

TOWN OF WINDSOR JAGUAR WAY EXTENSION PROJECT

APPENDIX G COLLISION RATES AND INTERSECTION LOS

PREPARED BY:



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Intersection Collision Rate Calculations

Jaguar Way Extension

Intersection # 1: Windsor River Road & Starr Rd

Date of Count: Tuesday, August 26, 2014

Number of Collisions: 5
Number of Injuries: 1
Number of Fatalities: 0
ADT: 7400
Start Date: October 1, 2013
End Date: September 30, 2018
Number of Years: 5

Intersection Type: Four-Legged
Control Type: 4 Way Stop
Area: Suburban

$$\text{collision rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$$

$$\text{collision rate} = \frac{5}{7,400} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.37 c/mve	0.0%	20.0%
Statewide Average*	0.32 c/mve	0.4%	44.7%

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2013 Collision Data on California State Highways, Caltrans

Intersection # 2: Windsor River Rd & Windsor Rd

Date of Count: Tuesday, August 26, 2014

Number of Collisions: 16
Number of Injuries: 3
Number of Fatalities: 0
ADT: 15100
Start Date: October 1, 2013
End Date: September 30, 2018
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Signals
Area: Suburban

$$\text{collision rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$$

$$\text{collision rate} = \frac{16}{15,100} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.58 c/mve	0.0%	18.8%
Statewide Average*	0.43 c/mve	0.4%	37.9%

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2013 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Calculaions

Jaguar Way Extension

Intersection # 4: Jaguar Way & Windsor Rd

Date of Count: Tuesday, August 26, 2014

Number of Collisions: 2

Number of Injuries: 0

Number of Fatalities: 0

ADT: 6600

Start Date: October 1, 2013

End Date: September 30, 2018

Number of Years: 5

Intersection Type: Tee

Control Type: Signals

Area: Suburban

$$\text{collision rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Number of Years}}$$

$$\text{collision rate} = \frac{2}{6,600} \times \frac{1,000,000}{365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	0.17 c/mve	0.0%	0.0%
Statewide Average*	0.27 c/mve	0.6%	37.3%

ADT = average daily total vehicles entering intersection

c/mve = collisions per million vehicles entering intersection

* 2013 Collision Data on California State Highways, Caltrans

Intersection Level Of Service Report

Intersection 1: Starr Rd/Windsor River Rd

Control Type: All-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 14.0
 Level Of Service: B
 Volume to Capacity (v/c): 0.633

Intersection Setup

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+←→			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	20	165	50	278	124	17	19	62	21	30	42	159
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	165	50	278	124	17	19	62	21	30	42	159
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	41	13	70	31	4	5	16	5	8	11	40
Total Analysis Volume [veh/h]	20	165	50	278	124	17	19	62	21	30	42	159
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	652	663	522	594	633
Degree of Utilization, x	0.36	0.63	0.16	0.04	0.36

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.64	4.50	0.55	0.11	1.67
95th-Percentile Queue Length [ft]	41.00	112.50	13.64	2.74	41.71
Approach Delay [s/veh]	11.60	17.32	10.47		11.92
Approach LOS	B	C	B		B
Intersection Delay [s/veh]	13.99				
Intersection LOS	B				

Intersection Level Of Service Report

Intersection 2: Windsor Rd/Windsor River Rd

Control Type:	Signalized	Delay (sec / veh):	30.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.613

Intersection Setup

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	65.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	240.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	68	165	278	37	237	40	52	349	72	183	172	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	165	278	37	237	40	52	349	72	183	172	13
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	41	70	9	59	10	13	87	18	46	43	3
Total Analysis Volume [veh/h]	68	165	278	37	237	40	52	349	72	183	172	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permis	Permis	ProtPer	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	10	0
Maximum Green [s]	20	35	0	20	35	0	16	35	0	16	35	0
Amber [s]	3.6	3.6	0.0	3.0	3.2	0.0	3.2	3.2	0.0	3.2	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	23	0	12	22	0	12	24	0	12	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	14	0	0	13	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	2.6	0.0	2.0	2.2	0.0	2.2	2.2	0.0	2.2	2.2	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.60	4.60	4.20	4.20	4.20	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.60	0.00	2.20	2.20	2.20	2.20	2.20
g_i, Effective Green Time [s]	31	23	31	21	5	18	8	21
g / C, Green / Cycle	0.44	0.33	0.45	0.30	0.07	0.26	0.11	0.30
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.03	0.15	0.03	0.23	0.10	0.10
s, saturation flow rate [veh/h]	1285	1677	1100	1816	1774	1808	1774	1840
c, Capacity [veh/h]	581	544	466	539	131	468	203	551
d1, Uniform Delay [s]	11.99	21.78	13.20	20.50	31.01	25.13	30.70	19.15
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.41	12.61	0.07	3.48	1.93	6.48	13.48	0.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

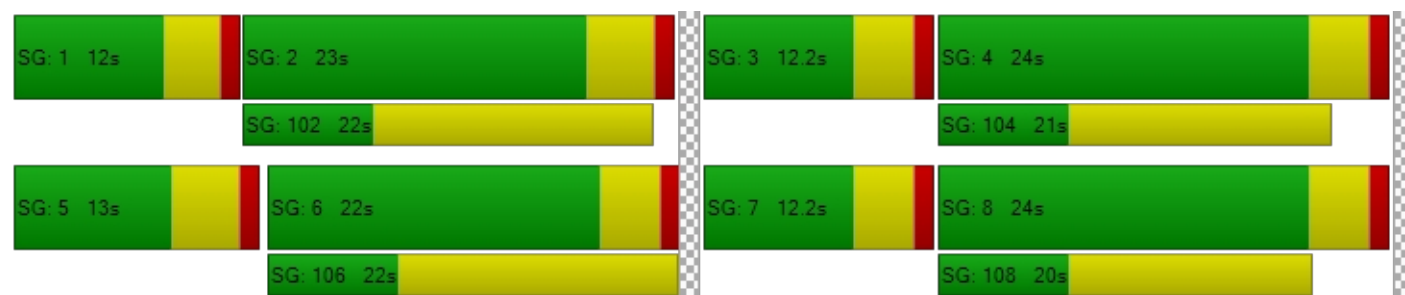
X, volume / capacity	0.12	0.81	0.08	0.51	0.40	0.90	0.90	0.34
d, Delay for Lane Group [s/veh]	12.40	34.39	13.27	23.98	32.95	31.60	44.18	19.51
Lane Group LOS	B	C	B	C	C	C	D	B
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.61	7.94	0.30	3.98	0.88	7.19	3.69	2.27
50th-Percentile Queue Length [ft/ln]	15.37	198.56	7.46	99.40	22.06	179.63	92.26	56.69
95th-Percentile Queue Length [veh/ln]	1.11	12.56	0.54	7.16	1.59	11.58	6.64	4.08
95th-Percentile Queue Length [ft/ln]	27.67	314.11	13.42	178.93	39.72	289.53	166.07	102.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.40	34.39	34.39	13.27	23.98	23.98	32.95	31.60	31.60	44.18	19.51	19.51
Movement LOS	B	C	C	B	C	C	C	C	C	D	B	B
d_A, Approach Delay [s/veh]	31.47			22.72			31.75			31.78		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	29.97											
Intersection LOS	C											
Intersection V/C	0.613											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Starr Rd/Jaguar WayControl Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutesDelay (sec / veh): 0.0
Level Of Service: A
Volume to Capacity (v/c): 0.002**Intersection Setup**

