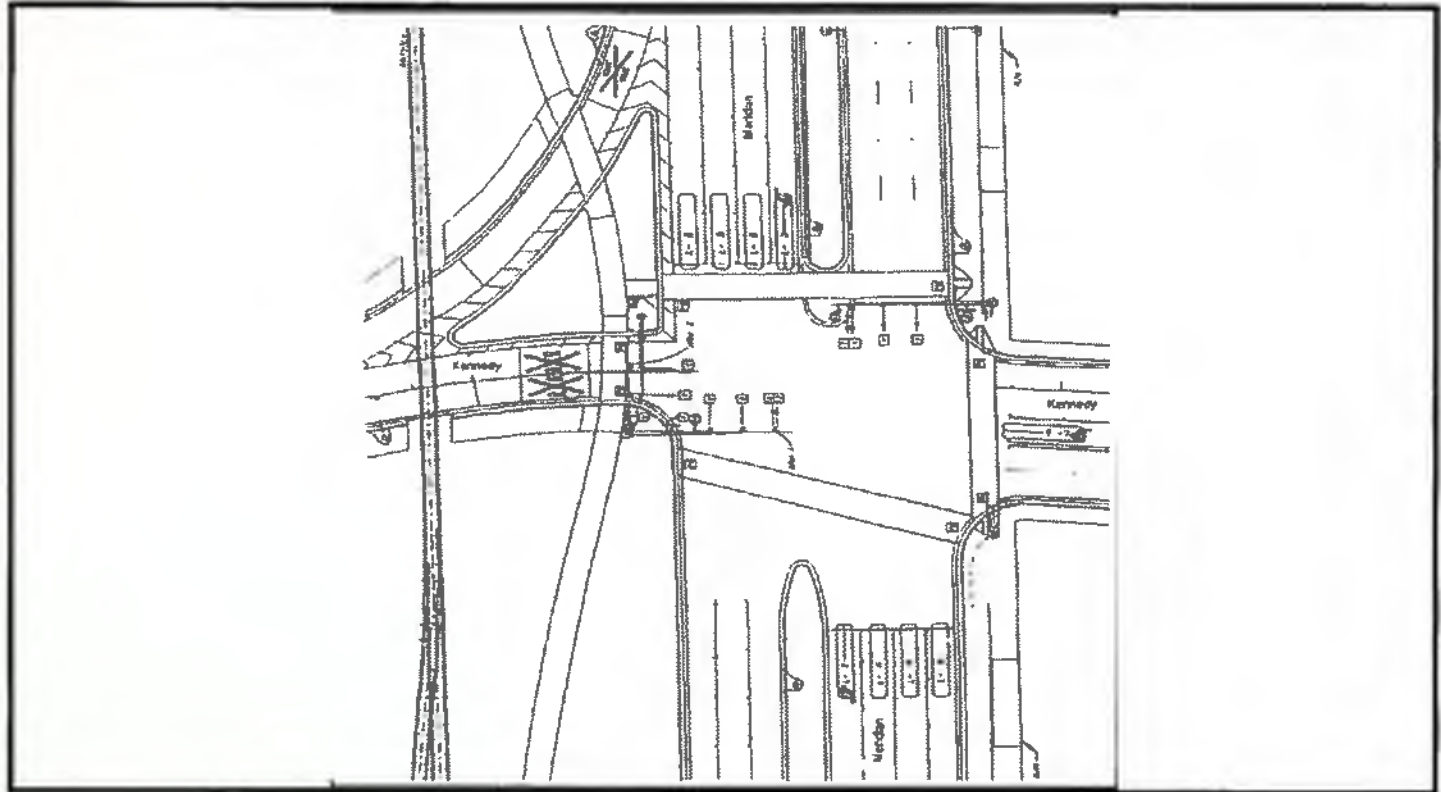
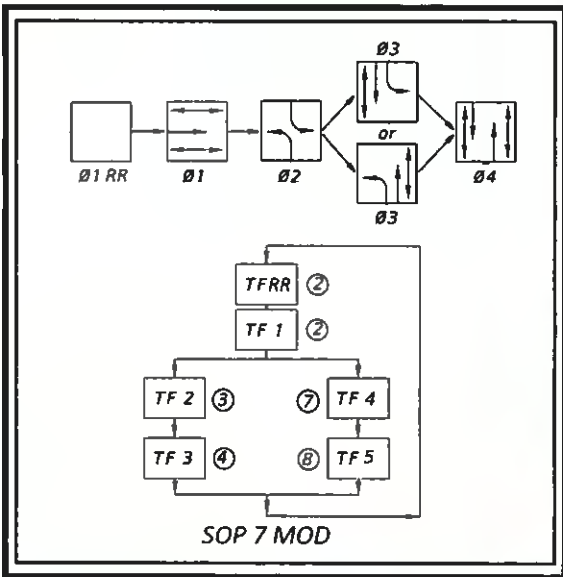
	Patterns	Sequence	Cycle	Offset								
1.	0515 - 0900 AM Peak	1	140	100		51	19	70			19	70
2.	0900 - 1115 AM Off Peak	1	120	15		59	12	49			12	49
3.	1115 - 1330 Noon	1	120	15		59	12	49			12	49
4.	1330 - 1515 PM Off Peak	1	120	15		59	12	49			12	49
5.	1515 - 1830 PM Peak	1	140	98		60	30	50			30	50
6.	1830 - 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>Sig 1 Selector 4 section gl fy yl rl v Signal Head 1: 3, 7</p> 	<p>Sig 2 Selector 3 section ball vertica Signal Head 2: 2, 4, 8</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 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			6		6		6
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 Assienments

LS1: LS2: LS3: LS4: Ø4 LS5: LS6: Ø6 LS7: LS8: Ø8
 LS9: LS10: LS11: P8 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: 10-26-17 Approved By: BY Date: 10-27-17

Implemented By: [Signature] 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



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	120	0				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 Assienments

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 15 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

Min Green:		10		10	5	10		10
Yellow CLR:		4.4		3.7	4.4	4.4		3.7
All Red CLR:		2.2		3.5	2.0	2.2		3.5
Walk:		---		7	---	7		7
FDW:		---		30	---	14		30

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

Direction:		SB		WB	SBLT	NB		EBPED
Ø Number:		2		4	5	6		8

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



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: *BC* 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

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

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	LS5:		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,

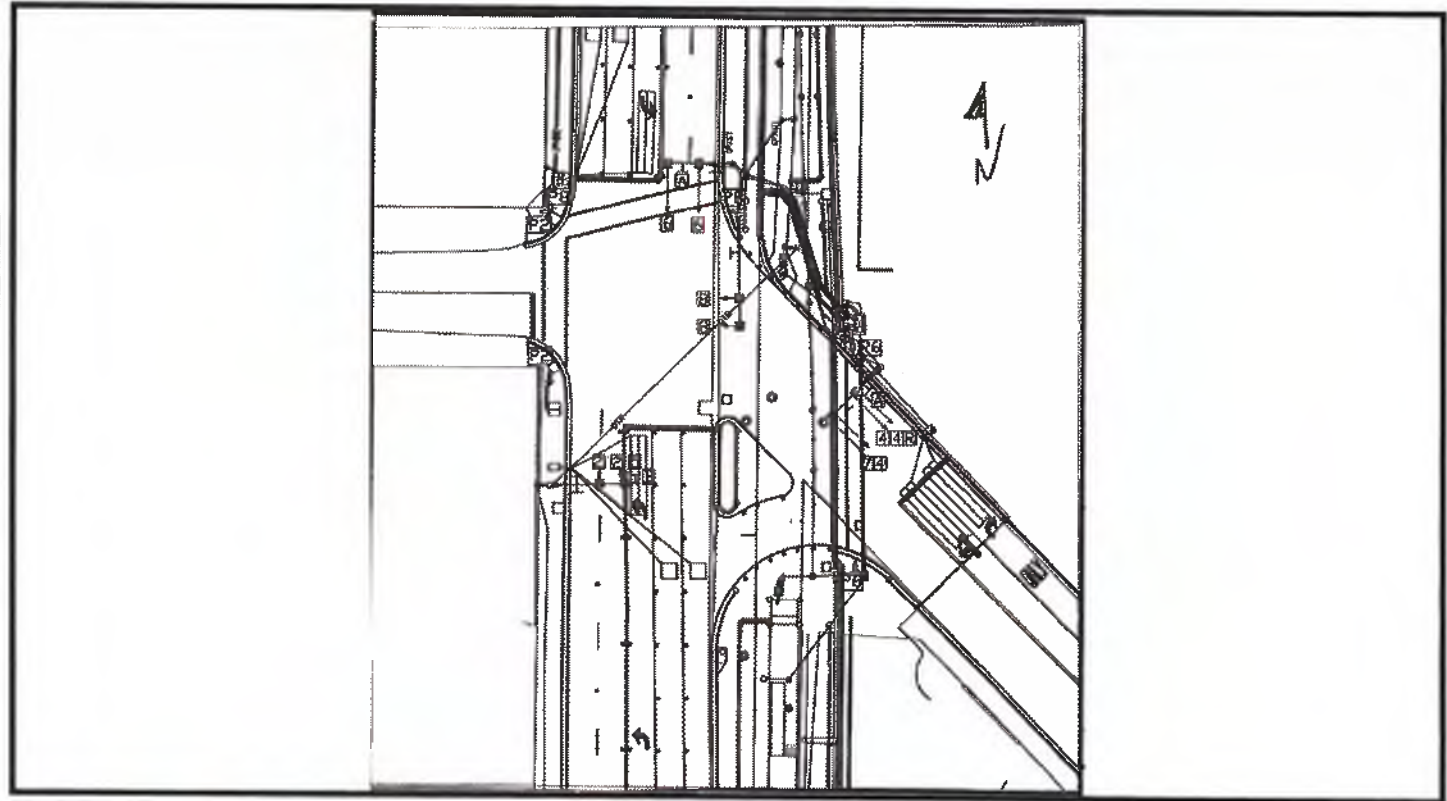
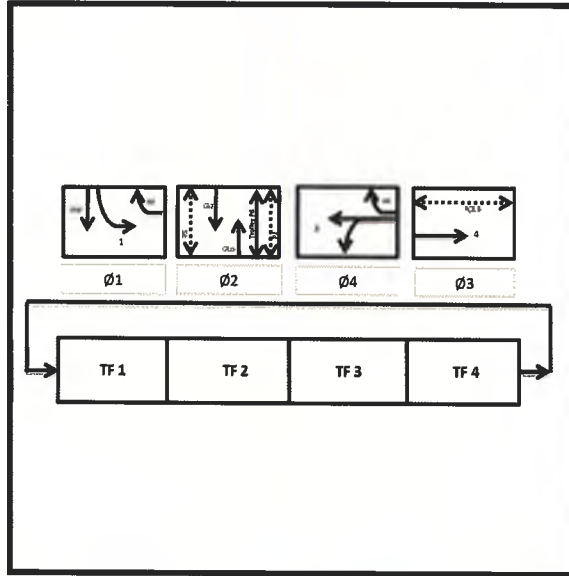
Submitted By: CS Date: 4/19 Review By: BT Date: 4/19/18 Approved By: BC Date: 4/19/18
 Implemented By: KN Date: 4/28 Notes:

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 S-section-doghouse- Signal Head 1: 5/2, 7/4</p>	<p>Sig 2 Selector 3-section-ball-vertica Signal Head 2: 2, 6, 8</p>	<p>Sig 3 Selector S-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

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:	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				

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 E

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		
Intersection Summary													
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
Intersection Summary				

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
Fr _t	0.99			1.00	1.00	0.85
Fl _t Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3519			3532	1770	1583
Fl _t 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, d ₁	16.6			6.0	65.0	63.9
Progression Factor	1.03			2.31	1.00	1.00
Incremental Delay, d ₂	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

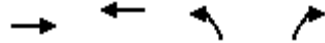
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.3
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		

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

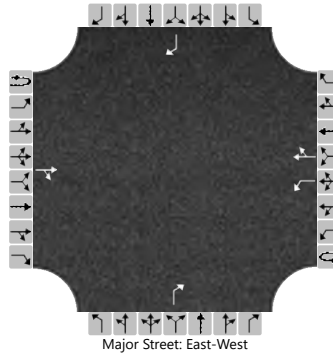
General Information

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 ₉₅ (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					B				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.

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Organisation: H. W. LOCHNER, INC. | Licence: PLUS / Enterprise | Processed: Saturday, November 20, 2021 10:30:41 PM

Project: C:\Users\kshams\Desktop\April\Tampa Office\Whitting\PTAR-Working\HCS_SIDRA\Existing\Channelside Drive_Cumberland Avenue_Existing_2019_AM.sip9

HCS7 Two-Way Stop-Control Report

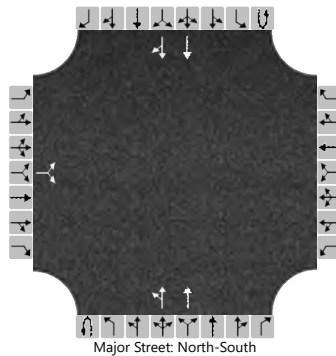
General Information

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 ₉₅ (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	12	
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		
Intersection Summary													
HCM 2000 Control Delay			27.5		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.41										
Actuated Cycle Length (s)			140.0		Sum of lost time (s)						22.4		
Intersection Capacity Utilization			79.8%		ICU Level of Service						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		
Intersection Summary													
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

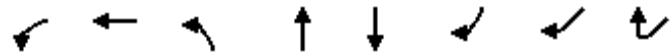


Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	2184	200	1547
v/c Ratio	0.90	0.22	0.62
Control Delay	45.4	16.2	26.7
Queue Delay	0.0	0.0	0.0
Total Delay	45.4	16.2	26.7
Queue Length 50th (ft)	530	75	347
Queue Length 95th (ft)	582	127	404
Internal Link Dist (ft)	416		237
Turn Bay Length (ft)			
Base Capacity (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
Intersection Summary			

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
Frt		1.00		1.00	0.93		1.00	0.85
Flt Protected		1.00		0.99	1.00		1.00	1.00
Satd. Flow (prot)		5072		3503	3284		1863	1583
Flt 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, d1		15.5		38.9	40.6		14.7	11.6
Progression Factor		0.63		0.69	1.00		1.00	1.00
Incremental Delay, d2		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

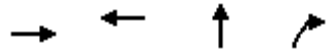
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔↔↔	↔			
Traffic Volume (vph)	113	110	0	0	277	153	30	1572	69	0	0	0
Future Volume (vph)	113	110	0	0	277	153	30	1572	69	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost 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	
Intersection Summary												
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		
Intersection Summary													
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

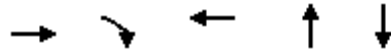
													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	24	84	51	47	105	25	62	199	47	11	89	63	
Future Volume (vph)	24	84	51	47	105	25	62	199	47	11	89	63	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost 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		
Intersection Summary													
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

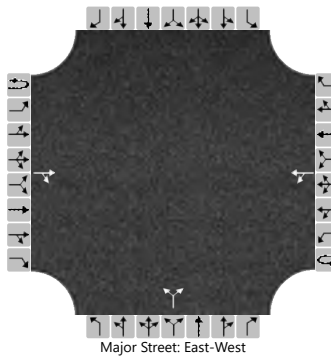
General Information

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 ₉₅ (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		Ø	↑↑↑		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 _t	0.92			0.99		1.00	1.00
Fl _t Protected	0.98			1.00		0.95	1.00
Satd. Flow (prot)	1681			5053		1770	5085
Fl _t 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 ₁	18.2			34.0		25.5	34.9
Progression Factor	1.13			1.14		1.00	1.00
Incremental Delay, d ₂	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

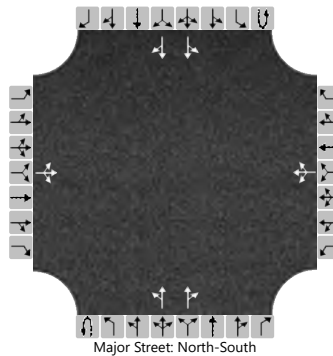
General Information

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	2	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		

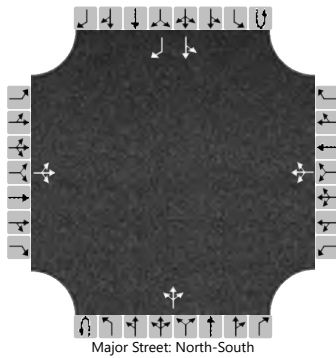
Delay, Queue Length, and Level of Service

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 ₉₅ (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											

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	2019	North/South Street	Brush 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	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 ₉₅ (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

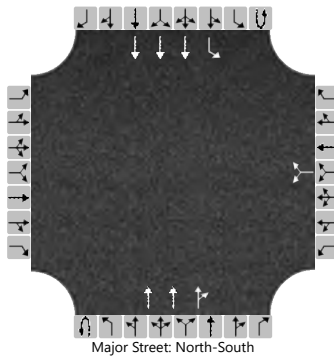
General Information

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 ₉₅ (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		
Intersection Summary													
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
Intersection Summary				

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

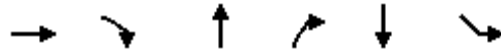
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.7
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

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 _t	1.00			1.00	1.00	0.85
Fl _t Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3525			3538	1770	1583
Fl _t 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 ₁	13.7			5.8	59.5	55.9
Progression Factor	2.43			2.01	1.00	1.00
Incremental Delay, d ₂	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

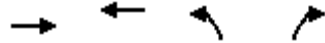
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.3
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

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

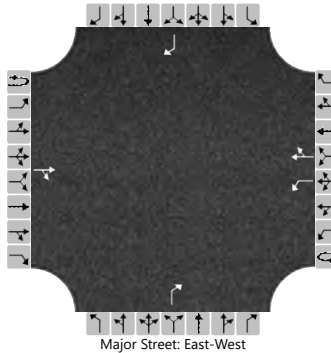
General Information

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 ₉₅ (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	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	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

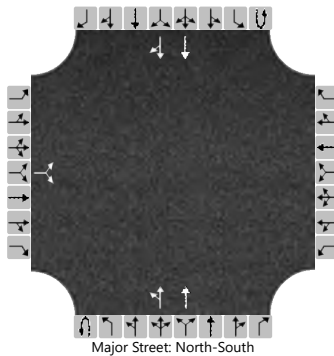
General Information

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 ₉₅ (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															

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		
Intersection Summary													
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		
Intersection Summary													
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					
Frt					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		
Intersection Summary													
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

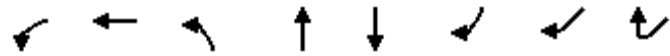


Lane Group	WBT	NBL	NBT
Lane Group Flow (vph)	1356	173	1516
v/c Ratio	0.55	0.19	0.61
Control Delay	33.9	12.8	24.4
Queue Delay	0.0	0.0	0.0
Total Delay	33.9	12.8	24.4
Queue Length 50th (ft)	273	56	318
Queue Length 95th (ft)	311	98	360
Internal Link Dist (ft)	416		237
Turn Bay Length (ft)			
Base Capacity (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
Intersection Summary			

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 _t		1.00		1.00	0.86		1.00	0.85
Fl _t Protected		1.00		0.98	1.00		1.00	1.00
Satd. Flow (prot)		5079		3462	3060		1863	1583
Fl _t 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 ₁		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 ₂		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		
Intersection Summary													
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
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)	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



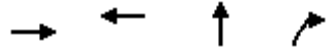
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔↔			↕↕			↔↔↔	↗				
Traffic Volume (vph)	170	238	0	0	84	103	35	1571	129	0	0	0	
Future Volume (vph)	170	238	0	0	84	103	35	1571	129	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total 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		
Intersection Summary													
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	

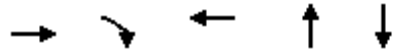
Intersection Summary		
HCM 2000 Control Delay	60.6	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.29	E
Actuated Cycle Length (s)	70.0	Sum of lost time (s)
Intersection Capacity Utilization	50.5%	17.4
Analysis Period (min)	15	ICU Level of Service
		A

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

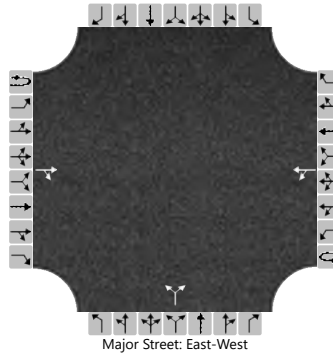
General Information

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 ₉₅ (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 _t	0.96			0.99		1.00	1.00
Fl _t Protected	0.97			1.00		0.95	1.00
Satd. Flow (prot)	1727			5024		1770	5085
Fl _t 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 ₁	61.1			5.6		2.5	2.5
Progression Factor	1.02			2.69		1.00	1.00
Incremental Delay, d ₂	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

Intersection Summary

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

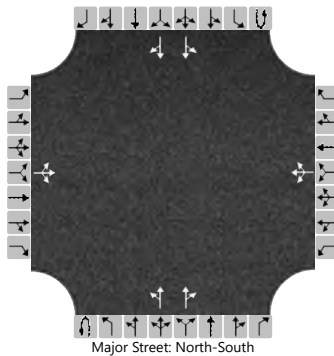
General Information

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 ₉₅ (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

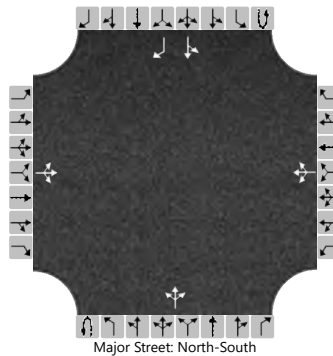
General Information

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 ₉₅ (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

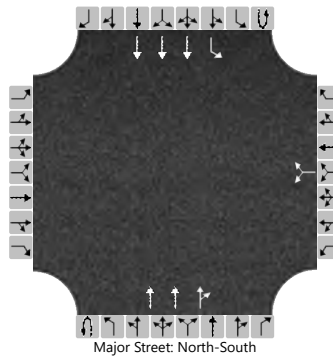
General Information

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 ₉₅ (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 F

Safety Analysis Technical Memorandum

TECHNICAL MEMORANDUM

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

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.

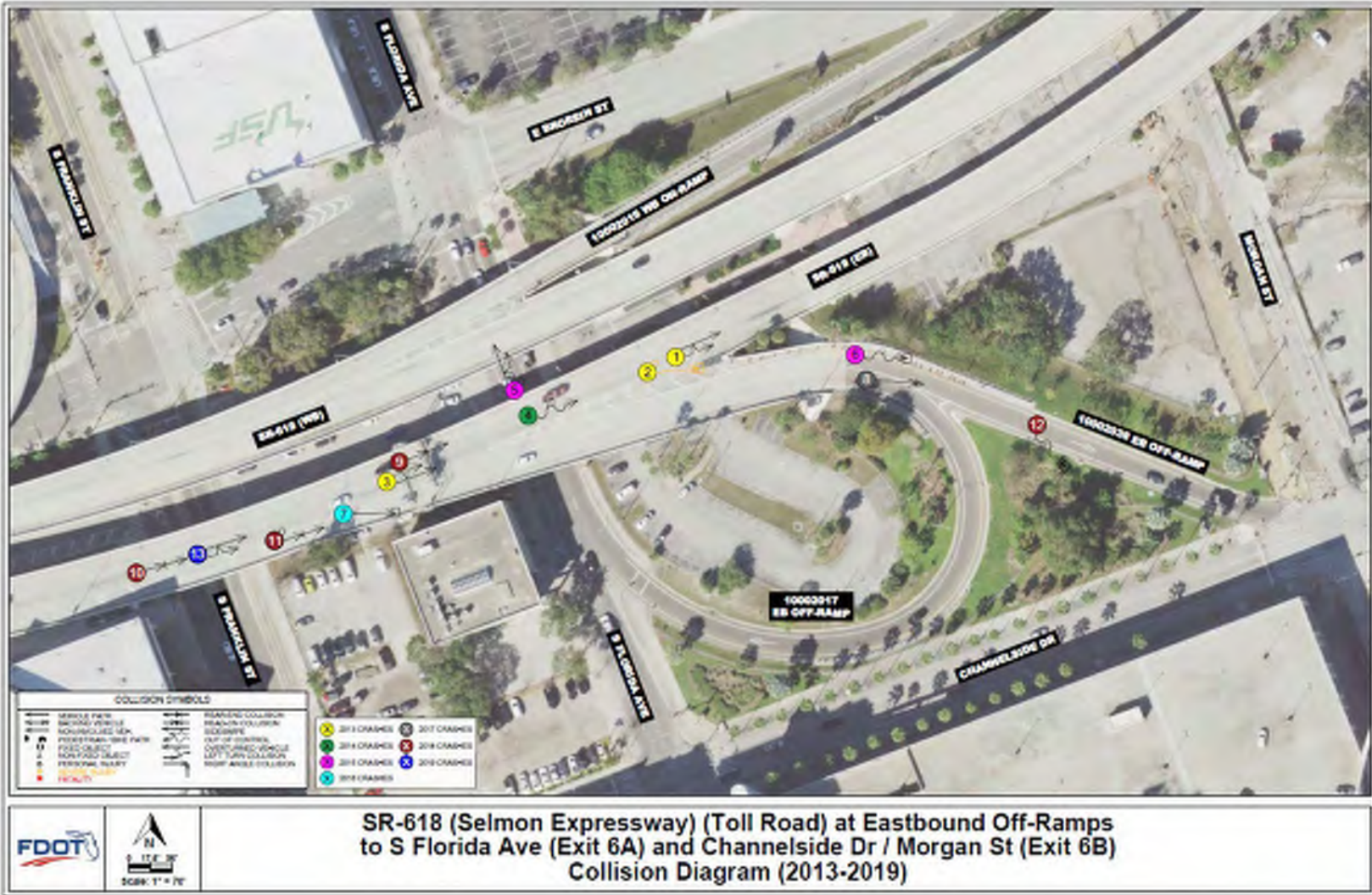


Figure 1: Florida Avenue Ramp Collision Diagram (2013 – 2019)

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

Existing Condition	Future Condition	Safety Benefit
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)

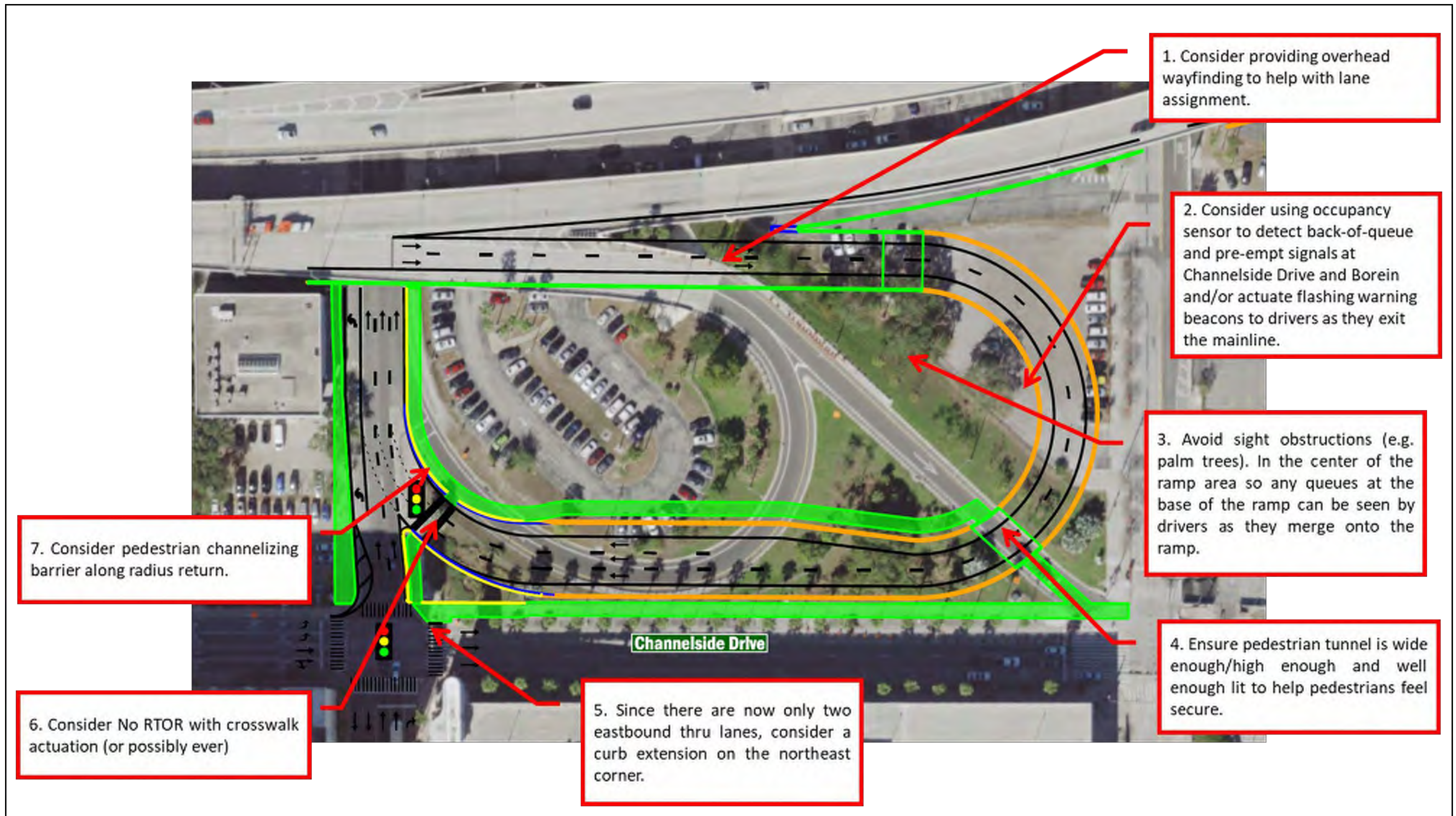


Figure 2: Mobility and Safety Qualitative Assessment - Florida Avenue Ramp

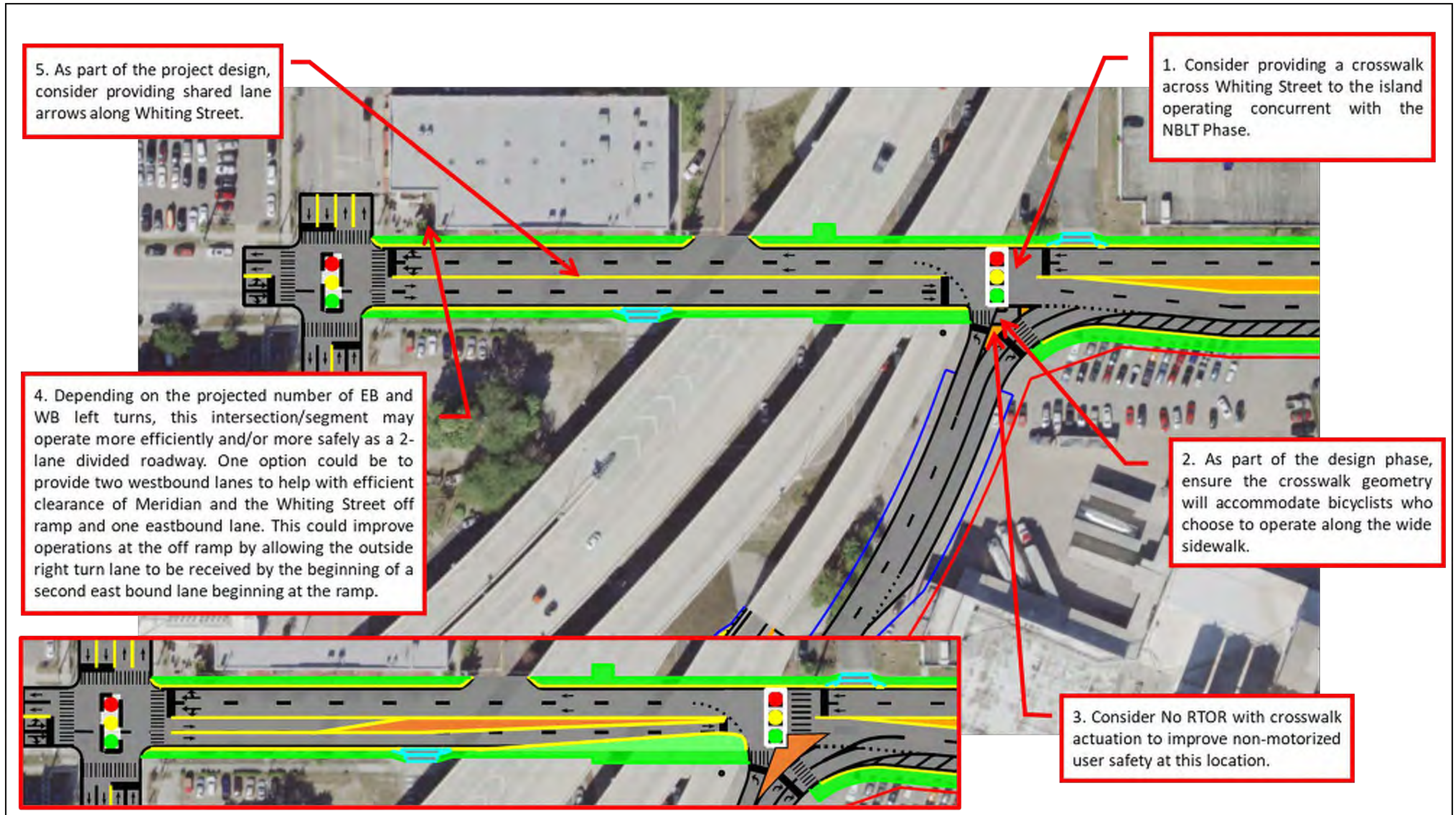


Figure 3: Mobility and Safety Qualitative Assessment - Whiting Street Ramp

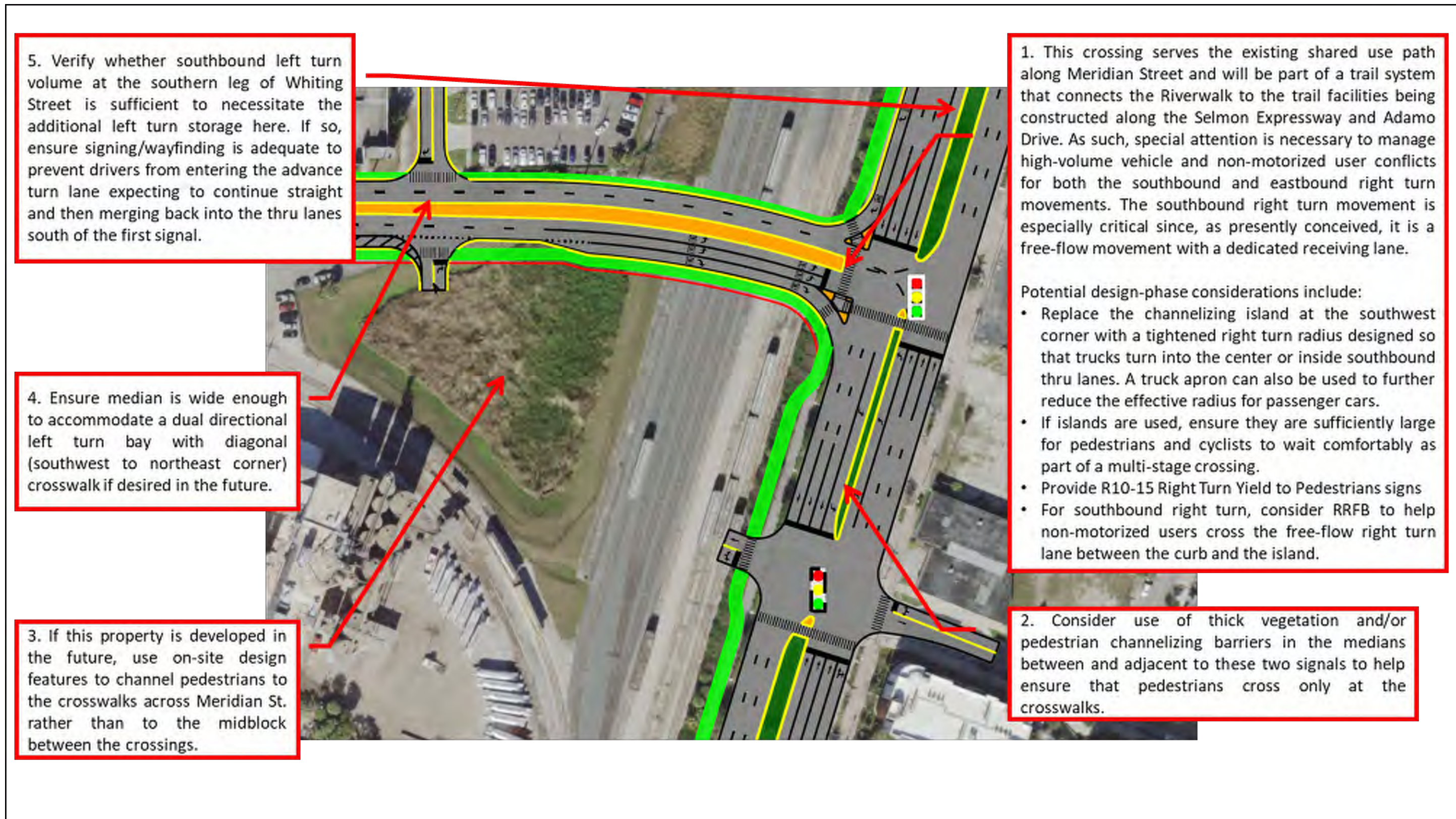


Figure 4: Mobility and Safety Qualitative Assessment - Meridian Avenue Connection

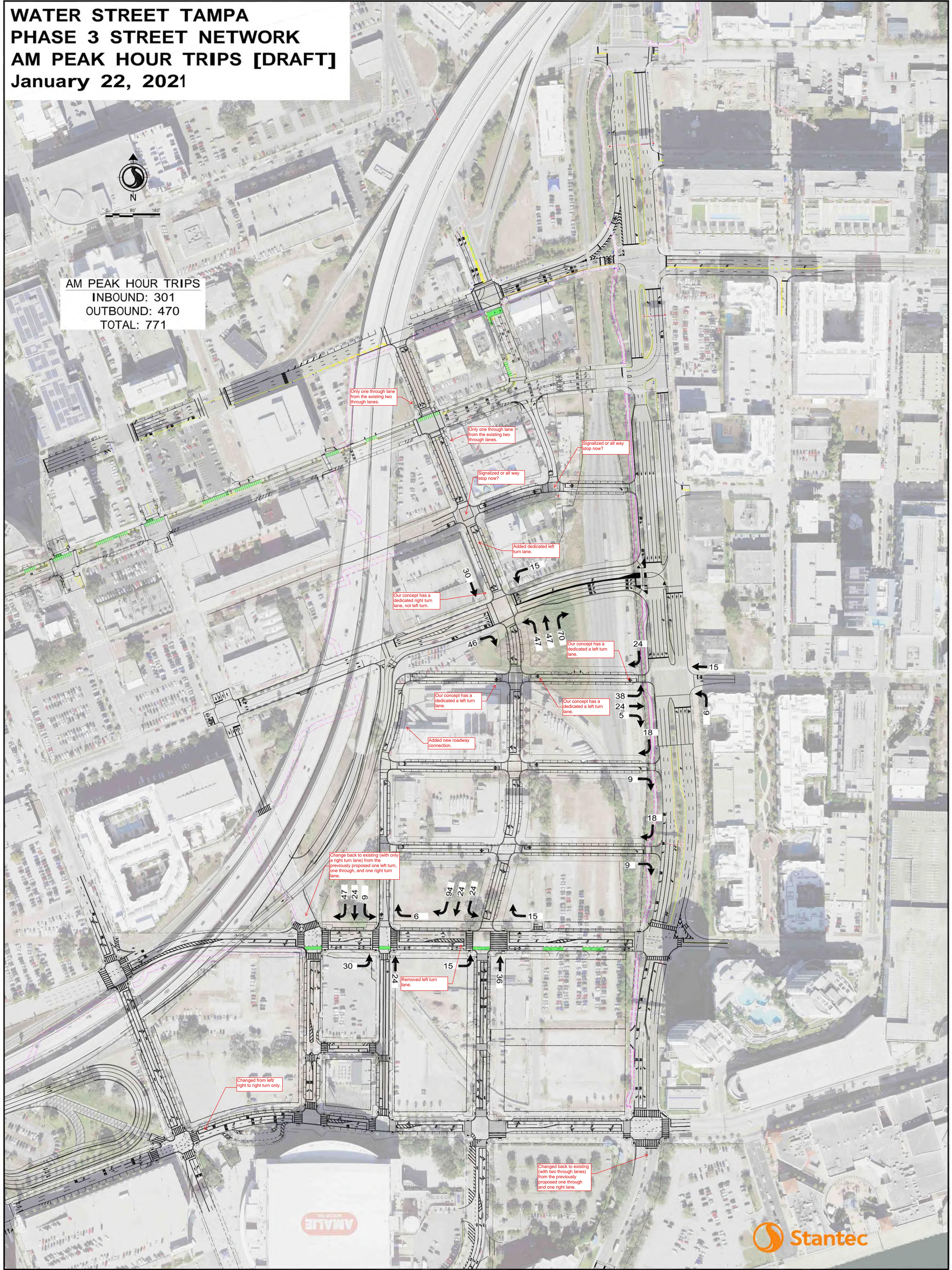
Appendix H

SPP Concepts

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

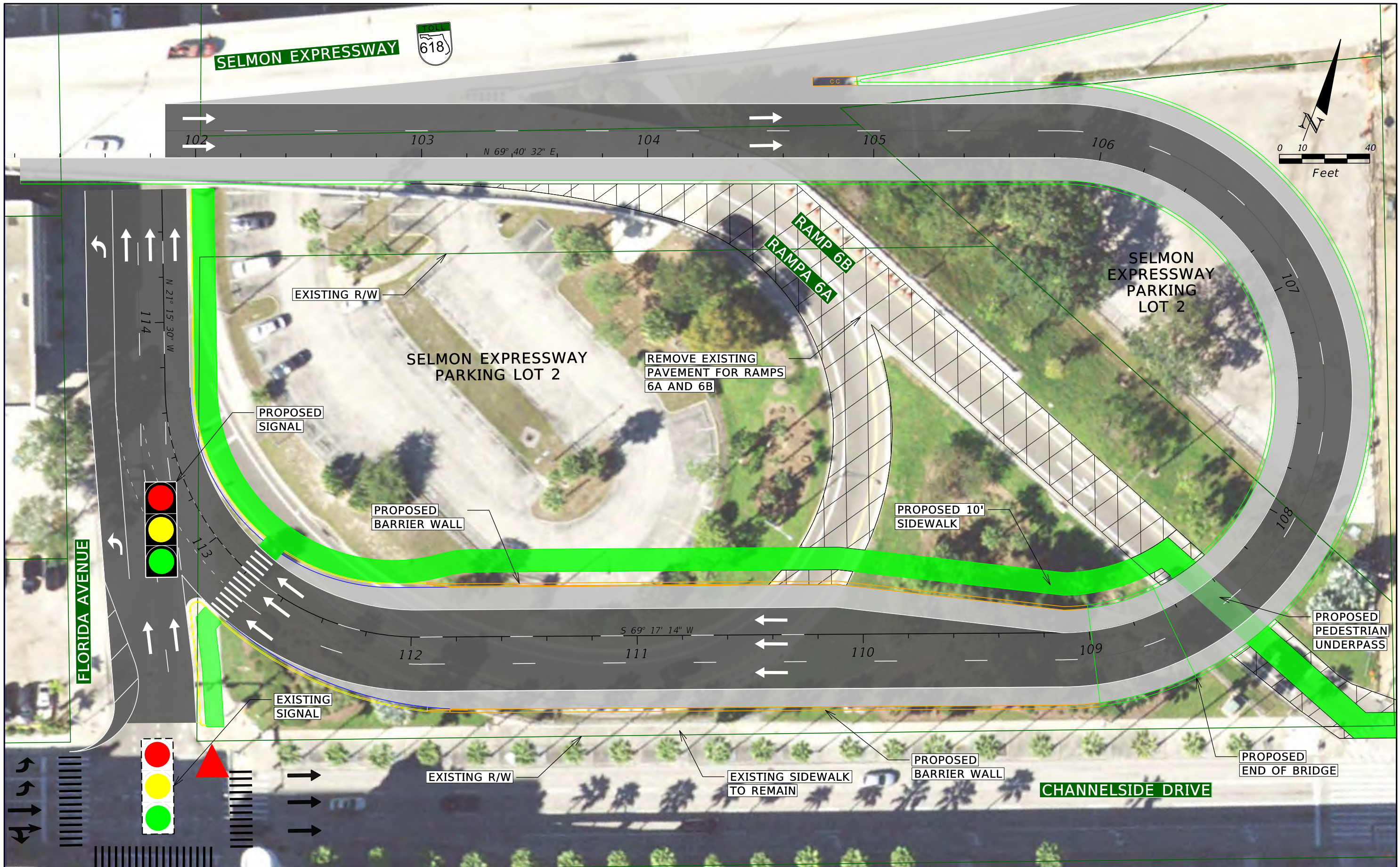


AM PEAK HOUR TRIPS
INBOUND: 301
OUTBOUND: 470
TOTAL: 771



Appendix I

Design Concepts



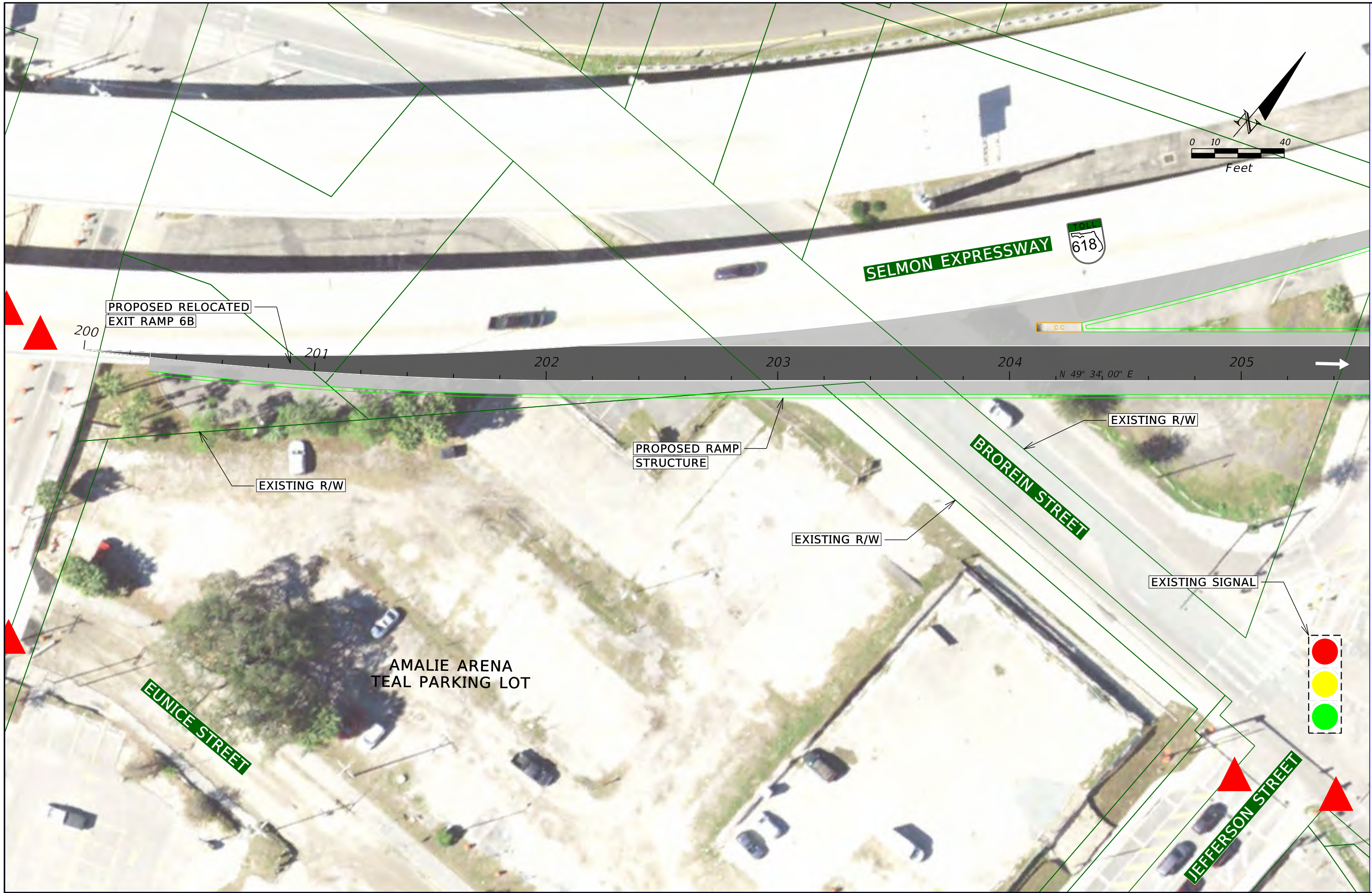
LEGEND	
	Sidewalk
	Roadway Pavement
	Grass
	Traffic Separator/ Raised Median
	Proposed Maintenance Agreement
	Proposed Roadway Limits of Construction
	Existing ROW
	Proposed ROW
	Wall Barrier
	Bridge
	Curb
	Ramp Shoulder
	Pavement Removal
	High Level Contamination
	Medium Level Contamination

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



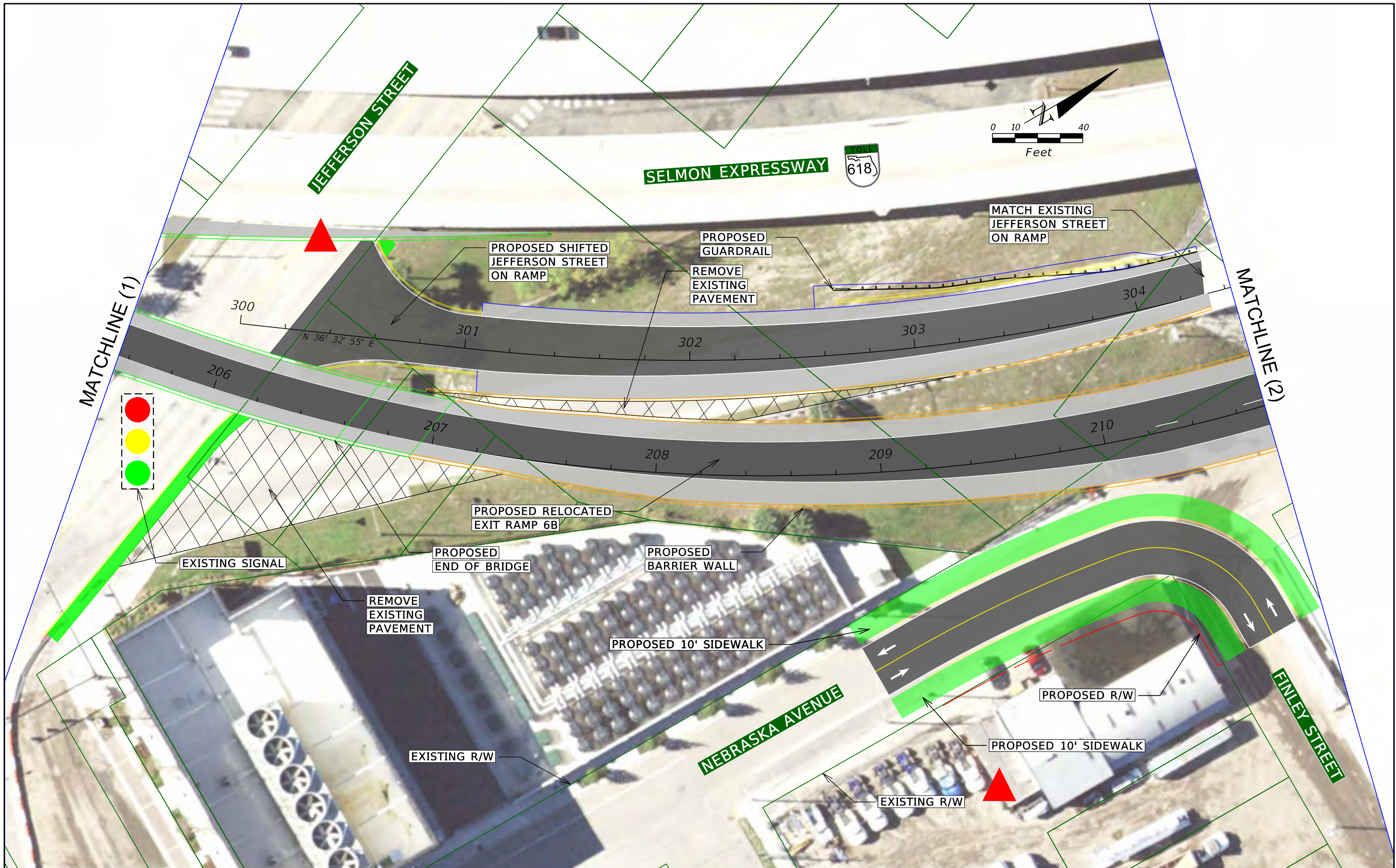
LEGEND	Sidewalk	Proposed Maintenance Agreement	Wall Barrier	Pavement Removal
	Roadway Pavement	Proposed Roadway Limits of Construction	Bridge	High Level Contamination
	Grass	Existing ROW	Curb	Medium Level Contamination
	Traffic Separator/Raised Median	Proposed ROW	Ramp Shoulder	

H.W. LOCHNER, INC.
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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.
 2



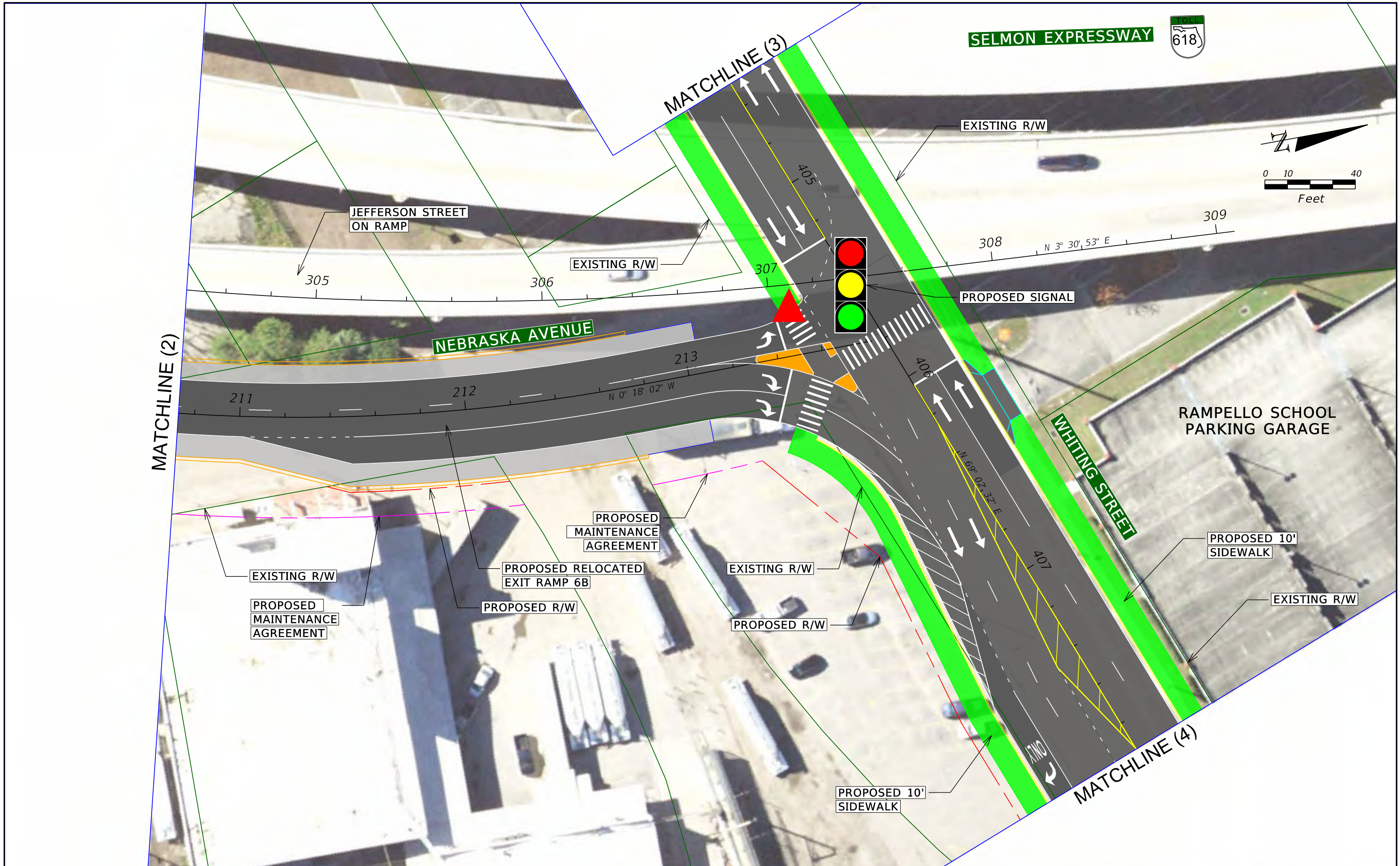
LEGEND	
	Sidewalk
	Roadway Pavement
	Grass
	Traffic Separator/ Raised Median
	Proposed Maintenance Agreement
	Proposed Roadway Limits of Construction
	Existing ROW
	Proposed ROW
	Wall Barrier
	Bridge
	Curb
	Ramp Shoulder
	Pavement Removal
	High Level Contamination
	Medium Level Contamination

H.W. LOCHNER, INC.
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ROAD NO.	COUNTY	FINANCIAL PROJ ID
SR 618	HILLSBOROUGH	HI-0141

**PREFERRED ALTERNATIVE
 CONCEPT PLAN SHEET**

SHEET NO.
3



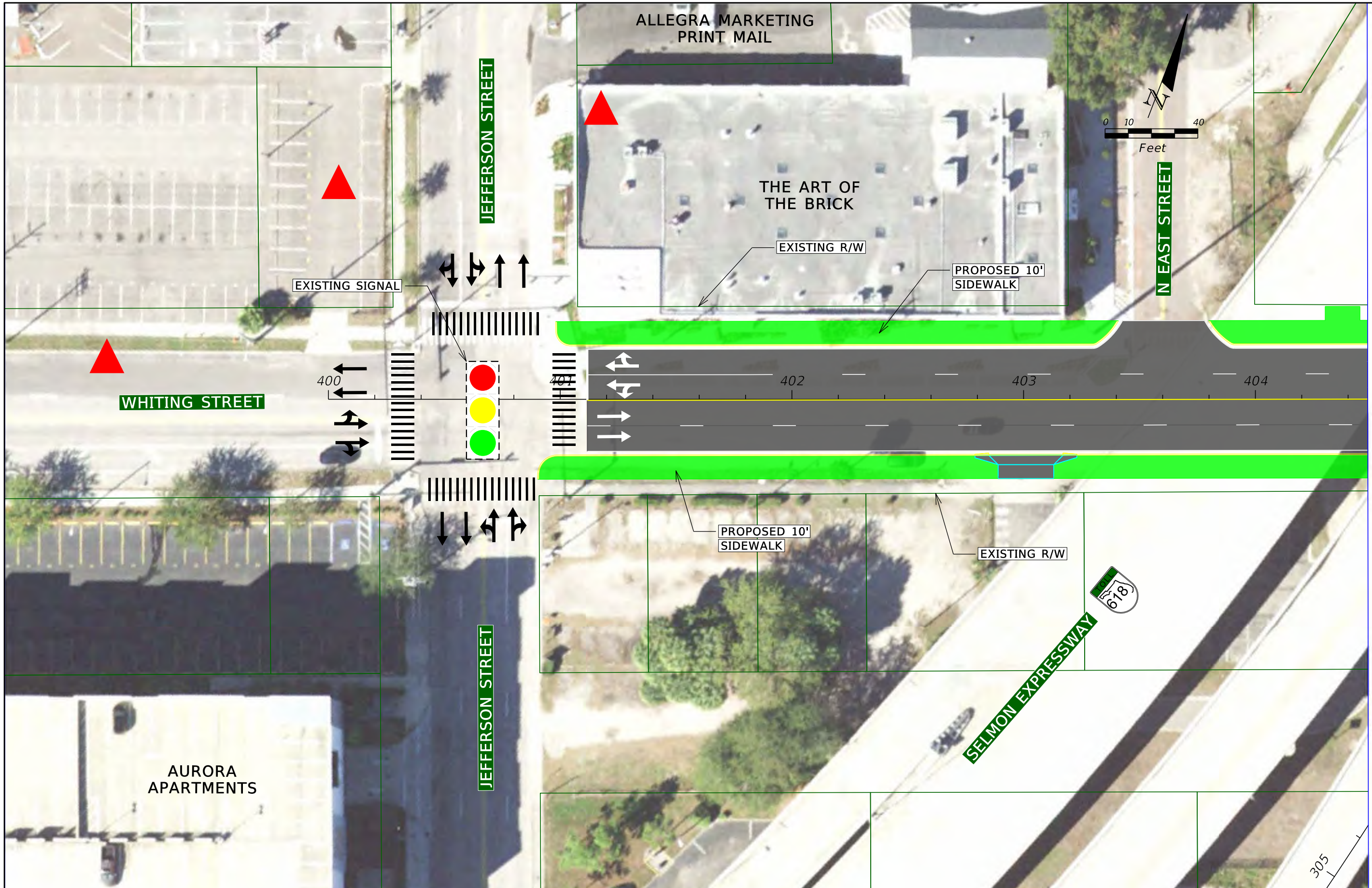
LEGEND	Sidewalk	Proposed Maintenance Agreement	Wall Barrier	Pavement Removal
	Roadway Pavement	Proposed Roadway Limits of Construction	Bridge	High Level Contamination
	Grass	Existing ROW	Curb	Medium Level Contamination
	Traffic Separator/Raised Median	Proposed ROW	Ramp Shoulder	

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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)