Name	Starr rd		Starr Rd		Jaguar Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Starr rd		Starr Rd		Jaguar Way	
Base Volume Input [veh/h]	235	0	0	175	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	235	0	0	175	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	0	0	44	0	0
Total Analysis Volume [veh/h]	235	0	0	175	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.70	0.00	11.02	9.48
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		10.25	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report

Intersection 4: Windsor Rd/Jaguar Way

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 12.8
 Level Of Service: B
 Volume to Capacity (v/c): 0.252

Intersection Setup

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0
Pocket Length [ft]	280.00	100.00	100.00	170.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Base Volume Input [veh/h]	46	393	357	132	32	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	393	357	132	32	31
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	98	89	33	8	8
Total Analysis Volume [veh/h]	46	393	357	132	32	31
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	8	4	0	2	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	7	7	0	7	0
Maximum Green [s]	35	30	30	0	40	0
Amber [s]	4.1	4.1	4.1	0.0	3.6	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	9	12	12	0	12	0
Vehicle Extension [s]	0.0	4.0	4.0	0.0	2.5	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk						
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.1	3.1	3.1	0.0	2.6	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	Yes	Yes		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	6
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	15

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	67	67	67	67	67
L, Total Lost Time per Cycle [s]	5.10	5.10	5.10	5.10	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.10	3.10	3.10	2.60
g_i, Effective Green Time [s]	37	30	37	37	5
g / C, Green / Cycle	0.56	0.45	0.56	0.56	0.07
(v / s)_i Volume / Saturation Flow Rate	0.05	0.21	0.19	0.08	0.04
s, saturation flow rate [veh/h]	1020	1863	1863	1583	1675
c, Capacity [veh/h]	506	832	1040	884	123
d1, Uniform Delay [s]	11.80	13.03	8.11	7.15	29.94
k, delay calibration	0.50	0.50	0.50	0.50	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.36	1.92	0.90	0.36	2.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

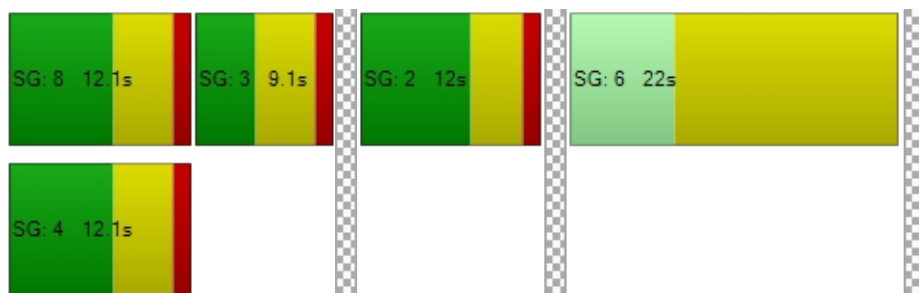
X, volume / capacity	0.09	0.47	0.34	0.15	0.51
d, Delay for Lane Group [s/veh]	12.16	14.95	9.01	7.50	32.35
Lane Group LOS	B	B	A	A	C
Critical Lane Group	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	4.02	2.52	0.82	1.04
50th-Percentile Queue Length [ft/ln]	10.50	100.52	62.96	20.60	25.97
95th-Percentile Queue Length [veh/ln]	0.76	7.24	4.53	1.48	1.87
95th-Percentile Queue Length [ft/ln]	18.90	180.93	113.32	37.07	46.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.16	14.95	9.01	7.50	32.35	32.35
Movement LOS	B	B	A	A	C	C
d_A, Approach Delay [s/veh]	14.66		8.60		32.35	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	12.79					
Intersection LOS	B					
Intersection V/C	0.252					

Sequence

Ring 1	3	8	2	6	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Starr Rd/Windsor River Rd

Control Type: All-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 10.5
 Level Of Service: B
 Volume to Capacity (v/c): 0.402

Intersection Setup

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+R			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	10	52	42	160	60	19	30	51	15	61	80	159
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	52	42	160	60	19	30	51	15	61	80	159
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	13	11	40	15	5	8	13	4	15	20	40
Total Analysis Volume [veh/h]	10	52	42	160	60	19	30	51	15	61	80	159
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	708	695	601	708	745
Degree of Utilization, x	0.15	0.34	0.13	0.02	0.40

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.51	1.53	0.46	0.06	1.95
95th-Percentile Queue Length [ft]	12.83	38.27	11.59	1.62	48.80
Approach Delay [s/veh]	8.96	10.87	9.35		11.04
Approach LOS	A	B	A		B
Intersection Delay [s/veh]	10.47				
Intersection LOS	B				

Intersection Level Of Service Report

Intersection 2: Windsor Rd/Windsor River Rd

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.474

Intersection Setup

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T			T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	65.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	240.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	82	106	185	71	98	48	40	251	44	201	326	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	82	106	185	71	98	48	40	251	44	201	326	56
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	27	46	18	25	12	10	63	11	50	82	14
Total Analysis Volume [veh/h]	82	106	185	71	98	48	40	251	44	201	326	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permis	Permis	ProtPer	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	10	0
Maximum Green [s]	20	35	0	20	35	0	16	35	0	16	35	0
Amber [s]	3.6	3.6	0.0	3.0	3.2	0.0	3.2	3.2	0.0	3.2	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	23	0	12	22	0	12	24	0	12	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	14	0	0	13	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	2.6	0.0	2.0	2.2	0.0	2.2	2.2	0.0	2.2	2.2	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.60	4.60	4.20	4.20	4.20	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.60	0.00	2.20	2.20	2.20	2.20	2.20
g_i, Effective Green Time [s]	36	26	36	25	4	13	8	17
g / C, Green / Cycle	0.51	0.37	0.51	0.36	0.06	0.19	0.11	0.24
(v / s)_i Volume / Saturation Flow Rate	0.06	0.17	0.06	0.08	0.02	0.16	0.11	0.21
s, saturation flow rate [veh/h]	1374	1675	1255	1761	1774	1815	1774	1816
c, Capacity [veh/h]	774	609	698	626	112	350	203	443
d1, Uniform Delay [s]	9.06	17.19	9.40	15.90	31.53	27.32	31.05	25.40
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.28	2.67	0.06	0.87	1.92	5.54	27.16	5.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

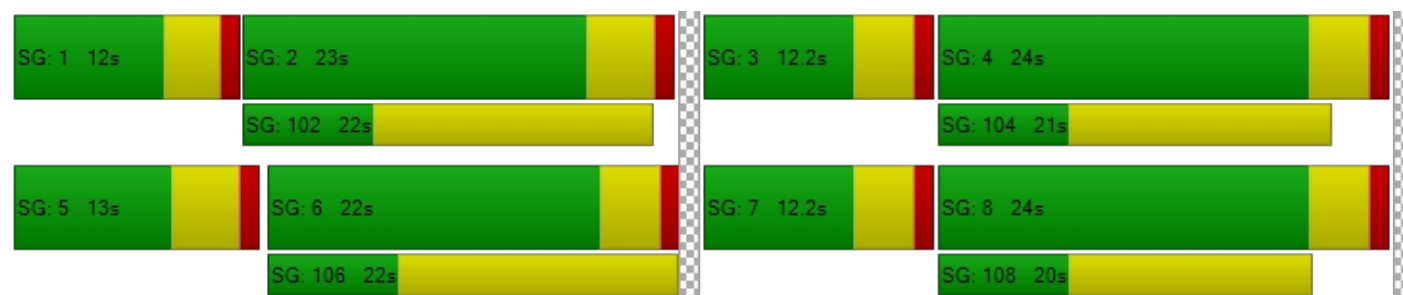
X, volume / capacity	0.11	0.48	0.10	0.23	0.36	0.84	0.99	0.86
d, Delay for Lane Group [s/veh]	9.34	19.86	9.46	16.77	33.45	32.86	58.21	30.47
Lane Group LOS	A	B	A	B	C	C	E	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.61	3.71	0.48	1.65	0.69	5.07	4.79	6.35
50th-Percentile Queue Length [ft/ln]	15.37	92.76	12.05	41.26	17.22	126.67	119.67	158.85
95th-Percentile Queue Length [veh/ln]	1.11	6.68	0.87	2.97	1.24	8.76	8.37	10.49
95th-Percentile Queue Length [ft/ln]	27.66	166.97	21.69	74.27	31.00	218.96	209.37	262.19

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.34	19.86	19.86	9.46	16.77	16.77	33.45	32.86	32.86	58.21	30.47	30.47
Movement LOS	A	B	B	A	B	B	C	C	C	E	C	C
d_A, Approach Delay [s/veh]	17.55			14.38			32.93			40.03		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	29.20											
Intersection LOS	C											
Intersection V/C	0.474											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Starr Rd/Jaguar WayControl Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutesDelay (sec / veh): 0.0
Level Of Service: A
Volume to Capacity (v/c): 0.001**Intersection Setup**

Name	Starr rd		Starr Rd		Jaguar Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Starr rd		Starr Rd		Jaguar Way	
Base Volume Input [veh/h]	104	0	0	136	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	104	0	0	136	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	0	0	34	0	0
Total Analysis Volume [veh/h]	104	0	0	136	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.42	0.00	9.81	8.79
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		9.30	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report

Intersection 4: Windsor Rd/Jaguar Way

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 13.0
 Level Of Service: B
 Volume to Capacity (v/c): 0.202

Intersection Setup

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0
Pocket Length [ft]	280.00	100.00	100.00	170.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Base Volume Input [veh/h]	18	293	222	54	51	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	293	222	54	51	24
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	73	56	14	13	6
Total Analysis Volume [veh/h]	18	293	222	54	51	24
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	8	4	0	2	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	7	7	0	7	0
Maximum Green [s]	35	30	30	0	40	0
Amber [s]	4.1	4.1	4.1	0.0	3.6	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	9	12	12	0	12	0
Vehicle Extension [s]	0.0	4.0	4.0	0.0	2.5	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk						
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.1	3.1	3.1	0.0	2.6	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	Yes	Yes		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	6
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	15

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	66	66	66	66	66
L, Total Lost Time per Cycle [s]	5.10	5.10	5.10	5.10	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.10	3.10	3.10	2.60
g_i, Effective Green Time [s]	36	30	36	36	5
g / C, Green / Cycle	0.55	0.45	0.55	0.55	0.08
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.12	0.03	0.04
s, saturation flow rate [veh/h]	1154	1863	1863	1583	1708
c, Capacity [veh/h]	597	842	1019	866	138
d1, Uniform Delay [s]	10.07	11.83	7.73	7.05	29.34
k, delay calibration	0.50	0.50	0.50	0.50	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.09	1.14	0.49	0.14	2.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

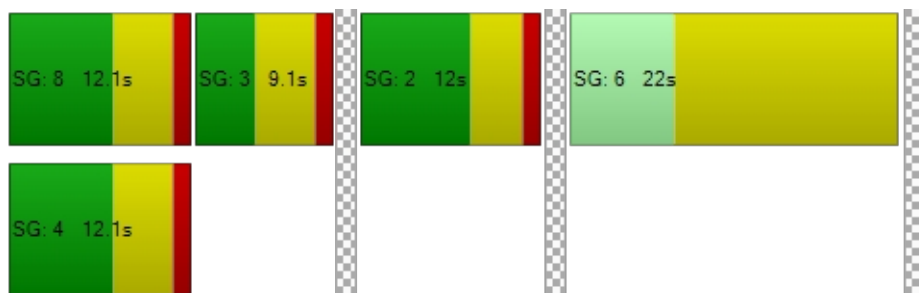
X, volume / capacity	0.03	0.35	0.22	0.06	0.54
d, Delay for Lane Group [s/veh]	10.17	12.97	8.22	7.19	31.81
Lane Group LOS	B	B	A	A	C
Critical Lane Group	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.14	2.69	1.46	0.33	1.21
50th-Percentile Queue Length [ft/ln]	3.57	67.20	36.39	8.13	30.37
95th-Percentile Queue Length [veh/ln]	0.26	4.84	2.62	0.59	2.19
95th-Percentile Queue Length [ft/ln]	6.42	120.96	65.51	14.64	54.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.17	12.97	8.22	7.19	31.81	31.81
Movement LOS	B	B	A	A	C	C
d_A, Approach Delay [s/veh]	12.80		8.02		31.81	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	12.96					
Intersection LOS	B					
Intersection V/C	0.202					

Sequence

Ring 1	3	8	2	6	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Starr Rd/Windsor River Rd

Control Type: All-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 21.6
 Level Of Service: C
 Volume to Capacity (v/c): 0.821

Intersection Setup

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	28	186	50	295	153	29	39	99	39	32	64	192
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	186	50	295	153	29	39	99	39	32	64	192
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	47	13	74	38	7	10	25	10	8	16	48
Total Analysis Volume [veh/h]	28	186	50	295	153	29	39	99	39	32	64	192
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	555	581	465	524	553
Degree of Utilization, x	0.48	0.82	0.30	0.07	0.52

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.55	8.37	1.23	0.24	2.99
95th-Percentile Queue Length [ft]	63.73	209.37	30.70	6.01	74.86
Approach Delay [s/veh]	15.26	31.48	12.89		16.39
Approach LOS	C	D	B		C
Intersection Delay [s/veh]	21.60				
Intersection LOS	C				

Intersection Level Of Service Report Intersection 2: Windsor Rd/Windsor River Rd

Control Type:	Signalized	Delay (sec / veh):	37.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.664