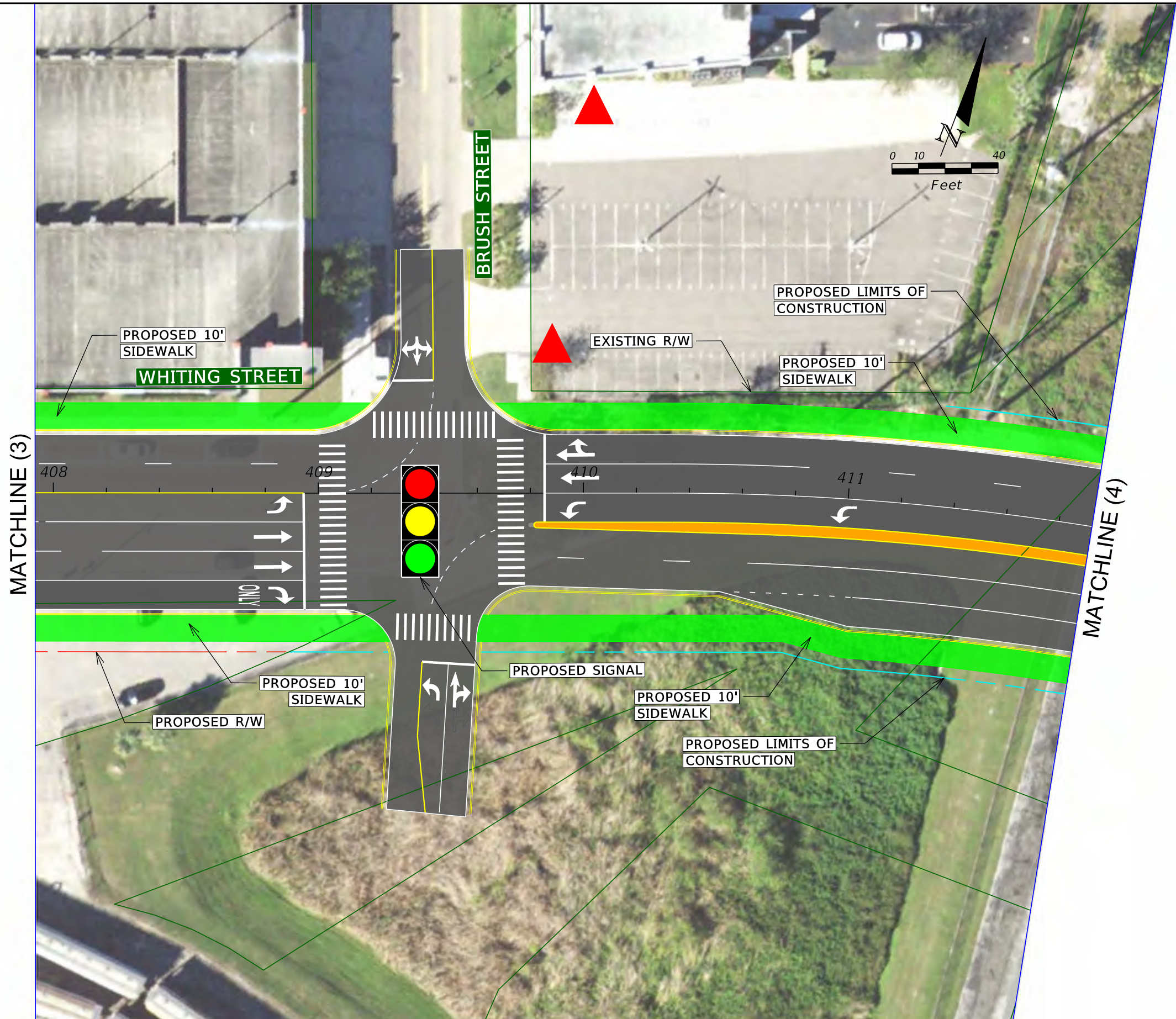
LEGEND	
	Sidewalk
	Roadway Pavement
	Grass
	Traffic Separator/ Raised Median
	Proposed Maintenance Agreement
	Proposed Roadway Limits of Construction
	Existing ROW
	Proposed ROW
	Wall Barrier
	Bridge
	Curb
	Ramp Shoulder
	Pavement Removal
	High Level Contamination
	Medium Level Contamination

H.W. LOCHNER, INC.
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 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



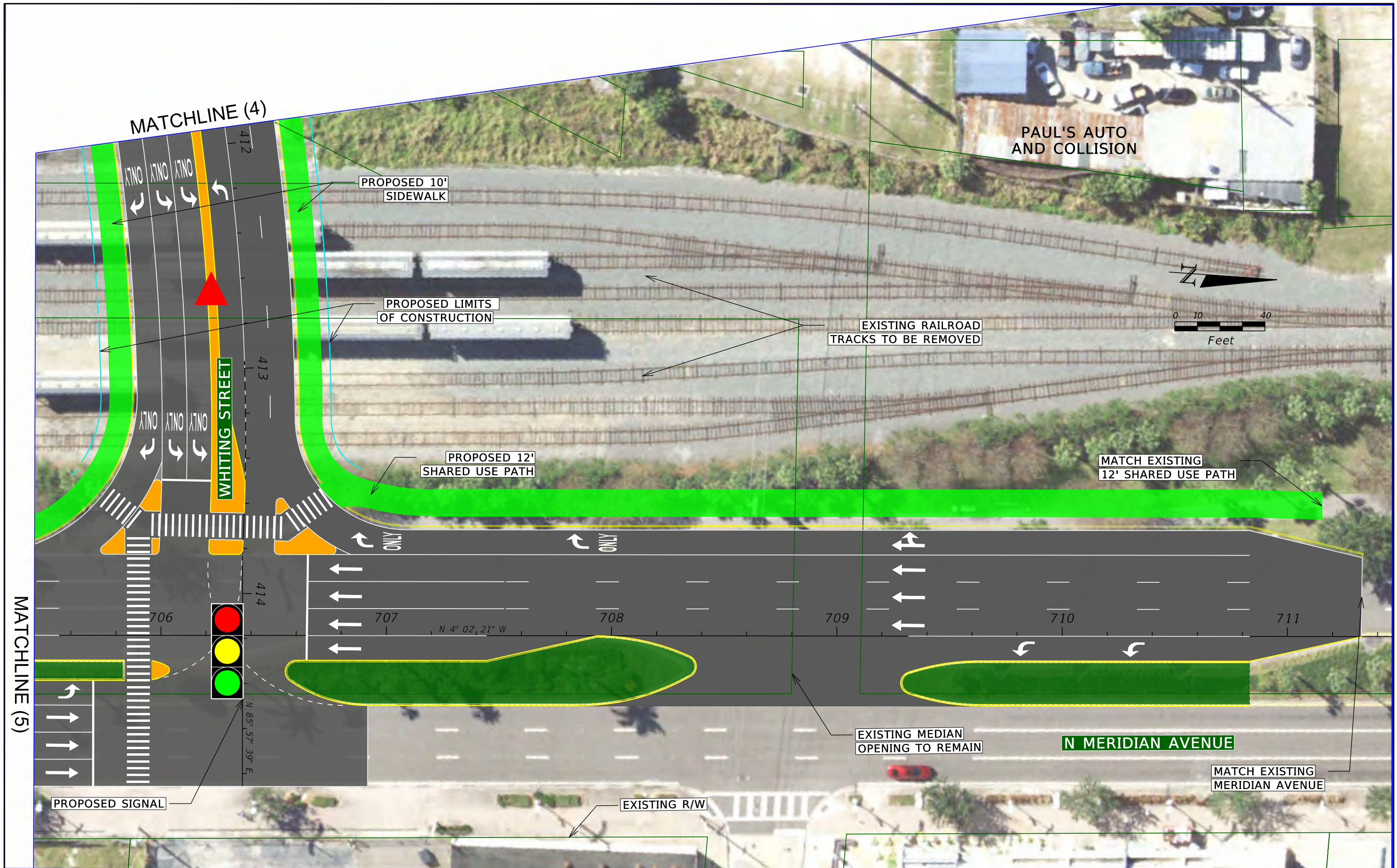
LEGEND	
	Sidewalk
	Roadway Pavement
	Grass
	Traffic Separator/ Raised Median
	Proposed Maintenance Agreement
	Proposed Roadway Limits of Construction
	Existing ROW
	Proposed ROW
	Wall Barrier
	Bridge
	Curb
	Ramp Shoulder
	Pavement Removal
	High Level Contamination
	Medium Level Contamination

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ROAD NO.	COUNTY	FINANCIAL PROJ 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 ET ID
SR 618	HILLSBOROUGH	HI-0141

**PREFERRED ALTERNATIVE
 CONCEPT PLAN SHEET**

SHEET NO.
7



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		
Intersection Summary													
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
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)	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

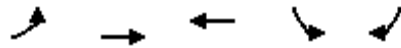


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↙	↘
Traffic Volume (veh/h)	351	1005	509	151	5	31
Future Volume (veh/h)	351	1005	509	151	5	31
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		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
Intersection Summary						
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
Intersection Summary						
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

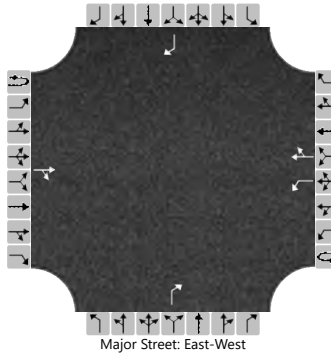
General Information

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	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)			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 ₉₅ (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

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

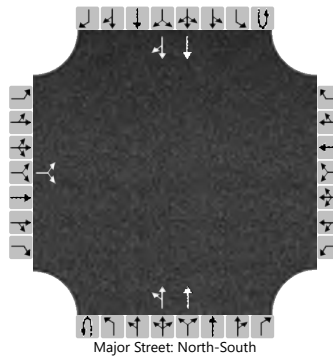
General Information

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 ₉₅ (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																

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	12	
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	

Intersection Summary		
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	Sum of lost time (s) 22.4
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(l)	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(I)	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

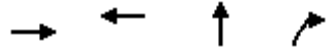
													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			  					
Traffic Volume (vph)	114	459	0	0	363	179	73	1760	86	0	0	0	
Future Volume (vph)	114	459	0	0	363	179	73	1760	86	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost 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		
Intersection Summary													
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

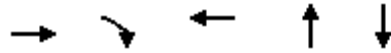
01/20/2022

													
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		
Intersection Summary													
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

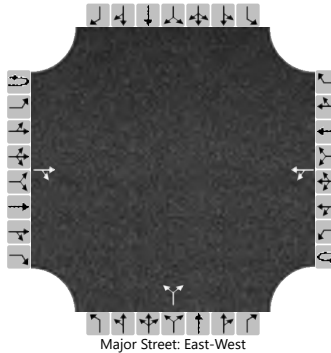
General Information

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 ₉₅ (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												D				

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		W	W
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 _t	0.93			0.99		1.00	1.00
Fl _t Protected	0.98			1.00		0.95	1.00
Satd. Flow (prot)	1693			5013		1770	5085
Fl _t 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

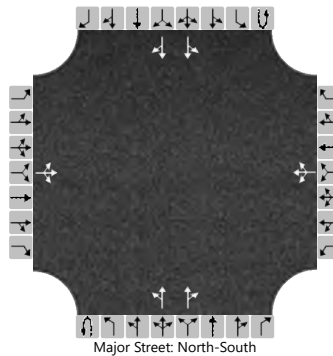
General Information

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 ₉₅ (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

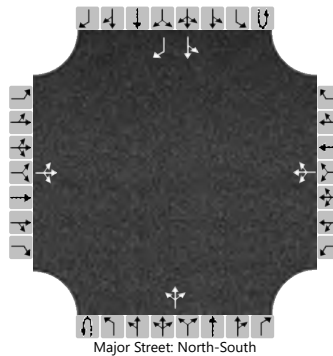
General Information

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 ₉₅ (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

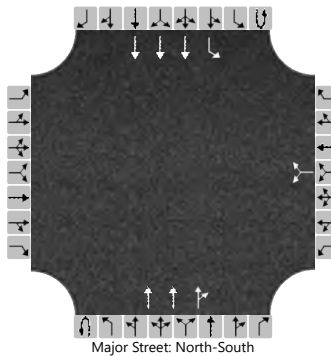
General Information

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	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)						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 ₉₅ (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		
Intersection Summary													
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
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)	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

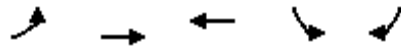


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	128	1559	642	11	7	160
Future Volume (veh/h)	128	1559	642	11	7	160
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
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(l)	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+11), s	4.8	2.0			112.0	17.0
Green Ext Time (p_c), s	0.0	5.5			0.0	0.1
Intersection Summary						
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
Intersection Summary						
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

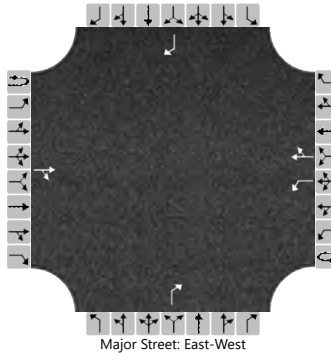
General Information

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 ₉₅ (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				C				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.

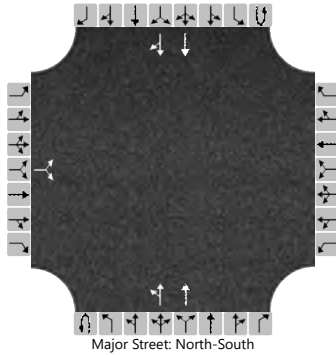
Gap-Acceptance Capacity: Traditional M1.

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

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	H.W. Lochner	Intersection	ChannelsideDr&E WhitingSt
Agency/Co.		Jurisdiction	FDOT, District 7
Date Performed	09/24/2021	East/West Street	E Whiting St
Analysis Year	2026	North/South Street	Channelside Dr
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	0	0	0	0	2	0	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 ₉₅ (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	
Intersection Summary												
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	
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	

Intersection Summary

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(l)	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

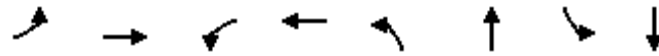
Notes

* 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

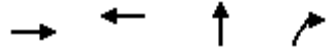
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  				
Traffic Volume (vph)	180	461	0	0	168	288	135	2067	129	0	0	0
Future Volume (vph)	180	461	0	0	168	288	135	2067	129	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost 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	
Intersection Summary												
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	

Intersection Summary

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	

Intersection Summary

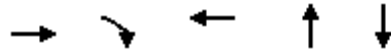
HCM 2000 Control Delay	60.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		

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

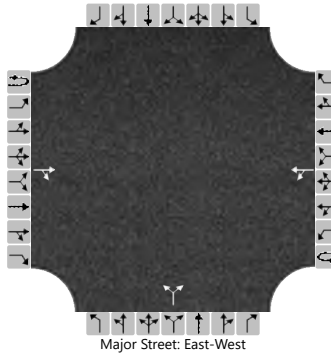
General Information

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 ₉₅ (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	WT		NT	NTT		ST	STT
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 _t	0.92			0.99		1.00	1.00
Fl _t Protected	0.98			1.00		0.95	1.00
Satd. Flow (prot)	1684			5019		1770	5085
Fl _t 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, d1	60.4			11.2		10.2	3.0
Progression Factor	1.00			1.46		1.00	1.00
Incremental Delay, d2	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

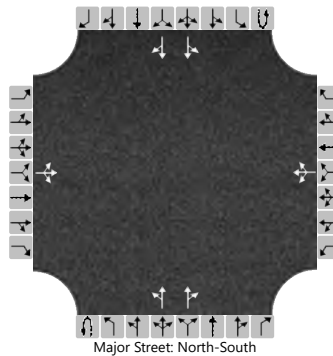
General Information

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		

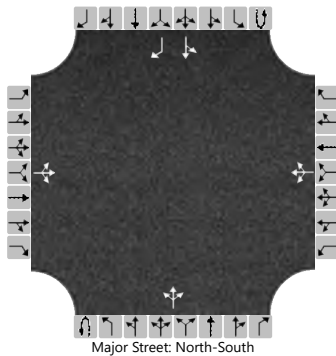
Delay, Queue Length, and Level of Service

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 ₉₅ (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 ₉₅ (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

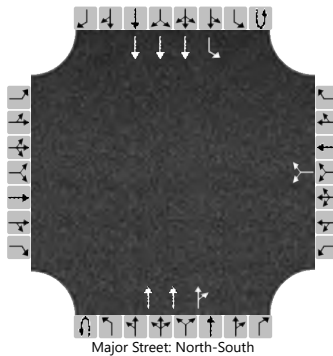
General Information

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	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)						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 ₉₅ (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		
Intersection Summary													
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	
Intersection Summary												
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

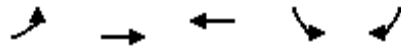


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↙	↘
Traffic Volume (veh/h)	413	1305	667	168	5	32
Future Volume (veh/h)	413	1305	667	168	5	32
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		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
Intersection Summary						
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
Intersection Summary						
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

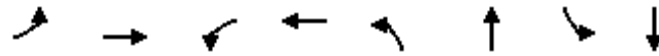
Notes

* 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

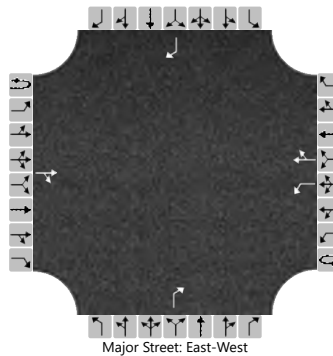
General Information

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 ₉₅ (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.

HCS7 Two-Way Stop-Control Report

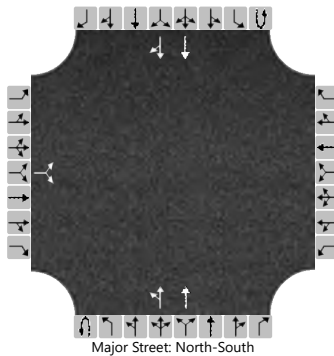
General Information

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 ₉₅ (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		
Intersection Summary													
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	
Intersection Summary												
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		Sum of lost time (s)						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		
Intersection Summary													
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

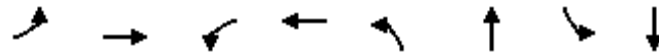
Notes

* 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(I)	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

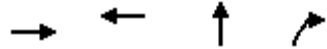
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			   				
Traffic Volume (vph)	115	467	0	0	462	225	113	1962	107	0	0	0
Future Volume (vph)	115	467	0	0	462	225	113	1962	107	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost 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	
Intersection Summary												
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

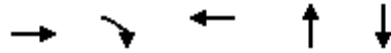
01/20/2022

													
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		
Fr _t		1.00	0.85		0.98			1.00			0.98		
Fl _t Protected		0.99	1.00		1.00			0.98			0.99		
Satd. Flow (prot)		1838	1583		1825			3479			3432		
Fl _t 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

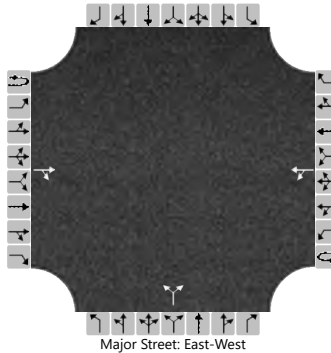
General Information

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 ₉₅ (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						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)	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 _t	0.95			0.99		1.00	1.00
Fl _t Protected	0.97			1.00		0.95	1.00
Satd. Flow (prot)	1719			5029		1770	5085
Fl _t 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, d1	57.6			9.0		4.8	7.4
Progression Factor	0.97			0.88		1.00	1.00
Incremental Delay, d2	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

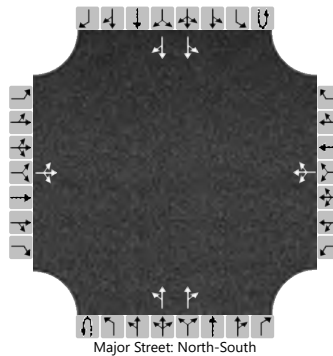
General Information

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		

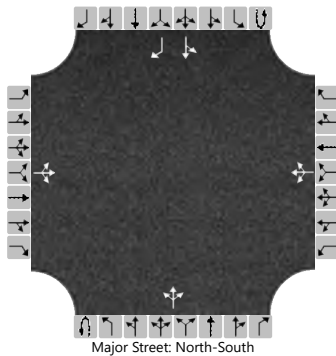
Delay, Queue Length, and Level of Service

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 ₉₅ (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		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	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	1	0		0	1	0		0	0	1	0	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 ₉₅ (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

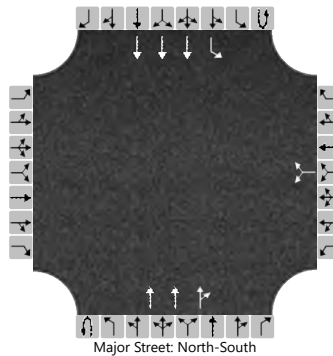
General Information

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	0	3	0	0	1	3	0
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 ₉₅ (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		
Intersection Summary													
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	
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	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	

Intersection Summary

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

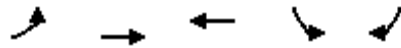


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↖	↗
Traffic Volume (veh/h)	160	1946	656	13	7	137
Future Volume (veh/h)	160	1946	656	13	7	137
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		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
Intersection Summary						
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
Intersection Summary						
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

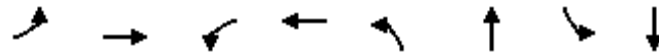
Notes

* 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

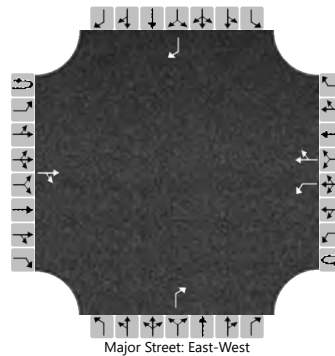
General Information

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 ₉₅ (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				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 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	0.729	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	LOS A	0.5	12.9	0.61	0.61	0.61	37.6
6	T1	5	2.0	5	2.0	0.147	7.5	LOS A	0.5	12.9	0.61	0.61	0.61	35.0
16	R2	66	2.0	69	2.0	0.147	7.5	LOS A	0.5	12.9	0.61	0.61	0.61	34.8
Approach		87	2.0	92	2.0	0.147	7.5	LOS A	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	LOS A	2.1	52.4	0.36	0.23	0.36	37.0
4	T1	425	2.0	447	2.0	0.392	6.8	LOS A	2.1	52.4	0.36	0.23	0.36	38.7
14	R2	231	2.0	243	2.0	0.212	5.0	LOS A	0.9	23.5	0.31	0.19	0.31	34.4
Approach		686	2.0	722	2.0	0.392	6.2	LOS A	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	LOS A	0.5	11.8	0.48	0.41	0.48	34.6
2	T1	50	2.0	53	2.0	0.127	5.2	LOS A	0.5	11.8	0.48	0.41	0.48	34.4
12	R2	13	2.0	14	2.0	0.127	5.2	LOS A	0.5	11.8	0.48	0.41	0.48	33.3
Approach		109	2.0	115	2.0	0.127	5.2	LOS A	0.5	11.8	0.48	0.41	0.48	34.3
All Vehicles		1741	2.0	1833	2.0	0.729	10.0	LOS A	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.

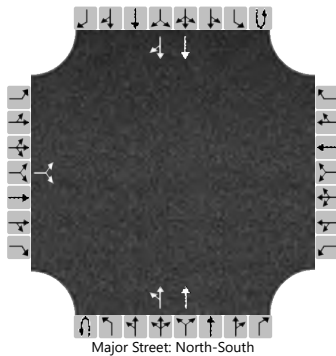
Gap-Acceptance Capacity: Traditional M1.

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

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	H.W. Lochner	Intersection	ChannelsideDr&E WhitingSt
Agency/Co.		Jurisdiction	FDOT, District 7
Date Performed	09/24/2021	East/West Street	E Whiting St
Analysis Year	2036	North/South Street	Channelside Dr
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	0	0	0	0	2	0	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 ₉₅ (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	12	
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	
Intersection Summary												
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		
Intersection Summary													
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(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.

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

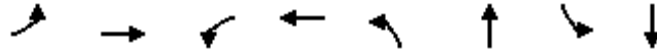


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	1242	28	32	742	51	461	172	49	58	98	96
Future Volume (veh/h)	16	1242	28	32	742	51	461	172	49	58	98	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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				
Intersection Summary												
HCM 6th Ctrl Delay				92.9								
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)	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(l)	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

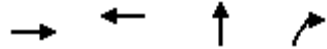
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  				
Traffic Volume (vph)	194	487	0	0	210	322	152	2364	130	0	0	0
Future Volume (vph)	194	487	0	0	210	322	152	2364	130	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost 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	
Intersection Summary												
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	

Intersection Summary

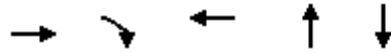
HCM 2000 Control Delay	202.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	114.4%	ICU Level of Service	H
Analysis Period (min)	15		

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

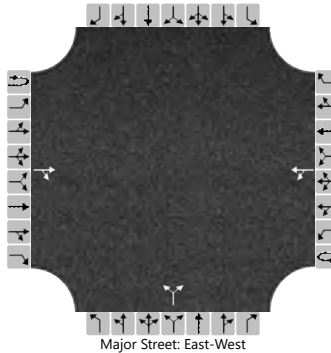
General Information

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 ₉₅ (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 _t	0.91			0.99		1.00	1.00
Fl _t Protected	0.98			1.00		0.95	1.00
Satd. Flow (prot)	1667			5034		1770	5085
Fl _t 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

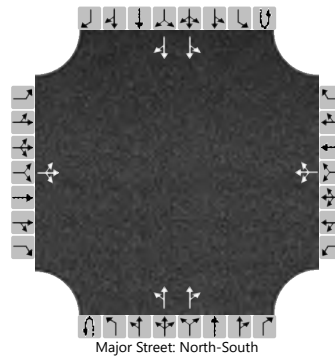
General Information

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 ₉₅ (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

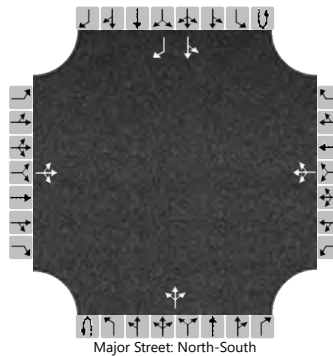
General Information

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&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)		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 ₉₅ (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

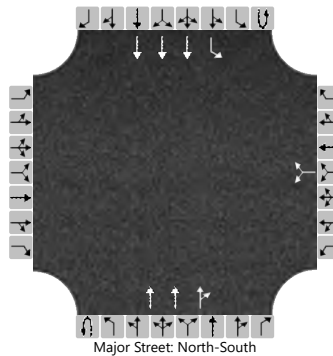
General Information

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 ₉₅ (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		
Intersection Summary													
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

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)	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

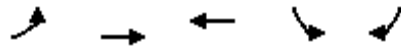


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↖	↗
Traffic Volume (veh/h)	512	1550	797	167	5	22
Future Volume (veh/h)	512	1550	797	167	5	22
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		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
Intersection Summary						
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
Intersection Summary						
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

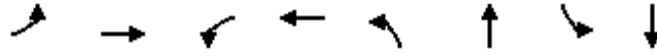
Notes

* 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

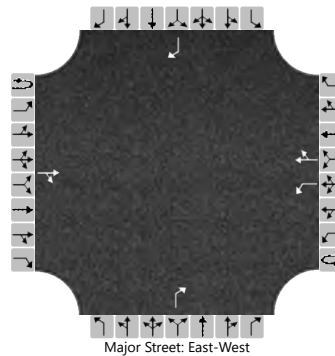
General Information

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 ₉₅ (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												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.

HCS7 Two-Way Stop-Control Report

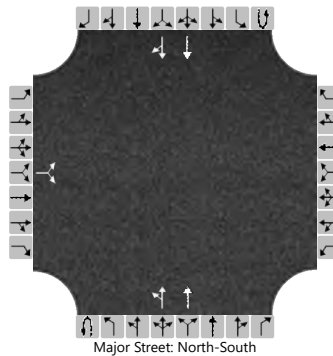
General Information

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 ₉₅ (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	12	
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	
Intersection Summary												
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		
Intersection Summary													
HCM 2000 Control Delay			44.5		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			0.90										
Actuated Cycle Length (s)			140.0		Sum of lost time (s)					22.4			
Intersection Capacity Utilization			106.6%		ICU Level of Service					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		
Intersection Summary													
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

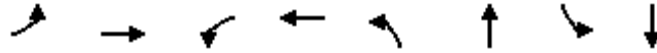


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	542	253	10	2120	256	39	94	44	57	112	20
Future Volume (veh/h)	14	542	253	10	2120	256	39	94	44	57	112	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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	

Intersection Summary

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		

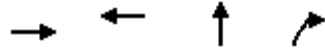
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

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	

Intersection Summary

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	Sum of lost time (s)	17.4
Intersection Capacity Utilization	113.1%	ICU Level of Service	H
Analysis Period (min)	15		

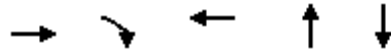
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

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

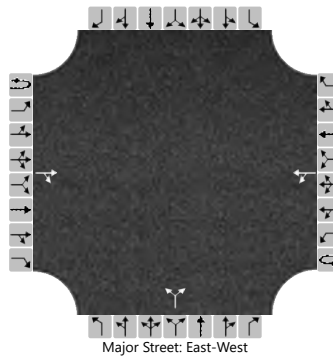
General Information

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 ₉₅ (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		W	W		W	W
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 _t	0.96			0.99		1.00	1.00
Fl _t Protected	0.97			1.00		0.95	1.00
Satd. Flow (prot)	1729			5040		1770	5085
Fl _t 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, d1	53.4			13.9		8.4	13.0
Progression Factor	1.03			0.98		1.00	1.00
Incremental Delay, d2	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

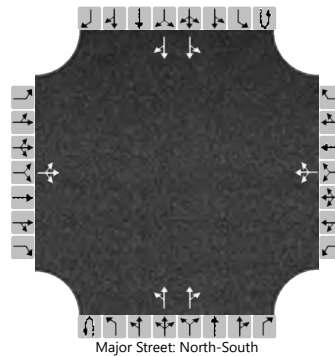
General Information

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 ₉₅ (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

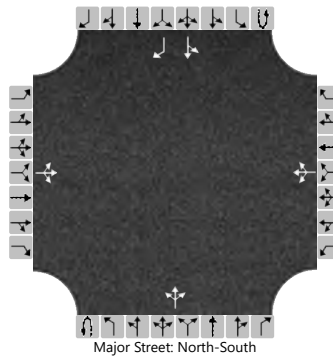
General Information

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 ₉₅ (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

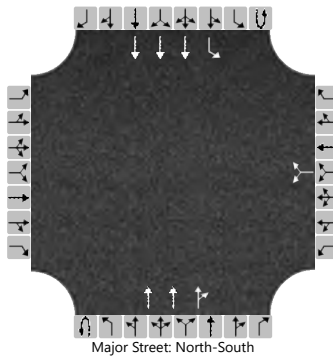
General Information

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	0	3	0	0	1	3	0
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 ₉₅ (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	
Intersection Summary												
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	

Intersection Summary

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

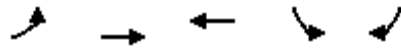


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↙	↘
Traffic Volume (veh/h)	260	2252	650	14	7	132
Future Volume (veh/h)	260	2252	650	14	7	132
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		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

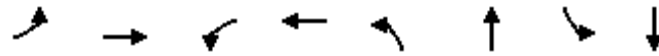
Notes

* 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

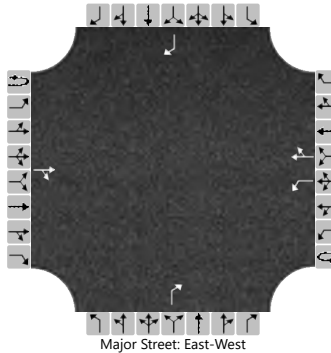
General Information

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	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)			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 ₉₅ (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 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	0.814	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.

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Organisation: H. W. LOCHNER, INC. | Licence: PLUS / Enterprise | Processed: Monday, November 29, 2021 2:10:18 AM

Project: C:\Users\kshams\Desktop\April\Tampa Office\Whitting\PTAR-Working\HCS_SIDRA\No-Build\2046\Channelside Drive_Cumberland Avenue_Existing_NB2046_PM.sip9

HCS7 Two-Way Stop-Control Report

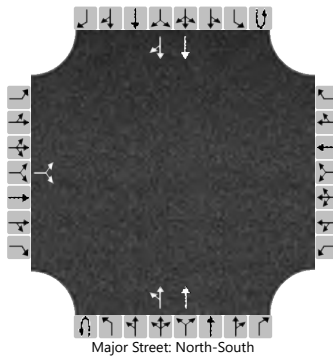
General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2046
Time Analyzed	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	0	2	0	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 ₉₅ (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	12	
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	
Intersection Summary												
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		
Intersection Summary													
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	
Intersection Summary												
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(I)	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(l)	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

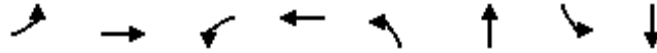
Notes

* 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	

Intersection Summary

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		

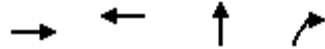
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

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		

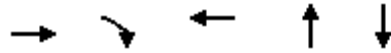
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

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

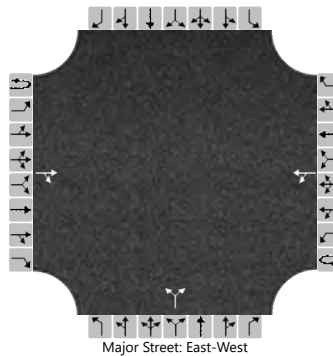
General Information

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 ₉₅ (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	W		W	W		W	W
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 _t	0.89			0.99		1.00	1.00
Fl _t Protected	0.99			1.00		0.95	1.00
Satd. Flow (prot)	1640			5041		1770	5085
Fl _t 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, d1	58.1			21.0		44.1	4.7
Progression Factor	1.11			1.96		1.00	1.00
Incremental Delay, d2	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

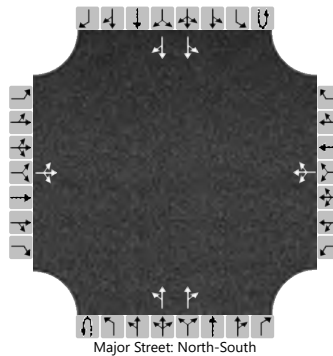
General Information

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	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)		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 ₉₅ (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

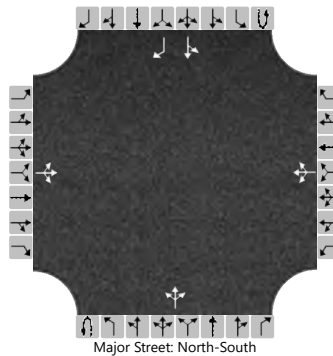
General Information

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	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)		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 ₉₅ (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

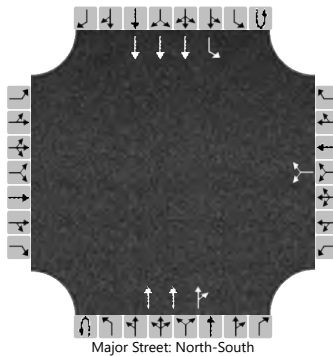
General Information

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	0	3	0	0	1	3	0
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 ₉₅ (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										

















Appendix K

Build Alternative 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)	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	6.1						6.0	6.0			
Lane Util. Factor	*0.51	*0.76						*0.80	1.00			
Frt	1.00	0.96						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1805	2726						2980	1583			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1805	2726						2980	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)	245	15	0	0	0	0	0	0	60	0	0	0
Lane Group Flow (vph)	676	1598	0	0	0	0	0	220	7	0	0	0
Turn Type	Prot	NA						NA	Perm			
Protected Phases	1	6						4				
Permitted Phases									4			
Actuated Green, G (s)	58.0	112.9						15.0	15.0			
Effective Green, g (s)	58.0	112.9						15.0	15.0			
Actuated g/C Ratio	0.41	0.81						0.11	0.11			
Clearance Time (s)	6.0	6.1						6.0	6.0			
Vehicle Extension (s)	3.0	3.0						3.0	3.0			
Lane Grp Cap (vph)	747	2198						319	169			
v/s Ratio Prot	c0.37	c0.59						c0.07				
v/s Ratio Perm									0.00			
v/c Ratio	0.90	0.73						0.69	0.04			
Uniform Delay, d1	38.4	6.3						60.3	56.1			
Progression Factor	1.00	1.00						1.00	1.00			
Incremental Delay, d2	16.5	2.1						6.1	0.1			
Delay (s)	54.9	8.5						66.4	56.2			
Level of Service	D	A						E	E			
Approach Delay (s)		25.3			0.0			64.0			0.0	
Approach LOS		C			A			E			A	
Intersection Summary												
HCM 2000 Control Delay			29.3					HCM 2000 Level of Service			C	
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		18.6		
Intersection Capacity Utilization			85.8%					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)	921	1613	220	67
v/c Ratio	0.93	0.73	0.69	0.28
Control Delay	36.9	8.3	72.3	13.1
Queue Delay	41.2	0.0	0.5	0.0
Total Delay	78.1	8.3	72.8	13.1
Queue Length 50th (ft)	496	356	122	0
Queue Length 95th (ft)	#805	446	178	40
Internal Link Dist (ft)		1290	1157	
Turn Bay Length (ft)				200
Base Capacity (vph)	993	2214	319	236
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	148	0	10	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.09	0.73	0.71	0.28

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

01/19/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	156	977	45	112	0	493	0	87	3	25	65	0	
Future Volume (vph)	156	977	45	112	0	493	0	87	3	25	65	0	
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		
Lane Util. Factor	1.00	0.95		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		
Flt Protected	0.95	1.00		0.95		1.00		1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1770	3516		1770		1583		1863	1583	1770	1863		
Flt Permitted	0.95	1.00		0.26		1.00		1.00	1.00	0.68	1.00		
Satd. Flow (perm)	1770	3516		478		1583		1863	1583	1266	1863		
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)	170	1062	49	122	0	536	0	95	3	27	71	0	
RTOR Reduction (vph)	0	2	0	0	0	91	0	0	2	0	0	0	
Lane Group Flow (vph)	170	1109	0	122	0	445	0	95	1	27	71	0	
Turn Type	pm+pt	NA		Perm		Perm		NA	Perm	Perm	NA		
Protected Phases	1	6						4				8	
Permitted Phases	6			2		2			4	8			
Actuated Green, G (s)	103.8	103.8		89.3		89.3		24.1	24.1	24.1	24.1		
Effective Green, g (s)	103.8	103.8		89.3		89.3		24.1	24.1	24.1	24.1		
Actuated g/C Ratio	0.74	0.74		0.64		0.64		0.17	0.17	0.17	0.17		
Clearance Time (s)	5.5	6.2		5.9		5.9		5.9	5.9	5.9	5.9		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	1312	2606		304		1009		320	272	217	320		
v/s Ratio Prot	0.01	c0.32						c0.05			0.04		
v/s Ratio Perm	0.09			0.26		c0.28			0.00	0.02			
v/c Ratio	0.13	0.43		0.40		0.44		0.30	0.00	0.12	0.22		
Uniform Delay, d1	5.2	6.8		12.3		12.8		50.6	48.0	49.0	49.9		
Progression Factor	0.64	0.52		1.01		1.16		1.00	1.00	0.33	0.34		
Incremental Delay, d2	0.0	0.4		2.8		1.0		2.4	0.0	1.1	1.5		
Delay (s)	3.3	3.9		15.3		15.8		52.9	48.0	17.3	18.5		
Level of Service	A	A		B		B		D	D	B	B		
Approach Delay (s)		3.9			15.7			52.8			18.2		
Approach LOS		A			B			D			B		
Intersection Summary													
HCM 2000 Control Delay			10.4									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.42										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	17.3
Intersection Capacity Utilization			61.9%									ICU Level of Service	B
Analysis Period (min)			15										

c Critical Lane Group

Queues

115: Morgan St & Channelside Dr

01/19/2022



Lane Group	EBL	EBT	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	170	1111	122	536	95	3	27	71
v/c Ratio	0.13	0.43	0.40	0.49	0.30	0.01	0.12	0.22
Control Delay	3.4	3.9	16.6	8.8	53.5	0.0	17.5	18.7
Queue Delay	0.0	0.3	0.0	0.8	0.0	0.0	0.0	0.0
Total Delay	3.4	4.2	16.6	9.5	53.5	0.0	17.5	18.7
Queue Length 50th (ft)	19	67	38	78	76	0	12	35
Queue Length 95th (ft)	m29	85	m61	129	132	0	26	55
Internal Link Dist (ft)		523			1253			424
Turn Bay Length (ft)	450			10			100	
Base Capacity (vph)	1321	2607	305	1101	320	328	217	320
Starvation Cap Reductn	0	755	0	284	0	0	0	0
Spillback Cap Reductn	231	1	0	207	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.60	0.40	0.66	0.30	0.01	0.12	0.22

Intersection Summary

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

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

01/19/2022

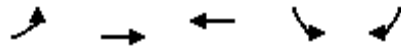


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↙	↘
Traffic Volume (veh/h)	346	660	509	151	6	96
Future Volume (veh/h)	346	660	509	151	6	96
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	376	717	553	164	7	104
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	613	1443	713	211	261	232
Arrive On Green	0.07	0.25	0.68	0.68	0.15	0.15
Sat Flow, veh/h	1781	1870	1386	411	1781	1585
Grp Volume(v), veh/h	376	717	0	717	7	104
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1796	1781	1585
Q Serve(g_s), s	9.9	45.8	0.0	37.6	0.5	8.4
Cycle Q Clear(g_c), s	9.9	45.8	0.0	37.6	0.5	8.4
Prop In Lane	1.00			0.23	1.00	1.00
Lane Grp Cap(c), veh/h	613	1443	0	924	261	232
V/C Ratio(X)	0.61	0.50	0.00	0.78	0.03	0.45
Avail Cap(c_a), veh/h	613	1443	0	924	261	232
HCM Platoon Ratio	0.33	0.33	1.33	1.33	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.00	0.82	0.09	0.09
Uniform Delay (d), s/veh	22.2	29.0	0.0	16.7	51.2	54.6
Incr Delay (d2), s/veh	4.1	1.1	0.0	5.3	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	23.5	0.0	14.2	0.2	3.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	26.4	30.1	0.0	22.0	51.2	55.1
LnGrp LOS	C	C	A	C	D	E
Approach Vol, veh/h		1093	717		111	
Approach Delay, s/veh		28.8	22.0		54.9	
Approach LOS		C	C		D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	36.0	78.0			114.0	26.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	30.0	72.0			108.0	20.5
Max Q Clear Time (g_c+I1), s	11.9	39.6			47.8	10.4
Green Ext Time (p_c), s	1.1	6.1			6.2	0.2
Intersection Summary						
HCM 6th Ctrl Delay			27.8			
HCM 6th LOS			C			

Queues

116: Channelside Dr & Jefferson St

01/19/2022



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	376	717	717	7	104
v/c Ratio	0.68	0.50	0.77	0.03	0.33
Control Delay	20.1	2.6	30.5	45.5	29.5
Queue Delay	0.8	0.1	6.6	0.0	0.0
Total Delay	21.0	2.7	37.1	45.5	29.5
Queue Length 50th (ft)	47	20	538	0	67
Queue Length 95th (ft)	219	22	665	m6	m57
Internal Link Dist (ft)		315	131	443	
Turn Bay Length (ft)				100	
Base Capacity (vph)	551	1437	936	259	320
Starvation Cap Reductn	42	80	173	0	0
Spillback Cap Reductn	0	85	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.74	0.53	0.94	0.03	0.33

Intersection Summary

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

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

01/19/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	121	545	454	195	30	206
Future Volume (veh/h)	121	545	454	195	30	206
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	132	592	493	212	33	224
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	635	1483	886	381	26	175
Arrive On Green	0.07	1.00	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1781	1870	1241	534	206	1397
Grp Volume(v), veh/h	132	592	0	705	258	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1774	1609	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	17.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	17.5	0.0
Prop In Lane	1.00			0.30	0.13	0.87
Lane Grp Cap(c), veh/h	635	1483	0	1267	201	0
V/C Ratio(X)	0.21	0.40	0.00	0.56	1.28	0.00
Avail Cap(c_a), veh/h	635	1483	0	1267	201	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.86	0.86	0.00	0.69	0.90	0.00
Uniform Delay (d), s/veh	5.7	0.0	0.0	0.0	61.3	0.0
Incr Delay (d2), s/veh	0.6	0.7	0.0	1.2	157.0	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	1.2	0.3	0.0	0.4	16.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.3	0.7	0.0	1.2	218.2	0.0
LnGrp LOS	A	A	A	A	F	A
Approach Vol, veh/h		724	705		258	
Approach Delay, s/veh		1.7	1.2		218.2	
Approach LOS		A	A		F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.0	106.0			117.0	23.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	5.0	100.0			111.0	17.5
Max Q Clear Time (g_c+I1), s	2.0	2.0			2.0	19.5
Green Ext Time (p_c), s	0.1	5.7			4.2	0.0
Intersection Summary						
HCM 6th Ctrl Delay			34.6			
HCM 6th LOS			C			

Queues

117: Channelside Dr & Nebraska Ave

01/19/2022



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	132	592	705	257
v/c Ratio	0.25	0.40	0.55	0.68
Control Delay	2.6	3.1	4.3	26.0
Queue Delay	0.9	0.3	1.4	65.1
Total Delay	3.5	3.4	5.7	91.1
Queue Length 50th (ft)	7	150	60	72
Queue Length 95th (ft)	10	131	78	129
Internal Link Dist (ft)		131	222	457
Turn Bay Length (ft)	80			
Base Capacity (vph)	519	1477	1286	378
Starvation Cap Reductn	206	361	197	0
Spillback Cap Reductn	0	0	371	208
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.53	0.77	1.51

Intersection Summary

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	91	461	23	93	625	154	7	33	20	38	5	17
Future Volume (veh/h)	91	461	23	93	625	154	7	33	20	38	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	99	501	25	101	679	167	8	36	22	41	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	513	1218	61	848	1175	289	236	158	96	207	52	186
Arrive On Green	0.07	1.00	1.00	0.31	1.00	1.00	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1781	1766	88	1781	1450	357	1388	1087	664	1345	356	1283
Grp Volume(v), veh/h	99	0	526	101	0	846	8	0	58	41	0	23
Grp Sat Flow(s),veh/h/ln	1781	0	1854	1781	0	1806	1388	0	1751	1345	0	1639
Q Serve(g_s), s	2.9	0.0	0.0	0.0	0.0	0.0	0.7	0.0	4.1	3.9	0.0	1.7
Cycle Q Clear(g_c), s	2.9	0.0	0.0	0.0	0.0	0.0	2.4	0.0	4.1	8.0	0.0	1.7
Prop In Lane	1.00		0.05	1.00		0.20	1.00		0.38	1.00		0.78
Lane Grp Cap(c), veh/h	513	0	1278	848	0	1464	236	0	254	207	0	238
V/C Ratio(X)	0.19	0.00	0.41	0.12	0.00	0.58	0.03	0.00	0.23	0.20	0.00	0.10
Avail Cap(c_a), veh/h	513	0	1278	848	0	1464	236	0	254	207	0	238
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)	0.87	0.00	0.87	0.49	0.00	0.49	1.00	0.00	1.00	0.82	0.00	0.82
Uniform Delay (d), s/veh	8.2	0.0	0.0	4.0	0.0	0.0	52.9	0.0	52.9	56.5	0.0	51.9
Incr Delay (d2), s/veh	0.7	0.0	0.9	0.1	0.0	0.8	0.3	0.0	2.1	1.8	0.0	0.7
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	1.1	0.0	0.3	0.7	0.0	0.3	0.3	0.0	2.0	1.4	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.0	0.0	0.9	4.1	0.0	0.8	53.2	0.0	55.0	58.2	0.0	52.6
LnGrp LOS	A	A	A	A	A	A	D	A	E	E	A	D
Approach Vol, veh/h		625			947			66				64
Approach Delay, s/veh		2.1			1.2			54.8				56.2
Approach LOS		A			A			D				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.0	120.5		26.0	28.5	103.0		26.0				
Change Period (Y+Rc), s	6.0	6.5		* 5.7	6.5	* 6.5		* 5.7				
Max Green Setting (Gmax), s	5.0	96.5		* 20	5.0	* 97		* 20				
Max Q Clear Time (g_c+I1), s	4.9	2.0		6.1	2.0	2.0		10.0				
Green Ext Time (p_c), s	0.0	8.7		0.3	0.1	4.0		0.2				

Intersection Summary

HCM 6th Ctrl Delay	5.7
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

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	99	526	101	846	8	58	41	23
v/c Ratio	0.32	0.41	0.16	0.68	0.04	0.21	0.21	0.09
Control Delay	5.5	4.1	11.1	19.8	52.3	40.3	60.9	29.2
Queue Delay	0.0	0.4	0.0	7.8	0.0	0.0	0.0	0.0
Total Delay	5.5	4.5	11.1	27.6	52.3	40.3	60.9	29.2
Queue Length 50th (ft)	8	48	41	465	6	32	0	5
Queue Length 95th (ft)	m13	55	m47	m491	23	77	m0	m27
Internal Link Dist (ft)		222		393		1129		462
Turn Bay Length (ft)	80		100				150	
Base Capacity (vph)	311	1276	633	1251	200	270	194	253
Starvation Cap Reductn	0	327	0	363	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	0.32	0.55	0.16	0.95	0.04	0.21	0.21	0.09

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)	238	270	11	94	419	61	88	448	64	62	303	365
Future Volume (vph)	238	270	11	94	419	61	88	448	64	62	303	365
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	0.98		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	1852		1770	1827		1770	1863	1583	1770	1863	1583
Flt Permitted	0.09	1.00		0.57	1.00		0.22	1.00	1.00	0.23	1.00	1.00
Satd. Flow (perm)	166	1852		1070	1827		402	1863	1583	434	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)	259	293	12	102	455	66	96	487	70	67	329	397
RTOR Reduction (vph)	0	1	0	0	4	0	0	0	48	0	0	305
Lane Group Flow (vph)	259	304	0	102	517	0	96	487	22	67	329	92
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)	82.8	82.8		38.8	38.8		44.6	44.6	44.6	32.6	32.6	32.6
Effective Green, g (s)	82.8	82.8		38.8	38.8		44.6	44.6	44.6	32.6	32.6	32.6
Actuated g/C Ratio	0.59	0.59		0.28	0.28		0.32	0.32	0.32	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)	533	1095		296	506		182	593	504	101	433	368
v/s Ratio Prot	c0.13	0.16			c0.28		0.02	c0.26			0.18	
v/s Ratio Perm	0.16			0.10			0.15		0.01	0.15		0.06
v/c Ratio	0.49	0.28		0.34	1.02		0.53	0.82	0.04	0.66	0.76	0.25
Uniform Delay, d1	28.3	14.0		40.4	50.6		36.6	44.0	33.0	48.7	50.1	43.8
Progression Factor	0.52	0.42		1.00	1.00		1.00	1.00	1.00	0.31	0.31	2.19
Incremental Delay, d2	3.0	0.6		3.2	45.8		1.3	12.1	0.2	27.8	11.1	1.5
Delay (s)	17.6	6.5		43.6	96.4		37.9	56.1	33.1	43.0	26.9	97.5
Level of Service	B	A		D	F		D	E	C	D	C	F
Approach Delay (s)		11.6			87.8			51.0			63.6	
Approach LOS		B			F			D			E	

Intersection Summary

HCM 2000 Control Delay	55.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
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	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	259	305	102	521	96	487	70	67	329	397
v/c Ratio	0.49	0.28	0.34	1.02	0.53	0.82	0.13	0.66	0.76	0.59
Control Delay	15.9	6.5	44.5	94.8	46.5	56.8	7.3	46.1	27.4	12.7
Queue Delay	0.4	0.4	0.0	0.6	3.9	0.0	0.0	0.0	0.0	4.4
Total Delay	16.3	6.9	44.5	95.4	50.4	56.8	7.3	46.1	27.4	17.1
Queue Length 50th (ft)	75	66	75	~500	63	409	0	41	221	178
Queue Length 95th (ft)	121	90	131	#728	109	#581	35	m#131	356	373
Internal Link Dist (ft)		393		142		1114			460	
Turn Bay Length (ft)	150		150		300			200		
Base Capacity (vph)	533	1096	296	509	182	593	553	101	433	673
Starvation Cap Reductn	58	401	0	0	0	0	0	0	0	148
Spillback Cap Reductn	0	0	0	1	38	0	0	0	0	200
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.44	0.34	1.03	0.67	0.82	0.13	0.66	0.76	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.
- m Volume for 95th percentile queue is metered by upstream signal.

HCS7 Two-Way Stop-Control Report

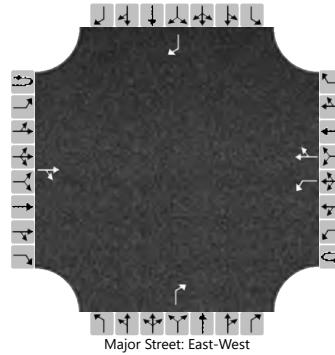
General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2026
Time Analyzed	AM Peak Hour
Intersection Orientation	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)			293	103		8	343	1				60				231
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				243
Capacity, c (veh/h)						1142						682				683
v/c Ratio						0.01						0.09				0.36
95% Queue Length, Q ₉₅ (veh)						0.0						0.3				1.6
Control Delay (s/veh)						8.2						10.8				13.2
Level of Service (LOS)						A						B				B
Approach Delay (s/veh)						0.2						10.8				13.2
Approach LOS												B				B

MOVEMENT SUMMARY

Site: 8 [Channelside Drive at Cumberland Avenue_Build2026-AM (Site Folder: General)]

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	0.346	6.1	LOS A	1.8	44.5	0.29	0.16	0.29	37.1
8	T1	300	2.0	316	2.0	0.346	6.1	LOS A	1.8	44.5	0.29	0.16	0.29	37.9
18	R2	22	2.0	23	2.0	0.346	6.1	LOS A	1.8	44.5	0.29	0.16	0.29	36.7
Approach		416	2.0	438	2.0	0.346	6.1	LOS A	1.8	44.5	0.29	0.16	0.29	37.7
East: E Cumberland Avenue														
1	L2	4	2.0	4	2.0	0.029	4.1	LOS A	0.1	2.6	0.43	0.31	0.43	39.8
6	T1	5	2.0	5	2.0	0.029	4.1	LOS A	0.1	2.6	0.43	0.31	0.43	36.9
16	R2	17	2.0	18	2.0	0.029	4.1	LOS A	0.1	2.6	0.43	0.31	0.43	36.7
Approach		26	2.0	27	2.0	0.029	4.1	LOS A	0.1	2.6	0.43	0.31	0.43	37.2
North: Channelside Drive														
7	L2	45	2.0	47	2.0	0.322	5.8	LOS A	1.6	40.2	0.28	0.15	0.28	37.5
4	T1	343	2.0	361	2.0	0.322	5.8	LOS A	1.6	40.2	0.28	0.15	0.28	39.2
14	R2	258	2.0	272	2.0	0.227	5.0	LOS A	1.0	26.0	0.26	0.14	0.26	34.4
Approach		646	2.0	680	2.0	0.322	5.5	LOS A	1.6	40.2	0.27	0.15	0.27	37.0
West: E Cumberland Avenue														
5	L2	39	2.0	41	2.0	0.076	4.4	LOS A	0.3	6.9	0.43	0.33	0.43	34.6
2	T1	22	2.0	23	2.0	0.076	4.4	LOS A	0.3	6.9	0.43	0.33	0.43	34.4
12	R2	9	2.0	9	2.0	0.076	4.4	LOS A	0.3	6.9	0.43	0.33	0.43	33.3
Approach		70	2.0	74	2.0	0.076	4.4	LOS A	0.3	6.9	0.43	0.33	0.43	34.3
All Vehicles		1158	2.0	1219	2.0	0.346	5.6	LOS A	1.8	44.5	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

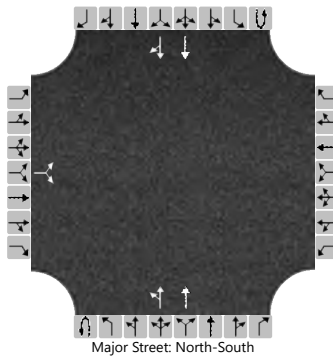
General Information

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)		29		1						12	344				646	100	
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								13							
Capacity, c (veh/h)			263								829							
v/c Ratio			0.12								0.02							
95% Queue Length, Q ₉₅ (veh)			0.4								0.0							
Control Delay (s/veh)			20.6								9.4							
Level of Service (LOS)			C								A							
Approach Delay (s/veh)		20.6									0.4							
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	7	5	8	5	35	5	364	7	85	730	26
Future Volume (vph)	14	7	5	8	5	35	5	364	7	85	730	26
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			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1770			1805	1583	1770	3529		1770	3521	
Flt Permitted		0.34			0.79	1.00	0.34	1.00		0.95	1.00	
Satd. Flow (perm)		620			1469	1583	637	3529		1770	3521	
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	8	5	9	5	38	5	396	8	92	793	28
RTOR Reduction (vph)	0	5	0	0	0	36	0	1	0	0	1	0
Lane Group Flow (vph)	0	23	0	0	14	2	5	403	0	92	820	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)		9.0			7.9	7.9	79.4	79.4		17.4	102.8	
Effective Green, g (s)		9.0			7.9	7.9	79.4	79.4		17.4	102.8	
Actuated g/C Ratio		0.06			0.06	0.06	0.57	0.57		0.12	0.73	
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)		39			82	89	361	2001		219	2585	
v/s Ratio Prot								0.11		c0.05	c0.23	
v/s Ratio Perm		c0.04			c0.01	0.00	0.01					
v/c Ratio		0.60			0.17	0.02	0.01	0.20		0.42	0.32	
Uniform Delay, d1		63.7			62.9	62.4	13.2	14.8		56.6	6.4	
Progression Factor		0.80			1.00	1.00	1.00	1.00		0.79	2.35	
Incremental Delay, d2		15.2			1.4	0.1	0.1	0.2		0.4	0.0	
Delay (s)		66.3			64.3	62.6	13.3	15.0		45.3	15.2	
Level of Service		E			E	E	B	B		D	B	
Approach Delay (s)		66.3			63.0			15.0			18.2	
Approach LOS		E			E			B			B	

Intersection Summary

HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.3
Intersection Capacity Utilization	52.4%	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)	28	14	38	5	404	92	821
v/c Ratio	0.52	0.17	0.19	0.01	0.20	0.42	0.31
Control Delay	71.8	67.0	2.1	20.8	17.0	48.3	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.8	67.0	2.1	20.8	17.0	48.3	16.7
Queue Length 50th (ft)	22	12	0	2	94	88	197
Queue Length 95th (ft)	56	36	0	12	162	m133	291
Internal Link Dist (ft)	927	832			494		591
Turn Bay Length (ft)			430	160		280	
Base Capacity (vph)	106	226	342	372	2063	219	2648
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	0.26	0.06	0.11	0.01	0.20	0.42	0.31

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)	411	29	130	7	11	4	35	367	11	28	710	958
Future Volume (vph)	411	29	130	7	11	4	35	367	11	28	710	958
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		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1696	1583		1826	1583	1770	3524		1770	3539	1583
Flt Permitted	0.95	0.96	1.00		0.76	1.00	0.18	1.00		0.43	1.00	1.00
Satd. Flow (perm)	1681	1696	1583		1413	1583	327	3524		798	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)	447	32	141	8	12	4	38	399	12	30	772	1041
RTOR Reduction (vph)	0	0	114	0	0	4	0	1	0	0	0	721
Lane Group Flow (vph)	237	242	27	0	20	0	38	410	0	30	772	320
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)	27.1	27.1	27.1		5.1	5.1	43.0	43.0		43.0	43.0	43.0
Effective Green, g (s)	27.1	27.1	27.1		5.1	5.1	43.0	43.0		43.0	43.0	43.0
Actuated g/C Ratio	0.19	0.19	0.19		0.04	0.04	0.31	0.31		0.31	0.31	0.31
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)	325	328	306		51	57	100	1082		245	1086	486
v/s Ratio Prot	0.14	c0.14						0.12			c0.22	
v/s Ratio Perm			0.02		c0.01	0.00	0.12			0.04		0.20
v/c Ratio	0.73	0.74	0.09		0.39	0.00	0.38	0.38		0.12	0.71	0.66
Uniform Delay, d1	53.0	53.1	46.3		65.9	65.0	38.0	38.0		34.9	43.0	42.1
Progression Factor	1.00	1.00	1.00		1.00	1.00	0.57	0.63		1.00	1.00	1.00
Incremental Delay, d2	8.0	8.4	0.1		4.9	0.0	10.5	1.0		1.0	4.0	6.8
Delay (s)	61.0	61.5	46.4		70.9	65.0	32.4	24.9		35.9	46.9	48.9
Level of Service	E	E	D		E	E	C	C		D	D	D
Approach Delay (s)		57.9			69.9			25.5			47.9	
Approach LOS		E			E			C			D	
Intersection Summary												
HCM 2000 Control Delay			46.8		HCM 2000 Level of Service						D	
HCM 2000 Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			140.0		Sum of lost time (s)						22.4	
Intersection Capacity Utilization			92.2%		ICU Level of Service						F	
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)	237	242	141	20	4	38	411	30	772	1041
v/c Ratio	0.73	0.74	0.34	0.27	0.02	0.36	0.36	0.12	0.67	0.86
Control Delay	65.2	65.7	8.4	71.7	0.2	31.1	23.4	34.7	44.1	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.2	65.7	8.4	71.7	0.2	31.1	23.4	34.7	44.1	10.4
Queue Length 50th (ft)	216	221	0	18	0	26	151	19	318	0
Queue Length 95th (ft)	288	294	53	46	0	66	198	46	392	164
Internal Link Dist (ft)		906		876			591		1242	
Turn Bay Length (ft)			140			280		75		375
Base Capacity (vph)	656	662	704	153	259	107	1152	260	1155	1217
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	0.37	0.20	0.13	0.02	0.36	0.36	0.12	0.67	0.86

Intersection Summary

HCM Signalized Intersection Capacity Analysis

113: Florida Ave & Selmon Expy Off-Ramp

01/19/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑	↑↑			
Traffic Volume (vph)	0	933	1067	0	0	0
Future Volume (vph)	0	933	1067	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.6	6.0			
Lane Util. Factor		0.76	0.95			
Frt		0.85	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		3610	3539			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		3610	3539			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1014	1160	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1014	1160	0	0	0
Turn Type		Prot	NA			
Protected Phases		2	1 4			
Permitted Phases						
Actuated Green, G (s)		48.4	79.0			
Effective Green, g (s)		48.4	79.0			
Actuated g/C Ratio		0.35	0.56			
Clearance Time (s)		6.6				
Vehicle Extension (s)		3.0				
Lane Grp Cap (vph)		1248	1997			
v/s Ratio Prot		c0.28	c0.33			
v/s Ratio Perm						
v/c Ratio		0.81	0.58			
Uniform Delay, d1		41.7	19.8			
Progression Factor		1.00	0.39			
Incremental Delay, d2		5.8	0.2			
Delay (s)		47.5	8.0			
Level of Service		D	A			
Approach Delay (s)	47.5		8.0		0.0	
Approach LOS	D		A		A	

Intersection Summary

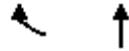
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues

113: Florida Ave & Selmon Expy Off-Ramp

01/19/2022



Lane Group	WBR	NBT
Lane Group Flow (vph)	1014	1160
v/c Ratio	0.81	0.58
Control Delay	47.9	8.4
Queue Delay	0.0	0.0
Total Delay	47.9	8.4
Queue Length 50th (ft)	367	227
Queue Length 95th (ft)	441	m148
Internal Link Dist (ft)		1
Turn Bay Length (ft)	350	
Base Capacity (vph)	1248	1997
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.81	0.58
















Intersection Summary

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

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	1876	290	216	1820	0	0	0	0	
Future Volume (vph)	0	0	0	0	1876	290	216	1820	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					0.98		1.00	1.00					
Flt Protected					1.00		0.95	1.00					
Satd. Flow (prot)					6279		1770	5085					
Flt Permitted					1.00		0.95	1.00					
Satd. Flow (perm)					6279		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	315	235	1978	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	19	0	22	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	2335	0	213	1978	0	0	0	0	
Turn Type					NA		Perm	NA					
Protected Phases					2			4					
Permitted Phases							4						
Actuated Green, G (s)					54.2		73.9	73.9					
Effective Green, g (s)					54.2		73.9	73.9					
Actuated g/C Ratio					0.37		0.51	0.51					
Clearance Time (s)					5.8		6.1	6.1					
Vehicle Extension (s)					3.0		3.0	3.0					
Lane Grp Cap (vph)					2347		902	2591					
v/s Ratio Prot					c0.37			c0.39					
v/s Ratio Perm							0.12						
v/c Ratio					0.99		0.24	0.76					
Uniform Delay, d1					45.3		19.8	28.5					
Progression Factor					1.00		1.00	1.00					
Incremental Delay, d2					17.4		0.6	2.2					
Delay (s)					62.6		20.4	30.7					
Level of Service					E		C	C					
Approach Delay (s)		0.0			62.6			29.6			0.0		
Approach LOS		A			E			C			A		
Intersection Summary													
HCM 2000 Control Delay			46.6		HCM 2000 Level of Service				D				
HCM 2000 Volume to Capacity ratio			0.85										
Actuated Cycle Length (s)			145.0		Sum of lost time (s)				14.9				
Intersection Capacity Utilization			77.1%		ICU Level of Service				D				
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)	2354	235	1978
v/c Ratio	0.99	0.25	0.76
Control Delay	61.7	16.9	31.0
Queue Delay	0.0	1.1	47.6
Total Delay	61.7	17.9	78.6
Queue Length 50th (ft)	635	98	536
Queue Length 95th (ft)	#731	154	596
Internal Link Dist (ft)	416		356
Turn Bay Length (ft)		300	
Base Capacity (vph)	2366	923	2591
Starvation Cap Reductn	0	470	919
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.99	0.52	1.18