Intersection Setup

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵			↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	65.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	240.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	68	228	278	37	237	48	112	381	72	183	247	29
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	228	278	37	237	48	112	381	72	183	247	29
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	57	70	9	59	12	28	95	18	46	62	7
Total Analysis Volume [veh/h]	68	228	278	37	237	48	112	381	72	183	247	29
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permis	Permis	ProtPer	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	10	0
Maximum Green [s]	20	35	0	20	35	0	16	35	0	16	35	0
Amber [s]	3.6	3.6	0.0	3.0	3.2	0.0	3.2	3.2	0.0	3.2	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	27	0	13	27	0	24	37	0	23	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	14	0	0	13	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	2.6	0.0	2.0	2.2	0.0	2.2	2.2	0.0	2.2	2.2	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.60	4.60	4.20	4.20	4.20	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.60	0.00	2.20	2.20	2.20	2.20	2.20
g_i, Effective Green Time [s]	48	38	48	36	8	27	12	32
g / C, Green / Cycle	0.47	0.38	0.48	0.36	0.08	0.27	0.12	0.31
(v / s)_i Volume / Saturation Flow Rate	0.06	0.30	0.04	0.16	0.06	0.25	0.10	0.15
s, saturation flow rate [veh/h]	1226	1698	1025	1809	1774	1812	1774	1829
c, Capacity [veh/h]	555	650	396	659	142	494	218	577
d1, Uniform Delay [s]	15.17	27.18	17.67	24.02	45.18	35.29	42.94	27.64
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.19	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.45	8.96	0.10	2.07	9.16	11.56	8.41	0.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

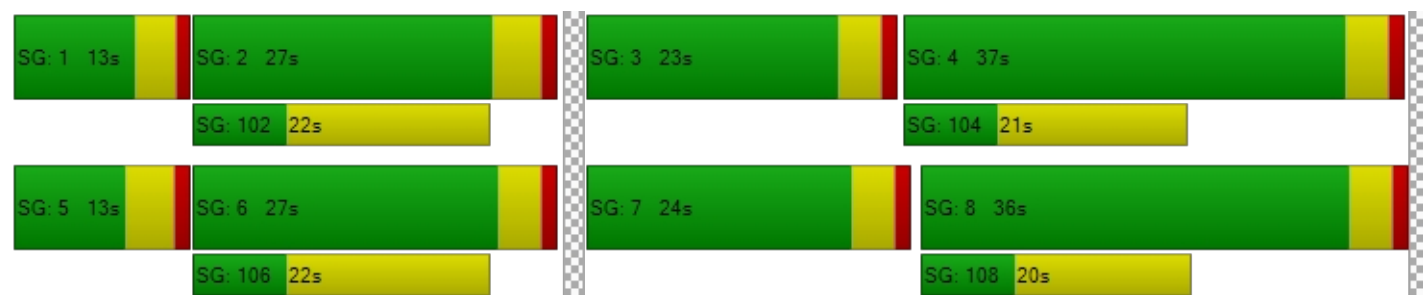
X, volume / capacity	0.12	0.78	0.09	0.43	0.79	0.92	0.84	0.48
d, Delay for Lane Group [s/veh]	15.63	36.15	17.77	26.09	54.35	46.84	51.36	28.25
Lane Group LOS	B	D	B	C	D	D	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.88	11.73	0.44	5.30	3.07	12.06	4.90	5.35
50th-Percentile Queue Length [ft/ln]	22.03	293.21	11.02	132.44	76.85	301.40	122.40	133.73
95th-Percentile Queue Length [veh/ln]	1.59	17.34	0.79	9.07	5.53	17.75	8.52	9.14
95th-Percentile Queue Length [ft/ln]	39.66	433.62	19.83	226.81	138.34	443.76	213.12	228.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.63	36.15	36.15	17.77	26.09	26.09	54.35	46.84	46.84	51.36	28.25	28.25
Movement LOS	B	D	D	B	C	C	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	33.71			25.13			48.33			37.46		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.47											
Intersection LOS	D											
Intersection V/C	0.664											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Starr Rd/Jaguar WayControl Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutesDelay (sec / veh): 0.0
Level Of Service: A
Volume to Capacity (v/c): 0.003**Intersection Setup**

Name	Starr rd		Starr Rd		Jaguar Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Starr rd		Starr Rd		Jaguar Way	
Base Volume Input [veh/h]	264	0	0	224	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	264	0	0	224	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	0	0	56	0	0
Total Analysis Volume [veh/h]	264	0	0	224	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.77	0.00	11.68	9.65
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		10.66	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report

Intersection 4: Windsor Rd/Jaguar Way

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 15.2
 Level Of Service: B
 Volume to Capacity (v/c): 0.309

Intersection Setup

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	170.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Base Volume Input [veh/h]	60	424	357	133	49	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	424	357	133	49	33
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	106	89	33	12	8
Total Analysis Volume [veh/h]	60	424	357	133	49	33
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	8	4	0	2	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	7	7	0	7	0
Maximum Green [s]	30	30	30	0	40	0
Amber [s]	3.0	4.1	4.1	0.0	3.6	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	54	64	118	0	99	0
Vehicle Extension [s]	3.0	4.0	4.0	0.0	2.5	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk						
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.1	3.1	0.0	2.6	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	Yes	Yes		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	6
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	15

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	73	73	73	73	73
L, Total Lost Time per Cycle [s]	5.10	5.10	5.10	5.10	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.10	3.10	3.10	2.60
g_i, Effective Green Time [s]	43	30	43	43	6
g / C, Green / Cycle	0.59	0.41	0.59	0.59	0.08
(v / s)_i Volume / Saturation Flow Rate	0.06	0.23	0.19	0.08	0.05
s, saturation flow rate [veh/h]	1020	1863	1863	1583	1692
c, Capacity [veh/h]	575	759	1089	926	135
d1, Uniform Delay [s]	11.22	16.73	7.85	6.93	32.77
k, delay calibration	0.11	0.50	0.50	0.50	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	2.96	0.80	0.33	3.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

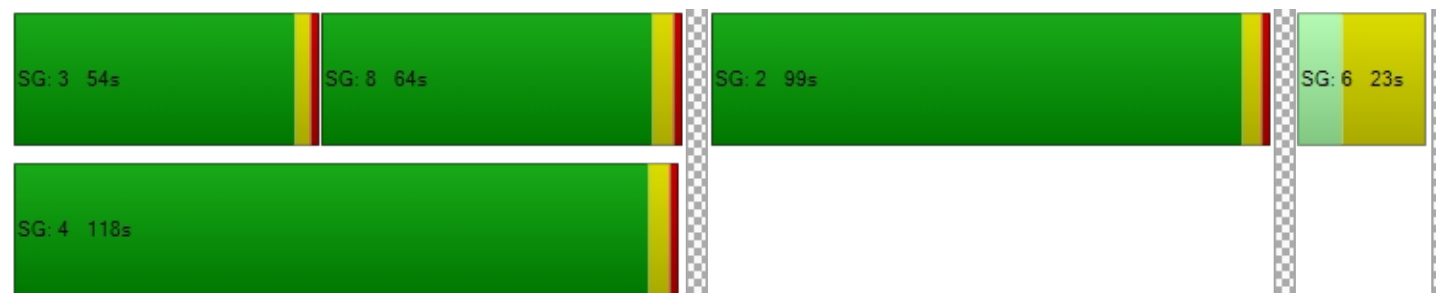
X, volume / capacity	0.10	0.56	0.33	0.14	0.61
d, Delay for Lane Group [s/veh]	11.29	19.69	8.66	7.26	36.05
Lane Group LOS	B	B	A	A	D
Critical Lane Group	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.50	5.55	2.61	0.86	1.51
50th-Percentile Queue Length [ft/ln]	12.45	138.67	65.22	21.54	37.86
95th-Percentile Queue Length [veh/ln]	0.90	9.41	4.70	1.55	2.73
95th-Percentile Queue Length [ft/ln]	22.41	235.23	117.39	38.77	68.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.29	19.69	8.66	7.26	36.05	36.05
Movement LOS	B	B	A	A	D	D
d_A, Approach Delay [s/veh]	18.65		8.28		36.05	
Approach LOS	B		A		D	
d_I, Intersection Delay [s/veh]	15.19					
Intersection LOS	B					
Intersection V/C	0.309					