Intersection Summary

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

01/19/2022



Movement	WBL	WBT	NBL	NBT	NBR2	SBL	SBT	SBR	SWR	SWR2
Lane Configurations		↔↔	↔	↑	↔	↔	↓		↔	↔
Traffic Volume (vph)	1	1752	56	607	56	513	100	191	695	541
Future Volume (vph)	1	1752	56	607	56	513	100	191	695	541
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	0.90		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	1679		1863	1583
Flt Permitted		1.00	0.44	1.00	1.00	0.23	1.00		1.00	1.00
Satd. Flow (perm)		3539	819	1863	1583	427	1679		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	1904	61	660	61	558	109	208	755	588
RTOR Reduction (vph)	0	0	0	0	31	0	49	0	0	185
Lane Group Flow (vph)	0	1905	61	660	31	558	268	0	755	403
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	70.0	70.0	70.5	64.0		46.3	46.3
Effective Green, g (s)		46.3	82.0	70.0	70.0	70.5	64.0		46.3	46.3
Actuated g/C Ratio		0.33	0.59	0.50	0.50	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	564	931	791	277	767		616	523
v/s Ratio Prot			0.01	c0.35		c0.09	0.16		0.41	
v/s Ratio Perm		0.54	0.05		0.02	c0.92				0.25
v/c Ratio		1.63	0.11	0.71	0.04	2.01	0.35		1.23	0.77
Uniform Delay, d1		46.9	13.4	27.1	17.8	37.5	24.6		46.9	42.1
Progression Factor		0.66	0.81	0.89	0.81	1.53	1.41		1.00	1.00
Incremental Delay, d2		283.1	0.4	4.3	0.1	465.3	0.9		115.5	10.5
Delay (s)		314.0	11.2	28.3	14.6	522.7	35.5		162.3	52.6
Level of Service		F	B	C	B	F	D		F	D
Approach Delay (s)		314.0		25.9			346.2			
Approach LOS		F		C			F			

Intersection Summary

HCM 2000 Control Delay	219.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	170.9%	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

01/19/2022



Lane Group	WBT	NBL	NBT	NBR2	SBL	SBT	SWR	SWR2
Lane Group Flow (vph)	1905	61	660	61	558	317	755	588
v/c Ratio	1.63	0.11	0.71	0.07	2.01	0.39	1.23	0.83
Control Delay	309.0	10.4	28.9	3.3	486.1	25.8	155.6	33.7
Queue Delay	0.7	0.0	24.2	0.0	0.0	0.0	0.0	0.0
Total Delay	309.7	10.4	53.1	3.3	486.1	25.8	155.6	33.7
Queue Length 50th (ft)	~1351	13	513	2	~791	210	~845	284
Queue Length 95th (ft)	m#1042	36	726	18	m#1008	m278	#1092	#465
Internal Link Dist (ft)	494		424			563		
Turn Bay Length (ft)		250		10			300	300
Base Capacity (vph)	1170	567	931	823	278	816	616	708
Starvation Cap Reductn	175	0	286	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	1.91	0.11	1.02	0.07	2.01	0.39	1.23	0.83

Intersection Summary

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

HCM 6th Signalized Intersection Summary

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 (veh/h)	97	161	24	31	1632	290	35	224	1	310	497	86
Future Volume (veh/h)	97	161	24	31	1632	290	35	224	1	310	497	86
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	105	175	26	34	1774	315	38	243	1	337	540	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	172	958	142	636	1500	259	121	682	3	358	445	
Arrive On Green	0.07	0.60	0.60	0.99	0.99	0.99	0.04	0.19	0.19	0.12	0.32	0.00
Sat Flow, veh/h	1781	1591	236	1181	3031	522	1781	3630	15	1781	1870	1585
Grp Volume(v), veh/h	105	0	201	34	1018	1071	38	119	125	337	540	0
Grp Sat Flow(s),veh/h/ln	1781	0	1828	1181	1777	1776	1781	1777	1868	1781	1870	1585
Q Serve(g_s), s	3.9	0.0	6.9	0.0	69.3	69.3	2.4	8.2	8.2	12.5	33.3	0.0
Cycle Q Clear(g_c), s	3.9	0.0	6.9	0.0	69.3	69.3	2.4	8.2	8.2	12.5	33.3	0.0
Prop In Lane	1.00		0.13	1.00		0.29	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	172	0	1101	636	880	879	121	334	351	358	445	
V/C Ratio(X)	0.61	0.00	0.18	0.05	1.16	1.22	0.31	0.36	0.36	0.94	1.21	
Avail Cap(c_a), veh/h	172	0	1101	636	880	879	121	334	351	358	445	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(l)	0.09	0.00	0.09	0.26	0.26	0.26	0.67	0.67	0.67	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.7	0.0	12.4	0.4	0.7	0.7	45.2	49.5	49.5	48.6	47.9	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	0.0	74.4	101.1	4.5	2.0	1.9	35.0	115.4	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	1.8	0.0	2.8	0.0	18.5	25.0	1.2	3.8	4.0	9.5	29.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.1	0.0	12.5	0.4	75.1	101.8	49.7	51.5	51.4	83.6	163.2	0.0
LnGrp LOS	C	A	B	A	F	F	D	D	D	F	F	
Approach Vol, veh/h		306			2123			282			877	A
Approach Delay, s/veh		19.9			87.4			51.2			132.6	
Approach LOS		B			F			D			F	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	15.0	75.0	18.0	32.0		90.0	11.0	39.0				
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 5.7		* 5.7	5.5	* 5.7				
Max Green Setting (Gmax), s	9.5	* 69	12.5	* 26		* 84	5.5	* 33				
Max Q Clear Time (g_c+I1), s	5.9	71.3	14.5	10.2		8.9	4.4	35.3				
Green Ext Time (p_c), s	0.1	0.0	0.0	0.8		1.3	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	89.9
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

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	105	201	34	2089	38	244	337	540	93
v/c Ratio	0.61	0.18	0.06	1.21	0.31	0.37	0.98	1.22	0.20
Control Delay	30.4	2.6	21.4	125.8	33.9	44.8	70.1	148.3	3.4
Queue Delay	0.0	0.1	0.0	3.1	4.2	0.0	38.5	0.0	0.1
Total Delay	30.4	2.8	21.4	128.9	38.1	44.8	108.6	148.3	3.4
Queue Length 50th (ft)	49	56	14	~671	22	95	135	~596	1
Queue Length 95th (ft)	m11	m4	m17	m#773	m31	m143	#401	#813	m14
Internal Link Dist (ft)		494		148		443		116	
Turn Bay Length (ft)	150		50		100		50		
Base Capacity (vph)	173	1104	582	1721	123	664	345	443	458
Starvation Cap Reductn	0	0	0	327	0	0	0	0	0
Spillback Cap Reductn	0	335	0	900	44	0	49	0	34
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.26	0.06	2.54	0.48	0.37	1.14	1.22	0.22

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	317	78	17	1490	5	307	81	96	19	125	156
Future Volume (veh/h)	77	317	78	17	1490	5	307	81	96	19	125	156
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	84	345	85	18	1620	5	334	88	104	21	136	170
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	192	717	177	374	1799	6	318	73	86	56	330	389
Arrive On Green	0.50	0.50	0.50	0.99	0.99	0.99	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	310	1449	357	958	3634	11	650	171	203	67	780	917
Grp Volume(v), veh/h	84	0	430	18	792	833	526	0	0	327	0	0
Grp Sat Flow(s),veh/h/ln	310	0	1806	958	1777	1868	1024	0	0	1764	0	0
Q Serve(g_s), s	28.4	0.0	22.1	0.9	5.7	5.8	40.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	34.2	0.0	22.1	23.0	5.7	5.8	59.3	0.0	0.0	19.1	0.0	0.0
Prop In Lane	1.00		0.20	1.00		0.01	0.63		0.20	0.06		0.52
Lane Grp Cap(c), veh/h	192	0	894	374	880	925	476	0	0	775	0	0
V/C Ratio(X)	0.44	0.00	0.48	0.05	0.90	0.90	1.11	0.00	0.00	0.42	0.00	0.00
Avail Cap(c_a), veh/h	192	0	894	374	880	925	476	0	0	775	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.68	0.00	0.68	0.59	0.59	0.59	0.98	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.6	0.0	23.4	4.2	0.4	0.4	46.8	0.0	0.0	28.8	0.0	0.0
Incr Delay (d2), s/veh	4.9	0.0	1.3	0.1	9.1	8.7	72.7	0.0	0.0	1.7	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	2.4	0.0	9.8	0.1	2.5	2.5	26.9	0.0	0.0	8.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.5	0.0	24.7	4.3	9.5	9.1	119.6	0.0	0.0	30.4	0.0	0.0
LnGrp LOS	C	A	C	A	A	A	F	A	A	C	A	A
Approach Vol, veh/h		514			1643			526				327
Approach Delay, s/veh		26.1			9.2			119.6				30.4
Approach LOS		C			A			F				C
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		75.0		65.0		75.0		65.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7		* 5.7				
Max Green Setting (Gmax), s		* 69		* 59		* 69		* 59				
Max Q Clear Time (g_c+I1), s		25.0		61.3		36.2		21.1				
Green Ext Time (p_c), s		18.7		0.0		5.5		2.5				

Intersection Summary

HCM 6th Ctrl Delay	33.7
HCM 6th LOS	C

Notes

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

Queues

112: Nebraska Ave & Brorein St

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	84	430	18	1625	526	327
v/c Ratio	1.58	0.48	0.05	0.93	1.24	0.46
Control Delay	351.8	32.3	6.7	25.2	159.5	30.5
Queue Delay	0.0	44.0	0.0	45.6	4.4	1.9
Total Delay	351.8	76.3	6.7	70.8	163.9	32.4
Queue Length 50th (ft)	~104	250	4	689	~589	203
Queue Length 95th (ft)	m#144	m280	m5	#851	#816	293
Internal Link Dist (ft)		148		203	457	414
Turn Bay Length (ft)	50		70			
Base Capacity (vph)	53	901	359	1751	423	704
Starvation Cap Reductn	0	498	0	182	0	0
Spillback Cap Reductn	0	0	0	462	141	235
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.58	1.07	0.05	1.26	1.87	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: Water St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕		↖	↗		↖	↗	
Traffic Volume (veh/h)	27	155	250	25	1400	181	72	82	32	5	160	35
Future Volume (veh/h)	27	155	250	25	1400	181	72	82	32	5	160	35
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	29	168	272	27	1522	197	78	89	35	5	174	38
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	137	445	720	707	2194	280	211	351	138	207	279	61
Arrive On Green	1.00	1.00	1.00	0.46	0.46	0.46	0.02	0.09	0.09	0.19	0.19	0.19
Sat Flow, veh/h	283	643	1040	949	3169	405	1781	1278	502	1267	1487	325
Grp Volume(v), veh/h	29	0	440	27	845	874	78	0	124	5	0	212
Grp Sat Flow(s),veh/h/ln	283	0	1683	949	1777	1797	1781	0	1780	1267	0	1812
Q Serve(g_s), s	9.5	0.0	0.0	2.2	52.4	54.2	0.0	0.0	9.1	0.5	0.0	15.1
Cycle Q Clear(g_c), s	64.1	0.0	0.0	2.4	52.4	54.2	0.0	0.0	9.1	9.6	0.0	15.1
Prop In Lane	1.00		0.62	1.00		0.23	1.00		0.28	1.00		0.18
Lane Grp Cap(c), veh/h	137	0	1165	707	1230	1244	211	0	489	207	0	340
V/C Ratio(X)	0.21	0.00	0.38	0.04	0.69	0.70	0.37	0.00	0.25	0.02	0.00	0.62
Avail Cap(c_a), veh/h	137	0	1165	707	1230	1244	211	0	489	207	0	340
HCM Platoon Ratio	1.67	1.67	1.67	0.67	0.67	0.67	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	0.97	0.00	0.97	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.0	0.0	0.0	12.2	25.6	26.1	61.2	0.0	50.3	54.0	0.0	52.3
Incr Delay (d2), s/veh	3.0	0.0	0.8	0.0	0.3	0.3	4.8	0.0	1.2	0.2	0.0	8.3
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	0.7	0.0	0.3	0.5	23.5	24.6	3.0	0.0	4.5	0.2	0.0	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	0.0	0.8	12.3	25.9	26.4	65.9	0.0	51.5	54.3	0.0	60.6
LnGrp LOS	C	A	A	B	C	C	E	A	D	D	A	E
Approach Vol, veh/h		469			1746			202				217
Approach Delay, s/veh		2.1			25.9			57.1				60.5
Approach LOS		A			C			E				E
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		102.8		44.2		102.8	12.2	32.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s		* 90		* 38		* 90	* 6.5	* 26				
Max Q Clear Time (g_c+I1), s		56.2		11.1		66.1	2.0	17.1				
Green Ext Time (p_c), s		18.6		0.7		3.9	0.1	0.8				

Intersection Summary

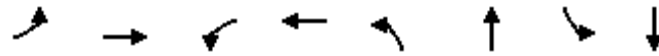
HCM 6th Ctrl Delay	26.9
HCM 6th LOS	C

Notes

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

Queues
701: Water St

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	440	27	1719	78	124	5	212
v/c Ratio	0.35	0.39	0.05	0.76	0.29	0.25	0.02	0.61
Control Delay	21.0	7.4	8.5	13.1	43.0	35.0	47.0	58.9
Queue Delay	0.0	0.4	0.0	22.8	0.0	0.0	0.0	0.0
Total Delay	21.0	7.8	8.5	35.9	43.0	35.0	47.0	58.9
Queue Length 50th (ft)	9	87	7	352	56	84	4	173
Queue Length 95th (ft)	m18	m110	m7	m266	m87	m129	17	262
Internal Link Dist (ft)		203		452		462		361
Turn Bay Length (ft)	70		70		150		150	
Base Capacity (vph)	83	1131	539	2251	269	498	220	346
Starvation Cap Reductn	0	296	0	595	0	0	0	0
Spillback Cap Reductn	0	0	0	495	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.53	0.05	1.04	0.29	0.25	0.02	0.61

Intersection Summary

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

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖	↗	↖	↗		↖	↗	↖
Traffic Volume (veh/h)	125	25	37	11	358	141	199	458	90	177	682	1065
Future Volume (veh/h)	125	25	37	11	358	141	199	458	90	177	682	1065
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	136	27	40	12	389	0	216	498	98	192	741	1158
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	229	213	315	34	574		193	1194	234	606	1833	817
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.00	0.07	0.81	0.81	0.05	0.17	0.17
Sat Flow, veh/h	995	681	1008	25	1836	1585	1781	2963	580	1781	3554	1585
Grp Volume(v), veh/h	136	0	67	401	0	0	216	298	298	192	741	1158
Grp Sat Flow(s),veh/h/ln	995	0	1689	1860	0	1585	1781	1777	1766	1781	1777	1585
Q Serve(g_s), s	10.8	0.0	4.0	2.0	0.0	0.0	5.0	6.9	6.9	7.6	26.0	72.2
Cycle Q Clear(g_c), s	37.1	0.0	4.0	26.3	0.0	0.0	5.0	6.9	6.9	7.6	26.0	72.2
Prop In Lane	1.00		0.60	0.03		1.00	1.00		0.33	1.00		1.00
Lane Grp Cap(c), veh/h	229	0	528	609	0		193	716	711	606	1833	817
V/C Ratio(X)	0.59	0.00	0.13	0.66	0.00		1.12	0.42	0.42	0.32	0.40	1.42
Avail Cap(c_a), veh/h	229	0	528	609	0		193	716	711	606	1833	817
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	0.93	0.00	0.93	1.00	0.00	0.00	0.64	0.64	0.64	0.85	0.85	0.85
Uniform Delay (d), s/veh	51.1	0.0	34.4	42.1	0.0	0.0	40.9	8.8	8.8	17.0	38.9	58.1
Incr Delay (d2), s/veh	10.2	0.0	0.5	5.5	0.0	0.0	86.9	1.1	1.2	1.2	0.6	193.6
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	5.2	0.0	1.7	13.2	0.0	0.0	9.1	2.3	2.3	3.5	12.5	74.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	0.0	34.9	47.6	0.0	0.0	127.7	9.9	10.0	18.2	39.5	251.7
LnGrp LOS	E	A	C	D	A		F	A	A	B	D	F
Approach Vol, veh/h		203			401	A		812			2091	
Approach Delay, s/veh		52.6			47.6			41.3			155.1	
Approach LOS		D			D			D			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.4	78.6		50.0	27.2	62.8		50.0				
Change Period (Y+Rc), s	6.4	6.4		* 6.2	6.4	6.4		* 6.2				
Max Green Setting (Gmax), s	5.0	72.2		* 44	20.8	56.4		* 44				
Max Q Clear Time (g_c+I1), s	7.0	74.2		39.1	9.6	8.9		28.3				
Green Ext Time (p_c), s	0.0	0.0		0.4	0.6	3.8		2.3				

Intersection Summary

HCM 6th Ctrl Delay	110.5
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

01/19/2022



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	136	67	401	153	216	596	192	741	1158
v/c Ratio	0.87	0.12	0.69	0.26	0.64	0.43	0.37	0.41	1.26
Control Delay	85.3	16.6	49.7	10.0	19.2	20.5	4.7	4.4	143.4
Queue Delay	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.7
Total Delay	85.3	16.6	49.7	10.0	19.6	20.5	4.7	4.4	144.0
Queue Length 50th (ft)	102	21	321	17	59	113	9	20	~1253
Queue Length 95th (ft)	#247	60	442	70	m82	m142	34	73	#1597
Internal Link Dist (ft)		452	888			460		712	
Turn Bay Length (ft)	100			100	200		250		
Base Capacity (vph)	156	557	578	581	340	1402	519	1825	921
Starvation Cap Reductn	0	0	0	0	0	0	0	0	106
Spillback Cap Reductn	0	0	0	0	12	0	0	0	29
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.12	0.69	0.26	0.66	0.43	0.37	0.41	1.42













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 Signalized Intersection Capacity Analysis

102: Florida Ave & Whiting St

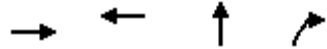
01/19/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔↔			↔↔			↔↔↔	↔				
Traffic Volume (vph)	114	456	0	0	627	112	85	1827	86	0	0	0	
Future Volume (vph)	114	456	0	0	627	112	85	1827	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			0.98			1.00	0.85				
Flt Protected		0.99			1.00			1.00	1.00				
Satd. Flow (prot)		3504			3459			5074	1583				
Flt Permitted		0.54			1.00			1.00	1.00				
Satd. Flow (perm)		1919			3459			5074	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	496	0	0	682	122	92	1986	93	0	0	0	
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	18	0	0	0	
Lane Group Flow (vph)	0	620	0	0	794	0	0	2078	75	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)		671			1210			2692	840				
v/s Ratio Prot					0.23								
v/s Ratio Perm		c0.32						0.41	0.05				
v/c Ratio		0.99dl			0.66			0.77	0.09				
Uniform Delay, d1		43.7			38.4			26.1	16.2				
Progression Factor		1.00			0.62			1.00	1.00				
Incremental Delay, d2		20.4			0.3			2.2	0.2				
Delay (s)		64.1			24.0			28.3	16.4				
Level of Service		E			C			C	B				
Approach Delay (s)		64.1			24.0			27.8			0.0		
Approach LOS		E			C			C			A		
Intersection Summary													
HCM 2000 Control Delay			33.2									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)	13.7
Intersection Capacity Utilization			88.6%									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

102: Florida Ave & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	620	804	2078	93
v/c Ratio	0.99dl	0.66	0.77	0.11
Control Delay	64.4	23.8	28.6	10.0
Queue Delay	0.0	0.4	6.0	0.0
Total Delay	64.4	24.2	34.6	10.0
Queue Length 50th (ft)	284	126	534	23
Queue Length 95th (ft)	#407	m75	595	52
Internal Link Dist (ft)	821	519	567	
Turn Bay Length (ft)				100
Base Capacity (vph)	671	1220	2693	858
Starvation Cap Reductn	0	116	568	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.92	0.73	0.98	0.11

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.

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)	46	106	295	155	754	103	88	527	49	43	534	75
Future Volume (vph)	46	106	295	155	754	103	88	527	49	43	534	75
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	0.98			0.99			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1657		1770	1829			3477			3466	
Flt Permitted	0.12	1.00		0.12	1.00			0.62			0.77	
Satd. Flow (perm)	218	1657		218	1829			2167			2668	
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)	50	115	321	168	820	112	96	573	53	47	580	82
RTOR Reduction (vph)	0	72	0	0	4	0	0	4	0	0	7	0
Lane Group Flow (vph)	50	364	0	168	928	0	0	718	0	0	702	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	34.2	34.2		69.4	34.2			53.3			53.3	
Effective Green, g (s)	34.2	34.2		69.4	34.2			53.3			53.3	
Actuated g/C Ratio	0.24	0.24		0.50	0.24			0.38			0.38	
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)	53	404		498	446			825			1015	
v/s Ratio Prot		0.22		c0.08	c0.51							
v/s Ratio Perm	0.23			0.08				c0.33			0.26	
v/c Ratio	0.94	0.90		0.34	2.08			0.87			0.69	
Uniform Delay, d1	51.9	51.3		22.9	52.9			40.1			36.4	
Progression Factor	0.90	0.79		1.49	0.74			1.39			1.00	
Incremental Delay, d2	79.6	17.1		1.6	493.3			8.0			3.9	
Delay (s)	126.4	57.7		35.8	532.4			63.8			40.3	
Level of Service	F	E		D	F			E			D	
Approach Delay (s)		64.8			456.6			63.8			40.3	
Approach LOS		E			F			E			D	

Intersection Summary

HCM 2000 Control Delay	201.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.3
Intersection Capacity Utilization	110.5%	ICU Level of Service	H
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)	50	436	168	932	722	709
v/c Ratio	0.94	0.92	0.34	2.07	0.87	0.69
Control Delay	129.0	49.2	31.5	512.7	63.6	40.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	129.0	49.2	31.5	512.7	63.6	40.1
Queue Length 50th (ft)	29	131	77	~1364	359	279
Queue Length 95th (ft)	m#63	m#198	146	#1606	#443	355
Internal Link Dist (ft)		519		503	563	436
Turn Bay Length (ft)			150			
Base Capacity (vph)	53	476	498	450	829	1023
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	0.94	0.92	0.34	2.07	0.87	0.69

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕↕			↕↕	
Traffic Volume (vph)	8	141	104	70	566	163	89	238	17	29	709	119
Future Volume (vph)	8	141	104	70	566	163	89	238	17	29	709	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.1			6.1			6.1			6.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.94			0.97			0.99			0.98	
Flt Protected		1.00			1.00			0.99			1.00	
Satd. Flow (prot)		3316			3416			3469			3460	
Flt Permitted		0.92			0.87			0.53			0.92	
Satd. Flow (perm)		3052			2988			1856			3204	
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)	9	153	113	76	615	177	97	259	18	32	771	129
RTOR Reduction (vph)	0	73	0	0	18	0	0	3	0	0	8	0
Lane Group Flow (vph)	0	202	0	0	850	0	0	371	0	0	924	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		8		7	4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		50.0			50.0			62.9			63.0	
Effective Green, g (s)		50.0			50.0			62.9			63.0	
Actuated g/C Ratio		0.36			0.36			0.45			0.45	
Clearance Time (s)		6.1			6.1			6.1			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1090			1067			833			1441	
v/s Ratio Prot												
v/s Ratio Perm		0.07			c0.28			0.20			c0.29	
v/c Ratio		0.19			0.80			0.45			0.64	
Uniform Delay, d1		31.0			40.4			26.5			29.8	
Progression Factor		1.79			0.34			0.88			1.00	
Incremental Delay, d2		0.1			4.0			0.3			2.2	
Delay (s)		55.6			17.9			23.8			32.0	
Level of Service		E			B			C			C	
Approach Delay (s)		55.6			17.9			23.8			32.0	
Approach LOS		E			B			C			C	

Intersection Summary

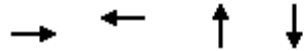
HCM 2000 Control Delay	28.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues

104: Jefferson St & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	275	868	374	932
v/c Ratio	0.24	0.80	0.45	0.64
Control Delay	31.1	19.3	24.9	31.8
Queue Delay	0.0	0.1	0.0	0.0
Total Delay	31.1	19.4	24.9	31.8
Queue Length 50th (ft)	87	102	114	335
Queue Length 95th (ft)	m100	101	m132	409
Internal Link Dist (ft)	503	427	450	207
Turn Bay Length (ft)				
Base Capacity (vph)	1208	1294	836	1449
Starvation Cap Reductn	0	43	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.69	0.45	0.64

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

715: Selmon Expy Off-Ramp & Whiting St

01/19/2022



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	↗
Traffic Volume (vph)	191	0	0	697	100	500
Future Volume (vph)	191	0	0	697	100	500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.7			5.7	6.0	6.0
Lane Util. Factor	0.95			0.95	1.00	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	1770	2787
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	208	0	0	758	109	543
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	208	0	0	758	109	543
Turn Type	NA			NA	Prot	custom
Protected Phases	5			2	4	4
Permitted Phases						
Actuated Green, G (s)	13.7			84.3	44.0	114.6
Effective Green, g (s)	13.7			84.3	44.0	108.9
Actuated g/C Ratio	0.10			0.60	0.31	0.78
Clearance Time (s)	5.7			5.7	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	346			2130	556	2167
v/s Ratio Prot	c0.06			c0.21	0.06	c0.19
v/s Ratio Perm						
v/c Ratio	0.60			0.36	0.20	0.25
Uniform Delay, d1	60.5			14.1	35.1	4.3
Progression Factor	0.73			0.54	1.00	1.00
Incremental Delay, d2	2.8			0.4	0.8	0.3
Delay (s)	47.1			8.0	35.9	4.6
Level of Service	D			A	D	A
Approach Delay (s)	47.1			8.0	9.8	
Approach LOS	D			A	A	

Intersection Summary

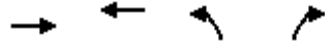
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	37.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

715: Selmon Expy Off-Ramp & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	208	758	109	543
v/c Ratio	0.60	0.36	0.20	0.24
Control Delay	51.2	8.1	36.3	3.3
Queue Delay	0.0	0.3	0.0	0.0
Total Delay	51.2	8.4	36.3	3.3
Queue Length 50th (ft)	69	99	73	51
Queue Length 95th (ft)	89	m53	122	80
Internal Link Dist (ft)	427	276	783	
Turn Bay Length (ft)			350	350
Base Capacity (vph)	1625	2130	556	2280
Starvation Cap Reductn	0	722	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.13	0.54	0.20	0.24

Intersection Summary

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

HCM 6th Signalized Intersection Summary
 11: Water St/Brush St & Whiting St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗			↕	
Traffic Volume (veh/h)	165	392	134	72	593	83	22	95	83	50	255	82
Future Volume (veh/h)	165	392	134	72	593	83	22	95	83	50	255	82
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	179	426	146	78	645	90	24	103	90	54	277	89
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	482	2089	966	581	1749	244	165	237	207	64	227	70
Arrive On Green	0.12	1.00	1.00	0.03	0.56	0.56	0.02	0.26	0.26	0.20	0.20	0.20
Sat Flow, veh/h	1781	3554	1585	1781	3132	436	1781	921	805	177	1166	361
Grp Volume(v), veh/h	179	426	146	78	365	370	24	0	193	420	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1792	1781	0	1726	1704	0	0
Q Serve(g_s), s	6.2	0.0	0.0	2.6	16.0	16.1	1.5	0.0	13.1	22.4	0.0	0.0
Cycle Q Clear(g_c), s	6.2	0.0	0.0	2.6	16.0	16.1	1.5	0.0	13.1	27.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.24	1.00		0.47	0.13		0.21
Lane Grp Cap(c), veh/h	482	2089	966	581	992	1000	165	0	444	361	0	0
V/C Ratio(X)	0.37	0.20	0.15	0.13	0.37	0.37	0.15	0.00	0.43	1.16	0.00	0.00
Avail Cap(c_a), veh/h	923	2089	966	692	992	1000	283	0	558	361	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	0.92	0.92	0.92	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.5	0.0	0.0	12.2	17.2	17.2	42.0	0.0	43.5	57.3	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.2	0.3	0.1	1.0	1.0	0.4	0.0	0.7	99.3	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	2.2	0.1	0.1	1.1	6.8	6.9	0.7	0.0	5.8	23.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.0	0.2	0.3	12.3	18.2	18.2	42.4	0.0	44.1	156.7	0.0	0.0
LnGrp LOS	B	A	A	B	B	B	D	A	D	F	A	A
Approach Vol, veh/h		751			813			217			420	
Approach Delay, s/veh		3.0			17.6			43.9			156.7	
Approach LOS		A			B			D			F	
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.4	83.9		41.7	10.3	88.0	8.7	33.0				
Change Period (Y+Rc), s	* 5.7	* 5.7		* 5.7	5.5	* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s	* 43	* 34		* 45	13.5	* 64	* 12	* 27				
Max Q Clear Time (g_c+I1), s	8.2	18.1		15.1	4.6	2.0	3.5	29.3				
Green Ext Time (p_c), s	0.5	4.3		1.3	0.1	3.7	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	41.8
HCM 6th LOS	D

Notes

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

Queues

11: Water St/Brush St & Whiting St

01/19/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	179	426	146	78	735	24	193	420
v/c Ratio	0.44	0.24	0.15	0.15	0.46	0.12	0.33	1.07
Control Delay	13.4	14.5	0.6	17.3	38.5	34.0	31.3	114.1
Queue Delay	0.0	0.4	0.0	0.0	0.7	0.0	0.0	0.0
Total Delay	13.4	14.9	0.6	17.3	39.2	34.0	31.3	114.1
Queue Length 50th (ft)	49	79	0	45	295	15	109	~415
Queue Length 95th (ft)	75	106	5	79	373	38	178	#654
Internal Link Dist (ft)		276			426		126	215
Turn Bay Length (ft)	100		200	300		50		
Base Capacity (vph)	688	1762	1046	603	1604	247	582	393
Starvation Cap Reductn	22	848	0	0	513	0	0	0
Spillback Cap Reductn	0	0	0	0	57	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.47	0.14	0.13	0.67	0.10	0.33	1.07

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
7: Meridian Ave & Whiting St

01/19/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	300	225	295	543	1711	453
Future Volume (vph)	300	225	295	543	1711	453
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	6.9	6.4	6.6	4.0
Lane Util. Factor	0.97	1.00	1.00	0.91	0.86	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	5085	6408	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	5085	6408	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	326	245	321	590	1860	492
RTOR Reduction (vph)	0	186	0	0	0	0
Lane Group Flow (vph)	326	59	321	590	1860	492
Turn Type	Prot	Perm	Prot	NA	NA	Free
Protected Phases	7 8		1	6	2	
Permitted Phases		7 8				Free
Actuated Green, G (s)	33.6	33.6	46.8	92.3	38.4	140.0
Effective Green, g (s)	33.6	33.6	46.8	92.3	38.4	140.0
Actuated g/C Ratio	0.24	0.24	0.33	0.66	0.27	1.00
Clearance Time (s)			6.9	6.4	6.6	
Vehicle Extension (s)			3.0	3.0	3.0	
Lane Grp Cap (vph)	823	379	591	3352	1757	1583
v/s Ratio Prot	c0.09		c0.18	0.12	c0.29	
v/s Ratio Perm		0.04				c0.31
v/c Ratio	0.40	0.16	0.54	0.18	1.06	0.31
Uniform Delay, d1	44.7	42.0	37.9	9.2	50.8	0.0
Progression Factor	0.72	1.36	0.48	0.25	1.00	1.00
Incremental Delay, d2	0.3	0.2	1.0	0.1	38.9	0.5
Delay (s)	32.7	57.1	19.0	2.4	89.7	0.5
Level of Service	C	E	B	A	F	A
Approach Delay (s)	43.1			8.3	71.1	
Approach LOS	D			A	E	

Intersection Summary			
HCM 2000 Control Delay	52.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues

7: Meridian Ave & Whiting St

01/19/2022



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	326	245	321	590	1860	492
v/c Ratio	0.37	0.42	0.54	0.18	1.06	0.31
Control Delay	31.8	8.0	22.3	2.6	87.2	0.5
Queue Delay	0.0	0.0	3.1	0.2	17.4	0.0
Total Delay	31.8	8.0	25.4	2.7	104.7	0.5
Queue Length 50th (ft)	115	33	88	16	~538	0
Queue Length 95th (ft)	m143	m87	128	32	#614	0
Internal Link Dist (ft)	426			229	186	
Turn Bay Length (ft)	200	250	150			
Base Capacity (vph)	1581	861	591	3351	1757	1583
Starvation Cap Reductn	0	0	174	1800	0	0
Spillback Cap Reductn	0	7	0	0	195	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.29	0.77	0.38	1.19	0.31

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
107: Meridian Ave & Whiting St

01/19/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↑↑↑		↙	↑↑↑
Traffic Volume (vph)	13	163	674	49	25	1911
Future Volume (vph)	13	163	674	49	25	1911
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.7		6.4		5.5	6.9
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.87		0.99		1.00	1.00
Flt Protected	1.00		1.00		0.95	1.00
Satd. Flow (prot)	1624		5034		1770	5085
Flt Permitted	1.00		1.00		0.33	1.00
Satd. Flow (perm)	1624		5034		618	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	177	733	53	27	2077
RTOR Reduction (vph)	165	0	4	0	0	0
Lane Group Flow (vph)	26	0	782	0	27	2077
Turn Type	Prot		NA		custom	NA
Protected Phases	8		6		7	1 2 7
Permitted Phases					1 2	
Actuated Green, G (s)	9.6		92.3		110.6	117.2
Effective Green, g (s)	9.6		92.3		103.7	110.6
Actuated g/C Ratio	0.07		0.66		0.74	0.79
Clearance Time (s)	7.7		6.4		5.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	111		3318		609	4017
v/s Ratio Prot	c0.02		0.16		0.01	c0.41
v/s Ratio Perm					0.03	
v/c Ratio	0.24		0.24		0.04	0.52
Uniform Delay, d1	61.7		9.6		5.7	5.2
Progression Factor	2.07		1.61		0.24	1.93
Incremental Delay, d2	1.1		0.2		0.0	0.0
Delay (s)	128.7		15.6		1.4	10.1
Level of Service	F		B		A	B
Approach Delay (s)	128.7		15.6			10.0
Approach LOS	F		B			A

Intersection Summary

HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
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)	191	786	27	2077
v/c Ratio	0.69	0.24	0.04	0.49
Control Delay	35.1	16.1	0.7	7.7
Queue Delay	0.0	0.0	0.0	2.0
Total Delay	35.1	16.1	0.7	9.6
Queue Length 50th (ft)	31	166	1	663
Queue Length 95th (ft)	119	m211	m1	m597
Internal Link Dist (ft)	878	712		229
Turn Bay Length (ft)				
Base Capacity (vph)	572	3321	645	4205
Starvation Cap Reductn	0	0	0	1905
Spillback Cap Reductn	11	36	0	279
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.24	0.04	0.90

Intersection Summary

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

HCS7 Two-Way Stop-Control Report

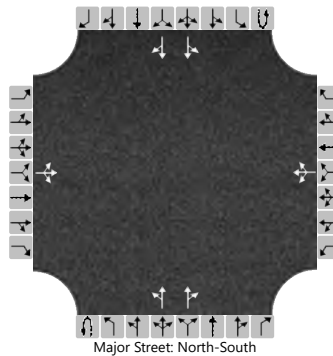
General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	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	33	152		65	48	182		40	369	5		19	640	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		

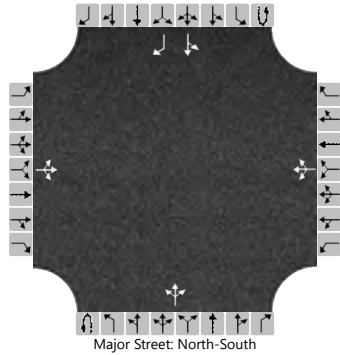
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			196				311				42				20		
Capacity, c (veh/h)			396				291				838				1161		
v/c Ratio			0.49				1.07				0.05				0.02		
95% Queue Length, Q ₉₅ (veh)			2.8				27.0				0.2				0.1		
Control Delay (s/veh)			22.9				243.0				9.5				8.2		
Level of Service (LOS)			C				F				A				A		
Approach Delay (s/veh)		22.9				243.0				1.1				0.3			
Approach LOS		C				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	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	1	0		0	1	0		0	1	0		0	1	1	
Configuration			LTR				LTR				LTR			LT		R	
Volume (veh/h)		3	9	39		21	4	1		85	149	21		5	323	166	
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)			54				27				89				5		
Capacity, c (veh/h)			554				274				1219				1397		
v/c Ratio			0.10				0.10				0.07				0.00		
95% Queue Length, Q ₉₅ (veh)			0.3				0.3				0.2				0.0		
Control Delay (s/veh)			12.2				19.6				8.2				7.6		
Level of Service (LOS)			B				C				A				A		
Approach Delay (s/veh)		12.2				19.6				3.2				0.1			
Approach LOS		B				C											

HCS7 Two-Way Stop-Control Report

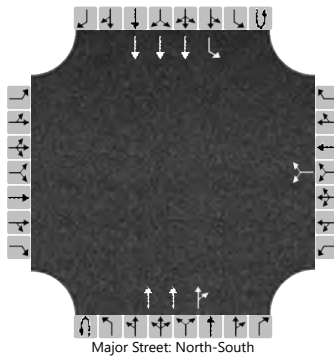
General Information

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	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)						120		130			700	143		0	5	2044
Percent Heavy Vehicles (%)						2		2						0	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)							263								5	
Capacity, c (veh/h)							296								443	
v/c Ratio							0.89								0.01	
95% Queue Length, Q ₉₅ (veh)							13.2								0.0	
Control Delay (s/veh)							88.4								13.2	
Level of Service (LOS)							F								B	
Approach Delay (s/veh)							88.4								0.0	
Approach LOS							F									

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)	890	1740	156	0	0	0	0	444	115	0	0	0
Future Volume (vph)	890	1740	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	6.1						6.0	6.0			
Lane Util. Factor	*0.51	*0.76						*0.80	1.00			
Frt	1.00	0.99						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1805	2796						2980	1583			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1805	2796						2980	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)	967	1891	170	0	0	0	0	483	125	0	0	0
RTOR Reduction (vph)	202	4	0	0	0	0	0	0	62	0	0	0
Lane Group Flow (vph)	765	2057	0	0	0	0	0	483	63	0	0	0
Turn Type	Prot	NA						NA	Perm			
Protected Phases	1	6						4				
Permitted Phases									4			
Actuated Green, G (s)	64.0	102.9						25.0	25.0			
Effective Green, g (s)	64.0	102.9						25.0	25.0			
Actuated g/C Ratio	0.46	0.74						0.18	0.18			
Clearance Time (s)	6.0	6.1						6.0	6.0			
Vehicle Extension (s)	3.0	3.0						3.0	3.0			
Lane Grp Cap (vph)	825	2055						532	282			
v/s Ratio Prot	0.42	c0.74						c0.16				
v/s Ratio Perm									0.04			
v/c Ratio	0.93	1.00						0.91	0.22			
Uniform Delay, d1	35.8	18.5						56.4	49.2			
Progression Factor	1.00	1.00						1.00	1.00			
Incremental Delay, d2	18.0	20.1						19.2	0.4			
Delay (s)	53.8	38.7						75.5	49.6			
Level of Service	D	D						E	D			
Approach Delay (s)		43.5			0.0			70.2			0.0	
Approach LOS		D			A			E			A	
Intersection Summary												
HCM 2000 Control Delay			48.0					HCM 2000 Level of Service		D		
HCM 2000 Volume to Capacity ratio			1.04									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		18.6		
Intersection Capacity Utilization			88.8%					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)	967	2061	483	125
v/c Ratio	0.94	1.00	0.91	0.36
Control Delay	39.5	38.8	78.2	24.9
Queue Delay	16.9	0.0	1.6	0.0
Total Delay	56.4	38.8	79.7	24.9
Queue Length 50th (ft)	578	~1108	272	39
Queue Length 95th (ft)	#901	#1450	#393	101
Internal Link Dist (ft)		1290	1157	
Turn Bay Length (ft)				200
Base Capacity (vph)	1027	2059	532	344
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	86	0	10	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.03	1.00	0.93	0.36

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

01/19/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	386	1440	29	5	0	748	0	133	13	5	18	0	
Future Volume (vph)	386	1440	29	5	0	748	0	133	13	5	18	0	
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		
Lane Util. Factor	1.00	0.95		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		
Flt Protected	0.95	1.00		0.95		1.00		1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1770	3529		1770		1583		1863	1583	1770	1863		
Flt Permitted	0.95	1.00		0.15		1.00		1.00	1.00	0.55	1.00		
Satd. Flow (perm)	1770	3529		281		1583		1863	1583	1019	1863		
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)	420	1565	32	5	0	813	0	145	14	5	20	0	
RTOR Reduction (vph)	0	1	0	0	0	191	0	0	12	0	0	0	
Lane Group Flow (vph)	420	1596	0	5	0	622	0	145	2	5	20	0	
Turn Type	pm+pt	NA		Perm		Perm		NA	Perm	Perm	NA		
Protected Phases	1	6						4				8	
Permitted Phases	6			2		2			4	8			
Actuated Green, G (s)	103.8	103.8		81.9		81.9		24.1	24.1	24.1	24.1		
Effective Green, g (s)	103.8	103.8		81.9		81.9		24.1	24.1	24.1	24.1		
Actuated g/C Ratio	0.74	0.74		0.59		0.59		0.17	0.17	0.17	0.17		
Clearance Time (s)	5.5	6.2		5.9		5.9		5.9	5.9	5.9	5.9		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	1312	2616		164		926		320	272	175	320		
v/s Ratio Prot	0.04	c0.45						c0.08				0.01	
v/s Ratio Perm	0.20			0.02		c0.39			0.00	0.00			
v/c Ratio	0.32	0.61		0.03		0.67		0.45	0.01	0.03	0.06		
Uniform Delay, d1	6.1	8.5		12.3		19.9		52.0	48.0	48.2	48.5		
Progression Factor	0.49	0.38		0.96		1.27		1.00	1.00	1.16	1.13		
Incremental Delay, d2	0.0	0.3		0.3		3.2		4.6	0.1	0.2	0.2		
Delay (s)	3.0	3.5		12.0		28.4		56.6	48.1	55.9	54.8		
Level of Service	A	A		B		C		E	D	E	D		
Approach Delay (s)		3.4			28.3			55.9			55.0		
Approach LOS		A			C			E			D		
Intersection Summary													
HCM 2000 Control Delay			13.4									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.63										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	17.3
Intersection Capacity Utilization			90.5%									ICU Level of Service	E
Analysis Period (min)			15										

c Critical Lane Group

Queues

115: Morgan St & Channelside Dr

01/19/2022



Lane Group	EBL	EBT	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	420	1597	5	813	145	14	5	20
v/c Ratio	0.32	0.61	0.03	0.73	0.45	0.04	0.03	0.06
Control Delay	3.1	3.6	14.0	14.6	57.2	0.2	56.4	55.2
Queue Delay	0.6	0.8	0.0	1.3	0.0	0.0	0.0	0.0
Total Delay	3.7	4.4	14.0	15.9	57.2	0.2	56.4	55.2
Queue Length 50th (ft)	44	94	2	193	120	0	3	11
Queue Length 95th (ft)	m49	m103	m3	334	191	0	m4	m15
Internal Link Dist (ft)		523			1253			424
Turn Bay Length (ft)	450			10			100	
Base Capacity (vph)	1321	2617	164	1117	320	328	175	320
Starvation Cap Reductn	546	650	0	138	0	0	0	0
Spillback Cap Reductn	62	194	0	60	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.81	0.03	0.83	0.45	0.04	0.03	0.06

Intersection Summary

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

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

01/19/2022

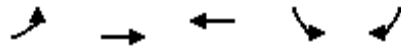


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↶		↶	↷
Traffic Volume (veh/h)	142	1316	486	14	7	267
Future Volume (veh/h)	142	1316	486	14	7	267
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	154	1430	528	15	8	290
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	747	1443	931	26	261	232
Arrive On Green	0.07	0.25	0.68	0.68	0.15	0.15
Sat Flow, veh/h	1781	1870	1810	51	1781	1585
Grp Volume(v), veh/h	154	1430	0	543	8	290
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1861	1781	1585
Q Serve(g_s), s	3.8	106.7	0.0	21.1	0.5	20.5
Cycle Q Clear(g_c), s	3.8	106.7	0.0	21.1	0.5	20.5
Prop In Lane	1.00			0.03	1.00	1.00
Lane Grp Cap(c), veh/h	747	1443	0	957	261	232
V/C Ratio(X)	0.21	0.99	0.00	0.57	0.03	1.25
Avail Cap(c_a), veh/h	747	1443	0	957	261	232
HCM Platoon Ratio	0.33	0.33	1.33	1.33	1.00	1.00
Upstream Filter(I)	0.76	0.76	0.00	0.90	0.99	0.99
Uniform Delay (d), s/veh	8.9	51.7	0.0	14.1	51.2	59.8
Incr Delay (d2), s/veh	0.5	18.7	0.0	2.2	0.2	142.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	61.1	0.0	8.1	0.3	17.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.4	70.4	0.0	16.3	51.4	202.3
LnGrp LOS	A	E	A	B	D	F
Approach Vol, veh/h		1584	543		298	
Approach Delay, s/veh		64.4	16.3		198.2	
Approach LOS		E	B		F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	36.0	78.0			114.0	26.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	30.0	72.0			108.0	20.5
Max Q Clear Time (g_c+I1), s	5.8	23.1			108.7	22.5
Green Ext Time (p_c), s	0.4	4.1			0.0	0.0
Intersection Summary						
HCM 6th Ctrl Delay			70.1			
HCM 6th LOS			E			

Queues

116: Channelside Dr & Jefferson St

01/19/2022



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	154	1430	543	8	290
v/c Ratio	0.23	1.00	0.57	0.03	0.61
Control Delay	1.6	34.6	21.9	52.4	20.0
Queue Delay	0.0	37.4	1.2	0.0	1.0
Total Delay	1.6	72.1	23.1	52.4	21.0
Queue Length 50th (ft)	14	1390	371	7	82
Queue Length 95th (ft)	20	#1658	519	m23	128
Internal Link Dist (ft)		315	131	443	
Turn Bay Length (ft)				100	
Base Capacity (vph)	677	1437	954	259	479
Starvation Cap Reductn	0	197	212	0	0
Spillback Cap Reductn	0	96	41	0	54
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	1.15	0.73	0.03	0.68

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 6th Signalized Intersection Summary

117: Channelside Dr & Nebraska Ave

01/19/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	217	1106	446	79	8	54
Future Volume (veh/h)	217	1106	446	79	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	236	1202	485	86	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	704	1483	1105	196	26	172
Arrive On Green	0.07	1.00	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1781	1870	1547	274	210	1378
Grp Volume(v), veh/h	236	1202	0	571	69	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1821	1612	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	5.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	5.5	0.0
Prop In Lane	1.00			0.15	0.13	0.86
Lane Grp Cap(c), veh/h	704	1483	0	1301	201	0
V/C Ratio(X)	0.34	0.81	0.00	0.44	0.34	0.00
Avail Cap(c_a), veh/h	704	1483	0	1301	201	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.11	0.11	0.00	0.89	0.32	0.00
Uniform Delay (d), s/veh	6.5	0.0	0.0	0.0	56.0	0.0
Incr Delay (d2), s/veh	0.1	0.6	0.0	1.0	1.5	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	2.2	0.2	0.0	0.3	2.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.6	0.6	0.0	1.0	57.5	0.0
LnGrp LOS	A	A	A	A	E	A
Approach Vol, veh/h		1438	571		69	
Approach Delay, s/veh		1.6	1.0		57.5	
Approach LOS		A	A		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.0	106.0			117.0	23.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	5.0	100.0			111.0	17.5
Max Q Clear Time (g_c+I1), s	2.0	2.0			2.0	7.5
Green Ext Time (p_c), s	0.2	4.1			17.2	0.1
Intersection Summary						
HCM 6th Ctrl Delay			3.2			
HCM 6th LOS			A			

Queues

117: Channelside Dr & Nebraska Ave

01/19/2022



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	236	1202	571	68
v/c Ratio	0.38	0.81	0.44	0.27
Control Delay	1.1	5.1	9.2	21.7
Queue Delay	5.3	30.7	0.7	0.1
Total Delay	6.4	35.8	9.8	21.8
Queue Length 50th (ft)	6	174	144	10
Queue Length 95th (ft)	m6	m174	211	m21
Internal Link Dist (ft)		131	222	457
Turn Bay Length (ft)	80			
Base Capacity (vph)	621	1477	1308	255
Starvation Cap Reductn	317	339	397	0
Spillback Cap Reductn	0	60	310	9
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.78	1.06	0.63	0.28

Intersection Summary

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

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	1052	38	10	364	122	101	12	70	44	5	60
Future Volume (veh/h)	24	1052	38	10	364	122	101	12	70	44	5	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	26	1143	41	11	396	133	110	13	76	48	5	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	649	1237	44	607	1086	365	192	34	201	176	17	216
Arrive On Green	0.07	1.00	1.00	0.31	1.00	1.00	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1781	1794	64	1781	1339	450	1331	237	1384	1308	114	1488
Grp Volume(v), veh/h	26	0	1184	11	0	529	110	0	89	48	0	70
Grp Sat Flow(s),veh/h/ln	1781	0	1859	1781	0	1789	1331	0	1621	1308	0	1603
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	11.3	0.0	7.0	4.8	0.0	5.5
Cycle Q Clear(g_c), s	0.7	0.0	0.0	0.0	0.0	0.0	16.7	0.0	7.0	11.8	0.0	5.5
Prop In Lane	1.00		0.03	1.00		0.25	1.00		0.85	1.00		0.93
Lane Grp Cap(c), veh/h	649	0	1281	607	0	1451	192	0	235	176	0	232
V/C Ratio(X)	0.04	0.00	0.92	0.02	0.00	0.36	0.57	0.00	0.38	0.27	0.00	0.30
Avail Cap(c_a), veh/h	649	0	1281	607	0	1451	192	0	235	176	0	232
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)	0.53	0.00	0.53	0.76	0.00	0.76	1.00	0.00	1.00	0.82	0.00	0.82
Uniform Delay (d), s/veh	7.9	0.0	0.0	3.7	0.0	0.0	61.0	0.0	54.1	59.5	0.0	53.5
Incr Delay (d2), s/veh	0.1	0.0	7.4	0.0	0.0	0.5	11.8	0.0	4.6	3.1	0.0	2.7
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	0.3	0.0	2.6	0.1	0.0	0.2	4.5	0.0	3.2	1.8	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.9	0.0	7.4	3.7	0.0	0.5	72.8	0.0	58.7	62.6	0.0	56.2
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1210			540			199			118	
Approach Delay, s/veh		7.5			0.6			66.5			58.8	
Approach LOS		A			A			E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.0	120.5		26.0	28.5	103.0		26.0				
Change Period (Y+Rc), s	6.0	6.5		* 5.7	6.5	* 6.5		* 5.7				
Max Green Setting (Gmax), s	5.0	96.5		* 20	5.0	* 97		* 20				
Max Q Clear Time (g_c+I1), s	2.7	2.0		18.7	2.0	2.0		13.8				
Green Ext Time (p_c), s	0.0	4.2		0.2	0.0	19.0		0.3				

Intersection Summary

HCM 6th Ctrl Delay	14.3
HCM 6th LOS	B

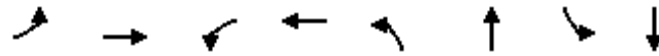
Notes

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

Queues

119: Old Water St & Channelside Dr

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	26	1184	11	529	110	89	48	70
v/c Ratio	0.05	0.93	0.07	0.43	0.58	0.30	0.26	0.24
Control Delay	6.0	15.7	13.4	15.2	68.8	17.4	65.9	23.0
Queue Delay	0.0	16.7	0.0	1.5	0.3	0.0	0.0	0.0
Total Delay	6.0	32.4	13.4	16.7	69.2	17.5	65.9	23.0
Queue Length 50th (ft)	4	173	5	264	95	10	36	10
Queue Length 95th (ft)	m7	#1285	m8	m334	161	62	m60	m32
Internal Link Dist (ft)		222		393		1129		462
Turn Bay Length (ft)	80		100				150	
Base Capacity (vph)	525	1278	149	1243	191	300	184	288
Starvation Cap Reductn	0	12	0	504	0	0	0	0
Spillback Cap Reductn	0	123	0	32	5	4	0	9
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	1.03	0.07	0.72	0.59	0.30	0.26	0.25

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

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)	600	545	21	95	209	59	183	327	76	105	245	104
Future Volume (vph)	600	545	21	95	209	59	183	327	76	105	245	104
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	0.97		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	1852		1770	1801		1770	1863	1583	1770	1863	1583
Flt Permitted	0.33	1.00		0.43	1.00		0.31	1.00	1.00	0.46	1.00	1.00
Satd. Flow (perm)	616	1852		804	1801		579	1863	1583	864	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)	652	592	23	103	227	64	199	355	83	114	266	113
RTOR Reduction (vph)	0	1	0	0	7	0	0	0	57	0	0	87
Lane Group Flow (vph)	652	614	0	103	284	0	199	355	26	114	266	26
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)	82.8	82.8		38.8	38.8		44.6	44.6	44.6	32.6	32.6	32.6
Effective Green, g (s)	82.8	82.8		38.8	38.8		44.6	44.6	44.6	32.6	32.6	32.6
Actuated g/C Ratio	0.59	0.59		0.28	0.28		0.32	0.32	0.32	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)	677	1095		222	499		232	593	504	201	433	368
v/s Ratio Prot	c0.26	0.33			0.16		c0.03	0.19			0.14	
v/s Ratio Perm	c0.31			0.13			c0.24		0.02	0.13		0.02
v/c Ratio	0.96	0.56		0.46	0.57		0.86	0.60	0.05	0.57	0.61	0.07
Uniform Delay, d1	23.4	17.5		42.0	43.4		47.3	40.2	33.1	47.5	48.1	41.9
Progression Factor	0.93	0.36		1.00	1.00		1.00	1.00	1.00	1.12	1.12	4.28
Incremental Delay, d2	16.5	1.0		6.8	4.6		31.4	4.4	0.2	10.8	6.2	0.4
Delay (s)	38.2	7.3		48.8	48.1		78.7	44.6	33.3	63.7	59.9	179.7
Level of Service	D	A		D	D		E	D	C	E	E	F
Approach Delay (s)		23.2			48.3			53.8			88.2	
Approach LOS		C			D			D			F	

Intersection Summary

HCM 2000 Control Delay	45.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
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	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	652	615	103	291	199	355	83	114	266	113
v/c Ratio	0.96	0.56	0.46	0.58	0.86	0.60	0.15	0.57	0.61	0.24
Control Delay	37.0	7.5	50.0	47.3	73.4	45.2	7.3	65.3	60.6	26.7
Queue Delay	15.4	3.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.4	10.5	50.0	47.9	73.4	45.2	7.3	65.3	60.6	26.7
Queue Length 50th (ft)	329	156	78	221	139	272	0	103	243	48
Queue Length 95th (ft)	m#508	m191	141	320	#268	380	39	172	341	97
Internal Link Dist (ft)		393		142		1114			460	
Turn Bay Length (ft)	150		150		300			200		
Base Capacity (vph)	678	1096	223	506	232	593	560	201	433	462
Starvation Cap Reductn	44	363	0	0	0	0	0	0	0	0
Spillback Cap Reductn	17	0	0	48	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.84	0.46	0.64	0.86	0.60	0.15	0.57	0.61	0.24

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.

HCS7 Two-Way Stop-Control Report

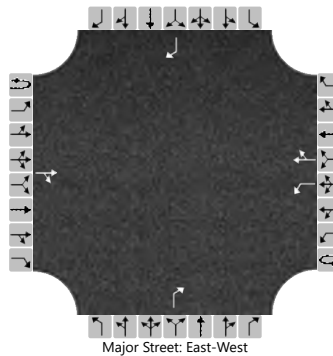
General Information

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	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)			646	81		6	280	24				85				83
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				87
Capacity, c (veh/h)						848						426				733
v/c Ratio						0.01						0.21				0.12
95% Queue Length, Q ₉₅ (veh)						0.0						0.8				0.4
Control Delay (s/veh)						9.3						15.7				10.6
Level of Service (LOS)						A						C				B
Approach Delay (s/veh)						0.2						15.7				10.6
Approach LOS												C				B

MOVEMENT SUMMARY

Site: 8 [Channelside Drive at Cumberland Avenue_Build2026-PM (Site Folder: General)]

Build 2026 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	0.600	9.9	LOS A	4.6	116.1	0.40	0.23	0.40	35.3
8	T1	581	2.0	612	2.0	0.600	9.9	LOS A	4.6	116.1	0.40	0.23	0.40	36.0
18	R2	25	2.0	26	2.0	0.600	9.9	LOS A	4.6	116.1	0.40	0.23	0.40	34.9
Approach		729	2.0	767	2.0	0.600	9.9	LOS A	4.6	116.1	0.40	0.23	0.40	35.9
East: E Cumberland Avenue														
1	L2	31	2.0	33	2.0	0.090	6.1	LOS A	0.3	7.8	0.56	0.55	0.56	37.2
6	T1	5	2.0	5	2.0	0.090	6.1	LOS A	0.3	7.8	0.56	0.55	0.56	34.7
16	R2	24	2.0	25	2.0	0.090	6.1	LOS A	0.3	7.8	0.56	0.55	0.56	34.5
Approach		60	2.0	63	2.0	0.090	6.1	LOS A	0.3	7.8	0.56	0.55	0.56	35.9
North: Channelside Drive														
7	L2	25	2.0	26	2.0	0.265	5.4	LOS A	1.2	30.2	0.32	0.20	0.32	37.8
4	T1	278	2.0	293	2.0	0.265	5.4	LOS A	1.2	30.2	0.32	0.20	0.32	39.6
14	R2	282	2.0	297	2.0	0.262	5.6	LOS A	1.2	30.5	0.34	0.22	0.34	34.1
Approach		585	2.0	616	2.0	0.265	5.5	LOS A	1.2	30.5	0.33	0.21	0.33	36.7
West: E Cumberland Avenue														
5	L2	46	2.0	48	2.0	0.090	4.3	LOS A	0.3	8.4	0.40	0.30	0.40	34.7
2	T1	22	2.0	23	2.0	0.090	4.3	LOS A	0.3	8.4	0.40	0.30	0.40	34.5
12	R2	20	2.0	21	2.0	0.090	4.3	LOS A	0.3	8.4	0.40	0.30	0.40	33.4
Approach		88	2.0	93	2.0	0.090	4.3	LOS A	0.3	8.4	0.40	0.30	0.40	34.4
All Vehicles		1462	2.0	1539	2.0	0.600	7.7	LOS A	4.6	116.1	0.38	0.24	0.38	36.1

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

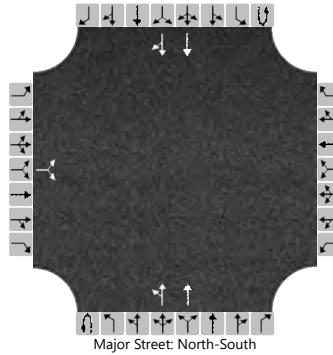
General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2026
Time Analyzed	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)		6		1						1	650				583	20	
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)			7							1								
Capacity, c (veh/h)			276							944								
v/c Ratio			0.03							0.00								
95% Queue Length, Q ₉₅ (veh)			0.1							0.0								
Control Delay (s/veh)			18.4							8.8								
Level of Service (LOS)			C							A								
Approach Delay (s/veh)		18.4									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)	20	8	5	16	11	88	5	651	2	30	576	16
Future Volume (vph)	20	8	5	16	11	88	5	651	2	30	576	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			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1774			1810	1583	1770	3538		1770	3525	
Flt Permitted		0.22			0.80	1.00	0.41	1.00		0.95	1.00	
Satd. Flow (perm)		395			1488	1583	759	3538		1770	3525	
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	17	12	96	5	708	2	33	626	17
RTOR Reduction (vph)	0	4	0	0	0	90	0	0	0	0	1	0
Lane Group Flow (vph)	0	32	0	0	29	6	5	710	0	33	642	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)		14.9			9.1	9.1	74.9	74.9		14.8	95.7	
Effective Green, g (s)		14.9			9.1	9.1	74.9	74.9		14.8	95.7	
Actuated g/C Ratio		0.11			0.06	0.06	0.54	0.54		0.11	0.68	
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			96	102	406	1892		187	2409	
v/s Ratio Prot								c0.20		0.02	c0.18	
v/s Ratio Perm		c0.08			c0.02	0.00	0.01					
v/c Ratio		0.75			0.30	0.06	0.01	0.38		0.18	0.27	
Uniform Delay, d1		60.7			62.4	61.4	15.2	18.9		57.0	8.6	
Progression Factor		1.08			1.00	1.00	1.00	1.00		1.01	1.51	
Incremental Delay, d2		45.9			2.4	0.3	0.1	0.6		0.1	0.0	
Delay (s)		111.5			64.8	61.8	15.3	19.5		57.9	12.9	
Level of Service		F			E	E	B	B		E	B	
Approach Delay (s)		111.5			62.5			19.5			15.1	
Approach LOS		F			E			B			B	

Intersection Summary

HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.3
Intersection Capacity Utilization	44.6%	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)	36	29	96	5	710	33	643
v/c Ratio	0.73	0.30	0.45	0.01	0.37	0.18	0.26
Control Delay	117.7	69.6	13.2	22.2	21.9	57.6	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	117.7	69.6	13.2	22.2	21.9	57.6	14.9
Queue Length 50th (ft)	31	26	0	2	202	32	111
Queue Length 95th (ft)	m#76	59	38	12	297	m62	185
Internal Link Dist (ft)	927	832			494		591
Turn Bay Length (ft)			430	160		280	
Base Capacity (vph)	69	229	342	412	1921	190	2415
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	0.13	0.28	0.01	0.37	0.17	0.27

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

01/19/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	803	8	38	15	24	47	45	710	4	12	550	441	
Future Volume (vph)	803	8	38	15	24	47	45	710	4	12	550	441	
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		1828	1583	1770	3536		1770	3539	1583	
Flt Permitted	0.95	0.95	1.00		0.68	1.00	0.29	1.00		0.18	1.00	1.00	
Satd. Flow (perm)	1681	1687	1583		1268	1583	544	3536		340	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)	873	9	41	16	26	51	49	772	4	13	598	479	
RTOR Reduction (vph)	0	0	25	0	0	48	0	0	0	0	0	327	
Lane Group Flow (vph)	436	446	16	0	42	3	49	776	0	13	598	152	
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		8.7	8.7	44.4	44.4		44.4	44.4	44.4	
Effective Green, g (s)	54.7	54.7	54.7		8.7	8.7	44.4	44.4		44.4	44.4	44.4	
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	98	172	1121		107	1122	502	
v/s Ratio Prot	0.26	c0.26						c0.22				0.17	
v/s Ratio Perm			0.01		c0.03	0.00	0.09			0.04		0.10	
v/c Ratio	0.66	0.68	0.03		0.54	0.03	0.28	0.69		0.12	0.53	0.30	
Uniform Delay, d1	35.1	35.3	26.3		63.7	61.7	35.9	41.8		33.9	39.3	36.1	
Progression Factor	1.00	1.00	1.00		1.00	1.00	0.44	0.59		1.00	1.00	1.00	
Incremental Delay, d2	5.3	5.5	0.1		7.0	0.1	3.9	3.3		2.3	1.8	1.5	
Delay (s)	40.4	40.8	26.3		70.7	61.8	19.8	27.9		36.3	41.1	37.7	
Level of Service	D	D	C		E	E	B	C		D	D	D	
Approach Delay (s)		40.0			65.8			27.5			39.5		
Approach LOS		D			E			C			D		
Intersection Summary													
HCM 2000 Control Delay			37.1		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			77.0%		ICU Level of Service						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)	436	446	41	42	51	49	776	13	598	479
v/c Ratio	0.66	0.68	0.06	0.47	0.25	0.28	0.67	0.12	0.52	0.57
Control Delay	41.1	41.6	0.2	78.7	3.0	19.8	27.1	36.7	40.2	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.1	41.6	0.2	78.7	3.0	19.8	27.1	36.7	40.2	5.8
Queue Length 50th (ft)	341	351	0	38	0	34	323	8	232	0
Queue Length 95th (ft)	472	486	0	77	2	m72	398	27	292	83
Internal Link Dist (ft)		906		876			591		1242	
Turn Bay Length (ft)			140			280		75		375
Base Capacity (vph)	656	658	680	137	259	177	1154	110	1155	839
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	0.66	0.68	0.06	0.31	0.20	0.28	0.67	0.12	0.52	0.57

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

113: Florida Ave & Selmon Expy Off-Ramp

01/19/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑	↑↑			
Traffic Volume (vph)	0	445	1360	0	0	0
Future Volume (vph)	0	445	1360	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.6	6.0			
Lane Util. Factor		0.76	0.95			
Frt		0.85	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		3610	3539			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		3610	3539			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	484	1478	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	484	1478	0	0	0
Turn Type		Prot	NA			
Protected Phases		2	1 4			
Permitted Phases						
Actuated Green, G (s)		32.4	95.0			
Effective Green, g (s)		32.4	95.0			
Actuated g/C Ratio		0.23	0.68			
Clearance Time (s)		6.6				
Vehicle Extension (s)		3.0				
Lane Grp Cap (vph)		835	2401			
v/s Ratio Prot		c0.13	c0.42			
v/s Ratio Perm						
v/c Ratio		0.58	0.62			
Uniform Delay, d1		47.8	12.4			
Progression Factor		1.00	0.33			
Incremental Delay, d2		2.9	0.2			
Delay (s)		50.7	4.3			
Level of Service		D	A			
Approach Delay (s)	50.7		4.3		0.0	
Approach LOS	D		A		A	

Intersection Summary

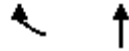
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	91.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues

113: Florida Ave & Selmon Expy Off-Ramp

01/19/2022



Lane Group	WBR	NBT
Lane Group Flow (vph)	484	1478
v/c Ratio	0.58	0.62
Control Delay	51.0	4.7
Queue Delay	0.0	0.0
Total Delay	51.0	4.7
Queue Length 50th (ft)	172	67
Queue Length 95th (ft)	223	m74
Internal Link Dist (ft)		1
Turn Bay Length (ft)	350	
Base Capacity (vph)	835	2401
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.58	0.62

Intersection Summary

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

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	1730	22	196	1660	0	0	0	0
Future Volume (vph)	0	0	0	0	1730	22	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					1.00		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6396		1770	5085				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6396		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	24	213	1804	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	22	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1903	0	191	1804	0	0	0	0
Turn Type					NA		Perm	NA				
Protected Phases					2			4				
Permitted Phases							4					
Actuated Green, G (s)					54.2		73.9	73.9				
Effective Green, g (s)					54.2		73.9	73.9				
Actuated g/C Ratio					0.37		0.51	0.51				
Clearance Time (s)					5.8		6.1	6.1				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					2390		902	2591				
v/s Ratio Prot					c0.30			c0.35				
v/s Ratio Perm							0.11					
v/c Ratio					0.80		0.21	0.70				
Uniform Delay, d1					40.5		19.5	27.0				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					2.9		0.5	1.6				
Delay (s)					43.3		20.1	28.6				
Level of Service					D		C	C				
Approach Delay (s)		0.0			43.3			27.7			0.0	
Approach LOS		A			D			C			A	

Intersection Summary

HCM 2000 Control Delay	35.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	14.9
Intersection Capacity Utilization	67.4%	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)	1904	213	1804
v/c Ratio	0.80	0.23	0.70
Control Delay	43.5	16.2	28.8
Queue Delay	0.0	0.0	47.9
Total Delay	43.5	16.2	76.8
Queue Length 50th (ft)	463	85	462
Queue Length 95th (ft)	510	137	517
Internal Link Dist (ft)	416		356
Turn Bay Length (ft)		300	
Base Capacity (vph)	2391	923	2591
Starvation Cap Reductn	0	0	973
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.80	0.23	1.11
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

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

01/19/2022



Movement	WBL	WBT	NBL	NBT	NBR2	SBL	SBT	SBR	SWR	SWR2
Lane Configurations		↕↕	↙	↕	↙	↙	↘		↙	↙
Traffic Volume (vph)	3	1238	454	464	361	445	20	521	471	96
Future Volume (vph)	3	1238	454	464	361	445	20	521	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	0.86		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	1594		1863	1583
Flt Permitted		1.00	0.21	1.00	1.00	0.36	1.00		1.00	1.00
Satd. Flow (perm)		3539	393	1863	1583	679	1594		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	1346	493	504	392	484	22	566	512	104
RTOR Reduction (vph)	0	0	0	0	32	0	3	0	0	70
Lane Group Flow (vph)	0	1349	493	504	360	484	585	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	70.0	70.0	70.5	64.0		46.3	46.3
Effective Green, g (s)		46.3	82.0	70.0	70.0	70.5	64.0		46.3	46.3
Actuated g/C Ratio		0.33	0.59	0.50	0.50	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	353	931	791	392	728		616	523
v/s Ratio Prot			c0.12	0.27		0.06	0.37		0.27	
v/s Ratio Perm		0.38	c0.69		0.23	0.56				0.02
v/c Ratio		1.15	1.40	0.54	0.46	1.23	0.80		0.83	0.07
Uniform Delay, d1		46.9	26.9	24.0	22.7	36.6	32.6		43.2	32.1
Progression Factor		0.68	1.08	0.97	0.95	1.04	1.04		1.00	1.00
Incremental Delay, d2		69.9	192.3	1.9	1.6	124.9	8.7		12.4	0.2
Delay (s)		101.7	221.3	25.2	23.0	162.9	42.5		55.6	32.3
Level of Service		F	F	C	C	F	D		E	C
Approach Delay (s)		101.7		94.2			96.9			
Approach LOS		F		F			F			

Intersection Summary

HCM 2000 Control Delay	91.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	141.0%	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

01/19/2022



Lane Group	WBT	NBL	NBT	NBR2	SBL	SBT	SWR	SWR2
Lane Group Flow (vph)	1349	493	504	392	484	588	512	104
v/c Ratio	1.15	1.39	0.54	0.48	1.23	0.80	0.83	0.17
Control Delay	100.8	211.9	25.7	19.8	149.3	43.2	56.3	5.8
Queue Delay	0.5	0.0	4.6	1.7	0.4	7.8	0.0	0.0
Total Delay	101.3	211.9	30.3	21.4	149.7	50.9	56.3	5.8
Queue Length 50th (ft)	~776	~470	344	203	~416	484	430	0
Queue Length 95th (ft)	m563	#786	473	344	#685	641	#610	39
Internal Link Dist (ft)	494		424			563		
Turn Bay Length (ft)		250		10			300	300
Base Capacity (vph)	1170	354	931	823	395	731	616	596
Starvation Cap Reductn	132	0	346	265	0	110	0	0
Spillback Cap Reductn	0	0	0	36	15	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.30	1.39	0.86	0.70	1.27	0.95	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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕		↖	↕		↖	↗	↖
Traffic Volume (veh/h)	383	535	27	3	843	746	206	240	359	158	105	192
Future Volume (veh/h)	383	535	27	3	843	746	206	240	359	158	105	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	416	582	29	3	916	811	224	261	390	172	114	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	325	963	48	312	656	532	434	473	422	193	525	
Arrive On Green	0.15	0.55	0.55	0.47	0.47	0.47	0.05	0.27	0.27	0.02	0.09	0.00
Sat Flow, veh/h	1781	1766	88	810	1863	1512	1781	1777	1585	1781	1870	1585
Grp Volume(v), veh/h	416	0	611	3	870	857	224	261	390	172	114	0
Grp Sat Flow(s),veh/h/ln	1781	0	1855	810	1777	1598	1781	1777	1585	1781	1870	1585
Q Serve(g_s), s	21.5	0.0	31.3	0.3	49.3	49.3	7.5	17.7	33.5	9.5	7.9	0.0
Cycle Q Clear(g_c), s	21.5	0.0	31.3	4.6	49.3	49.3	7.5	17.7	33.5	9.5	7.9	0.0
Prop In Lane	1.00		0.05	1.00		0.95	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	325	0	1011	312	626	563	434	473	422	193	525	
V/C Ratio(X)	1.28	0.00	0.60	0.01	1.39	1.52	0.52	0.55	0.92	0.89	0.22	
Avail Cap(c_a), veh/h	325	0	1011	312	626	563	434	473	422	193	525	
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	0.33	0.00	0.33	0.86	0.86	0.86	0.98	0.98	0.98	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.9	0.0	21.6	26.6	37.2	37.2	39.8	44.2	50.0	41.6	49.3	0.0
Incr Delay (d2), s/veh	133.9	0.0	0.9	0.0	183.9	243.2	4.3	4.5	27.9	41.0	0.9	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	23.6	0.0	13.7	0.1	51.8	55.8	3.4	8.4	16.5	6.8	4.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	180.8	0.0	22.5	26.6	221.2	280.4	44.1	48.6	77.8	82.6	50.2	0.0
LnGrp LOS	F	A	C	C	F	F	D	D	E	F	D	
Approach Vol, veh/h		1027			1730			875			286	A
Approach Delay, s/veh		86.6			250.2			60.5			69.7	
Approach LOS		F			F			E			E	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	27.0	55.0	15.0	43.0		82.0	13.0	45.0				
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 5.7		* 5.7	5.5	* 5.7				
Max Green Setting (Gmax), s	21.5	* 49	9.5	* 37		* 76	7.5	* 39				
Max Q Clear Time (g_c+I1), s	23.5	51.3	11.5	35.5		33.3	9.5	9.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.6		4.8	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay	151.8
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

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	416	611	3	1727	224	651	172	114	209
v/c Ratio	1.28	0.61	0.01	1.36	0.51	0.62	0.78	0.22	0.35
Control Delay	172.3	11.5	23.7	191.5	37.2	26.6	48.2	37.9	7.7
Queue Delay	0.0	1.6	0.0	1.8	0.5	5.6	62.4	0.0	0.1
Total Delay	172.3	13.1	23.7	193.2	37.7	32.2	110.6	37.9	7.7
Queue Length 50th (ft)	~425	347	2	~567	139	156	112	85	36
Queue Length 95th (ft)	m#458	m272	m2	m#991	208	225	m#179	m118	m58
Internal Link Dist (ft)		494		148		443		116	
Turn Bay Length (ft)	150		50		100		50		
Base Capacity (vph)	325	1009	284	1272	436	1051	221	522	594
Starvation Cap Reductn	0	230	0	8	0	0	0	0	0
Spillback Cap Reductn	0	144	0	403	44	334	71	0	38
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.28	0.78	0.01	1.99	0.57	0.91	1.15	0.22	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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	734	266	54	989	77	212	77	180	22	10	391
Future Volume (veh/h)	52	734	266	54	989	77	212	77	180	22	10	391
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	57	798	289	59	1075	84	230	84	196	24	11	425
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	374	873	316	397	2225	174	89	19	44	41	18	397
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	485	1310	475	519	3339	261	207	75	176	57	73	1573
Grp Volume(v), veh/h	57	0	1087	59	572	587	510	0	0	460	0	0
Grp Sat Flow(s),veh/h/ln	485	0	1785	519	1777	1823	458	0	0	1703	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	35.3	0.0	0.0	35.3	0.0	0.0
Prop In Lane	1.00		0.27	1.00		0.14	0.45		0.38	0.05		0.92
Lane Grp Cap(c), veh/h	374	0	1190	397	1184	1215	153	0	0	456	0	0
V/C Ratio(X)	0.15	0.00	0.91	0.15	0.48	0.48	3.34	0.00	0.00	1.01	0.00	0.00
Avail Cap(c_a), veh/h	374	0	1190	397	1184	1215	153	0	0	456	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)	0.72	0.00	0.72	0.09	0.09	0.09	0.93	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	56.7	0.0	0.0	53.8	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	9.3	0.1	0.1	0.1	1066.9	0.0	0.0	44.1	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	0.1	0.0	3.1	0.0	0.0	0.0	50.8	0.0	0.0	22.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.6	0.0	9.3	0.1	0.1	0.1	1123.5	0.0	0.0	97.9	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	F	A	A	F	A	A
Approach Vol, veh/h		1144			1218			510				460
Approach Delay, s/veh		8.9			0.1			1123.5				97.9
Approach LOS		A			A			F				F
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		99.0		41.0		99.0		41.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7		* 5.7				
Max Green Setting (Gmax), s		* 93		* 35		* 93		* 35				
Max Q Clear Time (g_c+I1), s		2.0		37.3		2.0		37.3				
Green Ext Time (p_c), s		12.4		0.0		17.4		0.0				

Intersection Summary

HCM 6th Ctrl Delay	188.6
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

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	57	1087	59	1159	510	460
v/c Ratio	0.23	0.91	0.57	0.50	3.38	0.94
Control Delay	13.6	35.5	25.3	15.3	1102.3	64.7
Queue Delay	1.3	24.1	0.0	4.4	20.7	51.6
Total Delay	14.8	59.7	25.3	19.7	1123.1	116.3
Queue Length 50th (ft)	17	902	29	337	~802	313
Queue Length 95th (ft)	m37	#1192	m39	m291	#924	#531
Internal Link Dist (ft)		148		203	457	414
Turn Bay Length (ft)	50		70			
Base Capacity (vph)	244	1200	103	2336	151	490
Starvation Cap Reductn	87	113	0	1082	0	0
Spillback Cap Reductn	0	158	0	304	87	262
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	1.04	0.57	0.92	7.97	2.02

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: Water St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕		↖	↗		↖	↗	
Traffic Volume (veh/h)	121	728	88	32	440	13	461	110	49	8	35	219
Future Volume (veh/h)	121	728	88	32	440	13	461	110	49	8	35	219
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	132	791	96	35	478	14	501	120	53	9	38	238
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	676	1132	137	484	2440	71	141	338	149	168	42	262
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.02	0.09	0.09	0.19	0.19	0.19
Sat Flow, veh/h	905	1636	199	627	3526	103	1781	1230	543	1212	223	1396
Grp Volume(v), veh/h	132	0	887	35	241	251	501	0	173	9	0	276
Grp Sat Flow(s),veh/h/ln	905	0	1835	627	1777	1852	1781	0	1773	1212	0	1619
Q Serve(g_s), s	0.1	0.0	0.0	0.0	0.0	0.0	6.5	0.0	12.8	0.9	0.0	23.4
Cycle Q Clear(g_c), s	0.3	0.0	0.0	0.2	0.0	0.0	6.5	0.0	12.8	13.8	0.0	23.4
Prop In Lane	1.00		0.11	1.00		0.06	1.00		0.31	1.00		0.86
Lane Grp Cap(c), veh/h	676	0	1270	484	1230	1282	141	0	487	168	0	304
V/C Ratio(X)	0.20	0.00	0.70	0.07	0.20	0.20	3.54	0.00	0.35	0.05	0.00	0.91
Avail Cap(c_a), veh/h	676	0	1270	484	1230	1282	141	0	487	168	0	304
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)	0.30	0.00	0.30	0.82	0.82	0.82	0.98	0.00	0.98	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	67.6	0.0	52.0	57.6	0.0	55.7
Incr Delay (d2), s/veh	0.2	0.0	1.0	0.2	0.3	0.3	1160.5	0.0	2.0	0.6	0.0	32.6
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	0.3	0.0	0.1	0.1	50.9	0.0	6.4	0.3	0.0	12.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.2	0.0	1.0	0.2	0.3	0.3	1228.0	0.0	54.0	58.2	0.0	88.2
LnGrp LOS	A	A	A	A	A	A	F	A	D	E	A	F
Approach Vol, veh/h		1019			527			674				285
Approach Delay, s/veh		0.9			0.3			926.7				87.3
Approach LOS		A			A			F				F
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		102.8		44.2		102.8	12.2	32.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s		* 90		* 38		* 90	* 6.5	* 26				
Max Q Clear Time (g_c+I1), s		2.2		14.8		2.3	8.5	25.4				
Green Ext Time (p_c), s		3.7		1.0		10.7	0.0	0.2				

Intersection Summary

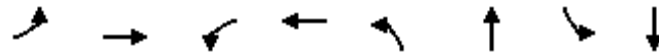
HCM 6th Ctrl Delay	259.7
HCM 6th LOS	F

Notes

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

Queues
701: Water St

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	132	887	35	492	501	173	9	276
v/c Ratio	0.24	0.75	0.17	0.22	2.32	0.35	0.05	0.59
Control Delay	7.0	10.9	3.3	1.8	633.5	41.3	47.8	21.0
Queue Delay	1.4	38.1	0.0	0.0	11.4	0.0	0.0	0.9
Total Delay	8.4	49.0	3.3	1.8	644.9	41.3	47.8	21.9
Queue Length 50th (ft)	31	359	2	11	~752	123	7	61
Queue Length 95th (ft)	m31	m313	m3	16	#954	196	24	160
Internal Link Dist (ft)		203		452		462		361
Turn Bay Length (ft)	70		70		150		150	
Base Capacity (vph)	550	1185	212	2275	216	497	182	465
Starvation Cap Reductn	268	356	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	178	101	0	0	51
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	1.07	0.17	0.23	4.36	0.35	0.05	0.67

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
 120: Meridian Ave & Cumberland Ave

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖	↗	↖	↗		↖	↗	↖
Traffic Volume (veh/h)	542	134	108	1	462	91	25	841	119	160	345	7
Future Volume (veh/h)	542	134	108	1	462	91	25	841	119	160	345	7
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	589	146	117	1	502	0	27	914	129	174	375	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	346	452	362	26	879		438	1108	156	160	1259	562
Arrive On Green	0.78	0.78	0.78	0.47	0.47	0.00	0.01	0.12	0.12	0.08	0.71	0.71
Sat Flow, veh/h	896	961	770	0	1870	1585	1781	3127	441	1781	3554	1585
Grp Volume(v), veh/h	589	0	263	503	0	0	27	519	524	174	375	8
Grp Sat Flow(s),veh/h/ln	896	0	1732	1870	0	1585	1781	1777	1791	1781	1777	1585
Q Serve(g_s), s	38.5	0.0	6.1	0.0	0.0	0.0	1.3	40.0	40.0	5.6	5.5	0.2
Cycle Q Clear(g_c), s	65.8	0.0	6.1	27.3	0.0	0.0	1.3	40.0	40.0	5.6	5.5	0.2
Prop In Lane	1.00		0.44	0.00		1.00	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	346	0	814	905	0		438	630	635	160	1259	562
V/C Ratio(X)	1.70	0.00	0.32	0.56	0.00		0.06	0.83	0.83	1.09	0.30	0.01
Avail Cap(c_a), veh/h	346	0	814	905	0		438	630	635	160	1259	562
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(l)	0.59	0.00	0.59	1.00	0.00	0.00	0.44	0.44	0.44	0.98	0.98	0.98
Uniform Delay (d), s/veh	27.0	0.0	8.6	26.9	0.0	0.0	26.9	57.6	57.6	44.8	14.0	13.2
Incr Delay (d2), s/veh	322.5	0.0	0.6	2.5	0.0	0.0	0.1	5.5	5.5	96.3	0.6	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	42.8	0.0	2.2	13.0	0.0	0.0	0.6	20.1	20.2	7.2	2.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	349.4	0.0	9.3	29.4	0.0	0.0	27.0	63.1	63.1	141.1	14.6	13.2
LnGrp LOS	F	A	A	C	A		C	E	E	F	B	B
Approach Vol, veh/h		852			503	A		1070				557
Approach Delay, s/veh		244.4			29.4			62.2				54.1
Approach LOS		F			C			E				D
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	56.0		72.0	12.0	56.0		72.0				
Change Period (Y+Rc), s	6.4	6.4		* 6.2	6.4	6.4		* 6.2				
Max Green Setting (Gmax), s	5.6	49.6		* 66	5.6	49.6		* 66				
Max Q Clear Time (g_c+I1), s	3.3	7.5		67.8	7.6	42.0		29.3				
Green Ext Time (p_c), s	0.0	2.5		0.0	0.0	3.7		3.9				

Intersection Summary

HCM 6th Ctrl Delay	107.2
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

01/19/2022



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	589	263	503	99	27	1043	174	375	8
v/c Ratio	2.14	0.31	0.57	0.13	0.07	0.84	1.34	0.30	0.01
Control Delay	541.7	10.7	30.2	7.0	20.0	43.4	221.9	27.2	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	20.5	0.0	0.0	0.0
Total Delay	541.7	10.7	30.2	7.0	20.0	63.9	221.9	27.2	0.7
Queue Length 50th (ft)	~607	41	326	11	11	471	~152	109	0
Queue Length 95th (ft)	#843	m74	441	44	m15	m297	#261	148	m0
Internal Link Dist (ft)		452	888			460		712	
Turn Bay Length (ft)	100			100	200		250		
Base Capacity (vph)	275	837	875	784	386	1237	130	1253	609
Starvation Cap Reductn	0	0	0	0	0	221	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	2.14	0.31	0.57	0.13	0.07	1.03	1.34	0.30	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

01/19/2022

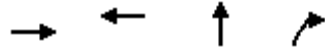


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↕			↕↕			↕↕↕	↗				
Traffic Volume (vph)	180	454	0	0	293	263	120	2092	129	0	0	0	
Future Volume (vph)	180	454	0	0	293	263	120	2092	129	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total 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			0.93			1.00	0.85				
Flt Protected		0.99			1.00			1.00	1.00				
Satd. Flow (prot)		3490			3288			5072	1583				
Flt Permitted		0.59			1.00			1.00	1.00				
Satd. Flow (perm)		2078			3288			5072	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	493	0	0	318	286	130	2274	140	0	0	0	
RTOR Reduction (vph)	0	0	0	0	29	0	0	0	21	0	0	0	
Lane Group Flow (vph)	0	689	0	0	575	0	0	2404	119	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)		727			1150			2691	840				
v/s Ratio Prot					0.17								
v/s Ratio Perm		c0.33						0.47	0.08				
v/c Ratio		0.98dl			0.50			0.89	0.14				
Uniform Delay, d1		44.3			35.8			29.3	16.7				
Progression Factor		1.00			0.71			1.00	1.00				
Incremental Delay, d2		22.8			1.2			5.1	0.4				
Delay (s)		67.1			26.7			34.4	17.0				
Level of Service		E			C			C	B				
Approach Delay (s)		67.1			26.7			33.4			0.0		
Approach LOS		E			C			C			A		
Intersection Summary													
HCM 2000 Control Delay			38.4									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.89										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	13.7
Intersection Capacity Utilization			91.9%									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

102: Florida Ave & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	689	604	2404	140
v/c Ratio	0.98dl	0.51	0.89	0.16
Control Delay	67.2	25.0	34.8	11.9
Queue Delay	0.0	0.0	45.2	0.0
Total Delay	67.2	25.0	79.9	11.9
Queue Length 50th (ft)	320	136	694	42
Queue Length 95th (ft)	#451	190	768	80
Internal Link Dist (ft)	821	519	567	
Turn Bay Length (ft)				100
Base Capacity (vph)	727	1180	2690	860
Starvation Cap Reductn	0	0	501	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.95	0.51	1.10	0.16

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

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)	138	397	173	103	348	163	136	466	97	39	416	54
Future Volume (vph)	138	397	173	103	348	163	136	466	97	39	416	54
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	0.95		1.00	0.95			0.98			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1778		1770	1774			3432			3469	
Flt Permitted	0.26	1.00		0.20	1.00			0.67			0.81	
Satd. Flow (perm)	479	1778		376	1774			2325			2818	
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	432	188	112	378	177	148	507	105	42	452	59
RTOR Reduction (vph)	0	11	0	0	12	0	0	9	0	0	6	0
Lane Group Flow (vph)	150	609	0	112	543	0	0	751	0	0	547	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)	64.2	64.2		64.2	64.2			64.3			64.3	
Effective Green, g (s)	64.2	64.2		64.2	64.2			64.3			64.3	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.46			0.46	
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)	219	815		172	813			1067			1294	
v/s Ratio Prot		c0.34			0.31							
v/s Ratio Perm	0.31			0.30				c0.32			0.19	
v/c Ratio	0.68	0.75		0.65	0.67			0.70			0.42	
Uniform Delay, d1	29.9	31.2		29.3	29.6			30.2			25.4	
Progression Factor	0.53	0.50		0.92	0.92			0.84			1.00	
Incremental Delay, d2	12.6	4.8		16.0	3.9			3.7			1.0	
Delay (s)	28.4	20.3		42.9	31.3			29.2			26.4	
Level of Service	C	C		D	C			C			C	
Approach Delay (s)		21.9			33.2			29.2			26.4	
Approach LOS		C			C			C			C	

Intersection Summary

HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
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)	150	620	112	555	760	553
v/c Ratio	0.68	0.75	0.65	0.67	0.71	0.43
Control Delay	30.2	20.1	45.8	30.8	29.0	26.1
Queue Delay	0.0	1.3	0.0	2.5	0.0	0.1
Total Delay	30.2	21.4	45.8	33.3	29.0	26.2
Queue Length 50th (ft)	44	171	66	317	161	171
Queue Length 95th (ft)	m62	m222	m#154	459	254	221
Internal Link Dist (ft)		519		503	563	436
Turn Bay Length (ft)			150			
Base Capacity (vph)	219	827	172	824	1077	1300
Starvation Cap Reductn	0	75	0	158	0	0
Spillback Cap Reductn	0	0	0	0	0	105
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.82	0.65	0.83	0.71	0.46

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

104: Jefferson St & Whiting St

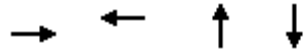
01/19/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	85	294	358	36	260	200	166	363	27	176	398	42	
Future Volume (vph)	85	294	358	36	260	200	166	363	27	176	398	42	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.1			6.1			6.1			6.0		
Lane Util. Factor		0.95			0.95			0.95			0.95		
Frt		0.93			0.94			0.99			0.99		
Flt Protected		0.99			1.00			0.99			0.99		
Satd. Flow (prot)		3263			3313			3462			3454		
Flt Permitted		0.70			0.72			0.58			0.61		
Satd. Flow (perm)		2293			2406			2038			2126		
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)	92	320	389	39	283	217	180	395	29	191	433	46	
RTOR Reduction (vph)	0	145	0	0	86	0	0	3	0	0	3	0	
Lane Group Flow (vph)	0	656	0	0	453	0	0	601	0	0	667	0	
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA		
Protected Phases	3	8			4			6			2		
Permitted Phases	8			4			6			2			
Actuated Green, G (s)		48.4			48.4			59.9			60.0		
Effective Green, g (s)		48.4			48.4			59.9			60.0		
Actuated g/C Ratio		0.35			0.35			0.43			0.43		
Clearance Time (s)		6.1			6.1			6.1			6.0		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		792			831			871			911		
v/s Ratio Prot													
v/s Ratio Perm		c0.29			0.19			0.29			c0.31		
v/c Ratio		0.83			0.54			0.69			0.73		
Uniform Delay, d1		42.0			36.9			32.5			33.3		
Progression Factor		1.15			1.11			0.54			1.00		
Incremental Delay, d2		6.2			0.7			0.2			5.2		
Delay (s)		54.4			41.7			17.6			38.5		
Level of Service		D			D			B			D		
Approach Delay (s)		54.4			41.7			17.6			38.5		
Approach LOS		D			D			B			D		
Intersection Summary													
HCM 2000 Control Delay			39.2									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.74										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	25.9
Intersection Capacity Utilization			90.2%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

Queues

104: Jefferson St & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	801	539	604	670
v/c Ratio	0.85	0.59	0.69	0.73
Control Delay	42.3	32.3	18.0	38.8
Queue Delay	0.0	0.0	0.1	0.1
Total Delay	42.3	32.3	18.1	38.9
Queue Length 50th (ft)	312	92	177	262
Queue Length 95th (ft)	370	115	m129	341
Internal Link Dist (ft)	503	427	450	207
Turn Bay Length (ft)				
Base Capacity (vph)	1152	1010	874	915
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	14	15
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.70	0.53	0.70	0.74

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

715: Selmon Expy Off-Ramp & Whiting St

01/19/2022



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↵	↵↵
Traffic Volume (vph)	487	0	0	420	89	325
Future Volume (vph)	487	0	0	420	89	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.7			5.7	6.0	6.0
Lane Util. Factor	0.95			0.95	1.00	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	1770	2787
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	529	0	0	457	97	353
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	529	0	0	457	97	353
Turn Type	NA			NA	Prot	custom
Protected Phases	5			2	4	4 6
Permitted Phases						
Actuated Green, G (s)	28.1			84.3	44.0	100.2
Effective Green, g (s)	28.1			84.3	44.0	94.5
Actuated g/C Ratio	0.20			0.60	0.31	0.68
Clearance Time (s)	5.7			5.7	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	710			2130	556	1881
v/s Ratio Prot	c0.15			c0.13	0.05	c0.13
v/s Ratio Perm						
v/c Ratio	0.75			0.21	0.17	0.19
Uniform Delay, d1	52.6			12.7	34.8	8.5
Progression Factor	0.73			1.11	1.00	1.00
Incremental Delay, d2	3.0			0.2	0.7	0.2
Delay (s)	41.6			14.3	35.5	8.7
Level of Service	D			B	D	A
Approach Delay (s)	41.6			14.3	14.5	
Approach LOS	D			B	B	

Intersection Summary

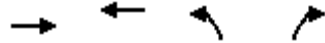
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

715: Selmon Expy Off-Ramp & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	529	457	97	353
v/c Ratio	0.75	0.21	0.17	0.18
Control Delay	43.1	14.4	35.9	7.3
Queue Delay	0.0	0.8	0.0	0.0
Total Delay	43.1	15.1	35.9	7.3
Queue Length 50th (ft)	213	145	64	53
Queue Length 95th (ft)	265	m163	111	88
Internal Link Dist (ft)	427	276	783	
Turn Bay Length (ft)			350	350
Base Capacity (vph)	1625	2130	556	1994
Starvation Cap Reductn	0	1312	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.56	0.17	0.18

Intersection Summary

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

HCM 6th Signalized Intersection Summary
 11: Water St/Brush St & Whiting St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑		↘	↗			↕	
Traffic Volume (veh/h)	135	554	123	230	173	3	188	239	48	98	86	59
Future Volume (veh/h)	135	554	123	230	173	3	188	239	48	98	86	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	147	602	134	250	188	3	204	260	52	107	93	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	798	1947	928	501	2052	33	265	382	76	91	57	36
Arrive On Green	0.04	0.37	0.37	0.08	0.57	0.57	0.04	0.25	0.25	0.17	0.17	0.17
Sat Flow, veh/h	1781	3554	1585	1781	3580	57	1781	1513	303	314	326	205
Grp Volume(v), veh/h	147	602	134	250	93	98	204	0	312	264	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1860	1781	0	1816	845	0	0
Q Serve(g_s), s	5.0	16.9	7.3	8.5	3.3	3.3	5.3	0.0	21.7	13.6	0.0	0.0
Cycle Q Clear(g_c), s	5.0	16.9	7.3	8.5	3.3	3.3	5.3	0.0	21.7	24.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.17	0.41		0.24
Lane Grp Cap(c), veh/h	798	1947	928	501	1019	1066	265	0	458	183	0	0
V/C Ratio(X)	0.18	0.31	0.14	0.50	0.09	0.09	0.77	0.00	0.68	1.44	0.00	0.00
Avail Cap(c_a), veh/h	1141	1947	928	658	1019	1066	265	0	458	183	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	0.97	0.97	0.97	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.4	25.4	18.9	12.9	13.5	13.5	51.1	0.0	47.3	63.4	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.3	0.3	0.7	0.2	0.2	13.0	0.0	4.1	227.9	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	2.1	7.8	2.9	3.5	1.4	1.5	5.4	0.0	10.5	18.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.5	25.7	19.2	13.6	13.6	13.6	64.1	0.0	51.4	291.3	0.0	0.0
LnGrp LOS	B	C	B	B	B	B	E	A	D	F	A	A
Approach Vol, veh/h		883			441			516			264	
Approach Delay, s/veh		22.5			13.6			56.4			291.3	
Approach LOS		C			B			E			F	
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	86.0		41.0	16.6	82.4	11.0	30.0				
Change Period (Y+Rc), s	* 5.7	* 5.7		* 5.7	5.5	* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s	* 34	* 53		* 35	23.5	* 64	* 5.3	* 24				
Max Q Clear Time (g_c+I1), s	7.0	5.3		23.7	10.5	18.9	7.3	26.3				
Green Ext Time (p_c), s	0.4	1.2		1.5	0.6	5.3	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	62.7
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.
 * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

11: Water St/Brush St & Whiting St

01/21/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	147	602	134	250	191	204	312	264
v/c Ratio	0.20	0.32	0.13	0.46	0.10	0.84	0.67	1.41
Control Delay	6.0	15.3	4.2	17.0	19.7	75.6	54.4	253.6
Queue Delay	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	16.8	4.2	17.0	19.7	75.6	54.4	253.6
Queue Length 50th (ft)	18	220	36	110	48	158	252	~316
Queue Length 95th (ft)	34	267	72	165	78	#290	360	#500
Internal Link Dist (ft)		276			426		126	215
Turn Bay Length (ft)	100		200	300		50		
Base Capacity (vph)	929	1885	1019	633	1964	244	463	187
Starvation Cap Reductn	0	1043	0	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	0.16	0.71	0.13	0.39	0.10	0.84	0.67	1.41

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

7: Meridian Ave & Whiting St

01/19/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	336	364	71	1386	248	335
Future Volume (vph)	336	364	71	1386	248	335
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	6.9	6.4	6.6	4.0
Lane Util. Factor	0.97	1.00	1.00	0.91	0.86	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	5085	6408	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	5085	6408	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	365	396	77	1507	270	364
RTOR Reduction (vph)	0	290	0	0	0	0
Lane Group Flow (vph)	365	106	77	1507	270	364
Turn Type	Prot	Perm	Prot	NA	NA	Free
Protected Phases	7 8		1	6	2	
Permitted Phases		7 8				Free
Actuated Green, G (s)	37.4	37.4	12.2	88.5	69.2	140.0
Effective Green, g (s)	37.4	37.4	12.2	88.5	69.2	140.0
Actuated g/C Ratio	0.27	0.27	0.09	0.63	0.49	1.00
Clearance Time (s)			6.9	6.4	6.6	
Vehicle Extension (s)			3.0	3.0	3.0	
Lane Grp Cap (vph)	917	422	154	3214	3167	1583
v/s Ratio Prot	c0.11		0.04	c0.30	0.04	
v/s Ratio Perm		0.07				0.23
v/c Ratio	0.40	0.25	0.50	0.47	0.09	0.23
Uniform Delay, d1	42.1	40.3	61.0	13.5	18.7	0.0
Progression Factor	0.47	1.26	1.21	0.22	1.00	1.00
Incremental Delay, d2	0.3	0.3	2.3	0.4	0.1	0.3
Delay (s)	19.9	50.9	76.0	3.4	18.7	0.3
Level of Service	B	D	E	A	B	A
Approach Delay (s)	36.0			6.9	8.2	
Approach LOS	D			A	A	

Intersection Summary

HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

7: Meridian Ave & Whiting St

01/21/2022



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	365	396	77	1507	270	364
v/c Ratio	0.38	0.54	0.50	0.47	0.09	0.23
Control Delay	19.4	6.5	82.5	3.6	20.6	0.3
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay	19.4	6.7	82.5	3.6	20.6	0.3
Queue Length 50th (ft)	97	213	63	47	36	0
Queue Length 95th (ft)	m61	m15	101	64	61	0
Internal Link Dist (ft)	426			229	186	
Turn Bay Length (ft)	200	250	150			
Base Capacity (vph)	1554	933	355	3213	3167	1583
Starvation Cap Reductn	0	119	0	284	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	0.49	0.22	0.51	0.09	0.23

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

107: Meridian Ave & Whiting St

01/19/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	88	1370	104	147	465
Future Volume (vph)	47	88	1370	104	147	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.7		6.4		5.5	6.9
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.91		0.99		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1670		5031		1770	5085
Flt Permitted	0.98		1.00		0.11	1.00
Satd. Flow (perm)	1670		5031		209	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	96	1489	113	160	505
RTOR Reduction (vph)	60	0	4	0	0	0
Lane Group Flow (vph)	87	0	1598	0	160	505
Turn Type	Prot		NA		custom	NA
Protected Phases	8		6		7	1 2 7
Permitted Phases					1 2	
Actuated Green, G (s)	13.7		88.5		106.5	113.1
Effective Green, g (s)	13.7		88.5		99.6	106.5
Actuated g/C Ratio	0.10		0.63		0.71	0.76
Clearance Time (s)	7.7		6.4		5.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	163		3180		351	3868
v/s Ratio Prot	c0.05		c0.32		c0.06	0.10
v/s Ratio Perm					0.26	
v/c Ratio	0.53		0.50		0.46	0.13
Uniform Delay, d1	60.1		13.9		25.9	4.4
Progression Factor	1.06		0.67		1.01	1.43
Incremental Delay, d2	3.3		0.1		0.9	0.0
Delay (s)	66.9		9.4		27.1	6.4
Level of Service	E		A		C	A
Approach Delay (s)	66.9		9.4			11.4
Approach LOS	E		A			B

Intersection Summary

HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
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)	147	1602	160	505
v/c Ratio	0.66	0.50	0.44	0.12
Control Delay	47.5	9.9	21.7	5.2
Queue Delay	0.0	0.0	0.1	0.2
Total Delay	47.5	9.9	21.8	5.4
Queue Length 50th (ft)	72	174	28	36
Queue Length 95th (ft)	141	m221	82	63
Internal Link Dist (ft)	878	712		229
Turn Bay Length (ft)				
Base Capacity (vph)	505	3182	367	4067
Starvation Cap Reductn	0	0	10	2609
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.29	0.50	0.45	0.35

Intersection Summary

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

HCS7 Two-Way Stop-Control Report

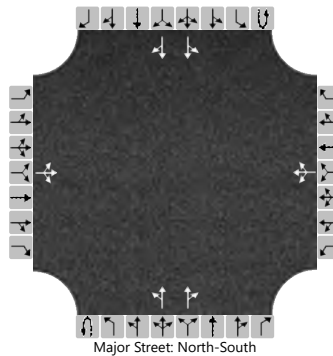
General Information

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	0	2	0	0	0	2	0	
Configuration			LTR				LTR			LT		TR		LT		TR	
Volume (veh/h)		22	102	85		94	49	94		99	502	47		115	437	38	
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				104				121					
Capacity, c (veh/h)			118								1060				992					
v/c Ratio			1.86								0.10				0.12					
95% Queue Length, Q ₉₅ (veh)			56.8								0.3				0.4					
Control Delay (s/veh)			1654.5								8.8				9.1					
Level of Service (LOS)			F								A				A					
Approach Delay (s/veh)		1654.5										1.7					2.2			
Approach LOS		F																		

HCS7 Two-Way Stop-Control Report

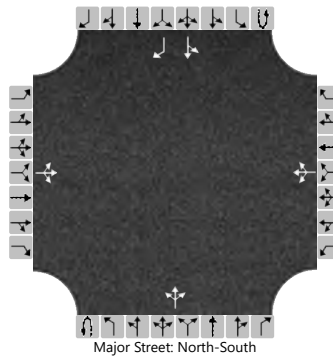
General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	2026
Time Analyzed	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)		108	5	143		11	21	5		82	310	5		5	66	55	
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)			269				39				86				5		
Capacity, c (veh/h)			574				374				1531				1228		
v/c Ratio			0.47				0.10				0.06				0.00		
95% Queue Length, Q ₉₅ (veh)			2.6				0.3				0.2				0.0		
Control Delay (s/veh)			16.8				15.7				7.5				7.9		
Level of Service (LOS)			C				C				A				A		
Approach Delay (s/veh)		16.8				15.7				2.0				0.3			
Approach LOS		C				C				A				A			

HCS7 Two-Way Stop-Control Report

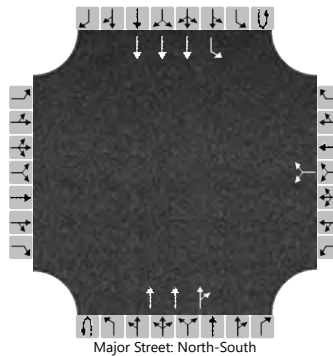
General Information

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	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	0	3	0	0	1	3	0
Configuration							LR				T	TR		L	T	
Volume (veh/h)						48		80			1518	204	0	5	535	
Percent Heavy Vehicles (%)						2		2					0	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)							135								5	
Capacity, c (veh/h)							137								156	
v/c Ratio							0.98								0.03	
95% Queue Length, Q ₉₅ (veh)							13.7								0.1	
Control Delay (s/veh)							232.4								29.0	
Level of Service (LOS)							F								D	
Approach Delay (s/veh)							232.4								0.3	
Approach LOS							F									

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)	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	6.1						6.0	6.0			
Lane Util. Factor	*0.51	*0.76						*0.80	1.00			
Frt	1.00	0.96						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1805	2725						2980	1583			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1805	2725						2980	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)	225	16	0	0	0	0	0	0	89	0	0	0
Lane Group Flow (vph)	783	1912	0	0	0	0	0	273	11	0	0	0
Turn Type	Prot	NA						NA	Perm			
Protected Phases	1	6						4				
Permitted Phases									4			
Actuated Green, G (s)	58.0	112.9						15.0	15.0			
Effective Green, g (s)	58.0	112.9						15.0	15.0			
Actuated g/C Ratio	0.41	0.81						0.11	0.11			
Clearance Time (s)	6.0	6.1						6.0	6.0			
Vehicle Extension (s)	3.0	3.0						3.0	3.0			
Lane Grp Cap (vph)	747	2197						319	169			
v/s Ratio Prot	c0.43	c0.70						c0.09				
v/s Ratio Perm									0.01			
v/c Ratio	1.05	0.87						0.86	0.06			
Uniform Delay, d1	41.0	8.8						61.4	56.2			
Progression Factor	1.00	1.00						1.00	1.00			
Incremental Delay, d2	46.3	5.1						19.6	0.2			
Delay (s)	87.3	13.9						81.0	56.3			
Level of Service	F	B						F	E			
Approach Delay (s)		39.1			0.0			74.4			0.0	
Approach LOS		D			A			E			A	
Intersection Summary												
HCM 2000 Control Delay			43.1					HCM 2000 Level of Service		D		
HCM 2000 Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		18.6		
Intersection Capacity Utilization			97.7%					ICU Level of Service		F		
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)	1008	1928	273	100
v/c Ratio	1.04	0.87	0.86	0.39
Control Delay	64.0	14.2	85.7	15.0
Queue Delay	24.8	0.0	2.1	0.0
Total Delay	88.8	14.2	87.8	15.0
Queue Length 50th (ft)	~752	601	155	0
Queue Length 95th (ft)	#1012	782	#248	56
Internal Link Dist (ft)		1290	1157	
Turn Bay Length (ft)				200
Base Capacity (vph)	972	2212	319	258
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	142	0	10	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.21	0.87	0.88	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.

HCM Signalized Intersection Capacity Analysis
115: Morgan St & Channelside Dr

01/19/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	255	1115	50	154	0	604	0	120	4	13	68	0		
Future Volume (vph)	255	1115	50	154	0	604	0	120	4	13	68	0		
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			
Lane Util. Factor	1.00	0.95		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			
Flt Protected	0.95	1.00		0.95		1.00		1.00	1.00	0.95	1.00			
Satd. Flow (prot)	1770	3517		1770		1583		1863	1583	1770	1863			
Flt Permitted	0.95	1.00		0.22		1.00		1.00	1.00	0.59	1.00			
Satd. Flow (perm)	1770	3517		409		1583		1863	1583	1092	1863			
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)	277	1212	54	167	0	657	0	130	4	14	74	0		
RTOR Reduction (vph)	0	2	0	0	0	86	0	0	3	0	0	0		
Lane Group Flow (vph)	277	1264	0	167	0	571	0	130	1	14	74	0		
Turn Type	pm+pt	NA		Perm		Perm		NA	Perm	Perm	NA			
Protected Phases	1	6						4				8		
Permitted Phases	6			2		2			4	8				
Actuated Green, G (s)	103.8	103.8		86.5		86.5		24.1	24.1	24.1	24.1			
Effective Green, g (s)	103.8	103.8		86.5		86.5		24.1	24.1	24.1	24.1			
Actuated g/C Ratio	0.74	0.74		0.62		0.62		0.17	0.17	0.17	0.17			
Clearance Time (s)	5.5	6.2		5.9		5.9		5.9	5.9	5.9	5.9			
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	1312	2607		252		978		320	272	187	320			
v/s Ratio Prot	0.02	c0.36						c0.07			0.04			
v/s Ratio Perm	0.14			c0.41		0.36			0.00	0.01				
v/c Ratio	0.21	0.48		0.66		0.58		0.41	0.00	0.07	0.23			
Uniform Delay, d1	5.5	7.3		17.3		16.0		51.6	48.0	48.6	50.0			
Progression Factor	0.65	0.54		0.91		1.07		1.00	1.00	0.40	0.39			
Incremental Delay, d2	0.0	0.3		6.5		1.2		3.8	0.0	0.7	1.5			
Delay (s)	3.6	4.2		22.3		18.3		55.4	48.0	20.3	21.1			
Level of Service	A	A		C		B		E	D	C	C			
Approach Delay (s)		4.1			19.1			55.2			20.9			
Approach LOS		A			B			E			C			
Intersection Summary														
HCM 2000 Control Delay			12.1									HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio			0.61											
Actuated Cycle Length (s)			140.0								17.3		Sum of lost time (s)	
Intersection Capacity Utilization			74.3%										ICU Level of Service	D
Analysis Period (min)			15											

c Critical Lane Group

Queues

115: Morgan St & Channelside Dr

01/19/2022



Lane Group	EBL	EBT	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	277	1266	167	657	130	4	14	74
v/c Ratio	0.21	0.49	0.66	0.62	0.41	0.01	0.07	0.23
Control Delay	3.7	4.3	25.3	12.7	56.0	0.0	20.6	21.3
Queue Delay	0.1	0.5	0.0	4.0	0.0	0.0	0.1	0.0
Total Delay	3.8	4.7	25.3	16.7	56.0	0.0	20.7	21.3
Queue Length 50th (ft)	31	77	57	173	107	0	6	32
Queue Length 95th (ft)	m49	117	m72	m218	174	0	m11	m56
Internal Link Dist (ft)		523			1253			424
Turn Bay Length (ft)	450			10			100	
Base Capacity (vph)	1321	2610	253	1064	320	328	187	320
Starvation Cap Reductn	0	795	0	237	0	0	0	0
Spillback Cap Reductn	354	240	0	317	0	0	31	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.70	0.66	0.88	0.41	0.01	0.09	0.23

Intersection Summary

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

HCM 6th Signalized Intersection Summary

116: Channelside Dr & Jefferson St

01/19/2022

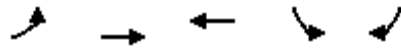


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↙	↘
Traffic Volume (veh/h)	422	710	660	153	6	98
Future Volume (veh/h)	422	710	660	153	6	98
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	459	772	717	166	7	107
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	757	1443	756	175	261	232
Arrive On Green	0.07	0.25	1.00	1.00	0.15	0.15
Sat Flow, veh/h	1781	1870	1469	340	1781	1585
Grp Volume(v), veh/h	459	772	0	883	7	107
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1809	1781	1585
Q Serve(g_s), s	12.0	49.9	0.0	0.0	0.5	8.7
Cycle Q Clear(g_c), s	12.0	49.9	0.0	0.0	0.5	8.7
Prop In Lane	1.00			0.19	1.00	1.00
Lane Grp Cap(c), veh/h	757	1443	0	930	261	232
V/C Ratio(X)	0.61	0.54	0.00	0.95	0.03	0.46
Avail Cap(c_a), veh/h	757	1443	0	930	261	232
HCM Platoon Ratio	0.33	0.33	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.00	0.71	0.09	0.09
Uniform Delay (d), s/veh	7.4	30.5	0.0	0.0	51.2	54.7
Incr Delay (d2), s/veh	3.1	1.2	0.0	15.3	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	25.6	0.0	4.0	0.2	3.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.6	31.8	0.0	15.3	51.2	55.3
LnGrp LOS	B	C	A	B	D	E
Approach Vol, veh/h		1231	883		114	
Approach Delay, s/veh		23.9	15.3		55.0	
Approach LOS		C	B		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	36.0	78.0			114.0	26.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	30.0	72.0			108.0	20.5
Max Q Clear Time (g_c+I1), s	14.0	2.0			51.9	10.7
Green Ext Time (p_c), s	1.4	9.4			7.0	0.2
Intersection Summary						
HCM 6th Ctrl Delay			22.1			
HCM 6th LOS			C			

Queues

116: Channelside Dr & Jefferson St

01/19/2022



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	459	772	883	7	107
v/c Ratio	1.06	0.54	0.94	0.03	0.33
Control Delay	99.4	2.3	43.6	45.5	28.9
Queue Delay	16.9	0.1	44.3	0.0	0.0
Total Delay	116.3	2.4	88.0	45.5	28.9
Queue Length 50th (ft)	~398	10	695	7	67
Queue Length 95th (ft)	#620	12	#1026	m8	m56
Internal Link Dist (ft)		315	131	443	
Turn Bay Length (ft)				100	
Base Capacity (vph)	435	1437	939	259	323
Starvation Cap Reductn	25	79	139	0	0
Spillback Cap Reductn	0	87	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.12	0.57	1.10	0.03	0.33

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

01/19/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	122	594	554	220	29	259
Future Volume (veh/h)	122	594	554	220	29	259
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	133	646	602	239	32	282
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	573	1483	910	361	20	179
Arrive On Green	0.07	1.00	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1781	1870	1274	506	163	1436
Grp Volume(v), veh/h	133	646	0	841	315	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1779	1604	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	17.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	17.5	0.0
Prop In Lane	1.00			0.28	0.10	0.90
Lane Grp Cap(c), veh/h	573	1483	0	1271	200	0
V/C Ratio(X)	0.23	0.44	0.00	0.66	1.57	0.00
Avail Cap(c_a), veh/h	573	1483	0	1271	200	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(l)	0.83	0.83	0.00	0.57	0.79	0.00
Uniform Delay (d), s/veh	5.9	0.0	0.0	0.0	61.3	0.0
Incr Delay (d2), s/veh	0.8	0.8	0.0	1.6	275.3	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	1.2	0.3	0.0	0.6	22.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.6	0.8	0.0	1.6	336.5	0.0
LnGrp LOS	A	A	A	A	F	A
Approach Vol, veh/h		779	841		315	
Approach Delay, s/veh		1.8	1.6		336.5	
Approach LOS		A	A		F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.0	106.0			117.0	23.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	5.0	100.0			111.0	17.5
Max Q Clear Time (g_c+I1), s	2.0	2.0			2.0	19.5
Green Ext Time (p_c), s	0.1	7.7			4.8	0.0
Intersection Summary						
HCM 6th Ctrl Delay			56.2			
HCM 6th LOS			E			

Queues

117: Channelside Dr & Nebraska Ave

01/19/2022



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	133	646	841	314
v/c Ratio	0.32	0.44	0.65	0.73
Control Delay	3.6	3.0	5.1	28.9
Queue Delay	1.1	0.4	4.7	63.1
Total Delay	4.7	3.3	9.8	92.0
Queue Length 50th (ft)	7	146	76	119
Queue Length 95th (ft)	9	137	94	191
Internal Link Dist (ft)		131	222	457
Turn Bay Length (ft)	80			
Base Capacity (vph)	421	1477	1290	430
Starvation Cap Reductn	139	346	163	0
Spillback Cap Reductn	0	0	370	242
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.47	0.57	0.91	1.67

Intersection Summary

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	94	505	24	118	736	148	12	43	40	40	10	26
Future Volume (veh/h)	94	505	24	118	736	148	12	43	40	40	10	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	549	26	128	800	161	13	47	43	43	11	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	472	1221	58	825	1225	247	222	130	119	179	68	172
Arrive On Green	0.07	1.00	1.00	0.31	1.00	1.00	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1781	1771	84	1781	1511	304	1368	899	823	1307	467	1189
Grp Volume(v), veh/h	102	0	575	128	0	961	13	0	90	43	0	39
Grp Sat Flow(s),veh/h/ln	1781	0	1855	1781	0	1816	1368	0	1722	1307	0	1656
Q Serve(g_s), s	3.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	6.6	4.3	0.0	2.9
Cycle Q Clear(g_c), s	3.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	6.6	10.9	0.0	2.9
Prop In Lane	1.00		0.05	1.00		0.17	1.00		0.48	1.00		0.72
Lane Grp Cap(c), veh/h	472	0	1279	825	0	1472	222	0	250	179	0	240
V/C Ratio(X)	0.22	0.00	0.45	0.16	0.00	0.65	0.06	0.00	0.36	0.24	0.00	0.16
Avail Cap(c_a), veh/h	472	0	1279	825	0	1472	222	0	250	179	0	240
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)	0.83	0.00	0.83	0.09	0.00	0.09	1.00	0.00	1.00	0.85	0.00	0.85
Uniform Delay (d), s/veh	8.3	0.0	0.0	4.1	0.0	0.0	54.2	0.0	54.0	58.9	0.0	52.4
Incr Delay (d2), s/veh	0.9	0.0	1.0	0.0	0.0	0.2	0.5	0.0	4.0	2.7	0.0	1.2
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	1.2	0.0	0.3	0.8	0.0	0.1	0.4	0.0	3.2	1.6	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.1	0.0	1.0	4.1	0.0	0.2	54.7	0.0	58.0	61.6	0.0	53.6
LnGrp LOS	A	A	A	A	A	A	D	A	E	E	A	D
Approach Vol, veh/h		677			1089			103				82
Approach Delay, s/veh		2.2			0.7			57.6				57.8
Approach LOS		A			A			E				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.0	120.5		26.0	28.5	103.0		26.0				
Change Period (Y+Rc), s	6.0	6.5		* 5.7	6.5	* 6.5		* 5.7				
Max Green Setting (Gmax), s	5.0	96.5		* 20	5.0	* 97		* 20				
Max Q Clear Time (g_c+I1), s	5.0	2.0		8.6	2.0	2.0		12.9				
Green Ext Time (p_c), s	0.0	11.3		0.5	0.1	4.5		0.2				

Intersection Summary

HCM 6th Ctrl Delay	6.6
HCM 6th LOS	A

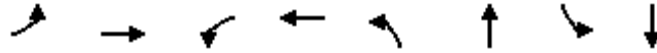
Notes

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

Queues

119: Old Water St & Channelside Dr

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	102	575	128	961	13	90	43	39
v/c Ratio	0.43	0.45	0.22	0.76	0.07	0.33	0.23	0.15
Control Delay	9.6	4.4	12.3	21.9	52.8	40.4	59.9	28.7
Queue Delay	0.0	0.3	0.0	49.8	0.0	0.0	0.0	0.0
Total Delay	9.6	4.8	12.3	71.7	52.8	40.4	59.9	28.7
Queue Length 50th (ft)	8	52	54	557	10	51	0	8
Queue Length 95th (ft)	m15	69	m51	m485	32	106	m74	m41
Internal Link Dist (ft)		222		393		1129		462
Turn Bay Length (ft)	80		100				150	
Base Capacity (vph)	239	1276	594	1257	197	274	183	264
Starvation Cap Reductn	0	254	0	412	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	0.43	0.56	0.22	1.14	0.07	0.33	0.23	0.15

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)	245	328	11	97	457	113	157	497	67	111	378	388
Future Volume (vph)	245	328	11	97	457	113	157	497	67	111	378	388
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	1.00		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	1854		1770	1807		1770	1863	1583	1770	1863	1583
Flt Permitted	0.09	1.00		0.54	1.00		0.10	1.00	1.00	0.14	1.00	1.00
Satd. Flow (perm)	166	1854		1009	1807		191	1863	1583	267	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)	266	357	12	105	497	123	171	540	73	121	411	422
RTOR Reduction (vph)	0	1	0	0	7	0	0	0	49	0	0	291
Lane Group Flow (vph)	266	368	0	105	613	0	171	540	24	121	411	131
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)	82.8	82.8		38.8	38.8		44.6	44.6	44.6	32.6	32.6	32.6
Effective Green, g (s)	82.8	82.8		38.8	38.8		44.6	44.6	44.6	32.6	32.6	32.6
Actuated g/C Ratio	0.59	0.59		0.28	0.28		0.32	0.32	0.32	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)	533	1096		279	500		124	593	504	62	433	368
v/s Ratio Prot	c0.14	0.20			c0.34		0.06	c0.29			0.22	
v/s Ratio Perm	0.16			0.10			0.38		0.02	c0.45		0.08
v/c Ratio	0.50	0.34		0.38	1.23		1.38	0.91	0.05	1.95	0.95	0.36
Uniform Delay, d1	28.8	14.6		40.8	50.6		44.6	45.8	33.0	53.7	52.9	44.9
Progression Factor	0.57	0.45		1.00	1.00		1.00	1.00	1.00	0.37	0.37	1.55
Incremental Delay, d2	3.1	0.8		3.8	118.9		212.9	20.5	0.2	476.1	30.0	2.4
Delay (s)	19.5	7.4		44.7	169.5		257.5	66.3	33.2	496.1	49.4	71.9
Level of Service	B	A		D	F		F	E	C	F	D	E
Approach Delay (s)		12.4			151.4			104.9			116.0	
Approach LOS		B			F			F			F	

Intersection Summary

HCM 2000 Control Delay	100.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.21		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	99.8%	ICU Level of Service	F
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	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	266	369	105	620	171	540	73	121	411	422
v/c Ratio	0.50	0.34	0.38	1.22	1.38	0.91	0.13	1.95	0.95	0.64
Control Delay	17.5	7.4	45.6	159.1	245.1	66.6	8.0	496.7	51.9	15.1
Queue Delay	0.4	0.5	0.0	0.0	5.0	0.0	0.0	0.0	0.0	39.1
Total Delay	18.0	7.9	45.6	159.1	250.2	66.6	8.0	496.7	51.9	54.2
Queue Length 50th (ft)	82	86	78	~689	~153	472	1	~169	331	222
Queue Length 95th (ft)	145	113	136	#929	#310	#688	37	m#250	#573	426
Internal Link Dist (ft)		393		142		1114			460	
Turn Bay Length (ft)	150		150		300			200		
Base Capacity (vph)	533	1096	279	507	124	593	553	62	433	659
Starvation Cap Reductn	58	348	0	0	0	0	0	0	0	140
Spillback Cap Reductn	0	0	0	2	25	0	0	0	0	259
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.49	0.38	1.23	1.73	0.91	0.13	1.95	0.95	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.