Sequence

Ring 1	3	8	2	6	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Starr Rd/Windsor River Rd

Control Type: All-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 22.1
 Level Of Service: C
 Volume to Capacity (v/c): 0.795

Intersection Setup

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	18	117	65	254	88	35	63	73	20	72	115	285
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	117	65	254	88	35	63	73	20	72	115	285
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	29	16	64	22	9	16	18	5	18	29	71
Total Analysis Volume [veh/h]	18	117	65	254	88	35	63	73	20	72	115	285
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	533	552	466	533	594
Degree of Utilization, x	0.37	0.68	0.29	0.04	0.79

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.73	5.23	1.20	0.12	7.71
95th-Percentile Queue Length [ft]	43.20	130.68	30.02	2.92	192.72
Approach Delay [s/veh]	13.74	22.45	13.08		28.44
Approach LOS	B	C	B		D
Intersection Delay [s/veh]	22.14				
Intersection LOS	C				

Intersection Level Of Service Report

Intersection 2: Windsor Rd/Windsor River Rd

Control Type:	Signalized	Delay (sec / veh):	37.8
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.580

Intersection Setup

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	65.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	240.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	91	131	185	99	101	130	122	359	46	201	441	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	91	131	185	99	101	130	122	359	46	201	441	83
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	33	46	25	25	33	31	90	12	50	110	21
Total Analysis Volume [veh/h]	91	131	185	99	101	130	122	359	46	201	441	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permis	Permis	ProtPer	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	10	0
Maximum Green [s]	20	35	0	20	35	0	16	35	0	16	35	0
Amber [s]	3.6	3.6	0.0	3.0	3.2	0.0	3.2	3.2	0.0	3.2	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	28	0	12	27	0	13	32	0	28	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	14	0	0	13	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	2.6	0.0	2.0	2.2	0.0	2.2	2.2	0.0	2.2	2.2	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.60	4.60	4.20	4.20	4.20	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.60	0.00	2.20	2.20	2.20	2.20	2.20
g_i, Effective Green Time [s]	47	36	48	36	9	26	13	31
g / C, Green / Cycle	0.47	0.36	0.48	0.36	0.09	0.26	0.13	0.31
(v / s)_i Volume / Saturation Flow Rate	0.07	0.19	0.08	0.14	0.07	0.22	0.11	0.29
s, saturation flow rate [veh/h]	1279	1688	1229	1694	1774	1826	1774	1812
c, Capacity [veh/h]	589	601	565	602	152	482	238	567
d1, Uniform Delay [s]	15.34	25.54	15.89	24.10	44.98	34.87	42.34	33.29
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.15	0.11	0.22
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.56	3.27	0.15	1.85	9.47	5.42	7.94	12.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

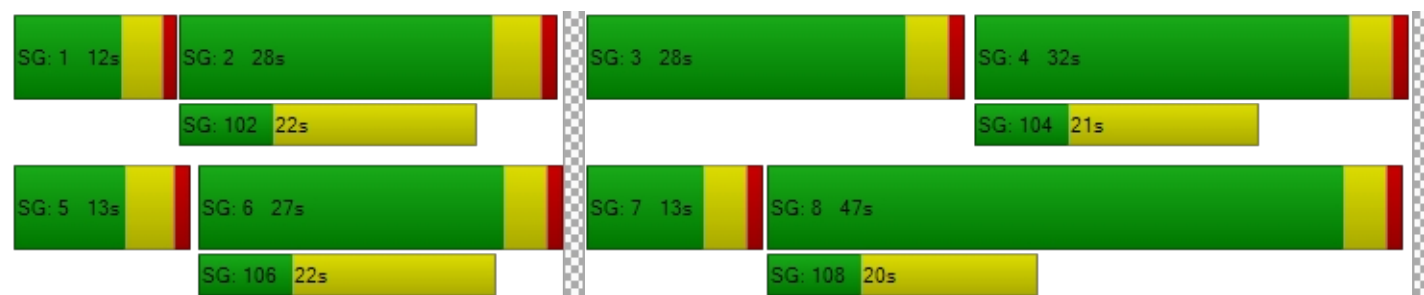
X, volume / capacity	0.15	0.53	0.18	0.38	0.80	0.84	0.84	0.92
d, Delay for Lane Group [s/veh]	15.90	28.81	16.04	25.94	54.45	40.28	50.28	45.79
Lane Group LOS	B	C	B	C	D	D	D	D
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.20	6.28	1.22	4.26	3.35	9.88	5.33	13.94
50th-Percentile Queue Length [ft/ln]	29.97	157.03	30.55	106.52	83.85	247.06	133.25	348.48
95th-Percentile Queue Length [veh/ln]	2.16	10.39	2.20	7.65	6.04	15.04	9.12	20.06
95th-Percentile Queue Length [ft/ln]	53.95	259.79	54.99	191.15	150.92	375.94	227.90	501.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.90	28.81	28.81	16.04	25.94	25.94	54.45	40.28	40.28	50.28	45.79	45.79
Movement LOS	B	C	C	B	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	25.92			22.97			43.56			47.04		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.80											
Intersection LOS	D											
Intersection V/C	0.580											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Starr Rd/Jaguar Way

Control Type: Two-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 0.0
 Level Of Service: A
 Volume to Capacity (v/c): 0.002

Intersection Setup

Name	Starr rd		Starr Rd		Jaguar Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Starr rd		Starr Rd		Jaguar Way	
Base Volume Input [veh/h]	200	0	0	178	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	200	0	0	178	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	0	0	45	0	0
Total Analysis Volume [veh/h]	200	0	0	178	0	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.62	0.00	10.77	9.28
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		10.03	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report

Intersection 4: Windsor Rd/Jaguar Way

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 14.2
 Level Of Service: B
 Volume to Capacity (v/c): 0.231