HCS7 Two-Way Stop-Control Report

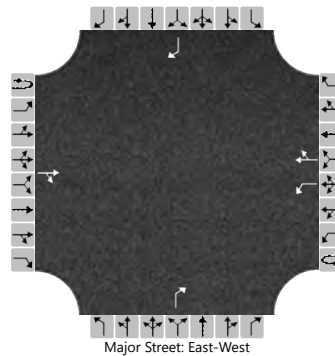
General Information

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)			348	158		10	421	2				89				246
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				259
Capacity, c (veh/h)						1035						610				614
v/c Ratio						0.01						0.15				0.42
95% Queue Length, Q ₉₅ (veh)						0.0						0.5				2.2
Control Delay (s/veh)						8.5						12.0				15.1
Level of Service (LOS)						A						B				C
Approach Delay (s/veh)						0.2						12.0				15.1
Approach LOS												B				C

MOVEMENT SUMMARY

Site: 8 [Channelside Drive at Cumberland Avenue_Build2036-AM (Site Folder: General)]

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	0.428	7.3	LOS A	2.4	60.3	0.37	0.23	0.37	36.7
8	T1	380	2.0	400	2.0	0.428	7.3	LOS A	2.4	60.3	0.37	0.23	0.37	37.5
18	R2	26	2.0	27	2.0	0.428	7.3	LOS A	2.4	60.3	0.37	0.23	0.37	36.2
Approach		500	2.0	526	2.0	0.428	7.3	LOS A	2.4	60.3	0.37	0.23	0.37	37.3
East: E Cumberland Avenue														
1	L2	7	2.0	7	2.0	0.054	4.6	LOS A	0.2	4.8	0.47	0.39	0.47	39.5
6	T1	5	2.0	5	2.0	0.054	4.6	LOS A	0.2	4.8	0.47	0.39	0.47	36.7
16	R2	33	2.0	35	2.0	0.054	4.6	LOS A	0.2	4.8	0.47	0.39	0.47	36.5
Approach		45	2.0	47	2.0	0.054	4.6	LOS A	0.2	4.8	0.47	0.39	0.47	36.9
North: Channelside Drive														
7	L2	53	2.0	56	2.0	0.395	6.7	LOS A	2.1	54.1	0.31	0.17	0.31	37.0
4	T1	421	2.0	443	2.0	0.395	6.7	LOS A	2.1	54.1	0.31	0.17	0.31	38.6
14	R2	244	2.0	257	2.0	0.215	4.9	LOS A	1.0	24.3	0.26	0.14	0.26	34.4
Approach		718	2.0	756	2.0	0.395	6.1	LOS A	2.1	54.1	0.29	0.16	0.29	37.0
West: E Cumberland Avenue														
5	L2	39	2.0	41	2.0	0.109	5.0	LOS A	0.4	10.0	0.48	0.41	0.48	34.7
2	T1	45	2.0	47	2.0	0.109	5.0	LOS A	0.4	10.0	0.48	0.41	0.48	34.4
12	R2	9	2.0	9	2.0	0.109	5.0	LOS A	0.4	10.0	0.48	0.41	0.48	33.3
Approach		93	2.0	98	2.0	0.109	5.0	LOS A	0.4	10.0	0.48	0.41	0.48	34.4
All Vehicles		1356	2.0	1427	2.0	0.428	6.4	LOS A	2.4	60.3	0.34	0.21	0.34	36.9

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

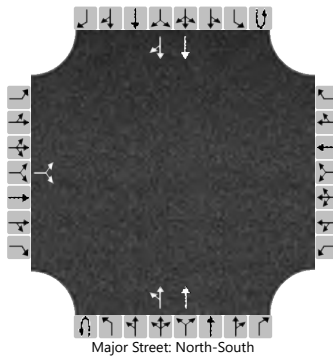
General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	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)		29		1						27	425				718	98	
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							28								
Capacity, c (veh/h)			204							778								
v/c Ratio			0.15							0.04								
95% Queue Length, Q ₉₅ (veh)			0.5							0.1								
Control Delay (s/veh)			25.8							9.8								
Level of Service (LOS)			D							A								
Approach Delay (s/veh)		25.8									0.8							
Approach LOS		D									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)	15	85	5	11	5	58	5	446	8	46	795	115	
Future Volume (vph)	15	85	5	11	5	58	5	446	8	46	795	115	
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			1799	1583	1770	3530		1770	3472		
Flt Permitted		0.27			0.72	1.00	0.29	1.00		0.95	1.00		
Satd. Flow (perm)		505			1341	1583	540	3530		1770	3472		
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)	16	92	5	12	5	63	5	485	9	50	864	125	
RTOR Reduction (vph)	0	1	0	0	0	59	0	1	0	0	6	0	
Lane Group Flow (vph)	0	112	0	0	17	4	5	493	0	50	983	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			8.3	8.3	60.8	60.8		21.5	88.3		
Effective Green, g (s)		23.1			8.3	8.3	60.8	60.8		21.5	88.3		
Actuated g/C Ratio		0.17			0.06	0.06	0.43	0.43		0.15	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)		83			79	93	234	1533		271	2189		
v/s Ratio Prot								0.14		0.03	c0.28		
v/s Ratio Perm		c0.22			c0.01	0.00	0.01						
v/c Ratio		1.35			0.22	0.04	0.02	0.32		0.18	0.45		
Uniform Delay, d1		58.5			62.7	62.1	22.6	26.0		51.6	13.3		
Progression Factor		0.77			1.00	1.00	1.00	1.00		0.97	2.13		
Incremental Delay, d2		217.1			1.9	0.2	0.2	0.6		0.1	0.0		
Delay (s)		261.9			64.6	62.3	22.8	26.6		50.0	28.3		
Level of Service		F			E	E	C	C		D	C		
Approach Delay (s)		261.9			62.8			26.6			29.4		
Approach LOS		F			E			C			C		
Intersection Summary													
HCM 2000 Control Delay			45.3		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			0.64										
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

01/19/2022



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	113	17	63	5	494	50	989
v/c Ratio	1.35	0.22	0.31	0.02	0.32	0.18	0.45
Control Delay	250.7	68.4	4.0	23.6	26.8	51.6	28.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	250.7	68.4	4.0	23.6	26.8	51.6	29.1
Queue Length 50th (ft)	~136	15	0	3	154	48	284
Queue Length 95th (ft)	#261	41	0	12	198	m63	373
Internal Link Dist (ft)	927	832			494		591
Turn Bay Length (ft)			430	160		280	
Base Capacity (vph)	84	206	342	234	1535	271	2197
Starvation Cap Reductn	0	0	0	0	0	0	613
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.35	0.08	0.18	0.02	0.32	0.18	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 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)	434	45	89	12	24	8	58	438	23	34	862	1058	
Future Volume (vph)	434	45	89	12	24	8	58	438	23	34	862	1058	
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		1832	1583	1770	3513		1770	3539	1583	
Flt Permitted	0.95	0.96	1.00		0.78	1.00	0.10	1.00		0.36	1.00	1.00	
Satd. Flow (perm)	1681	1701	1583		1458	1583	187	3513		674	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)	472	49	97	13	26	9	63	476	25	37	937	1150	
RTOR Reduction (vph)	0	0	77	0	0	8	0	3	0	0	0	703	
Lane Group Flow (vph)	260	261	20	0	39	1	63	498	0	37	937	447	
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)	28.7	28.7	28.7		7.9	7.9	44.4	44.4		44.4	44.4	44.4	
Effective Green, g (s)	28.7	28.7	28.7		7.9	7.9	44.4	44.4		44.4	44.4	44.4	
Actuated g/C Ratio	0.20	0.20	0.20		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)	344	348	324		82	89	59	1114		213	1122	502	
v/s Ratio Prot	c0.15	0.15						0.14			0.26		
v/s Ratio Perm			0.01		c0.03	0.00	c0.34			0.05		0.28	
v/c Ratio	0.76	0.75	0.06		0.48	0.01	1.07	0.45		0.17	0.84	0.89	
Uniform Delay, d1	52.4	52.3	44.8		64.0	62.3	47.8	38.0		34.5	44.4	45.5	
Progression Factor	1.00	1.00	1.00		1.00	1.00	0.53	0.43		1.00	1.00	1.00	
Incremental Delay, d2	9.1	8.8	0.1		4.3	0.0	134.8	1.2		1.8	7.4	20.5	
Delay (s)	61.5	61.1	44.9		68.3	62.4	160.3	17.5		36.3	51.8	66.0	
Level of Service	E	E	D		E	E	F	B		D	D	E	
Approach Delay (s)		58.7			67.2			33.5			59.2		
Approach LOS		E			E			C			E		
Intersection Summary													
HCM 2000 Control Delay			54.9									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			98.3%									ICU Level of Service	F
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)	260	261	97	39	9	63	501	37	937	1150
v/c Ratio	0.76	0.75	0.24	0.41	0.05	1.05	0.44	0.17	0.81	0.95
Control Delay	65.6	65.0	7.8	75.1	0.5	160.1	17.0	36.3	49.9	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.6	65.0	7.8	75.1	0.5	160.1	17.0	36.3	49.9	22.4
Queue Length 50th (ft)	237	237	0	35	0	~61	189	24	411	113
Queue Length 95th (ft)	313	312	41	73	0	m#155	m240	55	496	#622
Internal Link Dist (ft)		906		876			591		1242	
Turn Bay Length (ft)			140			280		75		375
Base Capacity (vph)	656	664	680	158	259	60	1149	220	1155	1210
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	0.40	0.39	0.14	0.25	0.03	1.05	0.44	0.17	0.81	0.95

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

113: Florida Ave & Selmon Expy Off-Ramp

01/19/2022

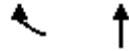


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑	↑↑			
Traffic Volume (vph)	0	1084	1202	0	0	0
Future Volume (vph)	0	1084	1202	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.6	6.0			
Lane Util. Factor		0.76	0.95			
Frt		0.85	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		3610	3539			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		3610	3539			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1178	1307	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1178	1307	0	0	0
Turn Type		Prot	NA			
Protected Phases		2	1 4			
Permitted Phases						
Actuated Green, G (s)		48.4	79.0			
Effective Green, g (s)		48.4	79.0			
Actuated g/C Ratio		0.35	0.56			
Clearance Time (s)		6.6				
Vehicle Extension (s)		3.0				
Lane Grp Cap (vph)		1248	1997			
v/s Ratio Prot		c0.33	c0.37			
v/s Ratio Perm						
v/c Ratio		0.94	0.65			
Uniform Delay, d1		44.5	21.1			
Progression Factor		1.00	0.35			
Incremental Delay, d2		15.2	0.2			
Delay (s)		59.6	7.6			
Level of Service		E	A			
Approach Delay (s)	59.6		7.6		0.0	
Approach LOS	E		A		A	
Intersection Summary						
HCM 2000 Control Delay			32.3		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.80			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	18.6
Intersection Capacity Utilization			100.2%		ICU Level of Service	G
Analysis Period (min)			15			
c Critical Lane Group						

Queues

113: Florida Ave & Selmon Expy Off-Ramp

01/19/2022



Lane Group	WBR	NBT
Lane Group Flow (vph)	1178	1307
v/c Ratio	0.94	0.65
Control Delay	59.7	7.9
Queue Delay	0.0	0.0
Total Delay	59.7	7.9
Queue Length 50th (ft)	455	262
Queue Length 95th (ft)	#575	m150
Internal Link Dist (ft)		1
Turn Bay Length (ft)	350	
Base Capacity (vph)	1248	1997
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.94	0.65

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

01/19/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					  			  				
Traffic Volume (vph)	0	0	0	0	2093	433	260	2069	0	0	0	0
Future Volume (vph)	0	0	0	0	2093	433	260	2069	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)					6243		1770	5085				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6243		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	471	283	2249	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	22	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2727	0	261	2249	0	0	0	0
Turn Type					NA		Perm	NA				
Protected Phases					2			4				
Permitted Phases							4					
Actuated Green, G (s)					54.2		73.9	73.9				
Effective Green, g (s)					54.2		73.9	73.9				
Actuated g/C Ratio					0.37		0.51	0.51				
Clearance Time (s)					5.8		6.1	6.1				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					2333		902	2591				
v/s Ratio Prot					c0.44			c0.44				
v/s Ratio Perm							0.15					
v/c Ratio					1.17		0.29	0.87				
Uniform Delay, d1					45.4		20.5	31.3				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					80.9		0.8	4.3				
Delay (s)					126.3		21.3	35.5				
Level of Service					F		C	D				
Approach Delay (s)		0.0			126.3			33.9			0.0	
Approach LOS		A			F			C			A	
Intersection Summary												
HCM 2000 Control Delay			82.0		HCM 2000 Level of Service				F			
HCM 2000 Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			145.0		Sum of lost time (s)				14.9			
Intersection Capacity Utilization			87.5%		ICU Level of Service				E			
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)	2746	283	2249
v/c Ratio	1.17	0.31	0.87
Control Delay	120.6	18.2	35.9
Queue Delay	0.0	1.5	46.8
Total Delay	120.6	19.7	82.7
Queue Length 50th (ft)	~891	127	667
Queue Length 95th (ft)	#956	191	737
Internal Link Dist (ft)	416		356
Turn Bay Length (ft)		300	
Base Capacity (vph)	2352	923	2591
Starvation Cap Reductn	0	454	834
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.17	0.60	1.28

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

01/19/2022



Movement	WBL	WBT	NBL	NBT	NBR2	SBL	SBT	SBR	SWR	SWR2
Lane Configurations		↕↕	↙	↕	↙	↙	↘		↙	↙
Traffic Volume (vph)	2	2093	148	695	121	529	92	244	876	575
Future Volume (vph)	2	2093	148	695	121	529	92	244	876	575
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	1660		1863	1583
Flt Permitted		1.00	0.40	1.00	1.00	0.15	1.00		1.00	1.00
Satd. Flow (perm)		3539	738	1863	1583	280	1660		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	2275	161	755	132	575	100	265	952	625
RTOR Reduction (vph)	0	0	0	0	32	0	39	0	0	158
Lane Group Flow (vph)	0	2277	161	755	100	575	326	0	952	467
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	70.0	70.0	70.5	64.0		46.3	46.3
Effective Green, g (s)		46.3	82.0	70.0	70.0	70.5	64.0		46.3	46.3
Actuated g/C Ratio		0.33	0.59	0.50	0.50	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	524	931	791	210	758		616	523
v/s Ratio Prot			0.03	c0.41		c0.13	0.20		0.51	
v/s Ratio Perm		0.64	0.15		0.06	c1.25				0.29
v/c Ratio		1.95	0.31	0.81	0.13	2.74	0.43		1.55	0.89
Uniform Delay, d1		46.9	14.7	29.4	18.7	35.9	25.7		46.9	44.5
Progression Factor		0.65	0.88	1.01	0.88	1.47	1.24		1.00	1.00
Incremental Delay, d2		426.1	1.3	6.8	0.3	789.9	1.0		253.5	20.2
Delay (s)		456.7	14.3	36.5	16.8	842.7	32.8		300.3	64.7
Level of Service		F	B	D	B	F	C		F	E
Approach Delay (s)		456.7		30.6			528.2			
Approach LOS		F		C			F			

Intersection Summary

HCM 2000 Control Delay	324.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.33		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	197.1%	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

01/19/2022



Lane Group	WBT	NBL	NBT	NBR2	SBL	SBT	SWR	SWR2
Lane Group Flow (vph)	2277	161	755	132	575	365	952	625
v/c Ratio	1.95	0.31	0.81	0.16	2.73	0.46	1.55	0.92
Control Delay	449.1	12.9	37.4	9.1	801.9	26.8	286.8	47.4
Queue Delay	0.7	0.0	50.2	0.0	0.0	0.0	0.0	0.0
Total Delay	449.9	12.9	87.6	9.1	801.9	26.8	286.8	47.4
Queue Length 50th (ft)	~1732	50	686	27	~894	244	~1217	375
Queue Length 95th (ft)	m#1162	90	848	68	m#1079	m293	#1474	#624
Internal Link Dist (ft)	494		424			563		
Turn Bay Length (ft)		250		10			300	300
Base Capacity (vph)	1170	527	931	823	211	797	616	681
Starvation Cap Reductn	174	0	269	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	2.29	0.31	1.14	0.16	2.73	0.46	1.55	0.92

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 6th Signalized Intersection Summary

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 (veh/h)	162	164	37	30	1953	214	38	315	3	323	510	104
Future Volume (veh/h)	162	164	37	30	1953	214	38	315	3	323	510	104
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	176	178	40	33	2123	233	41	342	3	351	554	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	172	890	200	627	1602	173	121	678	6	317	445	
Arrive On Green	0.07	0.60	0.60	0.66	0.66	0.66	0.04	0.19	0.19	0.12	0.32	0.00
Sat Flow, veh/h	1781	1478	332	1163	3236	349	1781	3610	32	1781	1870	1585
Grp Volume(v), veh/h	176	0	218	33	1148	1208	41	168	177	351	554	0
Grp Sat Flow(s),veh/h/ln	1781	0	1811	1163	1777	1808	1781	1777	1865	1781	1870	1585
Q Serve(g_s), s	9.5	0.0	7.6	1.4	69.3	69.3	2.5	11.9	11.9	12.5	33.3	0.0
Cycle Q Clear(g_c), s	9.5	0.0	7.6	1.4	69.3	69.3	2.5	11.9	11.9	12.5	33.3	0.0
Prop In Lane	1.00		0.18	1.00		0.19	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	172	0	1090	627	880	895	121	334	350	317	445	
V/C Ratio(X)	1.02	0.00	0.20	0.05	1.30	1.35	0.34	0.50	0.50	1.11	1.25	
Avail Cap(c_a), veh/h	172	0	1090	627	880	895	121	334	350	317	445	
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(l)	0.09	0.00	0.09	0.09	0.09	0.09	0.09	0.09	0.09	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.2	0.0	12.6	12.3	23.9	23.9	45.3	51.0	51.0	49.1	47.9	0.0
Incr Delay (d2), s/veh	26.2	0.0	0.0	0.0	138.0	158.3	0.7	0.5	0.5	82.6	128.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	3.1	0.4	58.0	64.1	1.2	5.4	5.6	12.5	30.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.3	0.0	12.6	12.3	161.9	182.2	45.9	51.5	51.5	131.7	175.9	0.0
LnGrp LOS	F	A	B	B	F	F	D	D	D	F	F	
Approach Vol, veh/h		394			2389			386			905	A
Approach Delay, s/veh		39.3			170.1			50.9			158.8	
Approach LOS		D			F			D			F	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	15.0	75.0	18.0	32.0		90.0	11.0	39.0				
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 5.7		* 5.7	5.5	* 5.7				
Max Green Setting (Gmax), s	9.5	* 69	12.5	* 26		* 84	5.5	* 33				
Max Q Clear Time (g_c+I1), s	11.5	71.3	14.5	13.9		9.6	4.5	35.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.0		1.4	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	143.7
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

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	176	218	33	2356	41	345	351	554	113
v/c Ratio	1.02	0.20	0.06	1.36	0.33	0.52	1.18	1.25	0.25
Control Delay	59.8	3.2	21.7	191.3	23.0	39.9	137.4	161.6	7.0
Queue Delay	0.0	0.5	0.0	4.3	4.9	0.0	1.6	0.0	0.1
Total Delay	59.8	3.7	21.7	195.6	27.9	39.9	139.0	161.6	7.1
Queue Length 50th (ft)	~121	69	15	~1470	21	157	~195	~610	1
Queue Length 95th (ft)	m37	m6	m14	m#1261	m21	m156	m#570	m#842	m23
Internal Link Dist (ft)		494		148		443		116	
Turn Bay Length (ft)	150		50		100		50		
Base Capacity (vph)	173	1096	573	1731	123	665	298	443	458
Starvation Cap Reductn	0	0	0	344	0	0	0	0	0
Spillback Cap Reductn	0	533	0	1048	44	0	36	0	38
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.39	0.06	3.45	0.52	0.52	1.34	1.25	0.27

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕			↕			↕	
Traffic Volume (veh/h)	77	335	78	3	1699	5	332	81	99	21	194	166
Future Volume (veh/h)	77	335	78	3	1699	5	332	81	99	21	194	166
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	84	364	85	3	1847	5	361	88	108	23	211	180
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	726	169	398	1800	5	278	57	70	52	402	328
Arrive On Green	0.66	0.66	0.66	0.99	0.99	0.99	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	249	1466	342	941	3636	10	556	135	166	59	948	775
Grp Volume(v), veh/h	84	0	449	3	902	950	557	0	0	414	0	0
Grp Sat Flow(s),veh/h/ln	249	0	1809	941	1777	1869	857	0	0	1782	0	0
Q Serve(g_s), s	0.0	0.0	17.7	0.1	69.3	69.3	34.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	69.3	0.0	17.7	17.8	69.3	69.3	59.3	0.0	0.0	25.3	0.0	0.0
Prop In Lane	1.00		0.19	1.00		0.01	0.65		0.19	0.06		0.43
Lane Grp Cap(c), veh/h	51	0	895	398	880	925	405	0	0	782	0	0
V/C Ratio(X)	1.63	0.00	0.50	0.01	1.03	1.03	1.37	0.00	0.00	0.53	0.00	0.00
Avail Cap(c_a), veh/h	51	0	895	398	880	925	405	0	0	782	0	0
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.49	0.00	0.49	0.44	0.44	0.44	0.96	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	58.6	0.0	15.1	2.8	0.7	0.7	48.9	0.0	0.0	30.6	0.0	0.0
Incr Delay (d2), s/veh	323.9	0.0	1.0	0.0	27.0	26.8	182.6	0.0	0.0	2.6	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	6.4	0.0	6.6	0.0	6.9	7.2	35.3	0.0	0.0	11.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	382.5	0.0	16.1	2.8	27.7	27.5	231.5	0.0	0.0	33.1	0.0	0.0
LnGrp LOS	F	A	B	A	F	F	F	A	A	C	A	A
Approach Vol, veh/h		533			1855			557			414	
Approach Delay, s/veh		73.8			27.6			231.5			33.1	
Approach LOS		E			C			F			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		75.0		65.0		75.0		65.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7		* 5.7				
Max Green Setting (Gmax), s		* 69		* 59		* 69		* 59				
Max Q Clear Time (g_c+I1), s		71.3		61.3		71.3		27.3				
Green Ext Time (p_c), s		0.0		0.0		0.0		3.2				

Intersection Summary

HCM 6th Ctrl Delay	69.4
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

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	84	449	3	1852	557	414
v/c Ratio	1.58	0.50	0.01	1.06	1.51	0.58
Control Delay	340.1	32.1	6.7	52.7	271.9	34.4
Queue Delay	0.0	56.0	0.0	18.5	26.6	69.0
Total Delay	340.1	88.2	6.7	71.2	298.5	103.5
Queue Length 50th (ft)	~103	246	0	~985	~702	281
Queue Length 95th (ft)	m#125	m243	m1	#1097	#930	393
Internal Link Dist (ft)		148		203	457	414
Turn Bay Length (ft)	50		70			
Base Capacity (vph)	53	902	345	1751	368	712
Starvation Cap Reductn	0	496	0	141	0	0
Spillback Cap Reductn	0	0	0	473	287	560
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.58	1.11	0.01	1.45	6.88	2.72

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
701: Water St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕		↖	↗		↖	↗	
Traffic Volume (veh/h)	29	175	250	31	1605	168	73	96	32	1	164	24
Future Volume (veh/h)	29	175	250	31	1605	168	73	96	32	1	164	24
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	32	190	272	34	1745	183	79	104	35	1	178	26
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	104	481	689	694	2251	232	218	368	124	196	300	44
Arrive On Green	1.00	1.00	1.00	0.46	0.46	0.46	0.02	0.09	0.09	0.19	0.19	0.19
Sat Flow, veh/h	231	695	996	930	3252	335	1781	1339	451	1250	1595	233
Grp Volume(v), veh/h	32	0	462	34	940	988	79	0	139	1	0	204
Grp Sat Flow(s),veh/h/ln	231	0	1691	930	1777	1810	1781	0	1789	1250	0	1828
Q Serve(g_s), s	16.3	0.0	0.0	2.8	61.5	64.6	0.0	0.0	10.1	0.1	0.0	14.3
Cycle Q Clear(g_c), s	81.3	0.0	0.0	3.0	61.5	64.6	0.0	0.0	10.1	10.2	0.0	14.3
Prop In Lane	1.00		0.59	1.00		0.19	1.00		0.25	1.00		0.13
Lane Grp Cap(c), veh/h	104	0	1171	694	1230	1253	218	0	492	196	0	343
V/C Ratio(X)	0.31	0.00	0.39	0.05	0.76	0.79	0.36	0.00	0.28	0.01	0.00	0.59
Avail Cap(c_a), veh/h	104	0	1171	694	1230	1253	218	0	492	196	0	343
HCM Platoon Ratio	1.67	1.67	1.67	0.67	0.67	0.67	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.00	0.86	0.09	0.09	0.09	0.93	0.00	0.93	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.3	0.0	0.0	12.4	28.0	28.9	60.4	0.0	50.8	54.8	0.0	52.0
Incr Delay (d2), s/veh	6.5	0.0	0.9	0.0	0.4	0.5	4.3	0.0	1.3	0.0	0.0	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.3	0.6	27.7	29.6	3.0	0.0	5.1	0.0	0.0	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.8	0.0	0.9	12.4	28.5	29.4	64.7	0.0	52.1	54.9	0.0	59.3
LnGrp LOS	C	A	A	B	C	C	E	A	D	D	A	E
Approach Vol, veh/h		494			1962			218				205
Approach Delay, s/veh		3.0			28.6			56.7				59.3
Approach LOS		A			C			E				E
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		102.8		44.2		102.8	12.2	32.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s		* 90		* 38		* 90	* 6.5	* 26				
Max Q Clear Time (g_c+I1), s		66.6		12.1		83.3	2.0	16.3				
Green Ext Time (p_c), s		17.1		0.8		2.2	0.1	0.8				

Intersection Summary

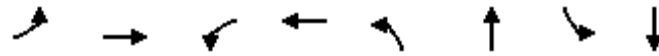
HCM 6th Ctrl Delay	28.5
HCM 6th LOS	C

Notes

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

Queues
701: Water St

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	32	462	34	1928	79	139	1	204
v/c Ratio	0.62	0.41	0.07	0.85	0.29	0.28	0.00	0.59
Control Delay	56.8	8.7	8.3	15.1	40.6	34.6	46.0	58.4
Queue Delay	0.0	0.4	0.0	47.0	0.0	0.0	0.0	0.0
Total Delay	56.8	9.1	8.3	62.1	40.6	34.6	46.0	58.4
Queue Length 50th (ft)	12	112	8	501	56	95	1	167
Queue Length 95th (ft)	m#52	m115	m8	m250	m76	m124	6	254
Internal Link Dist (ft)		203		452		462		361
Turn Bay Length (ft)	70		70		150		150	
Base Capacity (vph)	52	1132	521	2256	276	498	208	347
Starvation Cap Reductn	0	271	0	642	0	0	0	0
Spillback Cap Reductn	0	0	0	513	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.54	0.07	1.19	0.29	0.28	0.00	0.59

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖	↗	↖	↗		↖	↗	↖
Traffic Volume (veh/h)	131	34	43	11	403	152	131	633	91	218	823	1286
Future Volume (veh/h)	131	34	43	11	403	152	131	633	91	218	823	1286
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	142	37	47	12	438	0	142	688	99	237	895	1398
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	194	234	297	33	575		161	1256	181	540	1833	817
Arrive On Green	0.31	0.31	0.31	0.31	0.31	0.00	0.07	0.81	0.81	0.05	0.17	0.17
Sat Flow, veh/h	951	748	951	22	1839	1585	1781	3118	448	1781	3554	1585
Grp Volume(v), veh/h	142	0	84	450	0	0	142	392	395	237	895	1398
Grp Sat Flow(s),veh/h/ln	951	0	1699	1861	0	1585	1781	1777	1790	1781	1777	1585
Q Serve(g_s), s	13.1	0.0	5.0	6.3	0.0	0.0	5.0	10.7	10.8	9.5	31.9	72.2
Cycle Q Clear(g_c), s	43.6	0.0	5.0	30.6	0.0	0.0	5.0	10.7	10.8	9.5	31.9	72.2
Prop In Lane	1.00		0.56	0.03		1.00	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	194	0	532	609	0		161	716	721	540	1833	817
V/C Ratio(X)	0.73	0.00	0.16	0.74	0.00		0.88	0.55	0.55	0.44	0.49	1.71
Avail Cap(c_a), veh/h	194	0	532	609	0		161	716	721	540	1833	817
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	0.92	0.00	0.92	1.00	0.00	0.00	0.54	0.54	0.54	0.65	0.65	0.65
Uniform Delay (d), s/veh	55.2	0.0	34.8	43.5	0.0	0.0	36.6	9.2	9.2	18.1	41.4	58.1
Incr Delay (d2), s/veh	19.8	0.0	0.6	7.9	0.0	0.0	28.7	1.6	1.6	1.7	0.6	323.0
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	6.1	0.0	2.2	15.6	0.0	0.0	3.9	3.1	3.1	4.4	15.4	104.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.0	0.0	35.4	51.4	0.0	0.0	65.3	10.8	10.8	19.8	42.0	381.1
LnGrp LOS	E	A	D	D	A		E	B	B	B	D	F
Approach Vol, veh/h		226			450	A		929			2530	
Approach Delay, s/veh		60.3			51.4			19.1			227.3	
Approach LOS		E			D			B			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.4	78.6		50.0	27.2	62.8		50.0				
Change Period (Y+Rc), s	6.4	6.4		* 6.2	6.4	6.4		* 6.2				
Max Green Setting (Gmax), s	5.0	72.2		* 44	20.8	56.4		* 44				
Max Q Clear Time (g_c+I1), s	7.0	74.2		45.6	11.5	12.8		32.6				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.7	5.3		2.2				

Intersection Summary

HCM 6th Ctrl Delay	152.2
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

01/19/2022



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	142	84	450	165	142	787	237	895	1398
v/c Ratio	1.18	0.15	0.78	0.28	0.48	0.56	0.54	0.49	1.54
Control Delay	177.9	18.7	54.4	11.5	14.1	21.1	12.4	8.4	266.2
Queue Delay	0.0	0.0	0.0	0.0	0.8	0.5	0.0	0.0	0.6
Total Delay	177.9	18.7	54.4	11.5	14.9	21.6	12.4	8.4	266.9
Queue Length 50th (ft)	~158	30	373	25	34	165	36	103	~1815
Queue Length 95th (ft)	#298	79	508	82	m45	m183	97	239	#2079
Internal Link Dist (ft)		452	888			460		712	
Turn Bay Length (ft)	100			100	200		250		
Base Capacity (vph)	120	566	578	581	294	1407	441	1825	909
Starvation Cap Reductn	0	0	0	0	0	261	0	0	87
Spillback Cap Reductn	0	0	0	0	35	0	0	0	102
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.18	0.15	0.78	0.28	0.55	0.69	0.54	0.49	1.73

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

102: Florida Ave & Whiting St

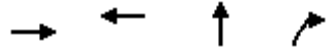
01/19/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			  				
Traffic Volume (vph)	125	464	0	0	723	155	136	2022	107	0	0	0
Future Volume (vph)	125	464	0	0	723	155	136	2022	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			0.97			1.00	0.85			
Flt Protected		0.99			1.00			1.00	1.00			
Satd. Flow (prot)		3502			3446			5069	1583			
Flt Permitted		0.50			1.00			1.00	1.00			
Satd. Flow (perm)		1777			3446			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)	136	504	0	0	786	168	148	2198	116	0	0	0
RTOR Reduction (vph)	0	0	0	0	13	0	0	0	18	0	0	0
Lane Group Flow (vph)	0	640	0	0	941	0	0	2346	98	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)		621			1206			2690	840			
v/s Ratio Prot					0.27							
v/s Ratio Perm		c0.36						0.46	0.06			
v/c Ratio		1.74dl			0.78			0.87	0.12			
Uniform Delay, d1		45.5			40.7			28.7	16.4			
Progression Factor		1.00			0.66			1.00	1.00			
Incremental Delay, d2		44.2			0.5			4.2	0.3			
Delay (s)		89.7			27.3			32.9	16.7			
Level of Service		F			C			C	B			
Approach Delay (s)		89.7			27.3			32.2			0.0	
Approach LOS		F			C			C			A	
Intersection Summary												
HCM 2000 Control Delay			40.1					HCM 2000 Level of Service		D		
HCM 2000 Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		13.7		
Intersection Capacity Utilization			98.0%					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

102: Florida Ave & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	640	954	2346	116
v/c Ratio	1.74dl	0.78	0.87	0.14
Control Delay	88.5	27.0	33.3	11.3
Queue Delay	0.0	1.4	36.5	0.0
Total Delay	88.5	28.4	69.9	11.3
Queue Length 50th (ft)	~327	165	663	34
Queue Length 95th (ft)	#452	m91	735	67
Internal Link Dist (ft)	821	519	567	
Turn Bay Length (ft)				100
Base Capacity (vph)	621	1219	2690	858
Starvation Cap Reductn	0	113	512	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.03	0.86	1.08	0.14

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Volume (vph)	59	134	297	221	831	145	100	608	63	46	520	128
Future Volume (vph)	59	134	297	221	831	145	100	608	63	46	520	128
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	0.98			0.99			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1670		1770	1821			3474			3430	
Flt Permitted	0.12	1.00		0.12	1.00			0.60			0.71	
Satd. Flow (perm)	218	1670		218	1821			2107			2439	
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)	64	146	323	240	903	158	109	661	68	50	565	139
RTOR Reduction (vph)	0	57	0	0	5	0	0	5	0	0	14	0
Lane Group Flow (vph)	64	412	0	240	1056	0	0	833	0	0	740	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	34.2	34.2		69.4	34.2			53.3			53.3	
Effective Green, g (s)	34.2	34.2		69.4	34.2			53.3			53.3	
Actuated g/C Ratio	0.24	0.24		0.50	0.24			0.38			0.38	
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)	53	407		498	444			802			928	
v/s Ratio Prot		0.25		c0.12	c0.58							
v/s Ratio Perm	0.29			0.12				c0.40			0.30	
v/c Ratio	1.21	1.01		0.48	2.38			1.04			0.80	
Uniform Delay, d1	52.9	52.9		26.2	52.9			43.4			38.6	
Progression Factor	0.95	0.89		1.33	0.78			1.34			1.00	
Incremental Delay, d2	151.7	34.2		2.8	626.5			32.9			7.1	
Delay (s)	201.8	81.2		37.6	667.8			90.8			45.7	
Level of Service	F	F		D	F			F			D	
Approach Delay (s)		95.7			551.5			90.8			45.7	
Approach LOS		F			F			F			D	

Intersection Summary

HCM 2000 Control Delay	256.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.3
Intersection Capacity Utilization	121.6%	ICU Level of Service	H
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)	64	469	240	1061	838	754
v/c Ratio	1.21	1.01	0.48	2.36	1.04	0.80
Control Delay	195.2	71.1	36.9	641.0	86.8	45.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	195.2	71.1	36.9	641.0	86.8	45.1
Queue Length 50th (ft)	~69	~198	138	~1602	~440	312
Queue Length 95th (ft)	m#86	m#254	m189	#1845	m#550	398
Internal Link Dist (ft)		519		503	563	436
Turn Bay Length (ft)			150			
Base Capacity (vph)	53	464	498	449	807	942
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	1.21	1.01	0.48	2.36	1.04	0.80

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	18	146	140	81	609	273	100	211	9	32	731	173
Future Volume (vph)	18	146	140	81	609	273	100	211	9	32	731	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.1			6.1			6.1			6.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.93			0.96			1.00			0.97	
Flt Protected		1.00			1.00			0.98			1.00	
Satd. Flow (prot)		3286			3374			3470			3435	
Flt Permitted		0.80			0.85			0.50			0.92	
Satd. Flow (perm)		2625			2879			1763			3183	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	159	152	88	662	297	109	229	10	35	795	188
RTOR Reduction (vph)	0	90	0	0	31	0	0	2	0	0	12	0
Lane Group Flow (vph)	0	241	0	0	1016	0	0	346	0	0	1006	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		8		7	4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		57.5			57.5			62.9			63.0	
Effective Green, g (s)		57.5			57.5			62.9			63.0	
Actuated g/C Ratio		0.41			0.41			0.45			0.45	
Clearance Time (s)		6.1			6.1			6.1			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1078			1182			792			1432	
v/s Ratio Prot												
v/s Ratio Perm		0.09			c0.35			0.20			c0.32	
v/c Ratio		0.22			0.86			0.44			0.70	
Uniform Delay, d1		26.8			37.6			26.4			31.0	
Progression Factor		1.89			0.38			0.90			1.00	
Incremental Delay, d2		0.1			6.0			0.3			2.9	
Delay (s)		50.7			20.5			24.0			33.9	
Level of Service		D			C			C			C	
Approach Delay (s)		50.7			20.5			24.0			33.9	
Approach LOS		D			C			C			C	

Intersection Summary

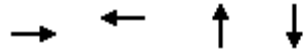
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Queues

104: Jefferson St & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	331	1047	348	1018
v/c Ratio	0.28	0.86	0.44	0.70
Control Delay	26.7	21.5	25.4	33.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.7	21.5	25.4	33.6
Queue Length 50th (ft)	87	116	98	379
Queue Length 95th (ft)	m100	189	m117	461
Internal Link Dist (ft)	503	427	450	207
Turn Bay Length (ft)				
Base Capacity (vph)	1167	1262	793	1444
Starvation Cap Reductn	0	3	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.28	0.83	0.44	0.70

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

715: Selmon Expy Off-Ramp & Whiting St

01/19/2022



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	↗↗
Traffic Volume (vph)	194	0	0	808	161	864
Future Volume (vph)	194	0	0	808	161	864
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.7			5.7	6.0	6.0
Lane Util. Factor	0.95			0.95	1.00	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	1770	2787
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	211	0	0	878	175	939
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	211	0	0	878	175	939
Turn Type	NA			NA	Prot	custom
Protected Phases	5			2	4	4 6
Permitted Phases						
Actuated Green, G (s)	13.8			84.3	44.0	114.5
Effective Green, g (s)	13.8			84.3	44.0	108.8
Actuated g/C Ratio	0.10			0.60	0.31	0.78
Clearance Time (s)	5.7			5.7	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	348			2130	556	2165
v/s Ratio Prot	c0.06			0.25	0.10	c0.34
v/s Ratio Perm						
v/c Ratio	0.61			0.41	0.31	0.43
Uniform Delay, d1	60.5			14.7	36.5	5.2
Progression Factor	0.87			0.46	1.00	1.00
Incremental Delay, d2	2.8			0.4	1.5	0.6
Delay (s)	55.2			7.2	38.0	5.9
Level of Service	E			A	D	A
Approach Delay (s)	55.2			7.2	10.9	
Approach LOS	E			A	B	

Intersection Summary

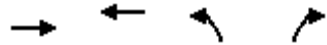
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

715: Selmon Expy Off-Ramp & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	577	573	177	673
v/c Ratio	0.75	0.27	0.32	0.34
Control Delay	43.8	13.7	38.6	9.5
Queue Delay	0.0	0.9	0.0	0.0
Total Delay	43.8	14.6	38.6	9.5
Queue Length 50th (ft)	227	176	123	125
Queue Length 95th (ft)	m260	m194	190	193
Internal Link Dist (ft)	427	276	783	
Turn Bay Length (ft)			350	350
Base Capacity (vph)	1625	2130	556	1951
Starvation Cap Reductn	0	1219	0	0
Spillback Cap Reductn	111	0	0	3
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.63	0.32	0.35

Intersection Summary

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

HCM 6th Signalized Intersection Summary
 11: Water St/Brush St & Whiting St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗			↕	
Traffic Volume (veh/h)	224	662	172	99	677	91	23	110	81	70	276	108
Future Volume (veh/h)	224	662	172	99	677	91	23	110	81	70	276	108
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	243	720	187	108	736	99	25	120	88	76	300	117
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	458	2060	954	457	1693	228	172	259	190	70	187	71
Arrive On Green	0.16	1.00	1.00	0.04	0.54	0.54	0.02	0.26	0.26	0.20	0.20	0.20
Sat Flow, veh/h	1781	3554	1585	1781	3148	423	1781	1003	735	205	958	362
Grp Volume(v), veh/h	243	720	187	108	415	420	25	0	208	493	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1794	1781	0	1738	1524	0	0
Q Serve(g_s), s	8.7	0.0	0.0	3.8	19.7	19.8	1.5	0.0	14.1	22.0	0.0	0.0
Cycle Q Clear(g_c), s	8.7	0.0	0.0	3.8	19.7	19.8	1.5	0.0	14.1	27.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.24	1.00		0.42	0.15		0.24
Lane Grp Cap(c), veh/h	458	2060	954	457	956	965	172	0	448	327	0	0
V/C Ratio(X)	0.53	0.35	0.20	0.24	0.43	0.43	0.15	0.00	0.46	1.51	0.00	0.00
Avail Cap(c_a), veh/h	863	2060	954	554	956	965	289	0	562	327	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	0.64	0.64	0.64	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.3	0.0	0.0	13.2	19.5	19.5	41.9	0.0	43.8	58.3	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.4	0.4	0.2	0.9	0.9	0.4	0.0	0.7	244.0	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	3.0	0.1	0.1	1.6	8.4	8.5	0.7	0.0	6.3	34.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	0.4	0.4	13.3	20.4	20.4	42.3	0.0	44.5	302.2	0.0	0.0
LnGrp LOS	B	A	A	B	C	C	D	A	D	F	A	A
Approach Vol, veh/h		1150			943			233			493	
Approach Delay, s/veh		3.1			19.6			44.3			302.2	
Approach LOS		A			B			D			F	
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.2	81.0		41.8	11.3	86.8	8.8	33.0				
Change Period (Y+Rc), s	* 5.7	* 5.7		* 5.7	5.5	* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s	* 43	* 34		* 45	13.5	* 64	* 12	* 27				
Max Q Clear Time (g_c+I1), s	10.7	21.8		16.1	5.8	2.0	3.5	29.3				
Green Ext Time (p_c), s	0.7	4.3		1.4	0.1	6.8	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	64.3
HCM 6th LOS	E

Notes

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

Queues

11: Water St/Brush St & Whiting St

01/21/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	243	720	187	108	835	25	208	493
v/c Ratio	0.60	0.42	0.19	0.27	0.56	0.14	0.36	1.29
Control Delay	22.5	18.8	0.9	12.2	38.6	34.3	33.2	190.6
Queue Delay	0.1	0.9	0.3	0.0	1.1	0.0	0.0	0.0
Total Delay	22.6	19.7	1.3	12.2	39.8	34.3	33.2	190.6
Queue Length 50th (ft)	83	168	0	50	360	16	125	~564
Queue Length 95th (ft)	158	214	13	m52	m386	38	197	#813
Internal Link Dist (ft)		276			426		126	215
Turn Bay Length (ft)	100		200	300		50		
Base Capacity (vph)	656	1734	1050	449	1487	235	583	382
Starvation Cap Reductn	42	684	475	0	398	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	0.40	0.69	0.33	0.24	0.77	0.11	0.36	1.29

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 Signalized Intersection Capacity Analysis

7: Meridian Ave & Whiting St

01/19/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	482	331	379	672	1917	488
Future Volume (vph)	482	331	379	672	1917	488
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	6.9	6.4	6.6	4.0
Lane Util. Factor	0.97	1.00	1.00	0.91	0.86	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	5085	6408	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	5085	6408	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	524	360	412	730	2084	530
RTOR Reduction (vph)	0	217	0	0	0	0
Lane Group Flow (vph)	524	143	412	730	2084	530
Turn Type	Prot	Perm	Prot	NA	NA	Free
Protected Phases	7 8		1	6	2	
Permitted Phases		7 8				Free
Actuated Green, G (s)	52.8	52.8	27.6	73.1	38.4	140.0
Effective Green, g (s)	52.8	52.8	27.6	73.1	38.4	140.0
Actuated g/C Ratio	0.38	0.38	0.20	0.52	0.27	1.00
Clearance Time (s)			6.9	6.4	6.6	
Vehicle Extension (s)			3.0	3.0	3.0	
Lane Grp Cap (vph)	1294	597	348	2655	1757	1583
v/s Ratio Prot	c0.15		c0.23	0.14	c0.33	
v/s Ratio Perm		0.09				0.33
v/c Ratio	0.40	0.24	1.18	0.27	1.19	0.33
Uniform Delay, d1	32.1	29.8	56.2	18.7	50.8	0.0
Progression Factor	0.71	2.56	0.58	0.21	1.00	1.00
Incremental Delay, d2	0.2	0.2	106.6	0.2	89.8	0.6
Delay (s)	23.0	76.6	139.1	4.2	140.6	0.6
Level of Service	C	E	F	A	F	A
Approach Delay (s)	44.8			52.9	112.2	
Approach LOS	D			D	F	

Intersection Summary

HCM 2000 Control Delay	84.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Queues

7: Meridian Ave & Whiting St

01/21/2022



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	524	360	412	730	2084	530
v/c Ratio	0.39	0.43	1.18	0.27	1.19	0.33
Control Delay	21.9	8.3	139.2	4.4	133.9	0.6
Queue Delay	0.0	0.4	0.6	0.2	0.5	0.0
Total Delay	21.9	8.8	139.8	4.6	134.3	0.6
Queue Length 50th (ft)	181	116	~418	43	~661	0
Queue Length 95th (ft)	m208	m181	#745	52	#736	0
Internal Link Dist (ft)	426			229	186	
Turn Bay Length (ft)	200	250	150			
Base Capacity (vph)	1581	917	348	2655	1757	1583
Starvation Cap Reductn	0	220	20	956	0	0
Spillback Cap Reductn	0	13	0	0	241	68
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.52	1.26	0.43	1.37	0.35

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
 107: Meridian Ave & Whiting St

01/19/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		↑↑↑		W	↑↑↑
Traffic Volume (vph)	103	188	863	53	24	2224
Future Volume (vph)	103	188	863	53	24	2224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.7		6.4		5.5	6.9
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.91		0.99		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1671		5041		1770	5085
Flt Permitted	0.98		1.00		0.23	1.00
Satd. Flow (perm)	1671		5041		431	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	112	204	938	58	26	2417
RTOR Reduction (vph)	51	0	4	0	0	0
Lane Group Flow (vph)	265	0	992	0	26	2417
Turn Type	Prot		NA		custom	NA
Protected Phases	8		6		7	1 2 7
Permitted Phases					1 2	
Actuated Green, G (s)	28.8		73.1		91.4	98.0
Effective Green, g (s)	28.8		73.1		84.5	91.4
Actuated g/C Ratio	0.21		0.52		0.60	0.65
Clearance Time (s)	7.7		6.4		5.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	343		2632		437	3319
v/s Ratio Prot	c0.16		0.20		0.01	c0.48
v/s Ratio Perm					0.03	
v/c Ratio	0.77		0.38		0.06	0.73
Uniform Delay, d1	52.5		19.9		16.4	16.1
Progression Factor	1.13		1.66		0.23	1.08
Incremental Delay, d2	10.3		0.3		0.0	0.1
Delay (s)	69.7		33.3		3.8	17.4
Level of Service	E		C		A	B
Approach Delay (s)	69.7		33.3			17.3
Approach LOS	E		C			B

Intersection Summary			
HCM 2000 Control Delay	26.0	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)	26.7
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
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)	316	996	26	2417
v/c Ratio	0.80	0.38	0.06	0.69
Control Delay	61.9	34.7	2.1	15.2
Queue Delay	1.0	0.0	0.0	16.4
Total Delay	62.9	34.8	2.1	31.7
Queue Length 50th (ft)	222	289	1	787
Queue Length 95th (ft)	291	m344	m2	m642
Internal Link Dist (ft)	878	712		229
Turn Bay Length (ft)				
Base Capacity (vph)	503	2635	461	3508
Starvation Cap Reductn	0	0	0	1146
Spillback Cap Reductn	55	238	0	365
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.71	0.42	0.06	1.02

Intersection Summary

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

HCS7 Two-Way Stop-Control Report

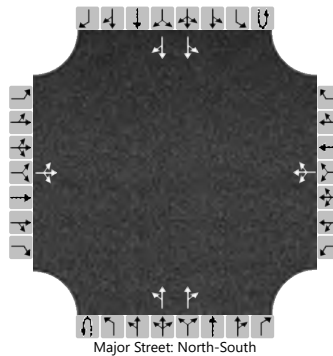
General Information

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	34	154		71	58	203		43	459	5		29	711	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				349				45				31		
Capacity, c (veh/h)			313				203				757				1071		
v/c Ratio			0.64				1.72				0.06				0.03		
95% Queue Length, Q ₉₅ (veh)			4.8				79.6				0.2				0.1		
Control Delay (s/veh)			36.1				1356.2				10.1				8.5		
Level of Service (LOS)			E				F				B				A		
Approach Delay (s/veh)		36.1				1356.2				1.2				0.5			
Approach LOS		E				F											

HCS7 Two-Way Stop-Control Report

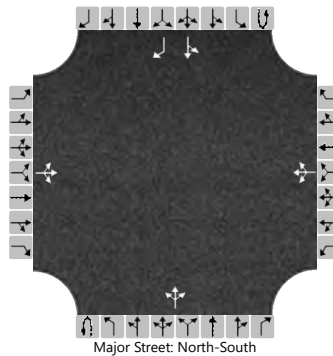
General Information

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)		26	9	43		31	4	1		112	175	28		5	381	172	
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)			82				38				118				5		
Capacity, c (veh/h)			381				203				1158				1356		
v/c Ratio			0.22				0.19				0.10				0.00		
95% Queue Length, Q ₉₅ (veh)			0.8				0.7				0.3				0.0		
Control Delay (s/veh)			17.0				26.8				8.5				7.7		
Level of Service (LOS)			C				D				A				A		
Approach Delay (s/veh)		17.0				26.8				3.6				0.1			
Approach LOS		C				D											

HCS7 Two-Way Stop-Control Report

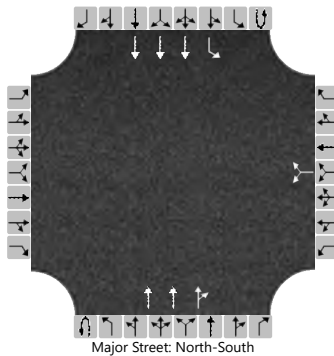
General Information

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 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)						156		156			984	171		0	5	2249
Percent Heavy Vehicles (%)						2		2						0	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)								328							5	
Capacity, c (veh/h)								210							307	
v/c Ratio								1.56							0.02	
95% Queue Length, Q ₉₅ (veh)								66.6							0.1	
Control Delay (s/veh)								1083.6							16.9	
Level of Service (LOS)								F							C	
Approach Delay (s/veh)								1083.6							0.0	
Approach LOS								F								

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)	1026	2117	221	0	0	0	0	533	135	0	0	0
Future Volume (vph)	1026	2117	221	0	0	0	0	533	135	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.1						6.0	6.0			
Lane Util. Factor	*0.51	*0.76						*0.80	1.00			
Frt	1.00	0.99						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1805	2791						2980	1583			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1805	2791						2980	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)	1115	2301	240	0	0	0	0	579	147	0	0	0
RTOR Reduction (vph)	188	4	0	0	0	0	0	0	62	0	0	0
Lane Group Flow (vph)	927	2537	0	0	0	0	0	579	85	0	0	0
Turn Type	Prot	NA						NA	Perm			
Protected Phases	1	6						4				
Permitted Phases									4			
Actuated Green, G (s)	64.0	102.9						25.0	25.0			
Effective Green, g (s)	64.0	102.9						25.0	25.0			
Actuated g/C Ratio	0.46	0.74						0.18	0.18			
Clearance Time (s)	6.0	6.1						6.0	6.0			
Vehicle Extension (s)	3.0	3.0						3.0	3.0			
Lane Grp Cap (vph)	825	2051						532	282			
v/s Ratio Prot	0.51	c0.91						c0.19				
v/s Ratio Perm									0.05			
v/c Ratio	1.12	1.24						1.09	0.30			
Uniform Delay, d1	38.0	18.5						57.5	49.9			
Progression Factor	1.00	1.00						1.00	1.00			
Incremental Delay, d2	71.0	111.0						65.2	0.6			
Delay (s)	109.0	129.5						122.7	50.5			
Level of Service	F	F						F	D			
Approach Delay (s)		123.3			0.0			108.1			0.0	
Approach LOS		F			A			F			A	
Intersection Summary												
HCM 2000 Control Delay			120.7					HCM 2000 Level of Service		F		
HCM 2000 Volume to Capacity ratio			1.27									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		18.6		
Intersection Capacity Utilization			107.3%					ICU Level of Service		G		
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)	1115	2541	579	147
v/c Ratio	1.10	1.24	1.09	0.43
Control Delay	85.6	131.9	117.9	29.3
Queue Delay	0.5	0.0	4.7	0.0
Total Delay	86.0	131.9	122.5	29.3
Queue Length 50th (ft)	~950	~1886	~369	57
Queue Length 95th (ft)	#1212	#2043	#515	127
Internal Link Dist (ft)		1290	1157	
Turn Bay Length (ft)				200
Base Capacity (vph)	1013	2056	532	344
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	89	0	10	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.21	1.24	1.11	0.43

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

01/19/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	528	1666	58	12	0	796	0	177	31	1	26	0	
Future Volume (vph)	528	1666	58	12	0	796	0	177	31	1	26	0	
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		
Lane Util. Factor	1.00	0.95		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		
Flt Protected	0.95	1.00		0.95		1.00		1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1770	3521		1770		1583		1863	1583	1770	1863		
Flt Permitted	0.95	1.00		0.10		1.00		1.00	1.00	0.43	1.00		
Satd. Flow (perm)	1770	3521		193		1583		1863	1583	795	1863		
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)	574	1811	63	13	0	865	0	192	34	1	28	0	
RTOR Reduction (vph)	0	2	0	0	0	157	0	0	28	0	0	0	
Lane Group Flow (vph)	574	1872	0	13	0	708	0	192	6	1	28	0	
Turn Type	pm+pt	NA		Perm		Perm		NA	Perm	Perm	NA		
Protected Phases	1	6						4				8	
Permitted Phases	6			2		2			4	8			
Actuated Green, G (s)	103.8	103.8		75.7		75.7		24.1	24.1	24.1	24.1		
Effective Green, g (s)	103.8	103.8		75.7		75.7		24.1	24.1	24.1	24.1		
Actuated g/C Ratio	0.74	0.74		0.54		0.54		0.17	0.17	0.17	0.17		
Clearance Time (s)	5.5	6.2		5.9		5.9		5.9	5.9	5.9	5.9		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	1312	2610		104		855		320	272	136	320		
v/s Ratio Prot	0.07	c0.53						c0.10			0.02		
v/s Ratio Perm	0.25			0.07		c0.45			0.00	0.00			
v/c Ratio	0.44	0.72		0.12		0.83		0.60	0.02	0.01	0.09		
Uniform Delay, d1	6.9	10.0		15.8		26.7		53.5	48.2	48.0	48.7		
Progression Factor	0.47	0.36		0.93		1.03		1.00	1.00	1.35	1.16		
Incremental Delay, d2	0.0	0.2		1.9		7.3		8.1	0.1	0.0	0.2		
Delay (s)	3.3	3.7		16.7		35.0		61.6	48.3	65.0	56.5		
Level of Service	A	A		B		C		E	D	E	E		
Approach Delay (s)		3.6			34.7			59.6			56.8		
Approach LOS		A			C			E			E		
Intersection Summary													
HCM 2000 Control Delay			15.2									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.78										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	17.3
Intersection Capacity Utilization			102.3%									ICU Level of Service	G
Analysis Period (min)			15										

c Critical Lane Group

Queues

115: Morgan St & Channelside Dr

01/19/2022



Lane Group	EBL	EBT	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	574	1874	13	865	192	34	1	28
v/c Ratio	0.43	0.72	0.12	0.85	0.60	0.10	0.01	0.09
Control Delay	3.3	3.8	20.2	25.2	62.2	1.7	65.0	57.0
Queue Delay	1.4	6.0	0.0	3.5	0.8	0.0	0.0	0.0
Total Delay	4.7	9.8	20.2	28.7	63.0	1.7	65.0	57.0
Queue Length 50th (ft)	62	113	5	284	163	0	1	18
Queue Length 95th (ft)	m55	m98	m9	#403	248	5	m1	m20
Internal Link Dist (ft)		523			1253			424
Turn Bay Length (ft)	450			10			100	
Base Capacity (vph)	1321	2613	104	1012	320	328	136	320
Starvation Cap Reductn	518	687	0	68	0	0	0	0
Spillback Cap Reductn	82	236	0	83	23	4	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.97	0.13	0.93	0.65	0.10	0.01	0.09

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

01/19/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↕	↑	↕		↕	↕
Traffic Volume (veh/h)	136	1562	528	14	7	279
Future Volume (veh/h)	136	1562	528	14	7	279
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	148	1698	574	15	8	303
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	716	1443	933	24	261	232
Arrive On Green	0.07	0.25	0.68	0.68	0.15	0.15
Sat Flow, veh/h	1781	1870	1814	47	1781	1585
Grp Volume(v), veh/h	148	1698	0	589	8	303
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1862	1781	1585
Q Serve(g_s), s	3.6	108.0	0.0	24.2	0.5	20.5
Cycle Q Clear(g_c), s	3.6	108.0	0.0	24.2	0.5	20.5
Prop In Lane	1.00			0.03	1.00	1.00
Lane Grp Cap(c), veh/h	716	1443	0	958	261	232
V/C Ratio(X)	0.21	1.18	0.00	0.62	0.03	1.31
Avail Cap(c_a), veh/h	716	1443	0	958	261	232
HCM Platoon Ratio	0.33	0.33	1.33	1.33	1.00	1.00
Upstream Filter(I)	0.64	0.64	0.00	0.88	0.95	0.95
Uniform Delay (d), s/veh	9.7	52.2	0.0	14.6	51.2	59.8
Incr Delay (d2), s/veh	0.4	84.6	0.0	2.6	0.2	163.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	88.2	0.0	9.3	0.3	18.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.1	136.8	0.0	17.2	51.4	223.6
LnGrp LOS	B	F	A	B	D	F
Approach Vol, veh/h		1846	589		311	
Approach Delay, s/veh		126.6	17.2		219.2	
Approach LOS		F	B		F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	36.0	78.0			114.0	26.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	30.0	72.0			108.0	20.5
Max Q Clear Time (g_c+I1), s	5.6	26.2			110.0	22.5
Green Ext Time (p_c), s	0.4	4.6			0.0	0.0
Intersection Summary						
HCM 6th Ctrl Delay			113.6			
HCM 6th LOS			F			

Queues

116: Channelside Dr & Jefferson St

01/19/2022



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	148	1698	589	8	303
v/c Ratio	0.23	1.18	0.62	0.03	0.62
Control Delay	1.5	105.0	23.7	50.0	28.2
Queue Delay	0.0	0.5	1.0	0.0	1.1
Total Delay	1.5	105.5	24.7	50.0	29.3
Queue Length 50th (ft)	12	~1904	440	7	138
Queue Length 95th (ft)	m15	#2177	585	m21	203
Internal Link Dist (ft)		315	131	443	
Turn Bay Length (ft)				100	
Base Capacity (vph)	643	1437	955	259	490
Starvation Cap Reductn	0	182	155	0	56
Spillback Cap Reductn	0	110	67	0	48
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	1.35	0.74	0.03	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
 117: Channelside Dr & Nebraska Ave

01/19/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	338	1231	488	73	8	54
Future Volume (veh/h)	338	1231	488	73	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	367	1338	530	79	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	683	1483	1136	169	26	172
Arrive On Green	0.07	1.00	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1781	1870	1591	237	210	1378
Grp Volume(v), veh/h	367	1338	0	609	69	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1828	1612	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	5.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	5.5	0.0
Prop In Lane	1.00			0.13	0.13	0.86
Lane Grp Cap(c), veh/h	683	1483	0	1305	201	0
V/C Ratio(X)	0.54	0.90	0.00	0.47	0.34	0.00
Avail Cap(c_a), veh/h	683	1483	0	1305	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	0.87	0.15	0.00
Uniform Delay (d), s/veh	8.3	0.0	0.0	0.0	56.0	0.0
Incr Delay (d2), s/veh	0.3	1.0	0.0	1.0	0.7	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	4.4	0.4	0.0	0.4	2.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.6	1.0	0.0	1.0	56.7	0.0
LnGrp LOS	A	A	A	A	E	A
Approach Vol, veh/h		1705	609		69	
Approach Delay, s/veh		2.6	1.0		56.7	
Approach LOS		A	A		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.0	106.0			117.0	23.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	5.0	100.0			111.0	17.5
Max Q Clear Time (g_c+I1), s	2.0	2.0			2.0	7.5
Green Ext Time (p_c), s	0.4	4.5			25.1	0.1
Intersection Summary						
HCM 6th Ctrl Delay			3.8			
HCM 6th LOS			A			

Queues

117: Channelside Dr & Nebraska Ave

01/19/2022



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	367	1338	609	68
v/c Ratio	0.62	0.91	0.46	0.27
Control Delay	2.2	7.5	9.2	20.8
Queue Delay	36.6	46.7	0.5	0.1
Total Delay	38.8	54.2	9.7	20.9
Queue Length 50th (ft)	11	433	142	9
Queue Length 95th (ft)	m9	m122	245	m22
Internal Link Dist (ft)		131	222	457
Turn Bay Length (ft)	80			
Base Capacity (vph)	592	1477	1310	255
Starvation Cap Reductn	240	400	321	0
Spillback Cap Reductn	0	170	327	10
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.04	1.24	0.62	0.28

Intersection Summary

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

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	1165	50	9	406	131	95	31	94	44	13	60
Future Volume (veh/h)	24	1165	50	9	406	131	95	31	94	44	13	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	26	1266	54	10	441	142	103	34	102	48	14	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	623	1227	52	338	1099	354	185	60	179	137	42	194
Arrive On Green	0.07	1.00	1.00	0.31	1.00	1.00	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1781	1781	76	1781	1355	436	1320	412	1236	1253	289	1340
Grp Volume(v), veh/h	26	0	1320	10	0	583	103	0	136	48	0	79
Grp Sat Flow(s),veh/h/ln	1781	0	1857	1781	0	1792	1320	0	1648	1253	0	1629
Q Serve(g_s), s	0.7	0.0	90.2	0.0	0.0	0.0	10.6	0.0	10.8	5.2	0.0	6.1
Cycle Q Clear(g_c), s	0.7	0.0	90.2	0.0	0.0	0.0	16.7	0.0	10.8	16.0	0.0	6.1
Prop In Lane	1.00		0.04	1.00		0.24	1.00		0.75	1.00		0.82
Lane Grp Cap(c), veh/h	623	0	1280	338	0	1453	185	0	239	137	0	236
V/C Ratio(X)	0.04	0.00	1.03	0.03	0.00	0.40	0.56	0.00	0.57	0.35	0.00	0.33
Avail Cap(c_a), veh/h	623	0	1280	338	0	1453	185	0	239	137	0	236
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)	0.36	0.00	0.36	0.17	0.00	0.17	1.00	0.00	1.00	0.78	0.00	0.78
Uniform Delay (d), s/veh	7.9	0.0	0.0	38.9	0.0	0.0	61.3	0.0	55.8	63.2	0.0	53.8
Incr Delay (d2), s/veh	0.0	0.0	24.0	0.0	0.0	0.1	11.5	0.0	9.5	5.4	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	8.5	0.2	0.0	0.1	4.2	0.0	5.2	1.9	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.9	0.0	24.0	38.9	0.0	0.1	72.8	0.0	65.3	68.7	0.0	56.7
LnGrp LOS	A	A	F	D	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1346			593			239				127
Approach Delay, s/veh		23.6			0.8			68.5				61.2
Approach LOS		C			A			E				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.0	120.5		26.0	28.5	103.0		26.0				
Change Period (Y+Rc), s	6.0	6.5		* 5.7	6.5	* 6.5		* 5.7				
Max Green Setting (Gmax), s	5.0	96.5		* 20	5.0	* 97		* 20				
Max Q Clear Time (g_c+I1), s	2.7	2.0		18.7	2.0	92.2		18.0				
Green Ext Time (p_c), s	0.0	4.8		0.2	0.0	3.6		0.1				

Intersection Summary

HCM 6th Ctrl Delay	24.5
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

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	26	1320	10	583	103	136	48	79
v/c Ratio	0.05	1.03	0.09	0.47	0.54	0.43	0.33	0.27
Control Delay	7.0	38.8	18.6	17.7	67.1	25.0	65.4	23.6
Queue Delay	0.0	27.1	0.0	4.2	0.8	0.2	0.0	0.1
Total Delay	7.0	65.9	18.6	21.9	67.9	25.2	65.4	23.8
Queue Length 50th (ft)	4	~1274	4	321	88	37	36	12
Queue Length 95th (ft)	m7	m#1539	m7	m327	153	104	m56	m31
Internal Link Dist (ft)		222		393		1129		462
Turn Bay Length (ft)	80		100				150	
Base Capacity (vph)	487	1277	115	1244	190	316	144	292
Starvation Cap Reductn	0	9	0	566	0	0	0	0
Spillback Cap Reductn	0	344	0	29	12	16	0	18
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	1.41	0.09	0.86	0.58	0.45	0.33	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 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)	677	604	21	103	208	117	235	398	104	87	335	103
Future Volume (vph)	677	604	21	103	208	117	235	398	104	87	335	103
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	0.95		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	1853		1770	1762		1770	1863	1583	1770	1863	1583
Flt Permitted	0.25	1.00		0.41	1.00		0.16	1.00	1.00	0.33	1.00	1.00
Satd. Flow (perm)	464	1853		757	1762		306	1863	1583	606	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)	736	657	23	112	226	127	255	433	113	95	364	112
RTOR Reduction (vph)	0	1	0	0	14	0	0	0	74	0	0	86
Lane Group Flow (vph)	736	679	0	112	339	0	255	433	39	95	364	26
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)	82.8	82.8		38.8	38.8		44.6	44.6	44.6	32.6	32.6	32.6
Effective Green, g (s)	82.8	82.8		38.8	38.8		44.6	44.6	44.6	32.6	32.6	32.6
Actuated g/C Ratio	0.59	0.59		0.28	0.28		0.32	0.32	0.32	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)	628	1095		209	488		156	593	504	141	433	368
v/s Ratio Prot	c0.32	0.37			0.19		c0.07	0.23			0.20	
v/s Ratio Perm	c0.37			0.15			c0.46		0.02	0.16		0.02
v/c Ratio	1.17	0.62		0.54	0.69		1.63	0.73	0.08	0.67	0.84	0.07
Uniform Delay, d1	30.5	18.5		43.0	45.3		47.8	42.4	33.3	48.9	51.2	41.9
Progression Factor	0.98	0.40		1.00	1.00		1.00	1.00	1.00	1.10	1.11	4.32
Incremental Delay, d2	82.7	0.8		9.5	7.9		312.7	7.7	0.3	21.8	16.9	0.4
Delay (s)	112.7	8.2		52.5	53.2		360.5	50.1	33.6	75.7	73.8	181.5
Level of Service	F	A		D	D		F	D	C	E	E	F
Approach Delay (s)		62.5			53.0			146.6			95.3	
Approach LOS		E			D			F			F	

Intersection Summary

HCM 2000 Control Delay	87.6	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)	25.0
Intersection Capacity Utilization	107.1%	ICU Level of Service	G
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	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	736	680	112	353	255	433	113	95	364	112
v/c Ratio	1.17	0.62	0.54	0.70	1.65	0.73	0.20	0.67	0.84	0.24
Control Delay	109.1	8.3	54.0	51.4	346.6	50.8	7.5	77.4	74.1	26.5
Queue Delay	0.5	7.3	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.1
Total Delay	109.6	15.6	54.0	51.5	347.7	50.8	7.5	77.4	74.1	26.7
Queue Length 50th (ft)	~648	193	87	274	~291	350	3	89	346	26
Queue Length 95th (ft)	m#632	m201	156	391	#489	479	48	#169	#493	104
Internal Link Dist (ft)		393		142		1114			460	
Turn Bay Length (ft)	150		150		300			200		
Base Capacity (vph)	629	1096	209	502	155	593	577	141	433	462
Starvation Cap Reductn	42	367	0	0	0	0	0	0	0	0
Spillback Cap Reductn	36	0	0	1	9	0	0	0	0	54
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.25	0.93	0.54	0.70	1.75	0.73	0.20	0.67	0.84	0.27

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

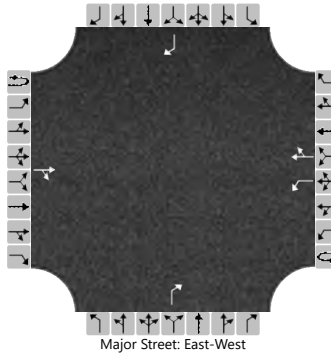
General Information

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)			686	109		12	311	25				124				117
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				123
Capacity, c (veh/h)						797						396				702
v/c Ratio						0.02						0.33				0.18
95% Queue Length, Q ₉₅ (veh)						0.0						1.5				0.6
Control Delay (s/veh)						9.6						18.6				11.2
Level of Service (LOS)						A						C				B
Approach Delay (s/veh)						0.3						18.6				11.2
Approach LOS												C				B

MOVEMENT SUMMARY

Site: 8 [Channelside Drive at Cumberland Avenue_Build2036-PM (Site Folder: General)]

Build 2036 Year -
 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	123	2.0	129	2.0	0.702	12.9	LOS B	6.3	160.8	0.57	0.36	0.57	33.9
8	T1	679	2.0	715	2.0	0.702	12.9	LOS B	6.3	160.8	0.57	0.36	0.57	34.5
18	R2	25	2.0	26	2.0	0.702	12.9	LOS B	6.3	160.8	0.57	0.36	0.57	33.5
Approach		827	2.0	871	2.0	0.702	12.9	LOS B	6.3	160.8	0.57	0.36	0.57	34.4
East: E Cumberland Avenue														
1	L2	39	2.0	41	2.0	0.143	7.3	LOS A	0.5	12.6	0.60	0.60	0.60	36.8
6	T1	5	2.0	5	2.0	0.143	7.3	LOS A	0.5	12.6	0.60	0.60	0.60	34.3
16	R2	43	2.0	45	2.0	0.143	7.3	LOS A	0.5	12.6	0.60	0.60	0.60	34.2
Approach		87	2.0	92	2.0	0.143	7.3	LOS A	0.5	12.6	0.60	0.60	0.60	35.3
North: Channelside Drive														
7	L2	30	2.0	32	2.0	0.297	5.8	LOS A	1.4	35.0	0.34	0.22	0.34	37.6
4	T1	307	2.0	323	2.0	0.297	5.8	LOS A	1.4	35.0	0.34	0.22	0.34	39.3
14	R2	273	2.0	287	2.0	0.256	5.6	LOS A	1.2	29.5	0.35	0.23	0.35	34.1
Approach		610	2.0	642	2.0	0.297	5.7	LOS A	1.4	35.0	0.35	0.22	0.35	36.8
West: E Cumberland Avenue														
5	L2	46	2.0	48	2.0	0.144	5.0	LOS A	0.5	13.9	0.44	0.36	0.44	35.0
2	T1	50	2.0	53	2.0	0.144	5.0	LOS A	0.5	13.9	0.44	0.36	0.44	34.7
12	R2	39	2.0	41	2.0	0.144	5.0	LOS A	0.5	13.9	0.44	0.36	0.44	33.6
Approach		135	2.0	142	2.0	0.144	5.0	LOS A	0.5	13.9	0.44	0.36	0.44	34.5
All Vehicles		1659	2.0	1746	2.0	0.702	9.3	LOS A	6.3	160.8	0.48	0.32	0.48	35.3

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.

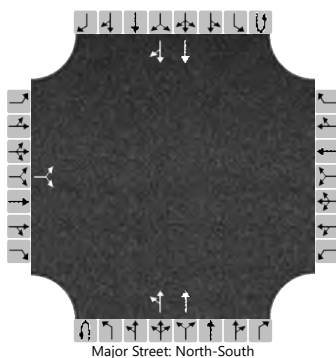
Gap-Acceptance Capacity: Traditional M1.

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

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	H.W. Lochner	Intersection	ChannelsideDr&E WhitingSt
Agency/Co.		Jurisdiction	FDOT, District 7
Date Performed	09/24/2021	East/West Street	E Whiting St
Analysis Year	2036	North/South Street	Channelside Dr
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	0	0	0	0	2	0	0	0	2	0	
Configuration			LR							LT	T				T	TR	
Volume (veh/h)		7		1						18	750					608	42
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)			8							19							
Capacity, c (veh/h)			219							905							
v/c Ratio			0.04							0.02							
95% Queue Length, Q ₉₅ (veh)			0.1							0.1							
Control Delay (s/veh)			22.1							9.1							
Level of Service (LOS)			C							A							
Approach Delay (s/veh)		22.1								0.4							
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	9	5	16	6	132	5	756	2	69	622	16
Future Volume (vph)	18	9	5	16	6	132	5	756	2	69	622	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			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1776			1799	1583	1770	3538		1770	3526	
Flt Permitted		0.23			0.77	1.00	0.39	1.00		0.95	1.00	
Satd. Flow (perm)		422			1430	1583	723	3538		1770	3526	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	10	5	17	7	143	5	822	2	75	676	17
RTOR Reduction (vph)	0	5	0	0	0	134	0	0	0	0	1	0
Lane Group Flow (vph)	0	30	0	0	24	9	5	824	0	75	692	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)		13.6			9.3	9.3	75.9	75.9		14.9	96.8	
Effective Green, g (s)		13.6			9.3	9.3	75.9	75.9		14.9	96.8	
Actuated g/C Ratio		0.10			0.07	0.07	0.54	0.54		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)		40			94	105	391	1918		188	2437	
v/s Ratio Prot								c0.23		c0.04	0.20	
v/s Ratio Perm		c0.07			c0.02	0.01	0.01					
v/c Ratio		0.76			0.26	0.09	0.01	0.43		0.40	0.28	
Uniform Delay, d1		61.6			62.1	61.4	14.8	19.1		58.4	8.3	
Progression Factor		0.93			1.00	1.00	1.00	1.00		0.94	1.65	
Incremental Delay, d2		47.1			2.0	0.5	0.1	0.7		0.5	0.0	
Delay (s)		104.3			64.0	61.9	14.8	19.8		55.5	13.7	
Level of Service		F			E	E	B	B		E	B	
Approach Delay (s)		104.3			62.2			19.8			17.8	
Approach LOS		F			E			B			B	

Intersection Summary

HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.3
Intersection Capacity Utilization	50.2%	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)	35	24	143	5	824	75	693
v/c Ratio	0.73	0.26	0.60	0.01	0.42	0.40	0.28
Control Delay	107.4	67.5	20.1	21.8	22.2	59.6	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.4	67.5	20.1	21.8	22.2	59.6	15.8
Queue Length 50th (ft)	28	21	0	2	235	72	132
Queue Length 95th (ft)	m47	51	67	12	354	127	213
Internal Link Dist (ft)	927	832			494		591
Turn Bay Length (ft)			430	160		280	
Base Capacity (vph)	73	220	365	398	1949	191	2444
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	0.48	0.11	0.39	0.01	0.42	0.39	0.28

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)	819	19	74	19	28	60	79	825	2	27	591	480
Future Volume (vph)	819	19	74	19	28	60	79	825	2	27	591	480
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		1825	1583	1770	3538		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.66	1.00	0.26	1.00		0.12	1.00	1.00
Satd. Flow (perm)	1681	1689	1583		1228	1583	489	3538		219	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)	890	21	80	21	30	65	86	897	2	29	642	522
RTOR Reduction (vph)	0	0	49	0	0	60	0	0	0	0	0	357
Lane Group Flow (vph)	454	457	31	0	51	5	86	899	0	29	642	165
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	44.3	44.3		44.3	44.3	44.3
Effective Green, g (s)	54.7	54.7	54.7		9.7	9.7	44.3	44.3		44.3	44.3	44.3
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		85	109	154	1119		69	1119	500
v/s Ratio Prot	0.27	c0.27						c0.25				0.18
v/s Ratio Perm			0.02		c0.04	0.00	0.18			0.13		0.10
v/c Ratio	0.69	0.69	0.05		0.60	0.04	0.56	0.80		0.42	0.57	0.33
Uniform Delay, d1	35.6	35.6	26.5		63.3	60.8	39.7	43.9		37.7	40.0	36.5
Progression Factor	1.00	1.00	1.00		1.00	1.00	0.54	0.62		1.00	1.00	1.00
Incremental Delay, d2	5.9	5.9	0.2		10.9	0.2	12.8	5.7		17.7	2.1	1.8
Delay (s)	41.5	41.6	26.7		74.2	61.0	34.4	32.8		55.4	42.1	38.3
Level of Service	D	D	C		E	E	C	C		E	D	D
Approach Delay (s)		40.3			66.8			32.9			40.8	
Approach LOS		D			E			C			D	
Intersection Summary												
HCM 2000 Control Delay			39.2		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

01/19/2022



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	454	457	80	51	65	86	899	29	642	522
v/c Ratio	0.69	0.69	0.12	0.54	0.31	0.54	0.78	0.41	0.56	0.60
Control Delay	42.3	42.3	2.9	81.3	7.0	33.8	31.3	57.1	41.0	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.3	42.3	2.9	81.3	7.0	33.8	31.3	57.1	41.0	6.0
Queue Length 50th (ft)	361	363	0	45	0	64	391	21	253	0
Queue Length 95th (ft)	498	502	21	90	18	130	477	59	316	88
Internal Link Dist (ft)		906		876			591		1242	
Turn Bay Length (ft)			140			280		75		375
Base Capacity (vph)	656	659	680	133	259	159	1155	71	1155	868
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	0.69	0.69	0.12	0.38	0.25	0.54	0.78	0.41	0.56	0.60

Intersection Summary

HCM Signalized Intersection Capacity Analysis

113: Florida Ave & Selmon Expy Off-Ramp

01/19/2022

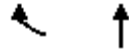


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑	↑↑			
Traffic Volume (vph)	0	597	1590	0	0	0
Future Volume (vph)	0	597	1590	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.6	6.0			
Lane Util. Factor		0.76	0.95			
Frt		0.85	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		3610	3539			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		3610	3539			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	649	1728	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	649	1728	0	0	0
Turn Type		Prot	NA			
Protected Phases		2	1 4			
Permitted Phases						
Actuated Green, G (s)		32.4	95.0			
Effective Green, g (s)		32.4	95.0			
Actuated g/C Ratio		0.23	0.68			
Clearance Time (s)		6.6				
Vehicle Extension (s)		3.0				
Lane Grp Cap (vph)		835	2401			
v/s Ratio Prot		c0.18	c0.49			
v/s Ratio Perm						
v/c Ratio		0.78	0.72			
Uniform Delay, d1		50.4	14.1			
Progression Factor		1.00	0.33			
Incremental Delay, d2		7.0	0.1			
Delay (s)		57.4	4.8			
Level of Service		E	A			
Approach Delay (s)	57.4		4.8		0.0	
Approach LOS	E		A		A	
Intersection Summary						
HCM 2000 Control Delay			19.2		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.77			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	18.6
Intersection Capacity Utilization			109.8%		ICU Level of Service	H
Analysis Period (min)			15			
c Critical Lane Group						

Queues

113: Florida Ave & Selmon Expy Off-Ramp

01/19/2022



Lane Group	WBR	NBT
Lane Group Flow (vph)	649	1728
v/c Ratio	0.78	0.72
Control Delay	57.8	5.0
Queue Delay	0.0	0.0
Total Delay	57.8	5.0
Queue Length 50th (ft)	244	77
Queue Length 95th (ft)	306	m70
Internal Link Dist (ft)		1
Turn Bay Length (ft)	350	
Base Capacity (vph)	835	2401
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.78	0.72

Intersection Summary

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

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	2163	31	248	1995	0	0	0	0
Future Volume (vph)	0	0	0	0	2163	31	248	1995	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					1.00		1.00	1.00				
Flt Protected					1.00		0.95	1.00				
Satd. Flow (prot)					6394		1770	5085				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6394		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	34	270	2168	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	1	0	22	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	2384	0	248	2168	0	0	0	0
Turn Type					NA		Perm	NA				
Protected Phases					2			4				
Permitted Phases							4					
Actuated Green, G (s)					54.2		73.9	73.9				
Effective Green, g (s)					54.2		73.9	73.9				
Actuated g/C Ratio					0.37		0.51	0.51				
Clearance Time (s)					5.8		6.1	6.1				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					2390		902	2591				
v/s Ratio Prot					c0.37			c0.43				
v/s Ratio Perm							0.14					
v/c Ratio					1.00		0.28	0.84				
Uniform Delay, d1					45.3		20.3	30.4				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					17.8		0.8	3.4				
Delay (s)					63.1		21.0	33.8				
Level of Service					E		C	C				
Approach Delay (s)		0.0			63.1			32.4			0.0	
Approach LOS		A			E			C			A	

Intersection Summary

HCM 2000 Control Delay	47.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	14.9
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
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)	2385	270	2168
v/c Ratio	1.00	0.29	0.84
Control Delay	62.8	17.9	34.1
Queue Delay	0.0	1.4	47.1
Total Delay	62.8	19.2	81.3
Queue Length 50th (ft)	650	118	626
Queue Length 95th (ft)	#747	180	692
Internal Link Dist (ft)	416		356
Turn Bay Length (ft)		300	
Base Capacity (vph)	2391	923	2591
Starvation Cap Reductn	0	458	859
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.00	0.58	1.25

Intersection Summary

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

01/19/2022



Movement	WBL	WBT	NBL	NBT	NBR2	SBL	SBT	SBR	SWR	SWR2
Lane Configurations		↕↕	↙	↕	↙	↙	↕		↙	↙
Traffic Volume (vph)	3	1425	546	490	480	416	21	639	785	163
Future Volume (vph)	3	1425	546	490	480	416	21	639	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	0.11	1.00	1.00	0.34	1.00		1.00	1.00
Satd. Flow (perm)		3539	206	1863	1583	631	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	1549	593	533	522	452	23	695	853	177
RTOR Reduction (vph)	0	0	0	0	36	0	1	0	0	73
Lane Group Flow (vph)	0	1552	593	533	487	452	717	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	70.0	70.0	70.5	64.0		46.3	46.3
Effective Green, g (s)		46.3	82.0	70.0	70.0	70.5	64.0		46.3	46.3
Actuated g/C Ratio		0.33	0.59	0.50	0.50	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	260	931	791	370	727		616	523
v/s Ratio Prot			c0.20	0.29		0.06	0.45		c0.46	
v/s Ratio Perm		0.44	c1.13		0.31	0.56				0.07
v/c Ratio		1.33	2.28	0.57	0.62	1.22	0.99		1.38	0.20
Uniform Delay, d1		46.9	34.7	24.5	25.3	36.9	37.6		46.9	33.6
Progression Factor		0.67	1.03	1.02	1.03	1.02	1.02		1.00	1.00
Incremental Delay, d2		147.5	585.3	1.9	2.6	118.8	27.7		183.1	0.9
Delay (s)		178.8	620.8	26.9	28.7	156.6	65.9		229.9	34.4
Level of Service		F	F	C	C	F	E		F	C
Approach Delay (s)		178.8		241.2			100.9			
Approach LOS		F		F			F			

Intersection Summary

HCM 2000 Control Delay	184.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.99		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	178.1%	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

01/19/2022



Lane Group	WBT	NBL	NBT	NBR2	SBL	SBT	SWR	SWR2
Lane Group Flow (vph)	1552	593	533	522	452	718	853	177
v/c Ratio	1.33	2.28	0.57	0.63	1.22	0.99	1.38	0.30
Control Delay	176.4	604.9	27.4	25.6	143.8	65.7	219.5	15.0
Queue Delay	0.5	0.0	8.4	5.9	0.0	37.8	0.0	0.0
Total Delay	176.9	604.9	35.7	31.5	143.8	103.5	219.5	15.0
Queue Length 50th (ft)	~982	~779	399	359	~349	652	~1030	43
Queue Length 95th (ft)	m#671	m#990	m492	m467	m#585	m#865	#1283	104
Internal Link Dist (ft)	494		424			563		
Turn Bay Length (ft)		250		10			300	300
Base Capacity (vph)	1170	260	931	827	372	728	616	596
Starvation Cap Reductn	129	0	355	245	0	111	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	1.49	2.28	0.93	0.90	1.22	1.16	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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕		↖	↕		↖	↗	↖
Traffic Volume (veh/h)	526	431	28	3	977	764	208	149	487	158	166	244
Future Volume (veh/h)	526	431	28	3	977	764	208	149	487	158	166	244
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	572	468	30	3	1062	830	226	162	529	172	180	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	325	948	61	368	704	492	376	473	422	172	525	
Arrive On Green	0.15	0.55	0.55	0.70	0.70	0.70	0.05	0.27	0.27	0.02	0.09	0.00
Sat Flow, veh/h	1781	1739	111	900	2000	1396	1781	1777	1585	1781	1870	1585
Grp Volume(v), veh/h	572	0	498	3	930	962	226	162	529	172	180	0
Grp Sat Flow(s),veh/h/ln	1781	0	1850	900	1777	1619	1781	1777	1585	1781	1870	1585
Q Serve(g_s), s	21.5	0.0	23.5	0.1	49.3	49.3	7.5	10.3	37.3	9.5	12.6	0.0
Cycle Q Clear(g_c), s	21.5	0.0	23.5	0.1	49.3	49.3	7.5	10.3	37.3	9.5	12.6	0.0
Prop In Lane	1.00		0.06	1.00		0.86	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	325	0	1008	368	626	570	376	473	422	172	525	
V/C Ratio(X)	1.76	0.00	0.49	0.01	1.49	1.69	0.60	0.34	1.25	1.00	0.34	
Avail Cap(c_a), veh/h	325	0	1008	368	626	570	376	473	422	172	525	
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)	0.31	0.00	0.31	0.82	0.82	0.82	0.98	0.98	0.98	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.9	0.0	19.8	13.4	20.7	20.7	42.2	41.4	51.4	41.8	51.4	0.0
Incr Delay (d2), s/veh	346.0	0.0	0.5	0.0	225.5	315.9	6.8	1.9	131.6	68.1	1.8	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	42.7	0.0	10.2	0.0	51.3	61.0	4.1	4.8	30.2	7.9	6.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	392.9	0.0	20.4	13.5	246.2	336.6	49.0	43.4	182.9	109.9	53.2	0.0
LnGrp LOS	F	A	C	B	F	F	D	D	F	F	D	
Approach Vol, veh/h		1070			1895			917			352	A
Approach Delay, s/veh		219.5			291.7			125.3			80.9	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	27.0	55.0	15.0	43.0		82.0	13.0	45.0				
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 5.7		* 5.7	5.5	* 5.7				
Max Green Setting (Gmax), s	21.5	* 49	9.5	* 37		* 76	7.5	* 39				
Max Q Clear Time (g_c+I1), s	23.5	51.3	11.5	39.3		25.5	9.5	14.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0		3.7	0.0	1.0				

Intersection Summary

HCM 6th Ctrl Delay	219.9
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

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	572	498	3	1892	226	691	172	180	265
v/c Ratio	1.76	0.49	0.01	1.50	0.59	0.64	0.83	0.34	0.42
Control Delay	375.5	6.8	22.7	251.2	40.3	23.2	51.0	40.4	6.7
Queue Delay	0.0	1.2	0.0	2.9	1.1	7.5	60.4	0.0	0.2
Total Delay	375.5	8.0	22.7	254.1	41.3	30.7	111.3	40.4	6.9
Queue Length 50th (ft)	~710	138	1	~1224	141	141	113	143	46
Queue Length 95th (ft)	m#769	m124	m2	m#1130	211	211	m#139	m172	m46
Internal Link Dist (ft)		494		148		443		116	
Turn Bay Length (ft)	150		50		100		50		
Base Capacity (vph)	325	1007	315	1264	386	1083	208	522	634
Starvation Cap Reductn	0	293	0	3	0	0	0	0	0
Spillback Cap Reductn	0	144	0	551	44	345	65	0	60
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.76	0.70	0.01	2.65	0.66	0.94	1.20	0.34	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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	704	266	51	1113	68	202	23	355	9	13	429
Future Volume (veh/h)	106	704	266	51	1113	68	202	23	355	9	13	429
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	115	765	289	55	1210	74	220	25	386	10	14	466
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	338	862	326	408	2267	139	78	5	76	30	17	406
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	430	1294	489	535	3402	208	173	20	303	16	67	1610
Grp Volume(v), veh/h	115	0	1054	55	631	653	631	0	0	490	0	0
Grp Sat Flow(s),veh/h/ln	430	0	1782	535	1777	1833	495	0	0	1693	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	35.3	0.0	0.0	35.3	0.0	0.0
Prop In Lane	1.00		0.27	1.00		0.11	0.35		0.61	0.02		0.95
Lane Grp Cap(c), veh/h	338	0	1188	408	1184	1222	159	0	0	453	0	0
V/C Ratio(X)	0.34	0.00	0.89	0.13	0.53	0.53	3.96	0.00	0.00	1.08	0.00	0.00
Avail Cap(c_a), veh/h	338	0	1188	408	1184	1222	159	0	0	453	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)	0.79	0.00	0.79	0.09	0.09	0.09	0.75	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	56.2	0.0	0.0	53.9	0.0	0.0
Incr Delay (d2), s/veh	2.2	0.0	8.1	0.1	0.2	0.2	1341.6	0.0	0.0	65.9	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	2.7	0.0	0.1	0.1	65.2	0.0	0.0	24.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.2	0.0	8.1	0.1	0.2	0.2	1397.8	0.0	0.0	119.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	F	A	A	F	A	A
Approach Vol, veh/h		1169			1339			631				490
Approach Delay, s/veh		7.5			0.2			1397.8				119.8
Approach LOS		A			A			F				F
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		99.0		41.0		99.0		41.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7		* 5.7				
Max Green Setting (Gmax), s		* 93		* 35		* 93		* 35				
Max Q Clear Time (g_c+I1), s		2.0		37.3		2.0		37.3				
Green Ext Time (p_c), s		14.6		0.0		18.8		0.0				

Intersection Summary

HCM 6th Ctrl Delay	261.7
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

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	115	1054	55	1284	631	490
v/c Ratio	0.57	0.88	0.44	0.55	3.80	1.03
Control Delay	31.6	35.8	18.9	15.9	1287.8	90.8
Queue Delay	2.9	16.2	0.0	2.2	22.9	37.3
Total Delay	34.5	51.9	18.9	18.0	1310.7	128.1
Queue Length 50th (ft)	76	849	32	398	~900	~406
Queue Length 95th (ft)	m149	1028	m39	m351	#1140	#633
Internal Link Dist (ft)		148		203	457	414
Turn Bay Length (ft)	50		70			
Base Capacity (vph)	203	1199	125	2340	166	474
Starvation Cap Reductn	33	118	0	871	0	0
Spillback Cap Reductn	0	161	0	652	103	314
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	1.02	0.44	0.87	10.02	3.06

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 6th Signalized Intersection Summary

701: Water St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↘		↗	↕		↗	↘		↗	↘	
Traffic Volume (veh/h)	83	891	94	32	572	13	462	137	49	7	42	198
Future Volume (veh/h)	83	891	94	32	572	13	462	137	49	7	42	198
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	90	968	102	35	622	14	502	149	53	8	46	215
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	598	1151	121	416	2459	55	155	362	129	147	54	252
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.02	0.09	0.09	0.19	0.19	0.19
Sat Flow, veh/h	792	1664	175	527	3553	80	1781	1317	469	1180	287	1342
Grp Volume(v), veh/h	90	0	1070	35	311	325	502	0	202	8	0	261
Grp Sat Flow(s),veh/h/ln	792	0	1839	527	1777	1856	1781	0	1786	1180	0	1629
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0	15.0	0.9	0.0	21.7
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.2	0.0	0.0	6.5	0.0	15.0	15.8	0.0	21.7
Prop In Lane	1.00		0.10	1.00		0.04	1.00		0.26	1.00		0.82
Lane Grp Cap(c), veh/h	598	0	1273	416	1230	1285	155	0	491	147	0	306
V/C Ratio(X)	0.15	0.00	0.84	0.08	0.25	0.25	3.24	0.00	0.41	0.05	0.00	0.85
Avail Cap(c_a), veh/h	598	0	1273	416	1230	1285	155	0	491	147	0	306
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)	0.36	0.00	0.36	0.86	0.86	0.86	0.94	0.00	0.94	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	67.2	0.0	52.9	59.5	0.0	55.0
Incr Delay (d2), s/veh	0.2	0.0	2.6	0.3	0.4	0.4	1023.5	0.0	2.4	0.7	0.0	24.8
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	0.0	0.0	0.9	0.0	0.1	0.1	49.8	0.0	7.6	0.3	0.0	11.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.2	0.0	2.6	0.3	0.4	0.4	1090.8	0.0	55.3	60.2	0.0	79.8
LnGrp LOS	A	A	A	A	A	A	F	A	E	E	A	E
Approach Vol, veh/h		1160			671			704				269
Approach Delay, s/veh		2.4			0.4			793.7				79.2
Approach LOS		A			A			F				E
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		102.8		44.2		102.8	12.2	32.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s		* 90		* 38		* 90	* 6.5	* 26				
Max Q Clear Time (g_c+I1), s		2.2		17.0		2.2	8.5	23.7				
Green Ext Time (p_c), s		5.1		1.2		15.8	0.0	0.4				

Intersection Summary

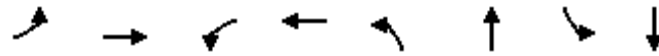
HCM 6th Ctrl Delay	208.0
HCM 6th LOS	F

Notes

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

Queues
701: Water St

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	90	1070	35	636	502	202	8	261
v/c Ratio	0.19	0.90	0.41	0.28	2.20	0.40	0.05	0.61
Control Delay	8.6	20.3	20.1	6.4	581.3	42.9	47.9	28.9
Queue Delay	0.0	47.2	0.0	0.0	12.2	0.0	0.0	1.2
Total Delay	8.6	67.5	20.1	6.5	593.6	42.9	47.9	30.1
Queue Length 50th (ft)	27	832	7	63	~728	151	6	93
Queue Length 95th (ft)	m24	m460	m13	67	#912	231	22	191
Internal Link Dist (ft)		203		452		462		361
Turn Bay Length (ft)	70		70		150		150	
Base Capacity (vph)	462	1187	86	2277	228	499	160	426
Starvation Cap Reductn	0	321	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	176	113	0	0	50
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	1.24	0.41	0.30	4.37	0.40	0.05	0.69

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	737	120	90	1	466	120	97	974	121	230	434	64
Future Volume (veh/h)	737	120	90	1	466	120	97	974	121	230	434	64
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	801	130	98	1	507	0	105	1059	132	250	472	70
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	465	351	26	879		383	1127	140	134	1259	562
Arrive On Green	0.78	0.78	0.78	0.47	0.47	0.00	0.01	0.12	0.12	0.08	0.71	0.71
Sat Flow, veh/h	892	990	746	0	1870	1585	1781	3180	396	1781	3554	1585
Grp Volume(v), veh/h	801	0	228	508	0	0	105	591	600	250	472	70
Grp Sat Flow(s),veh/h/ln	892	0	1736	1870	0	1585	1781	1777	1799	1781	1777	1585
Q Serve(g_s), s	38.1	0.0	5.1	0.0	0.0	0.0	5.2	46.2	46.3	5.6	7.4	2.0
Cycle Q Clear(g_c), s	65.8	0.0	5.1	27.7	0.0	0.0	5.2	46.2	46.3	5.6	7.4	2.0
Prop In Lane	1.00		0.43	0.00		1.00	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	343	0	816	905	0		383	630	637	134	1259	562
V/C Ratio(X)	2.34	0.00	0.28	0.56	0.00		0.27	0.94	0.94	1.87	0.37	0.12
Avail Cap(c_a), veh/h	343	0	816	905	0		383	630	637	134	1259	562
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	0.32	0.00	0.32	1.00	0.00	0.00	0.09	0.09	0.09	0.97	0.97	0.97
Uniform Delay (d), s/veh	27.1	0.0	8.5	27.0	0.0	0.0	28.3	60.3	60.4	41.2	14.2	13.5
Incr Delay (d2), s/veh	604.2	0.0	0.3	2.5	0.0	0.0	0.2	3.5	3.6	417.6	0.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	69.2	0.0	1.8	13.1	0.0	0.0	2.3	22.7	23.0	17.5	2.6	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	631.3	0.0	8.8	29.5	0.0	0.0	28.4	63.8	63.9	458.8	15.1	13.9
LnGrp LOS	F	A	A	C	A		C	E	E	F	B	B
Approach Vol, veh/h		1029			508	A		1296			792	
Approach Delay, s/veh		493.3			29.5			61.0			155.0	
Approach LOS		F			C			E			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	56.0		72.0	12.0	56.0		72.0				
Change Period (Y+Rc), s	6.4	6.4		* 6.2	6.4	6.4		* 6.2				
Max Green Setting (Gmax), s	5.6	49.6		* 66	5.6	49.6		* 66				
Max Q Clear Time (g_c+I1), s	7.2	9.4		67.8	7.6	48.3		29.7				
Green Ext Time (p_c), s	0.0	3.4		0.0	0.0	0.9		3.9				

Intersection Summary

HCM 6th Ctrl Delay	199.9
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

01/19/2022



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	801	228	508	130	105	1191	250	472	70
v/c Ratio	2.96	0.27	0.58	0.17	0.31	0.96	2.02	0.38	0.11
Control Delay	900.6	11.5	30.4	9.8	21.3	47.8	508.4	24.0	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	42.7	0.0	0.0	0.0
Total Delay	900.6	11.5	30.4	9.8	21.3	90.5	508.4	24.0	2.0
Queue Length 50th (ft)	~1012	27	331	27	46	324	~296	128	2
Queue Length 95th (ft)	m#1189	m57	447	65	m53	m326	#494	170	4
Internal Link Dist (ft)		452	888			460		712	
Turn Bay Length (ft)	100			100	200		250		
Base Capacity (vph)	271	839	875	784	336	1239	124	1253	609
Starvation Cap Reductn	0	0	0	0	0	219	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	2.96	0.27	0.58	0.17	0.31	1.17	2.02	0.38	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 Signalized Intersection Capacity Analysis

102: Florida Ave & Whiting St

01/19/2022

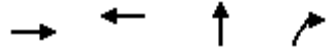


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕↕			↕↕			↕↕↕	↗				
Traffic Volume (vph)	194	502	0	0	373	287	133	2399	108	0	0	0	
Future Volume (vph)	194	502	0	0	373	287	133	2399	108	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total 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			0.93			1.00	0.85				
Flt Protected		0.99			1.00			1.00	1.00				
Satd. Flow (prot)		3491			3308			5072	1583				
Flt Permitted		0.55			1.00			1.00	1.00				
Satd. Flow (perm)		1943			3308			5072	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	546	0	0	405	312	145	2608	117	0	0	0	
RTOR Reduction (vph)	0	0	0	0	28	0	0	0	18	0	0	0	
Lane Group Flow (vph)	0	757	0	0	689	0	0	2753	99	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)		680			1157			2691	840				
v/s Ratio Prot					0.21								
v/s Ratio Perm		c0.39						0.54	0.06				
v/c Ratio		1.36dl			0.60			1.02	0.12				
Uniform Delay, d1		45.5			37.4			32.9	16.4				
Progression Factor		1.00			0.75			1.00	1.00				
Incremental Delay, d2		69.9			1.3			23.5	0.3				
Delay (s)		115.4			29.5			56.3	16.7				
Level of Service		F			C			E	B				
Approach Delay (s)		115.4			29.5			54.7			0.0		
Approach LOS		F			C			D			A		
Intersection Summary													
HCM 2000 Control Delay			61.1									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.03										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	13.7
Intersection Capacity Utilization			102.8%									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

01/19/2022



Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	757	717	2753	117
v/c Ratio	1.36dl	0.60	1.02	0.14
Control Delay	112.0	28.0	56.2	11.4
Queue Delay	0.0	0.0	31.3	0.0
Total Delay	112.0	28.0	87.4	11.4
Queue Length 50th (ft)	~414	168	~974	34
Queue Length 95th (ft)	#545	m276	#1056	67
Internal Link Dist (ft)	821	519	567	
Turn Bay Length (ft)				100
Base Capacity (vph)	680	1186	2690	858
Starvation Cap Reductn	0	0	431	0
Spillback Cap Reductn	1	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.11	0.60	1.22	0.14

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Volume (vph)	139	458	156	144	432	173	162	533	93	57	499	65
Future Volume (vph)	139	458	156	144	432	173	162	533	93	57	499	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	0.96		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	1792		1770	1783			3441			3467	
Flt Permitted	0.17	1.00		0.16	1.00			0.62			0.70	
Satd. Flow (perm)	317	1792		301	1783			2148			2432	
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	498	170	157	470	188	176	579	101	62	542	71
RTOR Reduction (vph)	0	9	0	0	10	0	0	8	0	0	6	0
Lane Group Flow (vph)	151	659	0	157	648	0	0	848	0	0	669	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)	64.2	64.2		64.2	64.2			64.3			64.3	
Effective Green, g (s)	64.2	64.2		64.2	64.2			64.3			64.3	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.46			0.46	
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)	145	821		138	817			986			1116	
v/s Ratio Prot		0.37			0.36							
v/s Ratio Perm	0.48			c0.52				c0.39			0.27	
v/c Ratio	1.04	0.80		1.14	0.79			0.86			0.60	
Uniform Delay, d1	37.9	32.5		37.9	32.2			33.8			28.2	
Progression Factor	0.47	0.48		0.94	0.94			0.85			1.00	
Incremental Delay, d2	70.4	5.3		112.3	6.7			9.1			2.4	
Delay (s)	88.3	20.8		147.9	36.9			37.9			30.6	
Level of Service	F	C		F	D			D			C	
Approach Delay (s)		33.3			58.3			37.9			30.6	
Approach LOS		C			E			D			C	

Intersection Summary

HCM 2000 Control Delay	40.4	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)	11.5
Intersection Capacity Utilization	101.0%	ICU Level of Service	G
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)	151	668	157	658	856	675
v/c Ratio	1.04	0.80	1.14	0.80	0.86	0.60
Control Delay	93.7	20.9	146.9	36.8	38.1	30.5
Queue Delay	0.0	3.0	0.0	13.4	0.2	1.6
Total Delay	93.7	23.9	146.9	50.2	38.3	32.1
Queue Length 50th (ft)	~144	195	~166	427	220	233
Queue Length 95th (ft)	m#174	m200	m#287	652	317	300
Internal Link Dist (ft)		519		503	563	436
Turn Bay Length (ft)			150			
Base Capacity (vph)	145	830	138	827	994	1123
Starvation Cap Reductn	0	85	0	159	0	0
Spillback Cap Reductn	0	1	0	0	7	268
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.90	1.14	0.99	0.87	0.79

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 Signalized Intersection Capacity Analysis
 104: Jefferson St & Whiting St

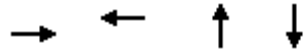
01/19/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	392	389	55	326	279	159	445	17	119	493	71
Future Volume (vph)	83	392	389	55	326	279	159	445	17	119	493	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.1			6.1			6.1			6.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.93			0.94			1.00			0.98	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		3284			3301			3480			3454	
Flt Permitted		0.67			0.66			0.57			0.63	
Satd. Flow (perm)		2225			2178			2008			2187	
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)	90	426	423	60	354	303	173	484	18	129	536	77
RTOR Reduction (vph)	0	110	0	0	87	0	0	1	0	0	6	0
Lane Group Flow (vph)	0	829	0	0	630	0	0	674	0	0	736	0
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	3	8			4			6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		59.5			59.5			59.9			60.0	
Effective Green, g (s)		59.5			59.5			59.9			60.0	
Actuated g/C Ratio		0.42			0.42			0.43			0.43	
Clearance Time (s)		6.1			6.1			6.1			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		945			925			859			937	
v/s Ratio Prot												
v/s Ratio Perm		c0.37			0.29			0.34			c0.34	
v/c Ratio		0.88			0.68			0.78			0.79	
Uniform Delay, d1		36.9			32.6			34.5			34.5	
Progression Factor		1.24			0.84			0.49			1.00	
Incremental Delay, d2		7.9			2.0			0.4			6.6	
Delay (s)		53.7			29.3			17.2			41.1	
Level of Service		D			C			B			D	
Approach Delay (s)		53.7			29.3			17.2			41.1	
Approach LOS		D			C			B			D	
Intersection Summary												
HCM 2000 Control Delay			36.9				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			140.0				Sum of lost time (s)			25.9		
Intersection Capacity Utilization			102.4%				ICU Level of Service			G		
Analysis Period (min)			15									
c Critical Lane Group												

Queues

104: Jefferson St & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	939	717	675	742
v/c Ratio	0.89	0.71	0.78	0.79
Control Delay	45.8	25.2	17.7	41.3
Queue Delay	0.0	0.1	0.7	0.7
Total Delay	45.8	25.3	18.4	41.9
Queue Length 50th (ft)	382	143	227	299
Queue Length 95th (ft)	471	115	m115	387
Internal Link Dist (ft)	503	427	450	207
Turn Bay Length (ft)				
Base Capacity (vph)	1104	1017	860	943
Starvation Cap Reductn	0	23	0	0
Spillback Cap Reductn	0	17	39	43
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.85	0.72	0.82	0.82

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

715: Selmon Expy Off-Ramp & Whiting St

01/19/2022



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	↗↗
Traffic Volume (vph)	531	0	0	527	163	619
Future Volume (vph)	531	0	0	527	163	619
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.7			5.7	6.0	6.0
Lane Util. Factor	0.95			0.95	1.00	0.88
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	1770	2787
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	577	0	0	573	177	673
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	577	0	0	573	177	673
Turn Type	NA			NA	Prot	custom
Protected Phases	5			2	4	4
Permitted Phases						
Actuated Green, G (s)	30.3			84.3	44.0	98.0
Effective Green, g (s)	30.3			84.3	44.0	92.3
Actuated g/C Ratio	0.22			0.60	0.31	0.66
Clearance Time (s)	5.7			5.7	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	765			2130	556	1837
v/s Ratio Prot	c0.16			0.16	0.10	c0.24
v/s Ratio Perm						
v/c Ratio	0.75			0.27	0.32	0.37
Uniform Delay, d1	51.4			13.2	36.6	10.7
Progression Factor	0.79			1.01	1.00	1.00
Incremental Delay, d2	2.3			0.2	1.5	0.6
Delay (s)	42.8			13.6	38.1	11.3
Level of Service	D			B	D	B
Approach Delay (s)	42.8			13.6	16.9	
Approach LOS	D			B	B	

Intersection Summary

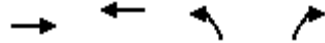
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

715: Selmon Expy Off-Ramp & Whiting St

01/21/2022



Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	577	573	177	673
v/c Ratio	0.75	0.27	0.32	0.34
Control Delay	43.8	13.7	38.6	9.5
Queue Delay	0.0	0.9	0.0	0.0
Total Delay	43.8	14.6	38.6	9.5
Queue Length 50th (ft)	227	176	123	125
Queue Length 95th (ft)	m260	m194	190	193
Internal Link Dist (ft)	427	276	783	
Turn Bay Length (ft)			350	350
Base Capacity (vph)	1625	2130	556	1951
Starvation Cap Reductn	0	1219	0	0
Spillback Cap Reductn	111	0	0	3
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.63	0.32	0.35

Intersection Summary

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

HCM 6th Signalized Intersection Summary
 11: Water St/Brush St & Whiting St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑	↗	↖	↑↑		↖	↗			↕	
Traffic Volume (veh/h)	223	778	150	248	240	63	208	221	62	164	88	79
Future Volume (veh/h)	223	778	150	248	240	63	208	221	62	164	88	79
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	242	846	163	270	261	68	226	240	67	178	96	86
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	717	1925	919	426	1532	392	294	355	99	103	35	31
Arrive On Green	0.08	0.54	0.54	0.09	0.55	0.55	0.04	0.25	0.25	0.17	0.17	0.17
Sat Flow, veh/h	1781	3554	1585	1781	2802	716	1781	1407	393	371	200	179
Grp Volume(v), veh/h	242	846	163	270	164	165	226	0	307	360	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1741	1781	0	1800	751	0	0
Q Serve(g_s), s	8.4	20.0	6.7	9.3	6.4	6.7	5.3	0.0	21.5	13.8	0.0	0.0
Cycle Q Clear(g_c), s	8.4	20.0	6.7	9.3	6.4	6.7	5.3	0.0	21.5	24.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.41	1.00		0.22	0.49		0.24
Lane Grp Cap(c), veh/h	717	1925	919	426	972	952	294	0	454	169	0	0
V/C Ratio(X)	0.34	0.44	0.18	0.63	0.17	0.17	0.77	0.00	0.68	2.13	0.00	0.00
Avail Cap(c_a), veh/h	1013	1925	919	573	972	952	294	0	454	169	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.83	0.94	0.94	0.94	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.8	19.3	13.8	14.2	15.8	15.9	51.3	0.0	47.2	64.7	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.6	0.4	1.5	0.4	0.4	11.7	0.0	4.0	529.2	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	3.4	8.5	2.6	3.9	2.7	2.8	6.1	0.0	10.3	30.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.1	19.9	14.1	15.7	16.2	16.3	63.0	0.0	51.2	593.9	0.0	0.0
LnGrp LOS	B	B	B	B	B	B	E	A	D	F	A	A
Approach Vol, veh/h		1251			599			533				360
Approach Delay, s/veh		17.6			16.0			56.2				593.9
Approach LOS		B			B			E				F
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.7	82.3		41.0	17.5	81.5	11.0	30.0				
Change Period (Y+Rc), s	* 5.7	* 5.7		* 5.7	5.5	* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s	* 34	* 53		* 35	23.5	* 64	* 5.3	* 24				
Max Q Clear Time (g_c+I1), s	10.4	8.7		23.5	11.3	22.0	7.3	26.3				
Green Ext Time (p_c), s	0.7	2.1		1.5	0.6	8.0	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	100.4
HCM 6th LOS	F

Notes

- User approved pedestrian interval to be less than phase max green.
- * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

11: Water St/Brush St & Whiting St

01/21/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	242	846	163	270	329	226	307	360
v/c Ratio	0.34	0.45	0.16	0.62	0.18	0.86	0.67	1.98
Control Delay	6.8	17.3	2.7	22.6	23.6	77.0	53.5	488.2
Queue Delay	0.1	1.6	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	18.9	2.7	22.6	23.6	77.0	53.5	488.2
Queue Length 50th (ft)	40	273	26	134	93	178	245	~505
Queue Length 95th (ft)	55	316	50	191	133	#322	352	#708
Internal Link Dist (ft)		276			426		126	215
Turn Bay Length (ft)	100		200	300		50		
Base Capacity (vph)	865	1866	1023	537	1841	264	461	182
Starvation Cap Reductn	152	797	0	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	0.34	0.79	0.16	0.50	0.18	0.86	0.67	1.98

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

7: Meridian Ave & Whiting St

01/19/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	551	453	124	1719	400	427
Future Volume (vph)	551	453	124	1719	400	427
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	6.9	6.4	6.6	4.0
Lane Util. Factor	0.97	1.00	1.00	0.91	0.86	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	5085	6408	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	5085	6408	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	599	492	135	1868	435	464
RTOR Reduction (vph)	0	340	0	0	0	0
Lane Group Flow (vph)	599	152	135	1868	435	464
Turn Type	Prot	Perm	Prot	NA	NA	Free
Protected Phases	7 8		1	6	2	
Permitted Phases		7 8				Free
Actuated Green, G (s)	43.3	43.3	18.1	82.6	57.4	140.0
Effective Green, g (s)	43.3	43.3	18.1	82.6	57.4	140.0
Actuated g/C Ratio	0.31	0.31	0.13	0.59	0.41	1.00
Clearance Time (s)			6.9	6.4	6.6	
Vehicle Extension (s)			3.0	3.0	3.0	
Lane Grp Cap (vph)	1061	489	228	3000	2627	1583
v/s Ratio Prot	c0.17		0.08	c0.37	0.07	
v/s Ratio Perm		0.10				0.29
v/c Ratio	0.56	0.31	0.59	0.62	0.17	0.29
Uniform Delay, d1	40.5	37.0	57.5	18.6	26.1	0.0
Progression Factor	0.53	0.95	1.20	0.21	1.00	1.00
Incremental Delay, d2	0.5	0.3	3.1	0.7	0.1	0.5
Delay (s)	22.0	35.5	72.2	4.6	26.3	0.5
Level of Service	C	D	E	A	C	A
Approach Delay (s)	28.1			9.2	13.0	
Approach LOS	C			A	B	

Intersection Summary

HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues

7: Meridian Ave & Whiting St

01/21/2022



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	599	492	135	1868	435	464
v/c Ratio	0.54	0.58	0.59	0.62	0.17	0.29
Control Delay	21.5	4.4	75.9	4.9	28.5	0.5
Queue Delay	0.0	0.4	0.2	0.1	0.0	0.0
Total Delay	21.5	4.8	76.1	5.0	28.5	0.5
Queue Length 50th (ft)	188	4	103	72	71	0
Queue Length 95th (ft)	m110	m21	m138	79	113	0
Internal Link Dist (ft)	426			229	186	
Turn Bay Length (ft)	200	250	150			
Base Capacity (vph)	1581	994	355	3001	2627	1583
Starvation Cap Reductn	0	158	22	265	0	0
Spillback Cap Reductn	0	3	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.59	0.41	0.68	0.17	0.29

Intersection Summary

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

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

01/19/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		↑↑↑		↑	↑↑↑
Traffic Volume (vph)	62	119	1725	106	187	666
Future Volume (vph)	62	119	1725	106	187	666
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.7		6.4		5.5	6.9
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.91		0.99		1.00	1.00
Flt Protected	0.98		1.00		0.95	1.00
Satd. Flow (prot)	1669		5041		1770	5085
Flt Permitted	0.98		1.00		0.05	1.00
Satd. Flow (perm)	1669		5041		101	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	67	129	1875	115	203	724
RTOR Reduction (vph)	59	0	4	0	0	0
Lane Group Flow (vph)	137	0	1986	0	203	724
Turn Type	Prot		NA		custom	NA
Protected Phases	8		6		7	1 2 7
Permitted Phases					1 2	
Actuated Green, G (s)	19.3		82.6		100.9	107.5
Effective Green, g (s)	19.3		82.6		94.0	100.9
Actuated g/C Ratio	0.14		0.59		0.67	0.72
Clearance Time (s)	7.7		6.4		5.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	230		2974		288	3664
v/s Ratio Prot	c0.08		c0.39		c0.09	0.14
v/s Ratio Perm					c0.38	
v/c Ratio	0.60		0.67		0.70	0.20
Uniform Delay, d1	56.7		19.4		37.5	6.4
Progression Factor	1.08		0.79		0.92	1.10
Incremental Delay, d2	4.1		0.1		7.3	0.0
Delay (s)	65.2		15.4		41.7	7.0
Level of Service	E		B		D	A
Approach Delay (s)	65.2		15.4			14.6
Approach LOS	E		B			B

Intersection Summary

HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
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)	196	1990	203	724
v/c Ratio	0.68	0.67	0.69	0.19
Control Delay	50.8	16.2	50.9	6.0
Queue Delay	0.0	0.2	0.1	0.2
Total Delay	50.8	16.4	51.1	6.2
Queue Length 50th (ft)	116	363	105	54
Queue Length 95th (ft)	195	m289	#214	84
Internal Link Dist (ft)	878	712		229
Turn Bay Length (ft)				
Base Capacity (vph)	505	2978	294	3824
Starvation Cap Reductn	0	270	2	2078
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.39	0.73	0.70	0.41

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.

HCS7 Two-Way Stop-Control Report

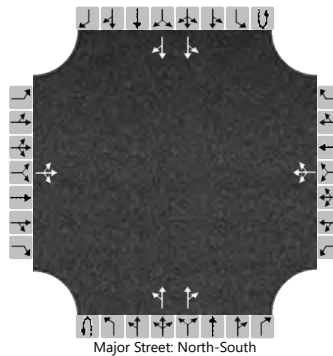
General Information

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	0	2	0	0	0	2	0	
Configuration			LTR				LTR			LT		TR		LT		TR	
Volume (veh/h)		22	110	86		137	50	126		134	595	78		183	461	38	
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

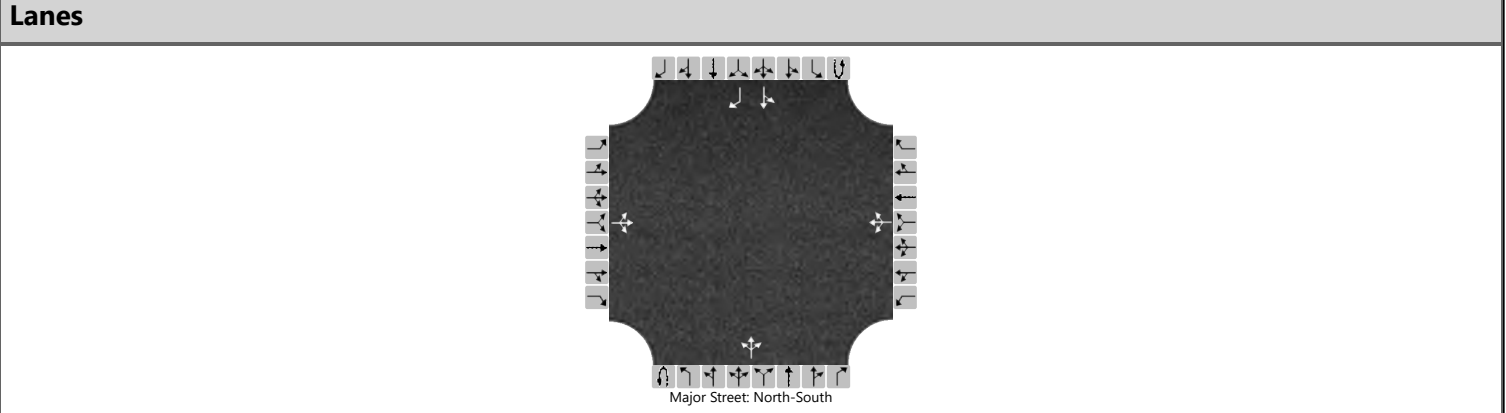
Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.54	6.54	6.94		7.54	6.54	6.94		4.14				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.32		2.22				2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			229				329				141				193	
Capacity, c (veh/h)											1038				886	
v/c Ratio											0.14				0.22	
95% Queue Length, Q ₉₅ (veh)											0.5				0.8	
Control Delay (s/veh)											9.0				10.2	
Level of Service (LOS)											A				B	
Approach Delay (s/veh)											2.0				3.3	
Approach LOS																

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		



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)		137	5	207		15	21	5		117	377	5		5	76	106	
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)			367				43				123				5		
Capacity, c (veh/h)			489				259				1518				1157		
v/c Ratio			0.75				0.17				0.08				0.00		
95% Queue Length, Q ₉₅ (veh)			8.0				0.6				0.3				0.0		
Control Delay (s/veh)			33.6				21.7				7.6				8.1		
Level of Service (LOS)			D				C				A				A		
Approach Delay (s/veh)		33.6				21.7				2.4				0.2			
Approach LOS		D				C											

HCS7 Two-Way Stop-Control Report

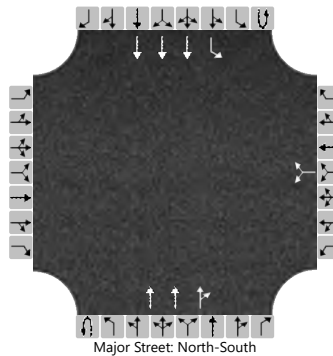
General Information

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 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	0	3	0	0	1	3	0
Configuration							LR				T	TR		L	T	
Volume (veh/h)						41		121			1909	361	0	5	786	
Percent Heavy Vehicles (%)						2		2					0	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)							171								5	
Capacity, c (veh/h)							87								79	
v/c Ratio							1.95								0.07	
95% Queue Length, Q ₉₅ (veh)							47.0								0.2	
Control Delay (s/veh)							1839.9								53.8	
Level of Service (LOS)							F								F	
Approach Delay (s/veh)							1839.9								0.3	
Approach LOS							F									

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)	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	6.1						6.0	6.0				
Lane Util. Factor	*0.51	*0.76						*0.80	1.00				
Frt	1.00	0.96						1.00	0.85				
Flt Protected	0.95	1.00						1.00	1.00				
Satd. Flow (prot)	1805	2723						2980	1583				
Flt Permitted	0.95	1.00						1.00	1.00				
Satd. Flow (perm)	1805	2723						2980	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)	210	16	0	0	0	0	0	0	67	0	0	0	
Lane Group Flow (vph)	885	2225	0	0	0	0	0	326	68	0	0	0	
Turn Type	Prot	NA						NA	Perm				
Protected Phases	1	6						4					
Permitted Phases									4				
Actuated Green, G (s)	58.0	112.9						15.0	15.0				
Effective Green, g (s)	58.0	112.9						15.0	15.0				
Actuated g/C Ratio	0.41	0.81						0.11	0.11				
Clearance Time (s)	6.0	6.1						6.0	6.0				
Vehicle Extension (s)	3.0	3.0						3.0	3.0				
Lane Grp Cap (vph)	747	2195						319	169				
v/s Ratio Prot	c0.49	c0.82						c0.11					
v/s Ratio Perm									0.04				
v/c Ratio	1.18	1.01						1.02	0.40				
Uniform Delay, d1	41.0	13.5						62.5	58.3				
Progression Factor	1.00	1.00						1.00	1.00				
Incremental Delay, d2	96.3	22.6						56.1	1.6				
Delay (s)	137.3	36.2						118.6	59.9				
Level of Service	F	D						F	E				
Approach Delay (s)		69.4			0.0			101.4			0.0		
Approach LOS		E			A			F			A		
Intersection Summary													
HCM 2000 Control Delay			73.3									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.12										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	18.6
Intersection Capacity Utilization			109.4%									ICU Level of Service	H
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)	1095	2241	326	135
v/c Ratio	1.14	1.01	1.02	0.57
Control Delay	103.0	36.3	116.5	37.7
Queue Delay	0.8	0.0	10.5	0.0
Total Delay	103.8	36.3	126.9	37.7
Queue Length 50th (ft)	~944	~1263	~196	52
Queue Length 95th (ft)	#1205	#1565	#318	124
Internal Link Dist (ft)		1290	1157	
Turn Bay Length (ft)				200
Base Capacity (vph)	958	2212	319	236
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	135	0	10	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.33	1.01	1.06	0.57

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

01/19/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	342	1264	54	204	0	771	0	153	4	14	59	0	
Future Volume (vph)	342	1264	54	204	0	771	0	153	4	14	59	0	
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		
Lane Util. Factor	1.00	0.95		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		
Flt Protected	0.95	1.00		0.95		1.00		1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1770	3517		1770		1583		1863	1583	1770	1863		
Flt Permitted	0.95	1.00		0.19		1.00		1.00	1.00	0.49	1.00		
Satd. Flow (perm)	1770	3517		346		1583		1863	1583	919	1863		
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)	372	1374	59	222	0	838	0	166	4	15	64	0	
RTOR Reduction (vph)	0	2	0	0	0	87	0	0	3	0	0	0	
Lane Group Flow (vph)	372	1431	0	222	0	751	0	166	1	15	64	0	
Turn Type	pm+pt	NA		Perm		Perm		NA	Perm	Perm	NA		
Protected Phases	1	6						4				8	
Permitted Phases	6			2		2			4	8			
Actuated Green, G (s)	103.8	103.8		83.5		83.5		24.1	24.1	24.1	24.1		
Effective Green, g (s)	103.8	103.8		83.5		83.5		24.1	24.1	24.1	24.1		
Actuated g/C Ratio	0.74	0.74		0.60		0.60		0.17	0.17	0.17	0.17		
Clearance Time (s)	5.5	6.2		5.9		5.9		5.9	5.9	5.9	5.9		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	1312	2607		206		944		320	272	158	320		
v/s Ratio Prot	0.03	c0.41						c0.09			0.03		
v/s Ratio Perm	0.18			c0.64		0.47			0.00	0.02			
v/c Ratio	0.28	0.55		1.08		0.80		0.52	0.00	0.09	0.20		
Uniform Delay, d1	5.9	7.9		28.2		21.7		52.7	48.0	48.8	49.7		
Progression Factor	0.71	0.60		0.86		1.01		1.00	1.00	0.45	0.42		
Incremental Delay, d2	0.0	0.2		43.7		0.7		5.9	0.0	1.0	1.2		
Delay (s)	4.2	4.9		68.0		22.6		58.6	48.0	23.1	22.0		
Level of Service	A	A		E		C		E	D	C	C		
Approach Delay (s)		4.8			32.1			58.3			22.2		
Approach LOS		A			C			E			C		
Intersection Summary													
HCM 2000 Control Delay			17.5									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.91										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	17.3
Intersection Capacity Utilization			89.4%									ICU Level of Service	E
Analysis Period (min)			15										

c Critical Lane Group

Queues

115: Morgan St & Channelside Dr

01/19/2022



Lane Group	EBL	EBT	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	372	1433	222	838	166	4	15	64
v/c Ratio	0.28	0.55	1.08	0.81	0.52	0.01	0.09	0.20
Control Delay	4.2	5.0	71.0	18.0	59.2	0.0	23.4	22.2
Queue Delay	0.6	1.0	0.0	50.5	0.0	0.0	0.1	0.0
Total Delay	4.9	5.9	71.0	68.5	59.2	0.0	23.6	22.2
Queue Length 50th (ft)	59	124	~220	270	139	0	5	22
Queue Length 95th (ft)	m64	m132	m#196	m234	216	0	m10	m51
Internal Link Dist (ft)		523			1253			424
Turn Bay Length (ft)	450			10			100	
Base Capacity (vph)	1321	2610	206	1031	320	328	158	320
Starvation Cap Reductn	598	824	0	179	0	0	0	0
Spillback Cap Reductn	423	373	0	378	0	0	26	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.80	1.08	1.28	0.52	0.01	0.11	0.20

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

01/19/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	527	755	867	143	7	108
Future Volume (veh/h)	527	755	867	143	7	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	573	821	942	155	8	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	433	1443	806	133	261	232
Arrive On Green	0.07	0.25	1.00	1.00	0.15	0.15
Sat Flow, veh/h	1781	1870	1566	258	1781	1585
Grp Volume(v), veh/h	573	821	0	1097	8	117
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1824	1781	1585
Q Serve(g_s), s	30.0	53.6	0.0	72.0	0.5	9.5
Cycle Q Clear(g_c), s	30.0	53.6	0.0	72.0	0.5	9.5
Prop In Lane	1.00			0.14	1.00	1.00
Lane Grp Cap(c), veh/h	433	1443	0	938	261	232
V/C Ratio(X)	1.32	0.57	0.00	1.17	0.03	0.50
Avail Cap(c_a), veh/h	433	1443	0	938	261	232
HCM Platoon Ratio	0.33	0.33	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	0.00	0.55	0.09	0.09
Uniform Delay (d), s/veh	59.0	31.9	0.0	0.0	51.2	55.1
Incr Delay (d2), s/veh	158.1	1.3	0.0	83.0	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	35.2	27.5	0.0	21.6	0.2	3.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	217.1	33.2	0.0	83.0	51.3	55.8
LnGrp LOS	F	C	A	F	D	E
Approach Vol, veh/h		1394	1097		125	
Approach Delay, s/veh		108.8	83.0		55.5	
Approach LOS		F	F		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	36.0	78.0			114.0	26.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	30.0	72.0			108.0	20.5
Max Q Clear Time (g_c+I1), s	32.0	74.0			55.6	11.5
Green Ext Time (p_c), s	0.0	0.0			7.8	0.2
Intersection Summary						
HCM 6th Ctrl Delay			95.4			
HCM 6th LOS			F			

Queues

116: Channelside Dr & Jefferson St

01/19/2022



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	573	821	1097	8	117
v/c Ratio	1.33	0.57	1.16	0.03	0.35
Control Delay	197.0	2.6	109.5	45.9	29.6
Queue Delay	0.4	0.1	0.4	0.0	0.0
Total Delay	197.4	2.7	109.9	45.9	29.6
Queue Length 50th (ft)	~625	11	~1172	8	76
Queue Length 95th (ft)	#868	12	#1442	m7	m55
Internal Link Dist (ft)		315	131	443	
Turn Bay Length (ft)				100	
Base Capacity (vph)	432	1437	943	259	331
Starvation Cap Reductn	17	80	70	0	0
Spillback Cap Reductn	0	88	24	0	1
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.38	0.61	1.26	0.03	0.35

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

01/19/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗	↑	↖		↗	↖
Traffic Volume (veh/h)	132	630	716	203	28	294
Future Volume (veh/h)	132	630	716	203	28	294
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	143	685	778	221	30	320
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	510	1483	1001	284	17	182
Arrive On Green	0.07	1.00	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1781	1870	1401	398	137	1459
Grp Volume(v), veh/h	143	685	0	999	351	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1799	1601	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	17.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	17.5	0.0
Prop In Lane	1.00			0.22	0.09	0.91
Lane Grp Cap(c), veh/h	510	1483	0	1285	200	0
V/C Ratio(X)	0.28	0.46	0.00	0.78	1.75	0.00
Avail Cap(c_a), veh/h	510	1483	0	1285	200	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.80	0.80	0.00	0.41	0.73	0.00
Uniform Delay (d), s/veh	6.2	0.0	0.0	0.0	61.3	0.0
Incr Delay (d2), s/veh	1.1	0.8	0.0	2.0	354.0	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	1.4	0.3	0.0	0.7	26.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.3	0.8	0.0	2.0	415.2	0.0
LnGrp LOS	A	A	A	A	F	A
Approach Vol, veh/h		828	999		351	
Approach Delay, s/veh		2.0	2.0		415.2	
Approach LOS		A	A		F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.0	106.0			117.0	23.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	5.0	100.0			111.0	17.5
Max Q Clear Time (g_c+I1), s	2.0	2.0			2.0	19.5
Green Ext Time (p_c), s	0.1	10.9			5.2	0.0
Intersection Summary						
HCM 6th Ctrl Delay			68.6			
HCM 6th LOS			E			

Queues

117: Channelside Dr & Nebraska Ave

01/19/2022



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	143	685	999	350
v/c Ratio	0.46	0.46	0.77	0.75
Control Delay	9.2	3.2	6.1	29.3
Queue Delay	2.2	0.4	43.6	62.7
Total Delay	11.4	3.6	49.7	91.9
Queue Length 50th (ft)	7	159	99	145
Queue Length 95th (ft)	34	136	112	219
Internal Link Dist (ft)		131	222	457
Turn Bay Length (ft)	80			
Base Capacity (vph)	313	1477	1298	468
Starvation Cap Reductn	80	349	127	14
Spillback Cap Reductn	0	0	378	275
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.61	0.61	1.09	1.81

Intersection Summary

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	85	548	25	143	870	132	17	53	59	40	16	33
Future Volume (veh/h)	85	548	25	143	870	132	17	53	59	40	16	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	92	596	27	155	946	143	18	58	64	43	17	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	431	1224	55	803	1287	195	209	118	130	152	78	164
Arrive On Green	0.07	1.00	1.00	0.31	1.00	1.00	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1781	1775	80	1781	1587	240	1351	812	897	1269	535	1132
Grp Volume(v), veh/h	92	0	623	155	0	1089	18	0	122	43	0	53
Grp Sat Flow(s),veh/h/ln	1781	0	1856	1781	0	1827	1351	0	1709	1269	0	1667
Q Serve(g_s), s	2.6	0.0	0.0	0.0	0.0	0.0	1.7	0.0	9.2	4.5	0.0	3.9
Cycle Q Clear(g_c), s	2.6	0.0	0.0	0.0	0.0	0.0	5.6	0.0	9.2	13.7	0.0	3.9
Prop In Lane	1.00		0.04	1.00		0.13	1.00		0.52	1.00		0.68
Lane Grp Cap(c), veh/h	431	0	1279	803	0	1481	209	0	248	152	0	242
V/C Ratio(X)	0.21	0.00	0.49	0.19	0.00	0.74	0.09	0.00	0.49	0.28	0.00	0.22
Avail Cap(c_a), veh/h	431	0	1279	803	0	1481	209	0	248	152	0	242
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	0.09	0.00	0.09	1.00	0.00	1.00	0.86	0.00	0.86
Uniform Delay (d), s/veh	8.2	0.0	0.0	4.3	0.0	0.0	55.3	0.0	55.1	61.4	0.0	52.9
Incr Delay (d2), s/veh	0.9	0.0	1.1	0.0	0.0	0.3	0.8	0.0	6.8	4.0	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.4	1.0	0.0	0.1	0.6	0.0	4.5	1.6	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.1	0.0	1.1	4.3	0.0	0.3	56.1	0.0	61.9	65.4	0.0	54.6
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	D
Approach Vol, veh/h		715			1244			140				96
Approach Delay, s/veh		2.1			0.8			61.2				59.5
Approach LOS		A			A			E				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.0	120.5		26.0	28.5	103.0		26.0				
Change Period (Y+Rc), s	6.0	6.5		* 5.7	6.5	* 6.5		* 5.7				
Max Green Setting (Gmax), s	5.0	96.5		* 20	5.0	* 97		* 20				
Max Q Clear Time (g_c+I1), s	4.6	2.0		11.2	2.0	2.0		15.7				
Green Ext Time (p_c), s	0.0	15.2		0.6	0.1	5.1		0.2				

Intersection Summary

HCM 6th Ctrl Delay	7.6
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

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	92	623	155	1089	18	122	43	53
v/c Ratio	0.59	0.49	0.28	0.86	0.09	0.44	0.28	0.19
Control Delay	35.4	4.8	12.8	26.8	53.4	45.1	62.2	28.9
Queue Delay	0.0	0.2	0.0	48.6	0.0	0.0	0.0	0.0
Total Delay	35.4	5.1	12.8	75.4	53.4	45.1	62.2	28.9
Queue Length 50th (ft)	10	63	63	634	14	74	0	10
Queue Length 95th (ft)	m64	72	m51	m459	39	141	m75	m54
Internal Link Dist (ft)		222		393		1129		462
Turn Bay Length (ft)	80		100				150	
Base Capacity (vph)	157	1276	556	1261	195	277	156	273
Starvation Cap Reductn	0	183	0	417	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	0.59	0.57	0.28	1.29	0.09	0.44	0.28	0.19

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)	256	380	11	99	571	80	187	586	67	160	452	387
Future Volume (vph)	256	380	11	99	571	80	187	586	67	160	452	387
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	1.00		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	1855		1770	1828		1770	1863	1583	1770	1863	1583
Flt Permitted	0.09	1.00		0.51	1.00		0.10	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)	166	1855		958	1828		191	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)	278	413	12	108	621	87	203	637	73	174	491	421
RTOR Reduction (vph)	0	1	0	0	4	0	0	0	49	0	0	242
Lane Group Flow (vph)	278	424	0	108	704	0	203	637	24	174	491	179
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)	82.8	82.8		38.8	38.8		44.6	44.6	44.6	32.6	32.6	32.6
Effective Green, g (s)	82.8	82.8		38.8	38.8		44.6	44.6	44.6	32.6	32.6	32.6
Actuated g/C Ratio	0.59	0.59		0.28	0.28		0.32	0.32	0.32	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)	533	1097		265	506		124	593	504	53	433	368
v/s Ratio Prot	c0.14	0.23			c0.39		0.07	c0.34			0.26	
v/s Ratio Perm	0.17			0.11			0.46		0.02	c0.76		0.11
v/c Ratio	0.52	0.39		0.41	1.39		1.64	1.07	0.05	3.28	1.13	0.49
Uniform Delay, d1	29.6	15.1		41.2	50.6		45.3	47.7	33.0	53.7	53.7	46.4
Progression Factor	0.61	0.48		1.00	1.00		1.00	1.00	1.00	0.40	0.40	0.96
Incremental Delay, d2	3.3	0.9		4.6	188.3		320.1	58.5	0.2	1067.1	82.1	3.8
Delay (s)	21.3	8.2		45.8	238.9		365.4	106.2	33.2	1088.7	103.3	48.2
Level of Service	C	A		D	F		F	F	C	F	F	D
Approach Delay (s)		13.4			213.3			158.0			239.8	
Approach LOS		B			F			F			F	

Intersection Summary

HCM 2000 Control Delay	167.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	109.6%	ICU Level of Service	H
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	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	278	425	108	708	203	637	73	174	491	421
v/c Ratio	0.52	0.39	0.41	1.39	1.64	1.07	0.13	3.28	1.13	0.69
Control Delay	19.2	8.3	46.9	224.6	348.5	103.5	8.0	1081.8	105.9	17.3
Queue Delay	0.5	0.5	0.0	0.7	3.9	0.0	0.0	0.0	0.0	31.0
Total Delay	19.7	8.7	46.9	225.3	352.3	103.5	8.0	1081.8	105.9	48.4
Queue Length 50th (ft)	90	103	81	~857	~216	~643	1	~234	~513	256
Queue Length 95th (ft)	172	132	143	#1105	#383	#881	37	m#390	m#736	m431
Internal Link Dist (ft)		393		142		1114				460
Turn Bay Length (ft)	150		150		300			200		
Base Capacity (vph)	533	1097	265	510	124	593	553	53	433	611
Starvation Cap Reductn	57	301	0	0	0	0	0	0	0	112
Spillback Cap Reductn	0	0	0	41	20	0	0	0	0	203
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.53	0.41	1.51	1.95	1.07	0.13	3.28	1.13	1.03

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

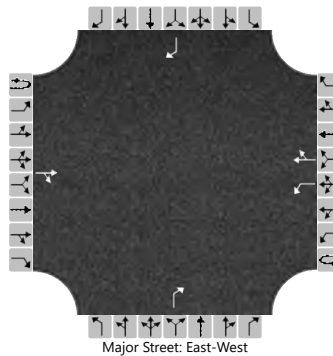
General Information

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)			394	213		12	496	3				119				254
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				267
Capacity, c (veh/h)						945						551				553
v/c Ratio						0.01						0.23				0.48
95% Queue Length, Q ₉₅ (veh)						0.0						0.9				2.8
Control Delay (s/veh)						8.9						13.4				17.5
Level of Service (LOS)						A						B				C
Approach Delay (s/veh)						0.2						13.4				17.5
Approach LOS												B				C

MOVEMENT SUMMARY

Site: 8 [Channelside Drive at Cumberland Avenue_Build2046-AM (Site Folder: General)]

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	0.508	8.6	LOS A	3.1	78.3	0.45	0.31	0.45	36.1
8	T1	453	2.0	477	2.0	0.508	8.6	LOS A	3.1	78.3	0.45	0.31	0.45	36.8
18	R2	29	2.0	31	2.0	0.508	8.6	LOS A	3.1	78.3	0.45	0.31	0.45	35.6
Approach		576	2.0	606	2.0	0.508	8.6	LOS A	3.1	78.3	0.45	0.31	0.45	36.6
East: E Cumberland Avenue														
1	L2	9	2.0	9	2.0	0.081	5.2	LOS A	0.3	7.2	0.51	0.45	0.51	39.2
6	T1	5	2.0	5	2.0	0.081	5.2	LOS A	0.3	7.2	0.51	0.45	0.51	36.4
16	R2	49	2.0	52	2.0	0.081	5.2	LOS A	0.3	7.2	0.51	0.45	0.51	36.2
Approach		63	2.0	66	2.0	0.081	5.2	LOS A	0.3	7.2	0.51	0.45	0.51	36.6
North: Channelside Drive														
7	L2	61	2.0	64	2.0	0.466	7.6	LOS A	2.8	70.6	0.35	0.20	0.35	36.4
4	T1	497	2.0	523	2.0	0.466	7.6	LOS A	2.8	70.6	0.35	0.20	0.35	38.0
14	R2	230	2.0	242	2.0	0.204	4.8	LOS A	0.9	22.6	0.26	0.14	0.26	34.5
Approach		788	2.0	829	2.0	0.466	6.8	LOS A	2.8	70.6	0.32	0.18	0.32	36.8
West: E Cumberland Avenue														
5	L2	40	2.0	42	2.0	0.147	5.8	LOS A	0.5	13.7	0.52	0.49	0.52	34.5
2	T1	67	2.0	71	2.0	0.147	5.8	LOS A	0.5	13.7	0.52	0.49	0.52	34.3
12	R2	9	2.0	9	2.0	0.147	5.8	LOS A	0.5	13.7	0.52	0.49	0.52	33.2
Approach		116	2.0	122	2.0	0.147	5.8	LOS A	0.5	13.7	0.52	0.49	0.52	34.3
All Vehicles		1543	2.0	1624	2.0	0.508	7.3	LOS A	3.1	78.3	0.39	0.26	0.39	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.