Intersection Setup

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0
Pocket Length [ft]	280.00	100.00	100.00	170.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Base Volume Input [veh/h]	35	324	222	55	59	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	35	324	222	55	59	35
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	81	56	14	15	9
Total Analysis Volume [veh/h]	35	324	222	55	59	35
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	8	4	0	2	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	7	7	0	7	0
Maximum Green [s]	35	30	30	0	40	0
Amber [s]	4.1	4.1	4.1	0.0	3.6	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	9	12	12	0	12	0
Vehicle Extension [s]	0.0	4.0	4.0	0.0	2.5	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk						
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.1	3.1	3.1	0.0	2.6	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	Yes	Yes		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	6
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	15

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	68	68	68	68	68
L, Total Lost Time per Cycle [s]	5.10	5.10	5.10	5.10	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.10	3.10	3.10	2.60
g_i, Effective Green Time [s]	37	30	37	37	6
g / C, Green / Cycle	0.55	0.44	0.55	0.55	0.09
(v / s)_i Volume / Saturation Flow Rate	0.03	0.17	0.12	0.03	0.06
s, saturation flow rate [veh/h]	1154	1863	1863	1583	1698
c, Capacity [veh/h]	595	823	1020	867	150
d1, Uniform Delay [s]	10.48	12.82	7.89	7.20	29.88
k, delay calibration	0.50	0.50	0.50	0.50	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	1.41	0.49	0.14	3.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

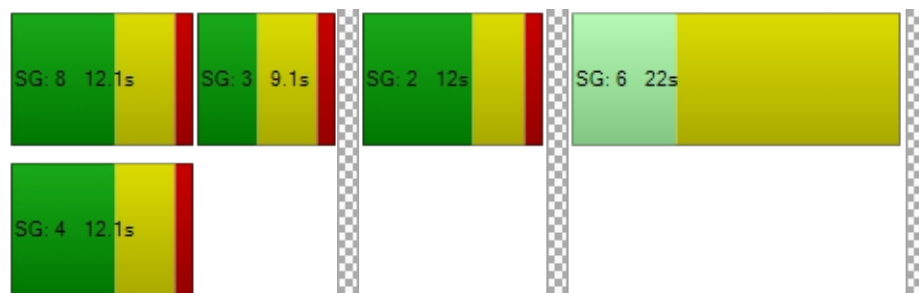
X, volume / capacity	0.06	0.39	0.22	0.06	0.63
d, Delay for Lane Group [s/veh]	10.66	14.23	8.38	7.34	33.05
Lane Group LOS	B	B	A	A	C
Critical Lane Group	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.29	3.21	1.50	0.34	1.58
50th-Percentile Queue Length [ft/ln]	7.26	80.37	37.46	8.53	39.42
95th-Percentile Queue Length [veh/ln]	0.52	5.79	2.70	0.61	2.84
95th-Percentile Queue Length [ft/ln]	13.07	144.66	67.44	15.36	70.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.66	14.23	8.38	7.34	33.05	33.05
Movement LOS	B	B	A	A	C	C
d_A, Approach Delay [s/veh]	13.89		8.17		33.05	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	14.19					
Intersection LOS	B					
Intersection V/C	0.231					

Sequence

Ring 1	3	8	2	6	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Starr Rd/Windsor River Rd

Control Type: All-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 13.9
 Level Of Service: B
 Volume to Capacity (v/c): 0.630

Intersection Setup

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	21	168	48	264	138	17	19	59	24	30	41	156
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	168	48	264	138	17	19	59	24	30	41	156
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	42	12	66	35	4	5	15	6	8	10	39
Total Analysis Volume [veh/h]	21	168	48	264	138	17	19	59	24	30	41	156
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	653	665	522	595	633
Degree of Utilization, x	0.36	0.63	0.15	0.04	0.36

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.66	4.47	0.52	0.13	1.62
95th-Percentile Queue Length [ft]	41.39	111.67	13.04	3.15	40.62
Approach Delay [s/veh]	11.62	17.19	10.38		11.83
Approach LOS	B	C	B		B
Intersection Delay [s/veh]	13.91				
Intersection LOS	B				

Intersection Level Of Service Report Intersection 2: Windsor Rd/Windsor River Rd

Control Type:	Signalized	Delay (sec / veh):	29.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.601

Intersection Setup

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T			T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	65.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	240.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	64	165	278	37	237	40	52	349	53	183	172	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	165	278	37	237	40	52	349	53	183	172	13
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	41	70	9	59	10	13	87	13	46	43	3
Total Analysis Volume [veh/h]	64	165	278	37	237	40	52	349	53	183	172	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permis	Permis	ProtPer	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	10	0
Maximum Green [s]	20	35	0	20	35	0	16	35	0	16	35	0
Amber [s]	3.6	3.6	0.0	3.0	3.2	0.0	3.2	3.2	0.0	3.2	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	23	0	12	22	0	12	24	0	12	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	14	0	0	13	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	2.6	0.0	2.0	2.2	0.0	2.2	2.2	0.0	2.2	2.2	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.60	4.60	4.20	4.20	4.20	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.60	0.00	2.20	2.20	2.20	2.20	2.20
g_i, Effective Green Time [s]	32	24	32	22	5	17	8	20
g / C, Green / Cycle	0.45	0.34	0.46	0.31	0.07	0.25	0.11	0.29
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.03	0.15	0.03	0.22	0.10	0.10
s, saturation flow rate [veh/h]	1277	1677	1102	1816	1774	1820	1774	1840
c, Capacity [veh/h]	592	562	480	563	131	452	203	531
d1, Uniform Delay [s]	11.52	21.09	12.74	19.74	31.01	25.46	30.70	19.75
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	10.72	0.07	3.06	1.93	6.18	13.48	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

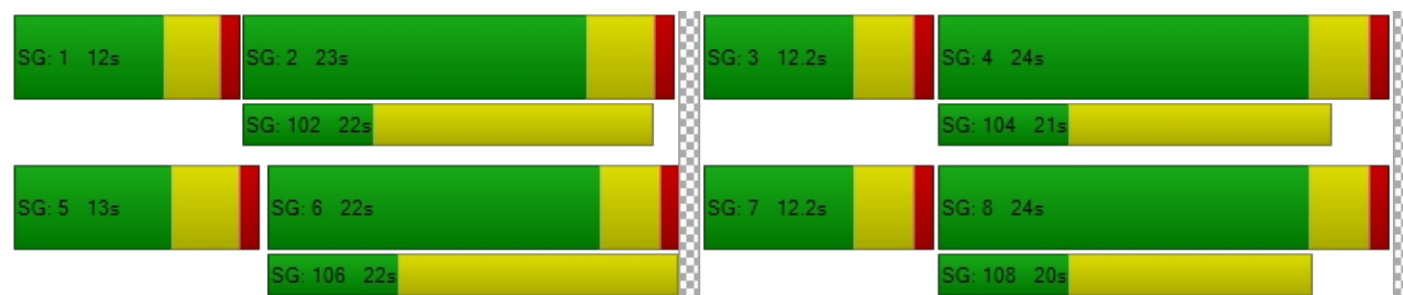
X, volume / capacity	0.11	0.79	0.08	0.49	0.40	0.89	0.90	0.35
d, Delay for Lane Group [s/veh]	11.89	31.81	12.80	22.80	32.95	31.64	44.18	20.14
Lane Group LOS	B	C	B	C	C	C	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.56	7.58	0.29	3.85	0.88	6.85	3.69	2.31
50th-Percentile Queue Length [ft/ln]	14.04	189.55	7.25	96.22	22.06	171.19	92.26	57.86
95th-Percentile Queue Length [veh/ln]	1.01	12.10	0.52	6.93	1.59	11.14	6.64	4.17
95th-Percentile Queue Length [ft/ln]	25.27	302.44	13.05	173.20	39.72	278.48	166.07	104.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.89	31.81	31.81	12.80	22.80	22.80	32.95	31.64	31.64	44.18	20.14	20.14
Movement LOS	B	C	C	B	C	C	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	29.29			21.62			31.79			32.09		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	29.14											
Intersection LOS	C											
Intersection V/C	0.601											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Starr Rd/Jaguar Way