HCS7 Two-Way Stop-Control Report

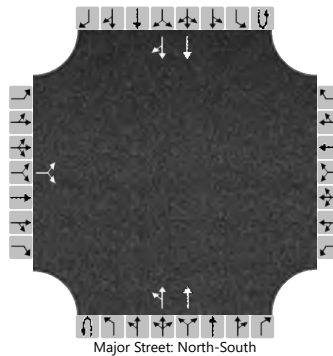
General Information

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)		31		1						42	500				786	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)			34							44								
Capacity, c (veh/h)			162							749								
v/c Ratio			0.21							0.06								
95% Queue Length, Q ₉₅ (veh)			0.8							0.2								
Control Delay (s/veh)			32.9							10.1								
Level of Service (LOS)			D							B								
Approach Delay (s/veh)		32.9									1.1							
Approach LOS		D									B							

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)	15	112	5	11	5	82	5	520	9	58	838	170	
Future Volume (vph)	15	112	5	11	5	82	5	520	9	58	838	170	
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			1799	1583	1770	3530		1770	3450		
Flt Permitted		0.27			0.70	1.00	0.26	1.00		0.95	1.00		
Satd. Flow (perm)		506			1308	1583	485	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)	16	122	5	12	5	89	5	565	10	63	911	185	
RTOR Reduction (vph)	0	1	0	0	0	84	0	1	0	0	10	0	
Lane Group Flow (vph)	0	142	0	0	17	5	5	574	0	63	1086	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			8.3	8.3	60.2	60.2		22.1	88.3		
Effective Green, g (s)		23.1			8.3	8.3	60.2	60.2		22.1	88.3		
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)		83			77	93	208	1517		279	2175		
v/s Ratio Prot								0.16		0.04	c0.31		
v/s Ratio Perm		c0.28			c0.01	0.00	0.01						
v/c Ratio		1.71			0.22	0.06	0.02	0.38		0.23	0.50		
Uniform Delay, d1		58.5			62.8	62.2	23.0	27.2		51.5	13.9		
Progression Factor		0.80			1.00	1.00	1.00	1.00		0.96	2.26		
Incremental Delay, d2		364.0			2.0	0.3	0.2	0.7		0.1	0.0		
Delay (s)		411.1			64.7	62.5	23.2	27.9		49.3	31.6		
Level of Service		F			E	E	C	C		D	C		
Approach Delay (s)		411.1			62.9			27.8			32.5		
Approach LOS		F			E			C			C		
Intersection Summary													
HCM 2000 Control Delay			60.0									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			0.75										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	26.3
Intersection Capacity Utilization			65.5%									ICU Level of Service	C
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)	143	17	89	5	575	63	1096
v/c Ratio	1.70	0.22	0.44	0.02	0.38	0.23	0.50
Control Delay	389.8	68.9	11.5	23.8	28.0	51.2	31.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Total Delay	389.8	68.9	11.5	23.8	28.0	51.2	32.3
Queue Length 50th (ft)	~188	15	0	3	185	60	341
Queue Length 95th (ft)	#332	41	31	12	234	m70	m391
Internal Link Dist (ft)	927	832			494		591
Turn Bay Length (ft)			430	160		280	
Base Capacity (vph)	84	201	342	208	1518	279	2186
Starvation Cap Reductn	0	0	0	0	0	0	604
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.70	0.08	0.26	0.02	0.38	0.23	0.69

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

01/19/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	462	59	74	18	36	11	82	500	35	40	985	1181	
Future Volume (vph)	462	59	74	18	36	11	82	500	35	40	985	1181	
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	3504		1770	3539	1583	
Flt Permitted	0.95	0.96	1.00		0.77	1.00	0.09	1.00		0.30	1.00	1.00	
Satd. Flow (perm)	1681	1704	1583		1434	1583	168	3504		565	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)	502	64	80	20	39	12	89	543	38	43	1071	1284	
RTOR Reduction (vph)	0	0	62	0	0	11	0	3	0	0	0	688	
Lane Group Flow (vph)	281	285	18	0	59	1	89	578	0	43	1071	596	
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)	30.8	30.8	30.8		9.8	9.8	44.3	44.3		44.3	44.3	44.3	
Effective Green, g (s)	30.8	30.8	30.8		9.8	9.8	44.3	44.3		44.3	44.3	44.3	
Actuated g/C Ratio	0.22	0.22	0.22		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)	369	374	348		100	110	53	1108		178	1119	500	
v/s Ratio Prot	0.17	c0.17						0.16			0.30		
v/s Ratio Perm			0.01		c0.04	0.00	c0.53			0.08		0.38	
v/c Ratio	0.76	0.76	0.05		0.59	0.01	1.68	0.52		0.24	0.96	1.19	
Uniform Delay, d1	51.2	51.2	43.1		63.2	60.6	47.9	39.2		35.4	46.9	47.9	
Progression Factor	1.00	1.00	1.00		1.00	1.00	0.53	0.43		1.00	1.00	1.00	
Incremental Delay, d2	9.0	8.9	0.1		8.6	0.0	370.5	1.6		3.2	18.4	105.1	
Delay (s)	60.1	60.0	43.1		71.8	60.6	395.9	18.6		38.6	65.3	152.9	
Level of Service	E	E	D		E	E	F	B		D	E	F	
Approach Delay (s)		58.0			69.9			68.7			111.7		
Approach LOS		E			E			E			F		
Intersection Summary													
HCM 2000 Control Delay			94.2		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			0.88										
Actuated Cycle Length (s)			140.0		Sum of lost time (s)					22.4			
Intersection Capacity Utilization			106.0%		ICU Level of Service					G			
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)	281	285	80	59	12	89	581	43	1071	1284
v/c Ratio	0.76	0.76	0.19	0.53	0.06	1.65	0.51	0.23	0.93	1.08
Control Delay	63.8	63.7	4.4	77.5	0.5	381.0	17.9	38.8	59.6	59.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	63.7	4.4	77.5	0.5	381.0	17.9	38.8	59.6	59.4
Queue Length 50th (ft)	253	257	0	53	0	~116	224	29	495	~641
Queue Length 95th (ft)	330	333	25	99	0	m#222	m282	64	#628	#912
Internal Link Dist (ft)		906		876			591		1242	
Turn Bay Length (ft)			140			280		75		375
Base Capacity (vph)	656	665	680	156	260	54	1147	184	1155	1194
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	0.43	0.43	0.12	0.38	0.05	1.65	0.51	0.23	0.93	1.08

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

113: Florida Ave & Selmon Expy Off-Ramp

01/19/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑	↑↑			
Traffic Volume (vph)	0	1234	1338	0	0	0
Future Volume (vph)	0	1234	1338	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.6	6.0			
Lane Util. Factor		0.76	0.95			
Frt		0.85	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		3610	3539			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		3610	3539			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1341	1454	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1341	1454	0	0	0
Turn Type		Prot	NA			
Protected Phases		2	1 4			
Permitted Phases						
Actuated Green, G (s)		48.4	79.0			
Effective Green, g (s)		48.4	79.0			
Actuated g/C Ratio		0.35	0.56			
Clearance Time (s)		6.6				
Vehicle Extension (s)		3.0				
Lane Grp Cap (vph)		1248	1997			
v/s Ratio Prot		c0.37	c0.41			
v/s Ratio Perm						
v/c Ratio		1.07	0.73			
Uniform Delay, d1		45.8	22.6			
Progression Factor		1.00	0.33			
Incremental Delay, d2		48.0	0.1			
Delay (s)		93.8	7.6			
Level of Service		F	A			
Approach Delay (s)	93.8		7.6		0.0	
Approach LOS	F		A		A	

Intersection Summary

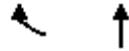
HCM 2000 Control Delay	49.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	111.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues

113: Florida Ave & Selmon Expy Off-Ramp

01/19/2022



Lane Group	WBR	NBT
Lane Group Flow (vph)	1341	1454
v/c Ratio	1.07	0.73
Control Delay	91.4	7.8
Queue Delay	0.0	0.0
Total Delay	91.4	7.8
Queue Length 50th (ft)	~594	303
Queue Length 95th (ft)	#710	m127
Internal Link Dist (ft)		1
Turn Bay Length (ft)	350	
Base Capacity (vph)	1248	1997
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	1.07	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

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	2304	576	302	2318	0	0	0	0
Future Volume (vph)	0	0	0	0	2304	576	302	2318	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)					6216		1770	5085				
Flt Permitted					1.00		0.95	1.00				
Satd. Flow (perm)					6216		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	626	328	2520	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	19	0	22	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	3111	0	306	2520	0	0	0	0
Turn Type					NA		Perm	NA				
Protected Phases					2			4				
Permitted Phases							4					
Actuated Green, G (s)					54.2		73.9	73.9				
Effective Green, g (s)					54.2		73.9	73.9				
Actuated g/C Ratio					0.37		0.51	0.51				
Clearance Time (s)					5.8		6.1	6.1				
Vehicle Extension (s)					3.0		3.0	3.0				
Lane Grp Cap (vph)					2323		902	2591				
v/s Ratio Prot					c0.50			c0.50				
v/s Ratio Perm							0.17					
v/c Ratio					1.34		0.34	0.97				
Uniform Delay, d1					45.4		21.1	34.6				
Progression Factor					1.00		1.00	1.00				
Incremental Delay, d2					155.7		1.0	12.3				
Delay (s)					201.1		22.1	46.9				
Level of Service					F		C	D				
Approach Delay (s)		0.0			201.1			44.0			0.0	
Approach LOS		A			F			D			A	
Intersection Summary												
HCM 2000 Control Delay			126.3		HCM 2000 Level of Service				F			
HCM 2000 Volume to Capacity ratio			1.11									
Actuated Cycle Length (s)			145.0		Sum of lost time (s)				14.9			
Intersection Capacity Utilization			97.7%		ICU Level of Service				F			
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)	3130	328	2520
v/c Ratio	1.34	0.36	0.97
Control Delay	190.8	19.5	46.9
Queue Delay	0.0	2.0	42.8
Total Delay	190.8	21.4	89.7
Queue Length 50th (ft)	~1116	155	827
Queue Length 95th (ft)	#1174	227	#963
Internal Link Dist (ft)	416		356
Turn Bay Length (ft)		300	
Base Capacity (vph)	2342	923	2591
Starvation Cap Reductn	0	439	749
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.34	0.68	1.37

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

01/19/2022



Movement	WBL	WBT	NBL	NBT	NBR2	SBL	SBT	SBR	SWR	SWR2
Lane Configurations		↕↕	↙	↕	↙	↙	↙		↙	↙
Traffic Volume (vph)	2	2346	346	734	170	560	83	296	1029	635
Future Volume (vph)	2	2346	346	734	170	560	83	296	1029	635
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	1644		1863	1583
Flt Permitted		1.00	0.36	1.00	1.00	0.12	1.00		1.00	1.00
Satd. Flow (perm)		3539	662	1863	1583	215	1644		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	2550	376	798	185	609	90	322	1118	690
RTOR Reduction (vph)	0	0	0	0	32	0	13	0	0	147
Lane Group Flow (vph)	0	2552	376	798	153	609	399	0	1118	543
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	70.0	70.0	70.5	64.0		46.3	46.3
Effective Green, g (s)		46.3	82.0	70.0	70.0	70.5	64.0		46.3	46.3
Actuated g/C Ratio		0.33	0.59	0.50	0.50	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	486	931	791	180	751		616	523
v/s Ratio Prot			c0.07	0.43		c0.16	0.24		0.60	
v/s Ratio Perm		0.72	0.38		0.10	c1.55				0.34
v/c Ratio		2.18	0.77	0.86	0.19	3.38	0.53		1.81	1.04
Uniform Delay, d1		46.9	21.3	30.6	19.4	33.8	27.2		46.9	46.9
Progression Factor		0.65	1.03	1.06	0.92	1.47	1.16		1.00	1.00
Incremental Delay, d2		531.8	9.0	8.0	0.4	1080.2	1.5		373.1	49.5
Delay (s)		562.3	30.9	40.5	18.3	1130.0	33.0		420.0	96.3
Level of Service		F	C	D	B	F	C		F	F
Approach Delay (s)		562.3		34.8			687.3			
Approach LOS		F		C			F			

Intersection Summary

HCM 2000 Control Delay	403.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.79		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	217.4%	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

01/19/2022



Lane Group	WBT	NBL	NBT	NBR2	SBL	SBT	SWR	SWR2
Lane Group Flow (vph)	2552	376	798	185	609	412	1118	690
v/c Ratio	2.18	0.77	0.86	0.22	3.38	0.54	1.81	1.03
Control Delay	553.1	26.8	41.3	12.2	1094.7	31.7	402.2	73.9
Queue Delay	0.7	6.0	49.4	0.0	0.0	0.7	0.0	0.0
Total Delay	553.8	32.7	90.7	12.2	1094.7	32.4	402.2	73.9
Queue Length 50th (ft)	~2014	160	753	56	~1001	308	~1530	~527
Queue Length 95th (ft)	m#1207	m252	#900	m102	m#1156	m358	#1793	#773
Internal Link Dist (ft)	494		424			563		
Turn Bay Length (ft)		250		10			300	300
Base Capacity (vph)	1170	488	931	823	180	765	616	670
Starvation Cap Reductn	173	70	278	0	0	123	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	2.56	0.90	1.22	0.22	3.38	0.64	1.81	1.03






















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

01/19/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	211	195	37	23	2190	204	40	423	5	331	550	118
Future Volume (veh/h)	211	195	37	23	2190	204	40	423	5	331	550	118
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	229	212	40	25	2380	222	43	460	5	360	598	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	172	921	174	610	1629	150	121	676	7	274	445	
Arrive On Green	0.07	0.60	0.60	0.66	0.66	0.66	0.04	0.19	0.19	0.12	0.32	0.00
Sat Flow, veh/h	1781	1530	289	1128	3291	302	1781	3601	39	1781	1870	1585
Grp Volume(v), veh/h	229	0	252	25	1268	1334	43	227	238	360	598	0
Grp Sat Flow(s),veh/h/ln	1781	0	1818	1128	1777	1816	1781	1777	1863	1781	1870	1585
Q Serve(g_s), s	9.5	0.0	9.0	1.1	69.3	69.3	2.7	16.6	16.7	12.5	33.3	0.0
Cycle Q Clear(g_c), s	9.5	0.0	9.0	1.1	69.3	69.3	2.7	16.6	16.7	12.5	33.3	0.0
Prop In Lane	1.00		0.16	1.00		0.17	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	172	0	1095	610	880	899	121	334	350	274	445	
V/C Ratio(X)	1.33	0.00	0.23	0.04	1.44	1.48	0.35	0.68	0.68	1.31	1.34	
Avail Cap(c_a), veh/h	172	0	1095	610	880	899	121	334	350	274	445	
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(l)	0.09	0.00	0.09	0.09	0.09	0.09	0.09	0.09	0.09	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.2	0.0	12.9	12.3	23.9	23.9	45.3	52.9	52.9	47.7	47.9	0.0
Incr Delay (d2), s/veh	151.8	0.0	0.0	0.0	199.2	218.5	0.7	1.0	1.0	164.1	169.3	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	10.2	0.0	3.7	0.3	73.0	79.4	1.2	7.6	7.9	16.2	35.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	197.9	0.0	12.9	12.3	223.1	242.5	46.0	54.0	53.9	211.8	217.2	0.0
LnGrp LOS	F	A	B	B	F	F	D	D	D	F	F	
Approach Vol, veh/h		481			2627			508			958	A
Approach Delay, s/veh		101.0			230.9			53.3			215.2	
Approach LOS		F			F			D			F	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	15.0	75.0	18.0	32.0		90.0	11.0	39.0				
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 5.7		* 5.7	5.5	* 5.7				
Max Green Setting (Gmax), s	9.5	* 69	12.5	* 26		* 84	5.5	* 33				
Max Q Clear Time (g_c+I1), s	11.5	71.3	14.5	18.7		11.0	4.7	35.3				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.1		1.7	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	194.2
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

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	229	252	25	2602	43	465	360	598	128
v/c Ratio	1.32	0.23	0.05	1.50	0.35	0.70	1.45	1.35	0.28
Control Delay	178.4	4.0	21.7	253.0	21.5	41.1	250.3	202.8	10.7
Queue Delay	0.0	0.6	0.0	5.1	5.5	0.0	2.1	0.0	0.1
Total Delay	178.4	4.7	21.7	258.0	27.0	41.1	252.4	202.8	10.9
Queue Length 50th (ft)	~215	89	11	~1713	22	222	~360	~699	8
Queue Length 95th (ft)	m64	m10	m10	m#1252	m17	m170	m#547	m#916	m29
Internal Link Dist (ft)		494		148		443		116	
Turn Bay Length (ft)	150		50		100		50		
Base Capacity (vph)	173	1099	555	1734	123	664	249	443	458
Starvation Cap Reductn	0	0	0	351	0	0	0	0	0
Spillback Cap Reductn	0	539	0	1126	44	0	34	0	41
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.32	0.45	0.05	4.28	0.54	0.70	1.67	1.35	0.31

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	372	78	3	1932	5	315	89	101	22	231	169
Future Volume (veh/h)	81	372	78	3	1932	5	315	89	101	22	231	169
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	88	404	85	3	2100	5	342	97	110	24	251	184
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	742	156	370	1800	4	251	59	67	51	429	303
Arrive On Green	0.66	0.66	0.66	0.99	0.99	0.99	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	194	1498	315	907	3637	9	494	140	159	56	1013	716
Grp Volume(v), veh/h	88	0	489	3	1026	1079	549	0	0	459	0	0
Grp Sat Flow(s),veh/h/ln	194	0	1814	907	1777	1869	792	0	0	1785	0	0
Q Serve(g_s), s	0.0	0.0	20.1	0.1	69.3	69.3	30.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	69.3	0.0	20.1	20.2	69.3	69.3	59.3	0.0	0.0	28.6	0.0	0.0
Prop In Lane	1.00		0.17	1.00		0.00	0.62		0.20	0.05		0.40
Lane Grp Cap(c), veh/h	51	0	898	370	880	925	377	0	0	783	0	0
V/C Ratio(X)	1.71	0.00	0.54	0.01	1.17	1.17	1.45	0.00	0.00	0.59	0.00	0.00
Avail Cap(c_a), veh/h	51	0	898	370	880	925	377	0	0	783	0	0
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.22	0.00	0.22	0.29	0.29	0.29	0.89	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	58.6	0.0	15.5	3.5	0.7	0.7	49.7	0.0	0.0	31.6	0.0	0.0
Incr Delay (d2), s/veh	337.6	0.0	0.5	0.0	78.6	78.9	217.4	0.0	0.0	3.2	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	6.6	0.0	7.3	0.0	19.5	20.6	36.5	0.0	0.0	13.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	396.1	0.0	16.0	3.5	79.3	79.6	267.1	0.0	0.0	34.8	0.0	0.0
LnGrp LOS	F	A	B	A	F	F	F	A	A	C	A	A
Approach Vol, veh/h		577			2108			549			459	
Approach Delay, s/veh		74.0			79.4			267.1			34.8	
Approach LOS		E			E			F			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		75.0		65.0		75.0		65.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7		* 5.7				
Max Green Setting (Gmax), s		* 69		* 59		* 69		* 59				
Max Q Clear Time (g_c+I1), s		71.3		61.3		71.3		30.6				
Green Ext Time (p_c), s		0.0		0.0		0.0		3.5				

Intersection Summary

HCM 6th Ctrl Delay	100.9
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

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	88	489	3	2105	549	459
v/c Ratio	1.66	0.54	0.01	1.20	1.56	0.64
Control Delay	351.3	32.4	7.7	113.2	292.9	36.8
Queue Delay	0.0	55.3	0.0	1.2	27.5	68.9
Total Delay	351.3	87.7	7.7	114.3	320.4	105.6
Queue Length 50th (ft)	~109	281	0	~1224	~701	325
Queue Length 95th (ft)	m#120	m234	m1	#1346	#619	449
Internal Link Dist (ft)		148		203	457	414
Turn Bay Length (ft)	50		70			
Base Capacity (vph)	53	903	313	1751	351	715
Starvation Cap Reductn	0	467	0	89	0	0
Spillback Cap Reductn	0	0	0	503	274	564
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.66	1.12	0.01	1.69	7.13	3.04

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: Water St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕	↗	↖	↗		↖	↗	
Traffic Volume (veh/h)	27	212	256	47	1837	115	74	97	32	2	164	24
Future Volume (veh/h)	27	212	256	47	1837	115	74	97	32	2	164	24
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	29	230	278	51	1997	125	80	105	35	2	178	26
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	82	534	645	667	2352	146	218	369	123	195	300	44
Arrive On Green	1.00	1.00	1.00	0.46	0.46	0.46	0.02	0.09	0.09	0.19	0.19	0.19
Sat Flow, veh/h	191	771	932	891	3399	210	1781	1342	447	1249	1595	233
Grp Volume(v), veh/h	29	0	508	51	1034	1088	80	0	140	2	0	204
Grp Sat Flow(s),veh/h/ln	191	0	1703	891	1777	1832	1781	0	1790	1249	0	1828
Q Serve(g_s), s	20.9	0.0	0.0	4.5	71.6	74.0	0.0	0.0	10.2	0.2	0.0	14.3
Cycle Q Clear(g_c), s	95.5	0.0	0.0	4.7	71.6	74.0	0.0	0.0	10.2	10.4	0.0	14.3
Prop In Lane	1.00		0.55	1.00		0.11	1.00		0.25	1.00		0.13
Lane Grp Cap(c), veh/h	82	0	1178	667	1230	1268	218	0	492	195	0	343
V/C Ratio(X)	0.35	0.00	0.43	0.08	0.84	0.86	0.37	0.00	0.28	0.01	0.00	0.59
Avail Cap(c_a), veh/h	82	0	1178	667	1230	1268	218	0	492	195	0	343
HCM Platoon Ratio	1.67	1.67	1.67	0.67	0.67	0.67	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.00	0.82	0.09	0.09	0.09	0.86	0.00	0.86	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.7	0.0	0.0	12.9	30.8	31.4	60.5	0.0	50.8	54.9	0.0	52.0
Incr Delay (d2), s/veh	9.5	0.0	0.9	0.0	0.7	0.8	4.0	0.0	1.2	0.1	0.0	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.3	0.9	32.3	34.4	3.1	0.0	5.1	0.1	0.0	7.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.2	0.0	0.9	12.9	31.4	32.2	64.5	0.0	52.0	55.0	0.0	59.3
LnGrp LOS	D	A	A	B	C	C	E	A	D	E	A	E
Approach Vol, veh/h		537			2173			220			206	
Approach Delay, s/veh		3.4			31.4			56.6			59.3	
Approach LOS		A			C			E			E	
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		102.8		44.2		102.8	12.2	32.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s		* 90		* 38		* 90	* 6.5	* 26				
Max Q Clear Time (g_c+I1), s		76.0		12.2		97.5	2.0	16.3				
Green Ext Time (p_c), s		12.3		0.8		0.0	0.1	0.8				

Intersection Summary

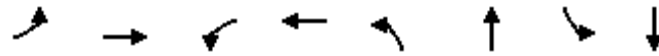
HCM 6th Ctrl Delay	30.2
HCM 6th LOS	C

Notes

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

Queues
701: Water St

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	508	51	2122	80	140	2	204
v/c Ratio	0.56	0.45	0.11	0.94	0.29	0.28	0.01	0.59
Control Delay	45.5	9.7	8.3	17.9	42.0	36.1	46.5	58.4
Queue Delay	0.0	0.5	0.0	45.4	0.0	0.0	0.0	0.0
Total Delay	45.5	10.1	8.3	63.3	42.0	36.1	46.5	58.4
Queue Length 50th (ft)	10	126	13	755	52	87	2	167
Queue Length 95th (ft)	m41	m126	m9	m228	m82	m130	10	254
Internal Link Dist (ft)		203		452		462		361
Turn Bay Length (ft)	70		70		150		150	
Base Capacity (vph)	52	1134	485	2265	276	498	208	347
Starvation Cap Reductn	0	255	0	722	0	0	0	0
Spillback Cap Reductn	0	0	0	549	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.58	0.11	1.38	0.29	0.28	0.01	0.59

Intersection Summary

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

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	64	46	11	449	154	81	750	91	229	942	1485
Future Volume (veh/h)	136	64	46	11	449	154	81	750	91	229	942	1485
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	148	70	50	12	488	0	88	815	99	249	1024	1614
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	318	227	33	576		144	1285	156	500	1833	817
Arrive On Green	0.10	0.10	0.10	0.31	0.31	0.00	0.07	0.81	0.81	0.05	0.17	0.17
Sat Flow, veh/h	908	1015	725	20	1841	1585	1781	3190	387	1781	3554	1585
Grp Volume(v), veh/h	148	0	120	500	0	0	88	454	460	249	1024	1614
Grp Sat Flow(s),veh/h/ln	908	0	1740	1861	0	1585	1781	1777	1801	1781	1777	1585
Q Serve(g_s), s	8.5	0.0	8.9	11.0	0.0	0.0	4.1	14.2	14.2	10.0	37.0	72.2
Cycle Q Clear(g_c), s	43.8	0.0	8.9	35.3	0.0	0.0	4.1	14.2	14.2	10.0	37.0	72.2
Prop In Lane	1.00		0.42	0.02		1.00	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	160	0	544	609	0		144	716	725	500	1833	817
V/C Ratio(X)	0.92	0.00	0.22	0.82	0.00		0.61	0.63	0.63	0.50	0.56	1.97
Avail Cap(c_a), veh/h	160	0	544	609	0		144	716	725	500	1833	817
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)	0.90	0.00	0.90	1.00	0.00	0.00	0.30	0.30	0.30	0.46	0.46	0.46
Uniform Delay (d), s/veh	73.6	0.0	47.1	45.1	0.0	0.0	27.6	9.5	9.5	19.1	43.5	58.1
Incr Delay (d2), s/veh	50.0	0.0	0.8	11.9	0.0	0.0	5.7	1.3	1.3	1.6	0.6	440.6
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	7.8	0.0	4.2	18.4	0.0	0.0	1.9	3.5	3.5	4.7	17.8	130.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	123.6	0.0	47.9	57.0	0.0	0.0	33.3	10.8	10.8	20.7	44.0	498.6
LnGrp LOS	F	A	D	E	A		C	B	B	C	D	F
Approach Vol, veh/h		268			500	A		1002			2887	
Approach Delay, s/veh		89.7			57.0			12.8			296.2	
Approach LOS		F			E			B			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.4	78.6		50.0	27.2	62.8		50.0				
Change Period (Y+Rc), s	6.4	6.4		* 6.2	6.4	6.4		* 6.2				
Max Green Setting (Gmax), s	5.0	72.2		* 44	20.8	56.4		* 44				
Max Q Clear Time (g_c+I1), s	6.1	74.2		45.8	12.0	16.2		37.3				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.7	6.4		1.8				

Intersection Summary

HCM 6th Ctrl Delay	197.6
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

01/19/2022



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	148	120	500	167	88	914	249	1024	1614
v/c Ratio	1.78	0.21	0.87	0.29	0.36	0.65	0.63	0.56	1.79
Control Delay	422.6	26.6	61.7	11.7	11.5	20.0	20.8	12.5	378.7
Queue Delay	0.0	0.0	0.0	0.0	0.6	1.0	0.0	0.0	1.0
Total Delay	422.6	26.6	61.7	11.7	12.1	21.0	20.8	12.6	379.6
Queue Length 50th (ft)	~206	72	429	26	21	173	74	228	~2232
Queue Length 95th (ft)	#350	133	#621	84	m25	m168	m125	372	#2490
Internal Link Dist (ft)		452	888			460		712	
Turn Bay Length (ft)	100			100	200		250		
Base Capacity (vph)	83	564	578	581	247	1409	397	1825	901
Starvation Cap Reductn	0	0	0	0	0	247	0	0	74
Spillback Cap Reductn	0	0	0	0	36	0	0	36	144
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.78	0.21	0.87	0.29	0.42	0.79	0.63	0.57	2.13

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

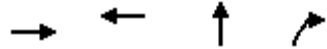
01/19/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			   				
Traffic Volume (vph)	154	510	0	0	817	202	165	2195	87	0	0	0
Future Volume (vph)	154	510	0	0	817	202	165	2195	87	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			0.97			1.00	0.85			
Flt Protected		0.99			1.00			1.00	1.00			
Satd. Flow (prot)		3499			3434			5068	1583			
Flt Permitted		0.51			1.00			1.00	1.00			
Satd. Flow (perm)		1819			3434			5068	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)	167	554	0	0	888	220	179	2386	95	0	0	0
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	18	0	0	0
Lane Group Flow (vph)	0	721	0	0	1092	0	0	2565	77	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)		636			1201			2689	840			
v/s Ratio Prot					0.32							
v/s Ratio Perm		c0.40						0.51	0.05			
v/c Ratio		3.15dl			0.91			0.95	0.09			
Uniform Delay, d1		45.5			43.4			31.2	16.2			
Progression Factor		1.00			0.70			1.00	1.00			
Incremental Delay, d2		78.5			1.3			9.5	0.2			
Delay (s)		124.0			31.7			40.7	16.4			
Level of Service		F			C			D	B			
Approach Delay (s)		124.0			31.7			39.9			0.0	
Approach LOS		F			C			D			A	
Intersection Summary												
HCM 2000 Control Delay			51.4					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)		13.7		
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

01/19/2022



Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	721	1108	2565	95
v/c Ratio	3.15dl	0.91	0.95	0.11
Control Delay	120.0	31.6	40.9	10.1
Queue Delay	0.0	11.4	44.0	0.0
Total Delay	120.0	43.0	84.9	10.1
Queue Length 50th (ft)	~400	203	788	24
Queue Length 95th (ft)	#530	m94	869	53
Internal Link Dist (ft)	821	519	567	
Turn Bay Length (ft)				100
Base Capacity (vph)	636	1217	2690	858
Starvation Cap Reductn	0	112	468	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.13	1.00	1.15	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.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

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)	66	150	308	253	934	198	127	683	80	29	568	137
Future Volume (vph)	66	150	308	253	934	198	127	683	80	29	568	137
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	0.97			0.99			0.97	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1770	1675		1770	1814			3467			3433	
Flt Permitted	0.12	1.00		0.12	1.00			0.58			0.75	
Satd. Flow (perm)	218	1675		218	1814			2020			2583	
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)	72	163	335	275	1015	215	138	742	87	32	617	149
RTOR Reduction (vph)	0	53	0	0	5	0	0	6	0	0	14	0
Lane Group Flow (vph)	72	445	0	275	1225	0	0	961	0	0	784	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	34.2	34.2		69.4	34.2			53.3			53.3	
Effective Green, g (s)	34.2	34.2		69.4	34.2			53.3			53.3	
Actuated g/C Ratio	0.24	0.24		0.50	0.24			0.38			0.38	
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)	53	409		498	443			769			983	
v/s Ratio Prot		0.27		c0.14	c0.68							
v/s Ratio Perm	0.33			0.13				c0.48			0.30	
v/c Ratio	1.36	1.09		0.55	2.76			1.25			0.80	
Uniform Delay, d1	52.9	52.9		29.1	52.9			43.4			38.5	
Progression Factor	0.94	0.90		1.21	0.83			1.29			1.00	
Incremental Delay, d2	189.7	50.7		3.4	799.0			116.6			6.7	
Delay (s)	239.6	98.6		38.5	842.7			172.3			45.3	
Level of Service	F	F		D	F			F			D	
Approach Delay (s)		116.4			695.8			172.3			45.3	
Approach LOS		F			F			F			D	

Intersection Summary

HCM 2000 Control Delay	342.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.3
Intersection Capacity Utilization	134.7%	ICU Level of Service	H
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)	72	498	275	1230	967	798
v/c Ratio	1.36	1.08	0.55	2.75	1.25	0.80
Control Delay	228.8	84.8	37.5	810.0	160.3	44.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	228.8	84.8	37.5	810.0	160.3	44.7
Queue Length 50th (ft)	~84	~344	163	~1907	~588	330
Queue Length 95th (ft)	m#86	m#183	m208	m#2076	m#650	418
Internal Link Dist (ft)		519		503	563	436
Turn Bay Length (ft)			150			
Base Capacity (vph)	53	462	498	448	775	998
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	1.36	1.08	0.55	2.75	1.25	0.80

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (vph)	29	120	180	113	651	326	128	232	10	34	750	227
Future Volume (vph)	29	120	180	113	651	326	128	232	10	34	750	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.1			6.1			6.1			6.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.92			0.96			1.00			0.97	
Flt Protected		1.00			0.99			0.98			1.00	
Satd. Flow (prot)		3234			3363			3465			3414	
Flt Permitted		0.67			0.82			0.51			0.92	
Satd. Flow (perm)		2189			2760			1783			3149	
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)	32	130	196	123	708	354	139	252	11	37	815	247
RTOR Reduction (vph)	0	112	0	0	34	0	0	2	0	0	17	0
Lane Group Flow (vph)	0	246	0	0	1151	0	0	400	0	0	1082	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		8		7	4		1	6			2	
Permitted Phases	8			4			6			2		
Actuated Green, G (s)		59.9			59.9			62.9			63.0	
Effective Green, g (s)		59.9			59.9			62.9			63.0	
Actuated g/C Ratio		0.43			0.43			0.45			0.45	
Clearance Time (s)		6.1			6.1			6.1			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		936			1180			801			1417	
v/s Ratio Prot												
v/s Ratio Perm		0.11			0.42			0.22			0.34	
v/c Ratio		0.26			0.98			1.23dl			0.76	
Uniform Delay, d1		25.8			39.3			27.4			32.3	
Progression Factor		1.99			0.48			0.90			1.00	
Incremental Delay, d2		0.1			19.2			0.4			4.0	
Delay (s)		51.5			38.2			25.0			36.2	
Level of Service		D			D			C			D	
Approach Delay (s)		51.5			38.2			25.0			36.2	
Approach LOS		D			D			C			D	

Intersection Summary

HCM 2000 Control Delay	37.3	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)	26.0
Intersection Capacity Utilization	101.3%	ICU Level of Service	G
Analysis Period (min)	15		

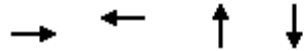
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Queues

104: Jefferson St & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	358	1185	402	1099
v/c Ratio	0.34	0.98	1.23dl	0.77
Control Delay	23.5	38.8	26.7	35.7
Queue Delay	0.0	0.3	0.0	0.0
Total Delay	23.5	39.1	26.7	35.7
Queue Length 50th (ft)	84	162	114	424
Queue Length 95th (ft)	m85	#677	m137	515
Internal Link Dist (ft)	503	427	450	207
Turn Bay Length (ft)				
Base Capacity (vph)	1049	1215	803	1434
Starvation Cap Reductn	0	2	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.34	0.98	0.50	0.77

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.

HCM Signalized Intersection Capacity Analysis

715: Selmon Expy Off-Ramp & Whiting St

01/19/2022



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↵	↵↵
Traffic Volume (vph)	167	0	0	879	223	1225
Future Volume (vph)	167	0	0	879	223	1225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.7			5.7	6.0	6.0
Lane Util. Factor	0.95			0.95	1.00	0.88
Fr _t	1.00			1.00	1.00	0.85
Fl _t Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	1770	2787
Fl _t Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	182	0	0	955	242	1332
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	182	0	0	955	242	1332
Turn Type	NA			NA	Prot	custom
Protected Phases	5			2	4	4
Permitted Phases						
Actuated Green, G (s)	12.8			84.3	44.0	115.5
Effective Green, g (s)	12.8			84.3	44.0	109.8
Actuated g/C Ratio	0.09			0.60	0.31	0.78
Clearance Time (s)	5.7			5.7	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	323			2130	556	2185
v/s Ratio Prot	c0.05			0.27	0.14	c0.48
v/s Ratio Perm						
v/c Ratio	0.56			0.45	0.44	0.61
Uniform Delay, d ₁	60.9			15.2	38.1	6.2
Progression Factor	0.95			0.50	1.00	1.00
Incremental Delay, d ₂	2.1			0.4	2.5	1.3
Delay (s)	59.9			8.0	40.6	7.5
Level of Service	E			A	D	A
Approach Delay (s)	59.9			8.0	12.6	
Approach LOS	E			A	B	

Intersection Summary

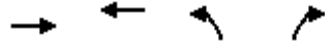
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues

715: Selmon Expy Off-Ramp & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	182	955	242	1332
v/c Ratio	0.56	0.45	0.44	0.58
Control Delay	63.8	8.1	41.1	5.5
Queue Delay	0.0	0.5	0.0	0.1
Total Delay	63.8	8.6	41.1	5.6
Queue Length 50th (ft)	77	77	175	184
Queue Length 95th (ft)	m106	m88	258	269
Internal Link Dist (ft)	427	276	783	
Turn Bay Length (ft)			350	350
Base Capacity (vph)	1625	2130	556	2299
Starvation Cap Reductn	0	652	0	0
Spillback Cap Reductn	12	69	0	108
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.11	0.65	0.44	0.61

Intersection Summary

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

HCM 6th Signalized Intersection Summary
 11: Water St/Brush St & Whiting St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗		↖	↗			↕	
Traffic Volume (veh/h)	281	905	206	152	701	98	34	121	79	68	293	144
Future Volume (veh/h)	281	905	206	152	701	98	34	121	79	68	293	144
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	305	984	224	165	762	107	37	132	86	74	318	157
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	464	1978	926	393	1592	224	176	278	181	64	179	86
Arrive On Green	0.21	1.00	1.00	0.06	0.51	0.51	0.03	0.26	0.26	0.20	0.20	0.20
Sat Flow, veh/h	1781	3554	1585	1781	3129	439	1781	1057	689	180	919	440
Grp Volume(v), veh/h	305	984	224	165	433	436	37	0	218	549	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1791	1781	0	1746	1539	0	0
Q Serve(g_s), s	11.9	0.0	0.0	6.2	22.1	22.1	2.3	0.0	14.7	22.1	0.0	0.0
Cycle Q Clear(g_c), s	11.9	0.0	0.0	6.2	22.1	22.1	2.3	0.0	14.7	27.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.39	0.13		0.29
Lane Grp Cap(c), veh/h	464	1978	926	393	904	912	176	0	459	329	0	0
V/C Ratio(X)	0.66	0.50	0.24	0.42	0.48	0.48	0.21	0.00	0.47	1.67	0.00	0.00
Avail Cap(c_a), veh/h	826	1978	926	459	904	912	284	0	565	329	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.79	0.79	0.57	0.57	0.57	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.6	0.0	0.0	14.4	22.3	22.3	41.7	0.0	43.5	58.2	0.0	0.0
Incr Delay (d2), s/veh	1.3	0.7	0.5	0.4	1.0	1.0	0.6	0.0	0.8	313.1	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	3.8	0.2	0.1	2.6	9.5	9.6	1.0	0.0	6.6	40.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	0.7	0.5	14.8	23.4	23.4	42.3	0.0	44.2	371.3	0.0	0.0
LnGrp LOS	B	A	A	B	C	C	D	A	D	F	A	A
Approach Vol, veh/h		1513			1034			255			549	
Approach Delay, s/veh		3.5			22.0			43.9			371.3	
Approach LOS		A			C			D			F	
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.5	76.9		42.5	13.8	83.6	9.5	33.0				
Change Period (Y+Rc), s	* 5.7	* 5.7		* 5.7	5.5	* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s	* 43	* 34		* 45	13.5	* 64	* 12	* 27				
Max Q Clear Time (g_c+I1), s	13.9	24.1		16.7	8.2	2.0	4.3	29.3				
Green Ext Time (p_c), s	0.9	4.0		1.4	0.2	10.6	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	72.6
HCM 6th LOS	E

Notes

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

Queues

11: Water St/Brush St & Whiting St

01/21/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	305	984	224	165	869	37	218	549
v/c Ratio	0.72	0.58	0.23	0.54	0.64	0.21	0.37	1.46
Control Delay	32.1	25.9	2.7	16.2	41.5	35.9	34.3	257.1
Queue Delay	0.2	3.3	0.5	0.0	1.2	0.0	0.0	0.0
Total Delay	32.3	29.2	3.2	16.2	42.8	35.9	34.3	257.1
Queue Length 50th (ft)	151	282	8	67	377	23	135	~676
Queue Length 95th (ft)	253	386	40	m90	m405	51	209	#937
Internal Link Dist (ft)		276			426		126	215
Turn Bay Length (ft)	100		200	300		50		
Base Capacity (vph)	637	1685	1026	337	1364	219	584	377
Starvation Cap Reductn	54	582	465	0	277	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	0.52	0.89	0.40	0.49	0.80	0.17	0.37	1.46

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 Signalized Intersection Capacity Analysis

7: Meridian Ave & Whiting St

01/19/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗	↗	↖	↑↑↑	↑↑↑	↗
Traffic Volume (vph)	637	415	339	804	2079	612
Future Volume (vph)	637	415	339	804	2079	612
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	6.9	6.4	6.6	4.0
Lane Util. Factor	0.97	1.00	1.00	0.91	0.86	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	5085	6408	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	5085	6408	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	692	451	368	874	2260	665
RTOR Reduction (vph)	0	202	0	0	0	0
Lane Group Flow (vph)	692	249	368	874	2260	665
Turn Type	Prot	Perm	Prot	NA	NA	Free
Protected Phases	7 8		1	6	2	
Permitted Phases		7 8				Free
Actuated Green, G (s)	58.9	58.9	21.5	67.0	38.4	140.0
Effective Green, g (s)	58.9	58.9	21.5	67.0	38.4	140.0
Actuated g/C Ratio	0.42	0.42	0.15	0.48	0.27	1.00
Clearance Time (s)			6.9	6.4	6.6	
Vehicle Extension (s)			3.0	3.0	3.0	
Lane Grp Cap (vph)	1444	665	271	2433	1757	1583
v/s Ratio Prot	c0.20		c0.21	0.17	c0.35	
v/s Ratio Perm		0.16				0.42
v/c Ratio	0.48	0.37	1.36	0.36	1.29	0.42
Uniform Delay, d1	29.4	27.9	59.2	23.0	50.8	0.0
Progression Factor	0.61	1.39	0.88	0.16	1.00	1.00
Incremental Delay, d2	0.2	0.3	180.6	0.4	133.3	0.8
Delay (s)	18.2	39.1	232.8	4.0	184.1	0.8
Level of Service	B	D	F	A	F	A
Approach Delay (s)	26.5			71.8	142.4	
Approach LOS	C			E	F	

Intersection Summary

HCM 2000 Control Delay	100.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues

7: Meridian Ave & Whiting St

01/21/2022



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	692	451	368	874	2260	665
v/c Ratio	0.46	0.51	1.36	0.36	1.29	0.42
Control Delay	17.7	9.7	221.3	4.1	174.3	0.8
Queue Delay	0.7	1.4	0.0	0.1	0.5	0.0
Total Delay	18.4	11.2	221.3	4.2	174.9	0.9
Queue Length 50th (ft)	232	206	~452	43	~758	0
Queue Length 95th (ft)	m296	m298	m#657	50	#830	0
Internal Link Dist (ft)	426			229	186	
Turn Bay Length (ft)	200	250	150			
Base Capacity (vph)	1581	917	271	2432	1757	1583
Starvation Cap Reductn	531	279	0	558	0	0
Spillback Cap Reductn	0	118	0	0	273	101
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.71	1.36	0.47	1.52	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.

HCM Signalized Intersection Capacity Analysis

107: Meridian Ave & Whiting St

01/19/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	W	T
Traffic Volume (vph)	193	159	984	56	31	2463
Future Volume (vph)	193	159	984	56	31	2463
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.7		6.4		5.5	6.9
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.94		0.99		1.00	1.00
Flt Protected	0.97		1.00		0.95	1.00
Satd. Flow (prot)	1702		5044		1770	5085
Flt Permitted	0.97		1.00		0.18	1.00
Satd. Flow (perm)	1702		5044		331	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	210	173	1070	61	34	2677
RTOR Reduction (vph)	22	0	4	0	0	0
Lane Group Flow (vph)	361	0	1127	0	34	2677
Turn Type	Prot		NA		custom	NA
Protected Phases	8		6		7	1 2 7
Permitted Phases					1 2	
Actuated Green, G (s)	34.9		67.0		85.3	91.9
Effective Green, g (s)	34.9		67.0		78.4	85.3
Actuated g/C Ratio	0.25		0.48		0.56	0.61
Clearance Time (s)	7.7		6.4		5.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	424		2413		375	3098
v/s Ratio Prot	c0.21		0.22		0.01	c0.53
v/s Ratio Perm					0.04	
v/c Ratio	0.85		0.47		0.09	0.86
Uniform Delay, d1	50.1		24.5		22.9	22.6
Progression Factor	1.04		1.62		0.31	1.13
Incremental Delay, d2	15.1		0.4		0.0	0.3
Delay (s)	67.2		40.2		7.0	25.8
Level of Service	E		D		A	C
Approach Delay (s)	67.2		40.2			25.6
Approach LOS	E		D			C

Intersection Summary

HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
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)	383	1131	34	2677
v/c Ratio	0.86	0.47	0.09	0.81
Control Delay	66.7	41.1	3.5	22.3
Queue Delay	9.9	0.1	0.0	46.7
Total Delay	76.6	41.2	3.5	68.9
Queue Length 50th (ft)	286	360	2	873
Queue Length 95th (ft)	#423	m384	m3	m656
Internal Link Dist (ft)	878	712		229
Turn Bay Length (ft)				
Base Capacity (vph)	486	2417	394	3285
Starvation Cap Reductn	0	0	0	914
Spillback Cap Reductn	79	301	0	455
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.94	0.53	0.09	1.13

Intersection Summary

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

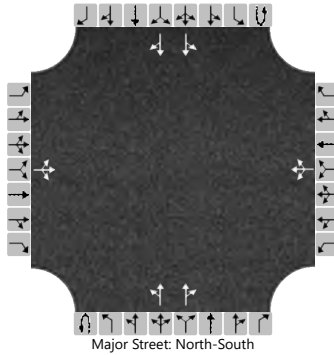
Queue shown is maximum after two cycles.

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

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	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	1	0		0	1	0		0	0	2	0	0	0	2	0	
Configuration			LTR				LTR				LT		TR			TR	
Volume (veh/h)		1	35	154		77	67	229		47	540	5		51	780	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				393				49				54	
Capacity, c (veh/h)							125				685				995	
v/c Ratio							3.15				0.07				0.05	
95% Queue Length, Q ₉₅ (veh)							138.2				0.2				0.2	
Control Delay (s/veh)							3937.0				10.7				8.8	
Level of Service (LOS)							F				B				A	
Approach Delay (s/veh)							3937.0				1.3				0.8	
Approach LOS							F									

HCS7 Two-Way Stop-Control Report

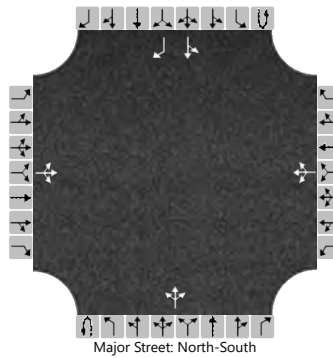
General Information

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)		41	9	48		38	12	1		125	208	34		6	421	174	
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)			103				54				132				6		
Capacity, c (veh/h)			302				170				1117				1310		
v/c Ratio			0.34				0.32				0.12				0.00		
95% Queue Length, Q ₉₅ (veh)			1.5				1.4				0.4				0.0		
Control Delay (s/veh)			23.1				35.9				8.7				7.8		
Level of Service (LOS)			C				E				A				A		
Approach Delay (s/veh)		23.1				35.9				3.7				0.1			
Approach LOS		C				E											

HCS7 Two-Way Stop-Control Report

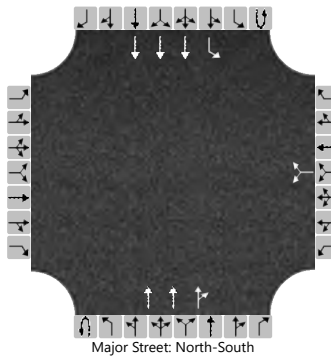
General Information

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)						126		186			1258	183		0	7	2565
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)							328								7	
Capacity, c (veh/h)							163								219	
v/c Ratio							2.01								0.03	
95% Queue Length, Q ₉₅ (veh)							88.1								0.1	
Control Delay (s/veh)							1888.7								22.0	
Level of Service (LOS)							F								C	
Approach Delay (s/veh)							1888.7								0.1	
Approach LOS							F									

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)	1162	2493	285	0	0	0	0	619	155	0	0	0
Future Volume (vph)	1162	2493	285	0	0	0	0	619	155	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.1						6.0	6.0			
Lane Util. Factor	*0.51	*0.76						*0.80	1.00			
Frt	1.00	0.98						1.00	0.85			
Flt Protected	0.95	1.00						1.00	1.00			
Satd. Flow (prot)	1805	2788						2980	1583			
Flt Permitted	0.95	1.00						1.00	1.00			
Satd. Flow (perm)	1805	2788						2980	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)	1263	2710	310	0	0	0	0	673	168	0	0	0
RTOR Reduction (vph)	180	5	0	0	0	0	0	0	62	0	0	0
Lane Group Flow (vph)	1083	3015	0	0	0	0	0	673	106	0	0	0
Turn Type	Prot	NA						NA	Perm			
Protected Phases	1	6						4				
Permitted Phases									4			
Actuated Green, G (s)	64.0	102.9						25.0	25.0			
Effective Green, g (s)	64.0	102.9						25.0	25.0			
Actuated g/C Ratio	0.46	0.74						0.18	0.18			
Clearance Time (s)	6.0	6.1						6.0	6.0			
Vehicle Extension (s)	3.0	3.0						3.0	3.0			
Lane Grp Cap (vph)	825	2049						532	282			
v/s Ratio Prot	0.60	c1.08						c0.23				
v/s Ratio Perm									0.07			
v/c Ratio	1.31	1.47						1.27	0.38			
Uniform Delay, d1	38.0	18.5						57.5	50.6			
Progression Factor	1.00	1.00						1.00	1.00			
Incremental Delay, d2	149.5	214.9						133.7	0.8			
Delay (s)	187.5	233.5						191.2	51.5			
Level of Service	F	F						F	D			
Approach Delay (s)		219.9			0.0			163.3			0.0	
Approach LOS		F			A			F			A	
Intersection Summary												
HCM 2000 Control Delay			210.6					HCM 2000 Level of Service		F		
HCM 2000 Volume to Capacity ratio			1.51									
Actuated Cycle Length (s)			140.0					Sum of lost time (s)		18.6		
Intersection Capacity Utilization			125.7%					ICU Level of Service		H		
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)	1263	3020	673	168
v/c Ratio	1.26	1.47	1.27	0.49
Control Delay	150.1	235.9	179.5	33.5
Queue Delay	0.5	0.0	0.2	0.0
Total Delay	150.6	235.9	179.6	33.5
Queue Length 50th (ft)	~1245	~2491	~480	75
Queue Length 95th (ft)	#1507	#2630	#630	152
Internal Link Dist (ft)		1290	1157	
Turn Bay Length (ft)				200
Base Capacity (vph)	1004	2054	532	344
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	88	1	10	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.38	1.47	1.29	0.49

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
115: Morgan St & Channelside Dr

01/19/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 											
Traffic Volume (vph)	649	1910	88	18	0	847	0	239	30	1	35	0	
Future Volume (vph)	649	1910	88	18	0	847	0	239	30	1	35	0	
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		
Lane Util. Factor	1.00	0.95		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		
Flt Protected	0.95	1.00		0.95		1.00		1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1770	3516		1770		1583		1863	1583	1770	1863		
Flt Permitted	0.95	1.00		0.06		1.00		1.00	1.00	0.26	1.00		
Satd. Flow (perm)	1770	3516		109		1583		1863	1583	483	1863		
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)	705	2076	96	20	0	921	0	260	33	1	38	0	
RTOR Reduction (vph)	0	2	0	0	0	124	0	0	27	0	0	0	
Lane Group Flow (vph)	705	2170	0	20	0	797	0	260	6	1	38	0	
Turn Type	pm+pt	NA		Perm		Perm		NA	Perm	Perm	NA		
Protected Phases	1	6						4		Perm		8	
Permitted Phases	6			2		2			4	8			
Actuated Green, G (s)	103.8	103.8		70.2		70.2		24.1	24.1	24.1	24.1		
Effective Green, g (s)	103.8	103.8		70.2		70.2		24.1	24.1	24.1	24.1		
Actuated g/C Ratio	0.74	0.74		0.50		0.50		0.17	0.17	0.17	0.17		
Clearance Time (s)	5.5	6.2		5.9		5.9		5.9	5.9	5.9	5.9		
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	1312	2606		54		793		320	272	83	320		
v/s Ratio Prot	0.11	c0.62						c0.14			0.02		
v/s Ratio Perm	0.29			0.18		c0.50			0.00	0.00			
v/c Ratio	0.54	0.83		0.37		1.00		0.81	0.02	0.01	0.12		
Uniform Delay, d1	7.8	12.2		21.4		34.9		55.8	48.1	48.1	49.0		
Progression Factor	0.43	0.31		0.89		0.91		1.00	1.00	1.36	1.15		
Incremental Delay, d2	0.0	0.3		14.0		28.8		19.8	0.1	0.0	0.1		
Delay (s)	3.4	4.1		33.1		60.6		75.5	48.3	65.5	56.5		
Level of Service	A	A		C		E		E	D	E	E		
Approach Delay (s)		3.9			60.0			72.5			56.8		
Approach LOS		A			E			E			E		
Intersection Summary													
HCM 2000 Control Delay			21.9									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.95										
Actuated Cycle Length (s)			140.0									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

115: Morgan St & Channelside Dr

01/19/2022



Lane Group	EBL	EBT	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	705	2172	20	921	260	33	1	38
v/c Ratio	0.53	0.83	0.37	1.00	0.81	0.10	0.01	0.12
Control Delay	3.4	4.2	41.0	50.7	75.9	1.2	66.0	57.1
Queue Delay	3.6	46.9	0.0	34.7	36.6	0.0	0.0	0.0
Total Delay	7.0	51.1	41.0	85.4	112.5	1.2	66.0	57.1
Queue Length 50th (ft)	78	134	8	~371	231	0	1	25
Queue Length 95th (ft)	m58	m98	m16	#1030	#370	4	m1	m25
Internal Link Dist (ft)		523			1253			424
Turn Bay Length (ft)	450			10			100	
Base Capacity (vph)	1321	2607	54	918	320	328	82	320
Starvation Cap Reductn	508	700	0	18	0	0	0	0
Spillback Cap Reductn	158	255	0	157	71	4	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	1.14	0.37	1.21	1.04	0.10	0.01	0.12

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

01/19/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗		↙	↘
Traffic Volume (veh/h)	167	1774	580	14	7	285
Future Volume (veh/h)	167	1774	580	14	7	285
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	182	1928	630	15	8	310
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	678	1443	936	22	261	232
Arrive On Green	0.07	0.25	0.68	0.68	0.15	0.15
Sat Flow, veh/h	1781	1870	1819	43	1781	1585
Grp Volume(v), veh/h	182	1928	0	645	8	310
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1863	1781	1585
Q Serve(g_s), s	4.5	108.0	0.0	28.4	0.5	20.5
Cycle Q Clear(g_c), s	4.5	108.0	0.0	28.4	0.5	20.5
Prop In Lane	1.00			0.02	1.00	1.00
Lane Grp Cap(c), veh/h	678	1443	0	958	261	232
V/C Ratio(X)	0.27	1.34	0.00	0.67	0.03	1.34
Avail Cap(c_a), veh/h	678	1443	0	958	261	232
HCM Platoon Ratio	0.33	0.33	1.33	1.33	1.00	1.00
Upstream Filter(l)	0.46	0.46	0.00	0.85	0.88	0.88
Uniform Delay (d), s/veh	11.5	52.2	0.0	15.2	51.2	59.8
Incr Delay (d2), s/veh	0.4	153.6	0.0	3.2	0.2	174.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	115.8	0.0	11.0	0.3	19.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.0	205.7	0.0	18.5	51.4	234.3
LnGrp LOS	B	F	A	B	D	F
Approach Vol, veh/h		2110	645		318	
Approach Delay, s/veh		189.0	18.5		229.7	
Approach LOS		F	B		F	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	36.0	78.0			114.0	26.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	30.0	72.0			108.0	20.5
Max Q Clear Time (g_c+I1), s	6.5	30.4			110.0	22.5
Green Ext Time (p_c), s	0.5	5.2			0.0	0.0
Intersection Summary						
HCM 6th Ctrl Delay			157.4			
HCM 6th LOS			F			

Queues

116: Channelside Dr & Jefferson St

01/19/2022



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	182	1928	645	8	310
v/c Ratio	0.30	1.34	0.68	0.03	0.62
Control Delay	1.5	175.6	25.5	48.0	35.3
Queue Delay	0.0	0.5	0.7	0.0	35.6
Total Delay	1.5	176.1	26.2	48.0	70.9
Queue Length 50th (ft)	13	~2352	492	7	187
Queue Length 95th (ft)	m13	#2618	636	m16	275
Internal Link Dist (ft)		315	131	443	
Turn Bay Length (ft)				100	
Base Capacity (vph)	602	1437	955	259	496
Starvation Cap Reductn	0	183	96	0	90
Spillback Cap Reductn	0	122	44	0	196
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.30	1.54	0.75	0.03	1.03

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

01/19/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	423	1358	540	73	8	54
Future Volume (veh/h)	423	1358	540	73	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	460	1476	587	79	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	654	1483	1153	155	26	172
Arrive On Green	0.07	1.00	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1781	1870	1614	217	210	1378
Grp Volume(v), veh/h	460	1476	0	666	69	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1831	1612	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	5.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	5.5	0.0
Prop In Lane	1.00			0.12	0.13	0.86
Lane Grp Cap(c), veh/h	654	1483	0	1308	201	0
V/C Ratio(X)	0.70	1.00	0.00	0.51	0.34	0.00
Avail Cap(c_a), veh/h	654	1483	0	1308	201	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(l)	0.09	0.09	0.00	0.84	0.09	0.00
Uniform Delay (d), s/veh	11.1	0.0	0.0	0.0	56.0	0.0
Incr Delay (d2), s/veh	0.6	6.0	0.0	1.2	0.4	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	7.4	2.5	0.0	0.4	2.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.7	6.0	0.0	1.2	56.4	0.0
LnGrp LOS	B	A	A	A	E	A
Approach Vol, veh/h		1936	666		69	
Approach Delay, s/veh		7.4	1.2		56.4	
Approach LOS		A	A		E	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.0	106.0			117.0	23.0
Change Period (Y+Rc), s	6.0	6.0			6.0	5.5
Max Green Setting (Gmax), s	5.0	100.0			111.0	17.5
Max Q Clear Time (g_c+I1), s	2.0	2.0			2.0	7.5
Green Ext Time (p_c), s	0.5	5.1			38.0	0.1
Intersection Summary						
HCM 6th Ctrl Delay			7.1			
HCM 6th LOS			A			

Queues

117: Channelside Dr & Nebraska Ave

01/19/2022



Lane Group	EBL	EBT	WBT	SBL
Lane Group Flow (vph)	460	1476	666	68
v/c Ratio	0.84	1.00	0.51	0.27
Control Delay	9.9	17.2	9.6	19.5
Queue Delay	52.8	37.4	0.8	0.1
Total Delay	62.8	54.6	10.4	19.6
Queue Length 50th (ft)	16	1435	156	8
Queue Length 95th (ft)	m10	m108	272	m14
Internal Link Dist (ft)		131	222	457
Turn Bay Length (ft)	80			
Base Capacity (vph)	548	1477	1312	255
Starvation Cap Reductn	182	426	247	0
Spillback Cap Reductn	0	200	337	10
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.26	1.40	0.68	0.28

Intersection Summary

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

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Traffic Volume (veh/h)	24	1276	66	12	455	131	98	39	117	46	19	60
Future Volume (veh/h)	24	1276	66	12	455	131	98	39	117	46	19	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	26	1387	72	13	495	142	107	42	127	50	21	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	598	1215	63	325	1133	325	180	59	180	109	58	180
Arrive On Green	0.07	1.00	1.00	0.31	1.00	1.00	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1781	1762	91	1781	1397	401	1311	409	1238	1216	402	1244
Grp Volume(v), veh/h	26	0	1459	13	0	637	107	0	169	50	0	86
Grp Sat Flow(s),veh/h/ln	1781	0	1854	1781	0	1798	1311	0	1648	1216	0	1646
Q Serve(g_s), s	0.7	0.0	96.5	0.0	0.0	0.0	11.2	0.0	13.7	5.7	0.0	6.6
Cycle Q Clear(g_c), s	0.7	0.0	96.5	0.0	0.0	0.0	17.8	0.0	13.7	19.4	0.0	6.6
Prop In Lane	1.00		0.05	1.00		0.22	1.00		0.75	1.00		0.76
Lane Grp Cap(c), veh/h	598	0	1278	325	0	1458	180	0	239	109	0	239
V/C Ratio(X)	0.04	0.00	1.14	0.04	0.00	0.44	0.60	0.00	0.71	0.46	0.00	0.36
Avail Cap(c_a), veh/h	598	0	1278	325	0	1458	180	0	239	109	0	239
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)	0.17	0.00	0.17	0.09	0.00	0.09	1.00	0.00	1.00	0.69	0.00	0.69
Uniform Delay (d), s/veh	7.9	0.0	0.0	41.1	0.0	0.0	62.0	0.0	57.0	66.3	0.0	54.0
Incr Delay (d2), s/veh	0.0	0.0	65.7	0.0	0.0	0.1	13.7	0.0	16.2	9.3	0.0	2.9
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	0.3	0.0	23.3	0.3	0.0	0.0	4.5	0.0	6.8	2.1	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.9	0.0	65.7	41.1	0.0	0.1	75.7	0.0	73.2	75.6	0.0	56.9
LnGrp LOS	A	A	F	D	A	A	E	A	E	E	A	E
Approach Vol, veh/h		1485			650			276			136	
Approach Delay, s/veh		64.7			0.9			74.2			63.8	
Approach LOS		E			A			E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.0	120.5		26.0	28.5	103.0		26.0				
Change Period (Y+Rc), s	6.0	6.5		* 5.7	6.5	* 6.5		* 5.7				
Max Green Setting (Gmax), s	5.0	96.5		* 20	5.0	* 97		* 20				
Max Q Clear Time (g_c+I1), s	2.7	2.0		19.8	2.0	98.5		21.4				
Green Ext Time (p_c), s	0.0	5.4		0.1	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	49.4
HCM 6th LOS	D

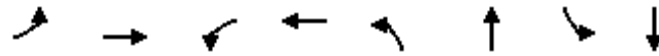
Notes

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

Queues

119: Old Water St & Channelside Dr

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	26	1459	13	637	107	169	50	86
v/c Ratio	0.06	1.14	0.11	0.51	0.58	0.53	0.43	0.29
Control Delay	7.4	83.4	21.8	19.8	69.1	32.3	65.2	22.6
Queue Delay	0.0	2.4	0.0	8.5	1.0	5.8	6.8	0.1
Total Delay	7.4	85.7	21.8	28.3	70.1	38.1	72.0	22.7
Queue Length 50th (ft)	6	~1547	6	348	92	65	41	15
Queue Length 95th (ft)	m6	m#1549	m8	m331	159	142	m53	m36
Internal Link Dist (ft)		222		393		1129		462
Turn Bay Length (ft)	80		100				150	
Base Capacity (vph)	448	1276	115	1248	186	317	117	295
Starvation Cap Reductn	0	6	0	568	0	0	0	0
Spillback Cap Reductn	0	492	0	43	12	98	36	19
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	1.86	0.11	0.94	0.61	0.77	0.62	0.31

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	784	632	23	111	238	130	262	490	135	88	423	98
Future Volume (vph)	784	632	23	111	238	130	262	490	135	88	423	98
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	0.95		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	1853		1770	1764		1770	1863	1583	1770	1863	1583
Flt Permitted	0.19	1.00		0.39	1.00		0.10	1.00	1.00	0.16	1.00	1.00
Satd. Flow (perm)	352	1853		735	1764		191	1863	1583	289	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)	852	687	25	121	259	141	285	533	147	96	460	107
RTOR Reduction (vph)	0	1	0	0	14	0	0	0	78	0	0	82
Lane Group Flow (vph)	852	711	0	121	386	0	285	533	69	96	460	25
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)	82.8	82.8		38.8	38.8		44.6	44.6	44.6	32.6	32.6	32.6
Effective Green, g (s)	82.8	82.8		38.8	38.8		44.6	44.6	44.6	32.6	32.6	32.6
Actuated g/C Ratio	0.59	0.59		0.28	0.28		0.32	0.32	0.32	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)	593	1095		203	488		124	593	504	67	433	368
v/s Ratio Prot	c0.39	0.38			0.22		c0.09	0.29			0.25	
v/s Ratio Perm	c0.46			0.16			c0.64		0.04	0.33		0.02
v/c Ratio	1.44	0.65		0.60	0.79		2.30	0.90	0.14	1.43	1.06	0.07
Uniform Delay, d1	35.0	19.0		43.8	46.9		45.3	45.5	34.0	53.7	53.7	41.9
Progression Factor	1.00	0.42		1.00	1.00		1.00	1.00	1.00	1.09	1.08	4.82
Incremental Delay, d2	197.4	0.3		12.3	12.4		608.9	19.0	0.6	256.7	59.0	0.3
Delay (s)	232.5	8.2		56.1	59.2		654.2	64.6	34.6	315.2	117.0	202.0
Level of Service	F	A		E	E		F	E	C	F	F	F
Approach Delay (s)		130.4			58.5			234.1			159.4	
Approach LOS		F			E			F			F	

Intersection Summary

HCM 2000 Control Delay	152.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	121.5%	ICU Level of Service	H
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	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	852	712	121	400	285	533	147	96	460	107
v/c Ratio	1.44	0.65	0.60	0.80	2.30	0.90	0.25	1.43	1.06	0.23
Control Delay	225.8	8.4	57.8	57.7	630.8	65.0	10.9	297.5	113.0	25.9
Queue Delay	1.7	18.3	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.3
Total Delay	227.5	26.6	57.8	57.7	632.8	65.0	10.9	297.5	113.0	26.2
Queue Length 50th (ft)	~940	222	96	325	~374	464	21	~121	~470	40
Queue Length 95th (ft)	m#790	m192	172	#466	#561	#673	73	#243	#695	107
Internal Link Dist (ft)		393		142		1114			460	
Turn Bay Length (ft)	150		150		300			200		
Base Capacity (vph)	593	1096	203	502	124	593	581	67	433	462
Starvation Cap Reductn	40	386	0	0	0	0	0	0	0	0
Spillback Cap Reductn	117	0	0	1	11	0	0	0	0	96
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.79	1.00	0.60	0.80	2.52	0.90	0.25	1.43	1.06	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.

HCS7 Two-Way Stop-Control Report

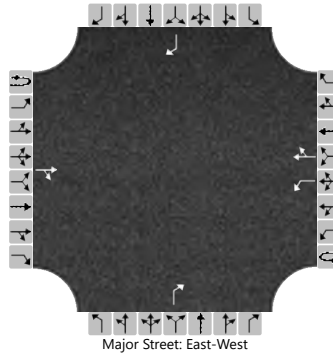
General Information

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	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)			716	139		17	334	25				163				145
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				153
Capacity, c (veh/h)						755						372				680
v/c Ratio						0.02						0.46				0.22
95% Queue Length, Q ₉₅ (veh)						0.1						2.5				0.9
Control Delay (s/veh)						9.9						22.9				11.8
Level of Service (LOS)						A						C				B
Approach Delay (s/veh)						0.4						22.9				11.8
Approach LOS												C				B

MOVEMENT SUMMARY

Site: 8 [Channelside Drive at Cumberland Avenue_Build2046-PM (Site Folder: General)]

Build 2046 Year -
 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	123	2.0	129	2.0	0.783	16.7	LOS C	16.9	429.6	0.75	0.70	1.12	32.2
8	T1	748	2.0	787	2.0	0.783	16.7	LOS C	16.9	429.6	0.75	0.70	1.12	32.7
18	R2	25	2.0	26	2.0	0.783	16.7	LOS C	16.9	429.6	0.75	0.70	1.12	31.8
Approach		896	2.0	943	2.0	0.783	16.7	LOS C	16.9	429.6	0.75	0.70	1.12	32.6
East: E Cumberland Avenue														
1	L2	20	2.0	21	2.0	0.190	8.3	LOS A	0.7	16.9	0.63	0.63	0.63	37.1
6	T1	8	2.0	8	2.0	0.190	8.3	LOS A	0.7	16.9	0.63	0.63	0.63	34.6
16	R2	81	2.0	85	2.0	0.190	8.3	LOS A	0.7	16.9	0.63	0.63	0.63	34.4
Approach		109	2.0	115	2.0	0.190	8.3	LOS A	0.7	16.9	0.63	0.63	0.63	34.9
North: Channelside Drive														
7	L2	35	2.0	37	2.0	0.337	6.2	LOS A	1.6	41.8	0.34	0.22	0.34	37.3
4	T1	353	2.0	372	2.0	0.337	6.2	LOS A	1.6	41.8	0.34	0.22	0.34	39.1
14	R2	258	2.0	272	2.0	0.238	5.3	LOS A	1.1	27.1	0.32	0.20	0.32	34.2
Approach		646	2.0	680	2.0	0.337	5.8	LOS A	1.6	41.8	0.34	0.21	0.34	36.9
West: E Cumberland Avenue														
5	L2	46	2.0	48	2.0	0.180	5.5	LOS A	0.7	17.7	0.47	0.40	0.47	34.9
2	T1	78	2.0	82	2.0	0.180	5.5	LOS A	0.7	17.7	0.47	0.40	0.47	34.6
12	R2	40	2.0	42	2.0	0.180	5.5	LOS A	0.7	17.7	0.47	0.40	0.47	33.5
Approach		164	2.0	173	2.0	0.180	5.5	LOS A	0.7	17.7	0.47	0.40	0.47	34.4
All Vehicles		1815	2.0	1911	2.0	0.783	11.3	LOS B	16.9	429.6	0.57	0.49	0.75	34.3

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

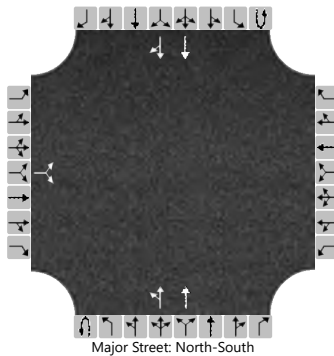
General Information

Analyst	H.W. Lochner
Agency/Co.	
Date Performed	09/24/2021
Analysis Year	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	0	2	0	0	0	2	0			
Configuration			LR								LT	T				T	TR		
Volume (veh/h)		10		1						53	822					645	65		
Percent Heavy Vehicles (%)		2		2						2									
Proportion Time Blocked																			
Percent Grade (%)		0																	
Right Turn Channelized																			
Median Type Storage		Undivided																	

Critical and Follow-up Headways

	Eastbound	Westbound	Northbound	Southbound
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

	Eastbound	Westbound	Northbound	Southbound
Flow Rate, v (veh/h)	12		56	
Capacity, c (veh/h)	153		857	
v/c Ratio	0.08		0.07	
95% Queue Length, Q ₉₅ (veh)	0.2		0.2	
Control Delay (s/veh)	30.4		9.5	
Level of Service (LOS)	D		A	
Approach Delay (s/veh)	30.4		1.1	
Approach LOS	D			

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)	19	45	5	18	8	168	5	831	2	72	680	16
Future Volume (vph)	19	45	5	18	8	168	5	831	2	72	680	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		0.99			1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.99			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1820			1801	1583	1770	3538		1770	3527	
Flt Permitted		0.21			0.75	1.00	0.36	1.00		0.95	1.00	
Satd. Flow (perm)		394			1392	1583	680	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)	21	49	5	20	9	183	5	903	2	78	739	17
RTOR Reduction (vph)	0	2	0	0	0	170	0	0	0	0	1	0
Lane Group Flow (vph)	0	73	0	0	29	13	5	905	0	78	755	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			9.8	9.8	62.9	62.9		17.9	86.8	
Effective Green, g (s)		23.1			9.8	9.8	62.9	62.9		17.9	86.8	
Actuated g/C Ratio		0.17			0.07	0.07	0.45	0.45		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)		65			97	110	305	1589		226	2186	
v/s Ratio Prot								c0.26		0.04	c0.21	
v/s Ratio Perm		c0.19			c0.02	0.01	0.01					
v/c Ratio		1.13			0.30	0.12	0.02	0.57		0.35	0.35	
Uniform Delay, d1		58.5			61.8	61.0	21.4	28.5		55.7	12.9	
Progression Factor		0.97			1.00	1.00	1.00	1.00		1.05	1.52	
Incremental Delay, d2		130.9			2.4	0.6	0.1	1.5		0.3	0.0	
Delay (s)		187.7			64.2	61.7	21.5	30.0		58.8	19.6	
Level of Service		F			E	E	C	C		E	B	
Approach Delay (s)		187.7			62.0			30.0			23.3	
Approach LOS		F			E			C			C	

Intersection Summary

HCM 2000 Control Delay	36.4	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	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Queues

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

01/19/2022



Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	75	29	183	5	905	78	756
v/c Ratio	1.14	0.30	0.65	0.02	0.57	0.35	0.35
Control Delay	181.7	68.3	19.3	23.4	30.8	62.6	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	181.7	68.3	19.3	23.4	30.8	62.6	20.6
Queue Length 50th (ft)	~77	26	0	3	326	75	161
Queue Length 95th (ft)	m#135	58	73	12	398	m127	243
Internal Link Dist (ft)	927	832			494		591
Turn Bay Length (ft)			430	160		280	
Base Capacity (vph)	66	214	399	305	1589	226	2188
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	1	0	23	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.14	0.14	0.46	0.02	0.58	0.35	0.35

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

01/19/2022

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	862	31	84	25	35	74	104	913	5	41	632	519	
Future Volume (vph)	862	31	84	25	35	74	104	913	5	41	632	519	
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		0.98	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1681	1691	1583		1825	1583	1770	3537		1770	3539	1583	
Flt Permitted	0.95	0.96	1.00		0.65	1.00	0.24	1.00		0.09	1.00	1.00	
Satd. Flow (perm)	1681	1691	1583		1203	1583	450	3537		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)	937	34	91	27	38	80	113	992	5	45	687	564	
RTOR Reduction (vph)	0	0	55	0	0	73	0	0	0	0	0	380	
Lane Group Flow (vph)	487	484	36	0	65	7	113	997	0	45	687	184	
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	146	1154		53	1155	516	
v/s Ratio Prot	c0.29	0.29						c0.28			0.19		
v/s Ratio Perm			0.02		c0.05	0.00	0.25			0.28		0.12	
v/c Ratio	0.74	0.73	0.06		0.63	0.05	0.77	0.86		0.85	0.59	0.36	
Uniform Delay, d1	36.6	36.4	26.6		61.8	58.7	42.5	44.2		43.9	39.4	35.9	
Progression Factor	1.00	1.00	1.00		1.00	1.00	0.48	0.50		1.00	1.00	1.00	
Incremental Delay, d2	7.4	7.1	0.2		11.9	0.2	27.7	7.4		84.9	2.3	1.9	
Delay (s)	44.0	43.5	26.8		73.7	58.8	47.9	29.5		128.8	41.7	37.9	
Level of Service	D	D	C		E	E	D	C		F	D	D	
Approach Delay (s)		42.3			65.5			31.4			43.0		
Approach LOS		D			E			C			D		
Intersection Summary													
HCM 2000 Control Delay			40.1		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			0.74										
Actuated Cycle Length (s)			140.0		Sum of lost time (s)						22.4		
Intersection Capacity Utilization			85.0%		ICU Level of Service						E		
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)	487	484	91	65	80	113	997	45	687	564
v/c Ratio	0.74	0.73	0.13	0.62	0.35	0.77	0.86	0.85	0.59	0.63
Control Delay	44.9	44.3	4.2	86.5	10.8	50.1	30.0	132.7	42.0	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.9	44.3	4.2	86.5	10.8	50.1	30.0	132.7	42.0	6.1
Queue Length 50th (ft)	397	392	0	58	0	93	450	38	275	0
Queue Length 95th (ft)	547	541	30	109	36	m#132	m540	#121	341	91
Internal Link Dist (ft)		906		876			591		1242	
Turn Bay Length (ft)			140			280		75		375
Base Capacity (vph)	656	661	680	130	259	147	1154	53	1155	896
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	0.74	0.73	0.13	0.50	0.31	0.77	0.86	0.85	0.59	0.63

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
 113: Florida Ave & Selmon Expy Off-Ramp

01/19/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑	↑↑			
Traffic Volume (vph)	0	749	1815	0	0	0
Future Volume (vph)	0	749	1815	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.6	6.0			
Lane Util. Factor		0.76	0.95			
Frt		0.85	1.00			
Flt Protected		1.00	1.00			
Satd. Flow (prot)		3610	3539			
Flt Permitted		1.00	1.00			
Satd. Flow (perm)		3610	3539			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	814	1973	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	814	1973	0	0	0
Turn Type		Prot	NA			
Protected Phases		2	1 4			
Permitted Phases						
Actuated Green, G (s)		32.4	95.0			
Effective Green, g (s)		32.4	95.0			
Actuated g/C Ratio		0.23	0.68			
Clearance Time (s)		6.6				
Vehicle Extension (s)		3.0				
Lane Grp Cap (vph)		835	2401			
v/s Ratio Prot		c0.23	c0.56			
v/s Ratio Perm						
v/c Ratio		0.97	0.82			
Uniform Delay, d1		53.4	16.3			
Progression Factor		1.00	0.37			
Incremental Delay, d2		25.6	0.2			
Delay (s)		79.0	6.2			
Level of Service		E	A			
Approach Delay (s)	79.0		6.2		0.0	
Approach LOS	E		A		A	

Intersection Summary

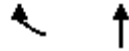
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	128.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues

113: Florida Ave & Selmon Expy Off-Ramp

01/19/2022



Lane Group	WBR	NBT
Lane Group Flow (vph)	814	1973
v/c Ratio	0.97	0.82
Control Delay	78.7	6.5
Queue Delay	0.0	0.0
Total Delay	78.7	6.5
Queue Length 50th (ft)	325	481
Queue Length 95th (ft)	#438	m66
Internal Link Dist (ft)		1
Turn Bay Length (ft)	350	
Base Capacity (vph)	835	2401
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.97	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.

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	2599	40	299	2325	0	0	0	0	
Future Volume (vph)	0	0	0	0	2599	40	299	2325	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					1.00		1.00	1.00					
Flt Protected					1.00		0.95	1.00					
Satd. Flow (prot)					6393		1770	5085					
Flt Permitted					1.00		0.95	1.00					
Satd. Flow (perm)					6393		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	43	325	2527	0	0	0	0	
RTOR Reduction (vph)	0	0	0	0	1	0	22	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	2867	0	303	2527	0	0	0	0	
Turn Type					NA		Perm	NA					
Protected Phases					2			4					
Permitted Phases							4						
Actuated Green, G (s)					54.2		73.9	73.9					
Effective Green, g (s)					54.2		73.9	73.9					
Actuated g/C Ratio					0.37		0.51	0.51					
Clearance Time (s)					5.8		6.1	6.1					
Vehicle Extension (s)					3.0		3.0	3.0					
Lane Grp Cap (vph)					2389		902	2591					
v/s Ratio Prot					c0.45			c0.50					
v/s Ratio Perm							0.17						
v/c Ratio					1.20		0.34	0.98					
Uniform Delay, d1					45.4		21.0	34.7					
Progression Factor					1.00		1.00	1.00					
Incremental Delay, d2					94.3		1.0	12.8					
Delay (s)					139.7		22.0	47.4					
Level of Service					F		C	D					
Approach Delay (s)		0.0			139.7			44.5			0.0		
Approach LOS		A			F			D			A		
Intersection Summary													
HCM 2000 Control Delay			92.3		HCM 2000 Level of Service				F				
HCM 2000 Volume to Capacity ratio			1.05										
Actuated Cycle Length (s)			145.0		Sum of lost time (s)				14.9				
Intersection Capacity Utilization			93.2%		ICU Level of Service				F				
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)	2868	325	2527
v/c Ratio	1.20	0.35	0.98
Control Delay	133.9	19.4	47.4
Queue Delay	0.0	1.9	42.5
Total Delay	133.9	21.3	89.9
Queue Length 50th (ft)	~955	154	832
Queue Length 95th (ft)	#1018	225	#968
Internal Link Dist (ft)	416		356
Turn Bay Length (ft)		300	
Base Capacity (vph)	2391	923	2591
Starvation Cap Reductn	0	440	747
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	1.20	0.67	1.37

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

01/19/2022



Movement	WBL	WBT	NBL	NBT	NBR2	SBL	SBT	SBR	SWR	SWR2
Lane Configurations		↕↕	↙	↕	↙	↙	↘		↙	↙
Traffic Volume (vph)	4	1603	649	513	593	409	27	753	1099	230
Future Volume (vph)	4	1603	649	513	593	409	27	753	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	0.86		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	0.32	1.00		1.00	1.00
Satd. Flow (perm)		3539	107	1863	1583	590	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	1742	705	558	645	445	29	818	1195	250
RTOR Reduction (vph)	0	0	0	0	42	0	0	0	0	73
Lane Group Flow (vph)	0	1746	705	558	604	445	847	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	70.0	70.0	70.5	64.0		46.3	46.3
Effective Green, g (s)		46.3	82.0	70.0	70.0	70.5	64.0		46.3	46.3
Actuated g/C Ratio		0.33	0.59	0.50	0.50	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	931	791	351	728		616	523
v/s Ratio Prot			c0.30	0.30		0.06	0.53		c0.64	
v/s Ratio Perm		0.49	c1.65		0.38	0.58				0.11
v/c Ratio		1.49	3.34	0.60	0.76	1.27	1.16		1.94	0.34
Uniform Delay, d1		46.9	47.0	25.0	28.3	37.1	38.0		46.9	35.3
Progression Factor		0.66	0.98	1.00	1.03	0.94	0.96		1.00	1.00
Incremental Delay, d2		222.0	1060.6	1.7	4.1	133.8	83.0		428.9	1.8
Delay (s)		253.0	1106.5	26.7	33.3	168.8	119.5		475.8	37.1
Level of Service		F	F	C	C	F	F		F	D
Approach Delay (s)		253.0		427.9			136.5			
Approach LOS		F		F			F			

Intersection Summary

HCM 2000 Control Delay	314.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	215.5%	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

01/19/2022



Lane Group	WBT	NBL	NBT	NBR2	SBL	SBT	SWR	SWR2
Lane Group Flow (vph)	1746	705	558	645	445	847	1195	250
v/c Ratio	1.49	3.33	0.60	0.77	1.26	1.16	1.94	0.42
Control Delay	249.2	1069.5	27.2	30.3	155.0	117.2	456.3	22.3
Queue Delay	0.5	0.0	20.0	45.0	0.0	1.1	0.0	0.0
Total Delay	249.7	1069.5	47.2	75.3	155.0	118.2	456.3	22.3
Queue Length 50th (ft)	~1180	~1088	422	486	~314	~920	~1676	97
Queue Length 95th (ft)	m#750	m#1214	m469	m560	m#428	m#1033	#1941	177
Internal Link Dist (ft)	494		424			563		
Turn Bay Length (ft)		250		10			300	300
Base Capacity (vph)	1170	212	931	833	354	728	616	596
Starvation Cap Reductn	124	0	373	238	0	111	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	1.67	3.33	1.00	1.08	1.26	1.37	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

01/19/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	545	482	28	3	1098	811	210	158	545	139	225	299
Future Volume (veh/h)	545	482	28	3	1098	811	210	158	545	139	225	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	592	524	30	3	1193	882	228	172	592	151	245	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	325	955	55	351	724	475	324	473	422	172	525	
Arrive On Green	0.15	0.55	0.55	0.70	0.70	0.70	0.05	0.27	0.27	0.02	0.09	0.00
Sat Flow, veh/h	1781	1752	100	854	2055	1349	1781	1777	1585	1781	1870	1585
Grp Volume(v), veh/h	592	0	554	3	1011	1064	228	172	592	151	245	0
Grp Sat Flow(s),veh/h/ln	1781	0	1852	854	1777	1628	1781	1777	1585	1781	1870	1585
Q Serve(g_s), s	21.5	0.0	27.2	0.1	49.3	49.3	7.5	11.0	37.3	8.5	17.4	0.0
Cycle Q Clear(g_c), s	21.5	0.0	27.2	0.3	49.3	49.3	7.5	11.0	37.3	8.5	17.4	0.0
Prop In Lane	1.00		0.05	1.00		0.83	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	325	0	1010	351	626	573	324	473	422	172	525	
V/C Ratio(X)	1.82	0.00	0.55	0.01	1.62	1.86	0.70	0.36	1.40	0.88	0.47	
Avail Cap(c_a), veh/h	325	0	1010	351	626	573	324	473	422	172	525	
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)	0.16	0.00	0.16	0.75	0.75	0.75	0.96	0.96	0.96	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.9	0.0	20.7	13.5	20.7	20.7	45.0	41.7	51.4	40.7	53.6	0.0
Incr Delay (d2), s/veh	371.7	0.0	0.3	0.0	282.6	390.5	11.6	2.1	194.1	42.1	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	45.0	0.0	11.8	0.0	61.2	73.3	4.9	5.2	37.5	6.0	9.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	418.6	0.0	21.0	13.5	303.3	411.2	56.6	43.8	245.5	82.9	56.5	0.0
LnGrp LOS	F	A	C	B	F	F	E	D	F	F	E	
Approach Vol, veh/h		1146			2078			992			396	A
Approach Delay, s/veh		226.4			358.1			167.1			66.6	
Approach LOS		F			F			F			E	
Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	27.0	55.0	15.0	43.0		82.0	13.0	45.0				
Change Period (Y+Rc), s	5.5	* 5.7	5.5	* 5.7		* 5.7	5.5	* 5.7				
Max Green Setting (Gmax), s	21.5	* 49	9.5	* 37		* 76	7.5	* 39				
Max Q Clear Time (g_c+I1), s	23.5	51.3	10.5	39.3		29.2	9.5	19.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0		4.3	0.0	1.3				

Intersection Summary

HCM 6th Ctrl Delay	259.3
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

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	592	554	3	2075	228	764	151	245	325
v/c Ratio	1.82	0.55	0.01	1.65	0.69	0.92dr	0.82	0.47	0.48
Control Delay	401.5	5.9	21.3	315.9	45.9	30.1	45.8	43.0	6.2
Queue Delay	0.0	1.9	0.0	4.1	3.3	37.5	79.5	0.0	0.4
Total Delay	401.5	7.9	21.3	320.1	49.2	67.6	125.3	43.0	6.5
Queue Length 50th (ft)	~750	138	1	~1412	142	201	100	205	58
Queue Length 95th (ft)	m#809	m122	m2	m#1260	213	280	m102	m222	m45
Internal Link Dist (ft)		494		148		443		116	
Turn Bay Length (ft)	150		50		100		50		
Base Capacity (vph)	325	1008	299	1261	331	1052	185	522	678
Starvation Cap Reductn	0	296	0	4	0	0	0	0	0
Spillback Cap Reductn	0	232	0	668	44	335	121	0	85
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.82	0.78	0.01	3.50	0.79	1.07	2.36	0.47	0.55

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕			↕			↕	
Traffic Volume (veh/h)	178	722	266	26	1265	68	202	12	451	5	41	444
Future Volume (veh/h)	178	722	266	26	1265	68	202	12	451	5	41	444
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	193	785	289	28	1375	74	220	13	490	5	45	483
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	296	869	320	402	2286	123	74	2	90	27	38	385
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	367	1304	480	525	3430	184	160	9	356	6	153	1527
Grp Volume(v), veh/h	193	0	1074	28	711	738	723	0	0	533	0	0
Grp Sat Flow(s),veh/h/ln	367	0	1784	525	1777	1837	526	0	0	1685	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	35.3	0.0	0.0	35.3	0.0	0.0
Prop In Lane	1.00		0.27	1.00		0.10	0.30		0.68	0.01		0.91
Lane Grp Cap(c), veh/h	296	0	1189	402	1184	1224	166	0	0	451	0	0
V/C Ratio(X)	0.65	0.00	0.90	0.07	0.60	0.60	4.35	0.00	0.00	1.18	0.00	0.00
Avail Cap(c_a), veh/h	296	0	1189	402	1184	1224	166	0	0	451	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)	0.76	0.00	0.76	0.09	0.09	0.09	0.43	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	53.9	0.0	0.0
Incr Delay (d2), s/veh	8.2	0.0	8.9	0.0	0.2	0.2	1515.5	0.0	0.0	102.6	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	0.7	0.0	2.9	0.0	0.1	0.1	75.9	0.0	0.0	29.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.2	0.0	8.9	0.0	0.2	0.2	1571.4	0.0	0.0	156.5	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	F	A	A	F	A	A
Approach Vol, veh/h		1267			1477			723				533
Approach Delay, s/veh		8.8			0.2			1571.4				156.5
Approach LOS		A			A			F				F
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		99.0		41.0		99.0		41.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7		* 5.7				
Max Green Setting (Gmax), s		* 93		* 35		* 93		* 35				
Max Q Clear Time (g_c+I1), s		2.0		37.3		2.0		37.3				
Green Ext Time (p_c), s		17.8		0.0		25.4		0.0				

Intersection Summary

HCM 6th Ctrl Delay	307.7
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

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	193	1074	28	1449	723	533
v/c Ratio	1.23	0.90	0.25	0.62	4.41	1.16
Control Delay	169.2	38.3	14.0	16.8	1557.2	133.4
Queue Delay	1.3	25.5	0.0	1.5	21.7	17.5
Total Delay	170.6	63.8	14.0	18.4	1578.9	150.8
Queue Length 50th (ft)	~186	900	12	480	~1075	~524
Queue Length 95th (ft)	m#262	#1161	m23	m421	#1326	#754
Internal Link Dist (ft)		148		203	457	414
Turn Bay Length (ft)	50		70			
Base Capacity (vph)	157	1200	111	2342	164	460
Starvation Cap Reductn	11	173	0	588	0	0
Spillback Cap Reductn	0	160	0	654	99	329
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.32	1.05	0.25	0.86	11.12	4.07

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: Water St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↕		↖	↗		↖	↗	
Traffic Volume (veh/h)	27	1068	78	32	734	13	462	145	49	12	66	163
Future Volume (veh/h)	27	1068	78	32	734	13	462	145	49	12	66	163
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	29	1161	85	35	798	14	502	158	53	13	72	177
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	516	1192	87	360	2473	43	168	368	124	141	90	221
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.02	0.09	0.09	0.19	0.19	0.19
Sat Flow, veh/h	672	1722	126	446	3573	63	1781	1340	449	1171	479	1179
Grp Volume(v), veh/h	29	0	1246	35	397	415	502	0	211	13	0	249
Grp Sat Flow(s),veh/h/ln	672	0	1848	446	1777	1859	1781	0	1789	1171	0	1658
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0	15.6	1.5	0.0	20.1
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.3	0.0	0.0	6.5	0.0	15.6	17.1	0.0	20.1
Prop In Lane	1.00		0.07	1.00		0.03	1.00		0.25	1.00		0.71
Lane Grp Cap(c), veh/h	516	0	1279	360	1230	1287	168	0	492	141	0	312
V/C Ratio(X)	0.06	0.00	0.97	0.10	0.32	0.32	2.99	0.00	0.43	0.09	0.00	0.80
Avail Cap(c_a), veh/h	516	0	1279	360	1230	1287	168	0	492	141	0	312
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)	0.32	0.00	0.32	0.82	0.82	0.82	0.88	0.00	0.88	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	66.9	0.0	53.2	60.4	0.0	54.3
Incr Delay (d2), s/veh	0.1	0.0	9.4	0.4	0.6	0.5	907.5	0.0	2.4	1.3	0.0	19.0
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	3.3	0.0	0.2	0.2	48.6	0.0	7.9	0.5	0.0	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.1	0.0	9.4	0.4	0.6	0.5	974.4	0.0	55.6	61.7	0.0	73.3
LnGrp LOS	A	A	A	A	A	A	F	A	E	E	A	E
Approach Vol, veh/h		1275			847			713				262
Approach Delay, s/veh		9.2			0.6			702.5				72.8
Approach LOS		A			A			F				E
Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		102.8		44.2		102.8	12.2	32.0				
Change Period (Y+Rc), s		* 5.7		* 5.7		* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s		* 90		* 38		* 90	* 6.5	* 26				
Max Q Clear Time (g_c+I1), s		2.3		17.6		2.2	8.5	22.1				
Green Ext Time (p_c), s		7.0		1.2		23.0	0.0	0.6				

Intersection Summary

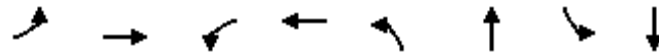
HCM 6th Ctrl Delay	171.8
HCM 6th LOS	F

Notes

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

Queues
701: Water St

01/19/2022



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	1246	35	812	502	211	13	249
v/c Ratio	0.08	1.05	0.67	0.36	2.11	0.42	0.08	0.66
Control Delay	8.0	46.3	65.6	8.9	540.7	43.7	48.8	45.3
Queue Delay	0.0	22.5	0.0	0.2	12.8	0.0	0.0	2.0
Total Delay	8.0	68.8	65.6	9.1	553.5	43.7	48.8	47.3
Queue Length 50th (ft)	8	~1229	11	104	~733	161	10	147
Queue Length 95th (ft)	m7	m549	m#66	132	#880	239	31	246
Internal Link Dist (ft)		203		452		462		361
Turn Bay Length (ft)	70		70		150		150	
Base Capacity (vph)	370	1191	52	2276	238	498	154	375
Starvation Cap Reductn	0	280	0	663	0	0	0	0
Spillback Cap Reductn	0	0	0	176	123	0	0	45
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	1.37	0.67	0.50	4.37	0.42	0.08	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.

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

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↖	↗	↖	↗		↖	↗	↗
Traffic Volume (veh/h)	932	120	77	1	478	140	172	1112	121	267	531	140
Future Volume (veh/h)	932	120	77	1	478	140	172	1112	121	267	531	140
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	1013	130	84	1	520	0	187	1209	132	290	577	152
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	334	499	322	26	879		329	1145	125	123	1259	562
Arrive On Green	0.78	0.78	0.78	0.47	0.47	0.00	0.01	0.12	0.12	0.08	0.71	0.71
Sat Flow, veh/h	882	1061	686	0	1870	1585	1781	3232	352	1781	3554	1585
Grp Volume(v), veh/h	1013	0	214	521	0	0	187	663	678	290	577	152
Grp Sat Flow(s),veh/h/ln	882	0	1747	1870	0	1585	1781	1777	1807	1781	1777	1585
Q Serve(g_s), s	37.2	0.0	4.6	0.0	0.0	0.0	5.6	49.6	49.6	5.6	9.8	4.8
Cycle Q Clear(g_c), s	65.8	0.0	4.6	28.6	0.0	0.0	5.6	49.6	49.6	5.6	9.8	4.8
Prop In Lane	1.00		0.39	0.00		1.00	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	334	0	821	905	0		329	630	640	123	1259	562
V/C Ratio(X)	3.03	0.00	0.26	0.58	0.00		0.57	1.05	1.06	2.36	0.46	0.27
Avail Cap(c_a), veh/h	334	0	821	905	0		329	630	640	123	1259	562
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
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	27.5	0.0	8.5	27.3	0.0	0.0	34.3	61.8	61.8	38.8	14.6	13.9
Incr Delay (d2), s/veh	916.3	0.0	0.1	2.7	0.0	0.0	0.6	28.4	30.4	637.0	1.1	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	96.3	0.0	1.6	13.6	0.0	0.0	2.4	28.6	29.5	24.2	3.3	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	943.8	0.0	8.5	29.9	0.0	0.0	35.0	90.2	92.2	675.8	15.7	15.0
LnGrp LOS	F	A	A	C	A		C	F	F	F	B	B
Approach Vol, veh/h		1227			521	A		1528			1019	
Approach Delay, s/veh		780.7			29.9			84.3			203.5	
Approach LOS		F			C			F			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	12.0	56.0		72.0	12.0	56.0		72.0				
Change Period (Y+Rc), s	6.4	6.4		* 6.2	6.4	6.4		* 6.2				
Max Green Setting (Gmax), s	5.6	49.6		* 66	5.6	49.6		* 66				
Max Q Clear Time (g_c+I1), s	7.6	11.8		67.8	7.6	51.6		30.6				
Green Ext Time (p_c), s	0.0	4.6		0.0	0.0	0.0		4.0				

Intersection Summary

HCM 6th Ctrl Delay	304.9
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

01/19/2022



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	1013	214	521	152	187	1341	290	577	152
v/c Ratio	3.88	0.25	0.60	0.19	0.65	1.08	2.34	0.46	0.23
Control Delay	1310.5	14.4	30.8	11.3	27.5	78.3	649.4	34.1	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	8.6	0.0	0.0	0.0
Total Delay	1310.5	14.4	30.8	11.3	27.5	86.9	649.4	34.1	10.6
Queue Length 50th (ft)	~1438	52	343	38	93	~621	~389	149	2
Queue Length 95th (ft)	m#1371	m50	462	82	m85	m363	#584	298	71
Internal Link Dist (ft)		452	888			460		712	
Turn Bay Length (ft)	100			100	200		250		
Base Capacity (vph)	261	840	875	784	288	1240	124	1253	658
Starvation Cap Reductn	0	0	0	0	0	235	0	0	0
Spillback Cap Reductn	0	0	0	2	0	114	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	3.88	0.25	0.60	0.19	0.65	1.33	2.34	0.46	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

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)	262	532	0	0	446	316	149	2645	103	0	0	0
Future Volume (vph)	262	532	0	0	446	316	149	2645	103	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			0.94			1.00	0.85			
Flt Protected		0.98			1.00			1.00	1.00			
Satd. Flow (prot)		3482			3319			5072	1583			
Flt Permitted		0.51			1.00			1.00	1.00			
Satd. Flow (perm)		1804			3319			5072	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)	285	578	0	0	485	343	162	2875	112	0	0	0
RTOR Reduction (vph)	0	0	0	0	28	0	0	0	18	0	0	0
Lane Group Flow (vph)	0	863	0	0	800	0	0	3037	94	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)		631			1161			2691	840			
v/s Ratio Prot					0.24							
v/s Ratio Perm		c0.48						0.60	0.06			
v/c Ratio		2.44dl			0.69			1.13	0.11			
Uniform Delay, d1		45.5			39.0			32.9	16.4			
Progression Factor		1.00			0.80			1.00	1.00			
Incremental Delay, d2		175.5			1.2			63.2	0.3			
Delay (s)		221.0			32.5			96.1	16.7			
Level of Service		F			C			F	B			
Approach Delay (s)		221.0			32.5			93.3			0.0	
Approach LOS		F			C			F			A	

Intersection Summary

HCM 2000 Control Delay	105.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	113.7%	ICU Level of Service	H
Analysis Period (min)	15		

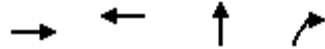
dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Queues

102: Florida Ave & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	863	828	3037	112
v/c Ratio	2.44dl	0.70	1.13	0.13
Control Delay	211.6	31.1	95.2	11.1
Queue Delay	0.0	0.4	0.3	0.0
Total Delay	211.6	31.5	95.6	11.1
Queue Length 50th (ft)	~544	243	~1171	32
Queue Length 95th (ft)	#677	m294	#1246	64
Internal Link Dist (ft)	821	519	567	
Turn Bay Length (ft)				100
Base Capacity (vph)	631	1189	2690	858
Starvation Cap Reductn	0	82	374	0
Spillback Cap Reductn	4	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.38	0.75	1.31	0.13

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	493	154	183	519	184	183	598	96	77	581	75
Future Volume (vph)	139	493	154	183	519	184	183	598	96	77	581	75
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	0.96			0.98			0.98	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	1796		1770	1790			3445			3466	
Flt Permitted	0.08	1.00		0.13	1.00			0.58			0.61	
Satd. Flow (perm)	154	1796		247	1790			2004			2124	
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	536	167	199	564	200	199	650	104	84	632	82
RTOR Reduction (vph)	0	8	0	0	9	0	0	6	0	0	6	0
Lane Group Flow (vph)	151	695	0	199	755	0	0	947	0	0	792	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)	64.2	64.2		64.2	64.2			64.3			64.3	
Effective Green, g (s)	64.2	64.2		64.2	64.2			64.3			64.3	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.46			0.46	
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)	70	823		113	820			920			975	
v/s Ratio Prot		0.39			0.42							
v/s Ratio Perm	c0.98			0.80				c0.47			0.37	
v/c Ratio	2.16	0.84		1.76	0.92			1.03			0.81	
Uniform Delay, d1	37.9	33.5		37.9	35.5			37.9			32.6	
Progression Factor	0.46	0.47		0.95	0.95			0.90			1.00	
Incremental Delay, d2	536.5	3.8		367.8	13.6			35.8			7.3	
Delay (s)	553.9	19.7		403.8	47.2			69.7			40.0	
Level of Service	F	B		F	D			E			D	
Approach Delay (s)		114.2			120.9			69.7			40.0	
Approach LOS		F			F			E			D	

Intersection Summary

HCM 2000 Control Delay	87.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	11.5
Intersection Capacity Utilization	111.6%	ICU Level of Service	H
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)	151	703	199	764	953	798
v/c Ratio	2.13	0.85	1.76	0.92	1.03	0.81
Control Delay	541.6	20.2	394.0	47.0	68.9	40.1
Queue Delay	0.0	10.0	0.0	46.1	26.3	50.0
Total Delay	541.6	30.1	394.0	93.1	95.2	90.1
Queue Length 50th (ft)	~216	201	~269	602	~295	320
Queue Length 95th (ft)	m#213	m178	m#318	m#808	#611	416
Internal Link Dist (ft)		519		503	563	436
Turn Bay Length (ft)			150			
Base Capacity (vph)	71	831	113	830	927	983
Starvation Cap Reductn	0	110	0	154	0	0
Spillback Cap Reductn	0	2	0	0	59	280
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	2.13	0.98	1.76	1.13	1.10	1.14

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

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕			↕↕			↕↕			↕↕	
Traffic Volume (vph)	91	466	417	76	395	383	153	491	19	76	568	97
Future Volume (vph)	91	466	417	76	395	383	153	491	19	76	568	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.1			6.1			6.1			6.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frt		0.94			0.93			1.00			0.98	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		3297			3287			3484			3452	
Flt Permitted		0.60			0.58			0.56			0.68	
Satd. Flow (perm)		1978			1917			1970			2358	
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)	99	507	453	83	429	416	166	534	21	83	617	105
RTOR Reduction (vph)	0	96	0	0	92	0	0	2	0	0	7	0
Lane Group Flow (vph)	0	963		0	836		0	719		0	798	
Turn Type	pm+pt	NA		Perm		NA		pm+pt	NA		Perm	
Protected Phases	3	8				4		1	6		2	
Permitted Phases	8			4				6			2	
Actuated Green, G (s)		62.9			62.9			59.9			60.0	
Effective Green, g (s)		62.9			62.9			59.9			60.0	
Actuated g/C Ratio		0.45			0.45			0.43			0.43	
Clearance Time (s)		6.1			6.1			6.1			6.0	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		888			861			842			1010	
v/s Ratio Prot												
v/s Ratio Perm		c0.49			0.44			c0.37			0.34	
v/c Ratio		1.08			0.97			0.85			0.79	
Uniform Delay, d1		38.5			37.7			36.1			34.5	
Progression Factor		1.22			0.82			0.50			1.00	
Incremental Delay, d2		52.9			22.9			0.8			6.3	
Delay (s)		100.1			53.6			19.0			40.8	
Level of Service		F			D			B			D	
Approach Delay (s)		100.1			53.6			19.0			40.8	
Approach LOS		F			D			B			D	

Intersection Summary

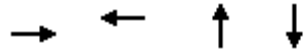
HCM 2000 Control Delay	57.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	25.9
Intersection Capacity Utilization	114.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues

104: Jefferson St & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	1059	928	721	805
v/c Ratio	1.08	0.97	0.85	0.79
Control Delay	85.6	48.4	19.9	41.0
Queue Delay	0.0	10.8	9.7	3.2
Total Delay	85.6	59.1	29.7	44.2
Queue Length 50th (ft)	~521	216	270	325
Queue Length 95th (ft)	m#644	#324	m117	415
Internal Link Dist (ft)	503	427	450	207
Turn Bay Length (ft)				
Base Capacity (vph)	985	954	845	1016
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	44	106	127
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.08	1.02	0.98	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.

HCM Signalized Intersection Capacity Analysis
715: Selmon Expy Off-Ramp & Whiting St

01/19/2022



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	↗↗
Traffic Volume (vph)	563	0	0	648	239	911
Future Volume (vph)	563	0	0	648	239	911
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.7			5.7	6.0	6.0
Lane Util. Factor	0.95			0.95	1.00	0.88
Fr _t	1.00			1.00	1.00	0.85
Fl _t Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3539			3539	1770	2787
Fl _t Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3539			3539	1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	612	0	0	704	260	990
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	612	0	0	704	260	990
Turn Type	NA			NA	Prot	custom
Protected Phases	5			2	4	4 6
Permitted Phases						
Actuated Green, G (s)	32.1			84.3	44.0	96.2
Effective Green, g (s)	32.1			84.3	44.0	90.5
Actuated g/C Ratio	0.23			0.60	0.31	0.65
Clearance Time (s)	5.7			5.7	6.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	811			2130	556	1801
v/s Ratio Prot	c0.17			0.20	0.15	c0.36
v/s Ratio Perm						
v/c Ratio	0.75			0.33	0.47	0.55
Uniform Delay, d ₁	50.3			13.8	38.6	13.6
Progression Factor	0.85			0.90	1.00	1.00
Incremental Delay, d ₂	0.4			0.2	2.8	1.2
Delay (s)	43.2			12.7	41.4	14.8
Level of Service	D			B	D	B
Approach Delay (s)	43.2			12.7	20.3	
Approach LOS	D			B	C	

Intersection Summary

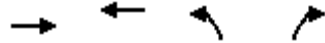
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.4
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Queues

715: Selmon Expy Off-Ramp & Whiting St

01/19/2022



Lane Group	EBT	WBT	NBL	NBR
Lane Group Flow (vph)	612	704	260	990
v/c Ratio	0.75	0.33	0.47	0.52
Control Delay	43.0	12.8	42.0	12.5
Queue Delay	0.2	1.1	0.0	0.0
Total Delay	43.2	13.9	42.0	12.5
Queue Length 50th (ft)	238	211	191	230
Queue Length 95th (ft)	m193	m213	279	339
Internal Link Dist (ft)	427	276	783	
Turn Bay Length (ft)			350	350
Base Capacity (vph)	1625	2130	556	1915
Starvation Cap Reductn	0	1119	0	0
Spillback Cap Reductn	373	0	0	14
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.70	0.47	0.52

Intersection Summary

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

HCM 6th Signalized Intersection Summary
 11: Water St/Brush St & Whiting St

01/19/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	311	1023	140	246	319	176	230	205	64	222	124	99
Future Volume (veh/h)	311	1023	140	246	319	176	230	205	64	222	124	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	338	1112	152	267	347	191	250	223	70	241	135	108
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	617	1913	913	379	1144	618	295	344	108	109	40	32
Arrive On Green	0.15	0.72	0.72	0.09	0.51	0.51	0.04	0.25	0.25	0.17	0.17	0.17
Sat Flow, veh/h	1781	3554	1585	1781	2227	1203	1781	1365	428	407	228	182
Grp Volume(v), veh/h	338	1112	152	267	276	262	250	0	293	484	0	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1654	1781	0	1793	817	0	0
Q Serve(g_s), s	12.7	21.3	4.0	9.8	12.5	12.9	5.3	0.0	20.4	14.9	0.0	0.0
Cycle Q Clear(g_c), s	12.7	21.3	4.0	9.8	12.5	12.9	5.3	0.0	20.4	24.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.73	1.00		0.24	0.50		0.22
Lane Grp Cap(c), veh/h	617	1913	913	379	912	849	295	0	452	180	0	0
V/C Ratio(X)	0.55	0.58	0.17	0.70	0.30	0.31	0.85	0.00	0.65	2.68	0.00	0.00
Avail Cap(c_a), veh/h	853	1913	913	520	912	849	295	0	452	180	0	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.76	0.76	0.88	0.88	0.88	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.6	12.2	8.3	15.9	19.6	19.7	52.9	0.0	46.8	64.2	0.0	0.0
Incr Delay (d2), s/veh	0.6	1.0	0.3	2.3	0.7	0.8	20.0	0.0	3.2	773.7	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	4.7	7.1	1.4	4.2	5.4	5.2	7.9	0.0	9.7	45.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	13.2	8.6	18.3	20.4	20.5	72.9	0.0	50.0	837.9	0.0	0.0
LnGrp LOS	B	B	A	B	C	C	E	A	D	F	A	A
Approach Vol, veh/h		1602			805			543				484
Approach Delay, s/veh		12.7			19.7			60.6				837.9
Approach LOS		B			B			E				F
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.4	77.6		41.0	17.9	81.1	11.0	30.0				
Change Period (Y+Rc), s	* 5.7	* 5.7		* 5.7	5.5	* 5.7	* 5.7	* 5.7				
Max Green Setting (Gmax), s	* 34	* 53		* 35	23.5	* 64	* 5.3	* 24				
Max Q Clear Time (g_c+I1), s	14.7	14.9		22.4	11.8	23.3	7.3	26.3				
Green Ext Time (p_c), s	1.0	3.8		1.5	0.6	11.5	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay	138.2
HCM 6th LOS	F

Notes

- User approved pedestrian interval to be less than phase max green.
- * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Queues

11: Water St/Brush St & Whiting St

01/19/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	338	1112	152	267	538	250	293	484
v/c Ratio	0.57	0.61	0.15	0.77	0.31	0.94	0.64	2.51
Control Delay	9.5	20.2	2.1	29.8	28.6	92.1	52.0	716.8
Queue Delay	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	22.5	2.1	29.8	28.6	92.1	52.0	716.8
Queue Length 50th (ft)	64	327	15	151	170	200	230	~733
Queue Length 95th (ft)	83	401	40	214	227	#382	334	#957
Internal Link Dist (ft)		276			426		126	215
Turn Bay Length (ft)	100		200	300		50		
Base Capacity (vph)	745	1833	1005	448	1740	265	461	193
Starvation Cap Reductn	16	558	0	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	0.46	0.87	0.15	0.60	0.31	0.94	0.64	2.51

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.

HCM Signalized Intersection Capacity Analysis

7: Meridian Ave & Whiting St

01/19/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	796	513	243	2006	553	498
Future Volume (vph)	796	513	243	2006	553	498
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5	6.9	6.4	6.6	4.0
Lane Util. Factor	0.97	1.00	1.00	0.91	0.86	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	3433	1583	1770	5085	6408	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	3433	1583	1770	5085	6408	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	865	558	264	2180	601	541
RTOR Reduction (vph)	0	353	0	0	0	0
Lane Group Flow (vph)	865	205	264	2180	601	541
Turn Type	Prot	Perm	Prot	NA	NA	Free
Protected Phases	7 8		1	6	2	
Permitted Phases		7 8				Free
Actuated Green, G (s)	50.5	50.5	28.4	75.4	39.9	140.0
Effective Green, g (s)	50.5	50.5	28.4	75.4	39.9	140.0
Actuated g/C Ratio	0.36	0.36	0.20	0.54	0.28	1.00
Clearance Time (s)			6.9	6.4	6.6	
Vehicle Extension (s)			3.0	3.0	3.0	
Lane Grp Cap (vph)	1238	571	359	2738	1826	1583
v/s Ratio Prot	c0.25		0.15	c0.43	0.09	
v/s Ratio Perm		0.13				0.34
v/c Ratio	0.70	0.36	0.74	0.80	0.33	0.34
Uniform Delay, d1	38.2	32.9	52.3	26.1	39.5	0.0
Progression Factor	0.53	0.51	1.13	0.22	1.00	1.00
Incremental Delay, d2	0.6	0.1	4.0	1.3	0.5	0.6
Delay (s)	21.1	16.8	62.9	7.1	40.0	0.6
Level of Service	C	B	E	A	D	A
Approach Delay (s)	19.4			13.1	21.3	
Approach LOS	B			B	C	

Intersection Summary

HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues

7: Meridian Ave & Whiting St

01/19/2022



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	865	558	264	2180	601	541
v/c Ratio	0.67	0.59	0.74	0.80	0.33	0.34
Control Delay	20.2	2.1	65.4	7.9	42.2	0.6
Queue Delay	0.2	0.8	14.9	0.9	0.0	0.0
Total Delay	20.4	2.9	80.3	8.8	42.2	0.6
Queue Length 50th (ft)	303	9	176	88	128	0
Queue Length 95th (ft)	m104	m20	m226	119	174	0
Internal Link Dist (ft)	426			229	186	
Turn Bay Length (ft)	200	250	150			
Base Capacity (vph)	1581	1026	382	2739	1825	1583
Starvation Cap Reductn	180	206	101	280	0	0
Spillback Cap Reductn	0	15	0	0	10	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.68	0.94	0.89	0.33	0.34

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

107: Meridian Ave & Whiting St

01/19/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		↑↑↑		↓	↑↑↑
Traffic Volume (vph)	66	172	2077	106	195	872
Future Volume (vph)	66	172	2077	106	195	872
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.7		6.4		5.5	6.9
Lane Util. Factor	1.00		0.91		1.00	0.91
Frt	0.90		0.99		1.00	1.00
Flt Protected	0.99		1.00		0.95	1.00
Satd. Flow (prot)	1658		5048		1770	5085
Flt Permitted	0.99		1.00		0.06	1.00
Satd. Flow (perm)	1658		5048		109	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	187	2258	115	212	948
RTOR Reduction (vph)	75	0	3	0	0	0
Lane Group Flow (vph)	184	0	2370	0	212	948
Turn Type	Prot		NA		custom	NA
Protected Phases	8		6		7	1 2 7
Permitted Phases					1 2	
Actuated Green, G (s)	26.5		75.4		93.7	100.3
Effective Green, g (s)	26.5		75.4		86.8	93.7
Actuated g/C Ratio	0.19		0.54		0.62	0.67
Clearance Time (s)	7.7		6.4		5.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	313		2718		287	3403
v/s Ratio Prot	c0.11		c0.47		c0.10	0.19
v/s Ratio Perm					0.36	
v/c Ratio	0.59		0.87		0.74	0.28
Uniform Delay, d1	51.8		28.1		50.2	9.4
Progression Factor	1.16		0.85		0.81	0.91
Incremental Delay, d2	2.8		0.4		8.8	0.0
Delay (s)	62.9		24.2		49.5	8.6
Level of Service	E		C		D	A
Approach Delay (s)	62.9		24.2			16.1
Approach LOS	E		C			B

Intersection Summary

HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
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)	259	2373	212	948
v/c Ratio	0.67	0.87	0.72	0.26
Control Delay	46.2	25.3	49.4	7.5
Queue Delay	0.2	1.2	0.2	0.2
Total Delay	46.4	26.6	49.6	7.7
Queue Length 50th (ft)	154	471	120	73
Queue Length 95th (ft)	227	m306	#245	123
Internal Link Dist (ft)	878	712		229
Turn Bay Length (ft)				
Base Capacity (vph)	520	2723	294	3555
Starvation Cap Reductn	0	168	3	1503
Spillback Cap Reductn	32	52	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.93	0.73	0.46

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.

HCS7 Two-Way Stop-Control Report

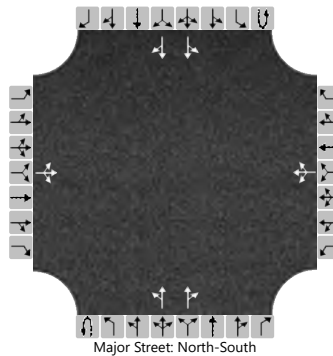
General Information

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	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)		22	125	79		180	51	150		170	708	88		247	483	38	
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				401				179				260	
Capacity, c (veh/h)											1017				792	
v/c Ratio											0.18				0.33	
95% Queue Length, Q ₉₅ (veh)											0.6				1.5	
Control Delay (s/veh)											9.3				11.8	
Level of Service (LOS)											A				B	
Approach Delay (s/veh)											2.4				4.7	
Approach LOS																

HCS7 Two-Way Stop-Control Report

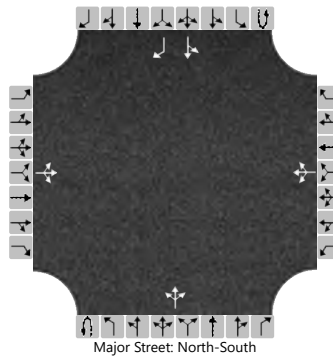
General Information

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	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)		142	5	275		19	21	6		145	500	5		41	108	156		
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)			444				48				153				43		
Capacity, c (veh/h)			348				133				1476				1036		
v/c Ratio			1.27				0.36				0.10				0.04		
95% Queue Length, Q ₉₅ (veh)			59.1				1.6				0.3				0.1		
Control Delay (s/veh)			553.8				47.2				7.7				8.6		
Level of Service (LOS)			F				E				A				A		
Approach Delay (s/veh)		553.8				47.2				2.6				1.3			
Approach LOS		F				E											

HCS7 Two-Way Stop-Control Report

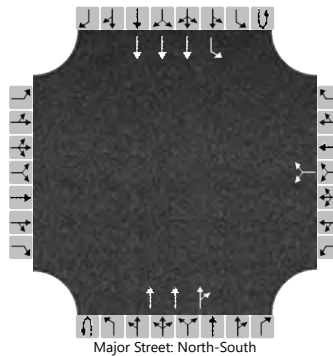
General Information

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)						41		60			2411	391		0	5	1010
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)								106							5	
Capacity, c (veh/h)								33							40	
v/c Ratio								3.21							0.13	
95% Queue Length, Q ₉₅ (veh)								40.5							0.4	
Control Delay (s/veh)								4238.7							107.8	
Level of Service (LOS)								F							F	
Approach Delay (s/veh)								4238.7							0.5	
Approach LOS								F								