Control Type: Two-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 9.5
 Level Of Service: A
 Volume to Capacity (v/c): 0.005

Intersection Setup

Name	Starr rd		Starr Rd		Jaguar Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Starr rd		Starr Rd		Jaguar Way	
Base Volume Input [veh/h]	235	2	19	175	0	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	235	2	19	175	0	4
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	1	5	44	0	1
Total Analysis Volume [veh/h]	235	2	19	175	0	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	7.75	0.00	11.47	9.51
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.04	0.04	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.09	1.09	0.38	0.38
d_A, Approach Delay [s/veh]	0.00		0.76		9.51	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.43					
Intersection LOS	A					

Intersection Level Of Service Report

Intersection 4: Windsor Rd/Jaguar Way

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 12.7
 Level Of Service: B
 Volume to Capacity (v/c): 0.249

Intersection Setup

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0
Pocket Length [ft]	280.00	100.00	100.00	170.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Base Volume Input [veh/h]	46	393	357	113	28	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	393	357	113	28	31
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	98	89	28	7	8
Total Analysis Volume [veh/h]	46	393	357	113	28	31
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	8	4	0	2	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	7	7	0	7	0
Maximum Green [s]	35	30	30	0	40	0
Amber [s]	4.1	4.1	4.1	0.0	3.6	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	9	12	12	0	12	0
Vehicle Extension [s]	0.0	4.0	4.0	0.0	2.5	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk						
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.1	3.1	3.1	0.0	2.6	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	Yes	Yes		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	6
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	15

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	67	67	67	67	67
L, Total Lost Time per Cycle [s]	5.10	5.10	5.10	5.10	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.10	3.10	3.10	2.60
g_i, Effective Green Time [s]	37	30	37	37	5
g / C, Green / Cycle	0.56	0.45	0.56	0.56	0.07
(v / s)_i Volume / Saturation Flow Rate	0.05	0.21	0.19	0.07	0.04
s, saturation flow rate [veh/h]	1020	1863	1863	1583	1668
c, Capacity [veh/h]	508	834	1043	886	119
d1, Uniform Delay [s]	11.71	12.94	8.03	6.99	29.94
k, delay calibration	0.50	0.50	0.50	0.50	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.35	1.91	0.90	0.30	2.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

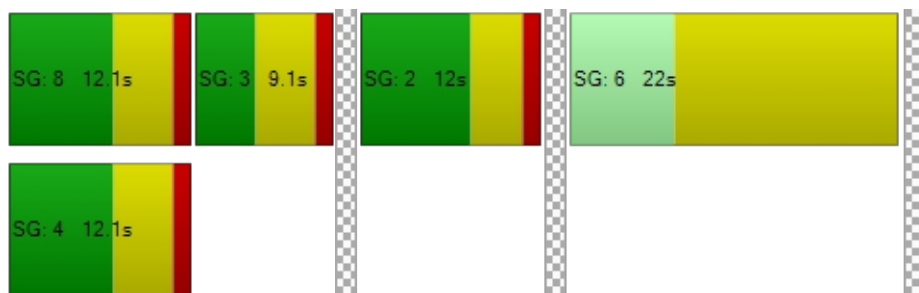
X, volume / capacity	0.09	0.47	0.34	0.13	0.50
d, Delay for Lane Group [s/veh]	12.06	14.85	8.93	7.29	32.30
Lane Group LOS	B	B	A	A	C
Critical Lane Group	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.42	3.99	2.50	0.69	0.97
50th-Percentile Queue Length [ft/ln]	10.42	99.85	62.40	17.23	24.28
95th-Percentile Queue Length [veh/ln]	0.75	7.19	4.49	1.24	1.75
95th-Percentile Queue Length [ft/ln]	18.76	179.73	112.32	31.01	43.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.06	14.85	8.93	7.29	32.30	32.30
Movement LOS	B	B	A	A	C	C
d_A, Approach Delay [s/veh]	14.55		8.53		32.30	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	12.71					
Intersection LOS	B					
Intersection V/C	0.249					

Sequence

Ring 1	3	8	2	6	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Starr Rd/Windsor River Rd

Control Type: All-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 10.4
 Level Of Service: B
 Volume to Capacity (v/c): 0.389

Intersection Setup

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	13	58	41	156	64	19	30	50	16	59	77	153
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	58	41	156	64	19	30	50	16	59	77	153
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	15	10	39	16	5	8	13	4	15	19	38
Total Analysis Volume [veh/h]	13	58	41	156	64	19	30	50	16	59	77	153
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	708	697	600	706	742
Degree of Utilization, x	0.16	0.34	0.13	0.02	0.39

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.56	1.52	0.46	0.07	1.85
95th-Percentile Queue Length [ft]	13.99	38.09	11.45	1.74	46.28
Approach Delay [s/veh]	9.04	10.83	9.33		10.90
Approach LOS	A	B	A		B
Intersection Delay [s/veh]	10.39				
Intersection LOS	B				

Intersection Level Of Service Report

Intersection 2: Windsor Rd/Windsor River Rd

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 29.4
 Level Of Service: C
 Volume to Capacity (v/c): 0.469

Intersection Setup

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T			T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	65.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	240.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	71	106	185	71	98	48	40	251	37	201	326	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	71	106	185	71	98	48	40	251	37	201	326	56
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	27	46	18	25	12	10	63	9	50	82	14
Total Analysis Volume [veh/h]	71	106	185	71	98	48	40	251	37	201	326	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permis	Permis	ProtPer	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	10	0
Maximum Green [s]	20	35	0	20	35	0	16	35	0	16	35	0
Amber [s]	3.6	3.6	0.0	3.0	3.2	0.0	3.2	3.2	0.0	3.2	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	23	0	12	22	0	12	24	0	12	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	14	0	0	13	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	2.6	0.0	2.0	2.2	0.0	2.2	2.2	0.0	2.2	2.2	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.60	4.60	4.20	4.20	4.20	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.60	0.00	2.20	2.20	2.20	2.20	2.20
g_i, Effective Green Time [s]	36	26	36	26	4	13	8	17
g / C, Green / Cycle	0.51	0.37	0.52	0.37	0.06	0.19	0.11	0.24
(v / s)_i Volume / Saturation Flow Rate	0.05	0.17	0.06	0.08	0.02	0.16	0.11	0.21
s, saturation flow rate [veh/h]	1366	1675	1265	1761	1774	1821	1774	1816
c, Capacity [veh/h]	778	617	711	644	111	343	203	436
d1, Uniform Delay [s]	8.84	16.92	9.22	15.39	31.52	27.42	31.01	25.61
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.23	2.58	0.06	0.82	1.97	5.48	27.27	5.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

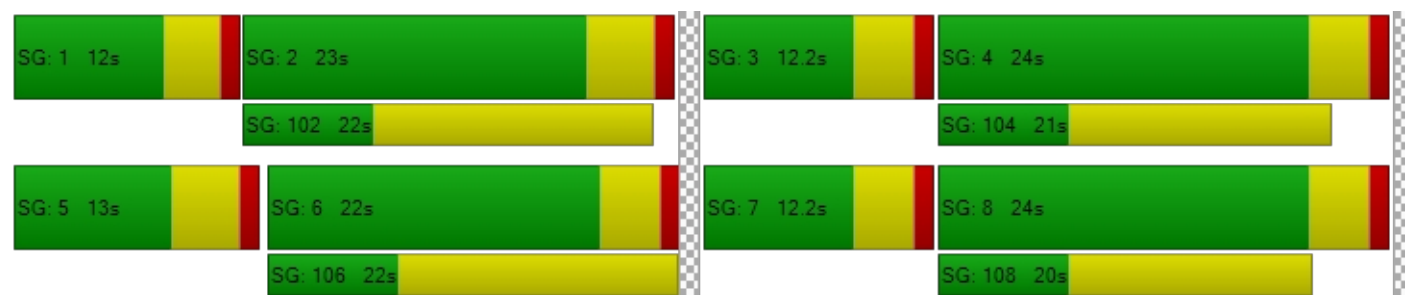
X, volume / capacity	0.09	0.47	0.10	0.23	0.36	0.84	0.99	0.88
d, Delay for Lane Group [s/veh]	9.07	19.50	9.28	16.20	33.49	32.89	58.27	31.29
Lane Group LOS	A	B	A	B	C	C	E	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.52	3.67	0.48	1.61	0.69	4.94	4.79	6.45
50th-Percentile Queue Length [ft/ln]	13.05	91.71	11.89	40.35	17.23	123.56	119.73	161.20
95th-Percentile Queue Length [veh/ln]	0.94	6.60	0.86	2.90	1.24	8.59	8.38	10.61
95th-Percentile Queue Length [ft/ln]	23.49	165.08	21.40	72.62	31.02	214.71	209.46	265.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.07	19.50	19.50	9.28	16.20	16.20	33.49	32.89	32.89	58.27	31.29	31.29
Movement LOS	A	B	B	A	B	B	C	C	C	E	C	C
d_A, Approach Delay [s/veh]	17.46			13.94			32.97			40.59		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	29.41											
Intersection LOS	C											
Intersection V/C	0.469											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Starr Rd/Jaguar WayControl Type: Two-way stop
Analysis Method: HCM 2010
Analysis Period: 15 minutesDelay (sec / veh): 10.0
Level Of Service: A
Volume to Capacity (v/c): 0.003**Intersection Setup**

Name	Starr rd		Starr Rd		Jaguar Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Starr rd		Starr Rd		Jaguar Way	
Base Volume Input [veh/h]	104	1	7	136	2	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	104	1	7	136	2	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	0	2	34	1	3
Total Analysis Volume [veh/h]	104	1	7	136	2	11
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.43	0.00	9.99	8.85
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.01	0.04	0.04
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.35	0.35	1.09	1.09
d_A, Approach Delay [s/veh]	0.00		0.36		9.02	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.65					
Intersection LOS	A					

Intersection Level Of Service Report

Intersection 4: Windsor Rd/Jaguar Way

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 12.5
 Level Of Service: B
 Volume to Capacity (v/c): 0.196

Intersection Setup

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0
Pocket Length [ft]	280.00	100.00	100.00	170.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Base Volume Input [veh/h]	18	293	222	47	40	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	293	222	47	40	24
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	73	56	12	10	6
Total Analysis Volume [veh/h]	18	293	222	47	40	24
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	8	4	0	2	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	7	7	0	7	0
Maximum Green [s]	35	30	30	0	40	0
Amber [s]	4.1	4.1	4.1	0.0	3.6	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	9	12	12	0	12	0
Vehicle Extension [s]	0.0	4.0	4.0	0.0	2.5	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk						
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.1	3.1	3.1	0.0	2.6	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	Yes	Yes		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	6
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	15

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	66	66	66	66	66
L, Total Lost Time per Cycle [s]	5.10	5.10	5.10	5.10	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.10	3.10	3.10	2.60
g_i, Effective Green Time [s]	36	30	36	36	5
g / C, Green / Cycle	0.55	0.46	0.55	0.55	0.07
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.12	0.03	0.04
s, saturation flow rate [veh/h]	1154	1863	1863	1583	1697
c, Capacity [veh/h]	602	847	1025	871	127
d1, Uniform Delay [s]	9.88	11.64	7.57	6.87	29.33
k, delay calibration	0.50	0.50	0.50	0.50	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.09	1.12	0.48	0.12	2.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

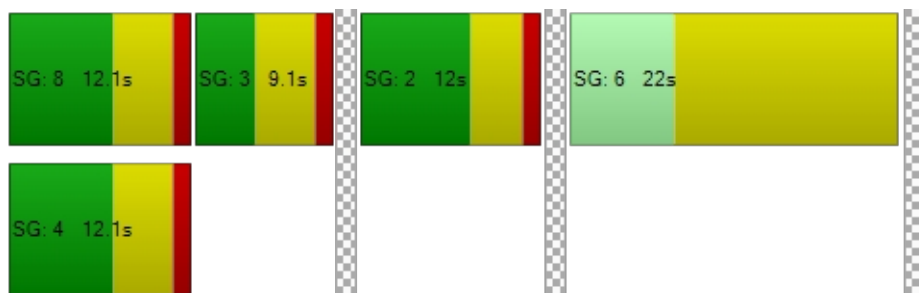
X, volume / capacity	0.03	0.35	0.22	0.05	0.50
d, Delay for Lane Group [s/veh]	9.97	12.75	8.05	6.99	31.60
Lane Group LOS	A	B	A	A	C
Critical Lane Group	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.14	2.65	1.43	0.28	1.03
50th-Percentile Queue Length [ft/ln]	3.50	66.14	35.65	6.90	25.75
95th-Percentile Queue Length [veh/ln]	0.25	4.76	2.57	0.50	1.85
95th-Percentile Queue Length [ft/ln]	6.31	119.04	64.17	12.42	46.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.97	12.75	8.05	6.99	31.60	31.60
Movement LOS	A	B	A	A	C	C
d_A, Approach Delay [s/veh]	12.59		7.87		31.60	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	12.51					
Intersection LOS	B					
Intersection V/C	0.196					

Sequence

Ring 1	3	8	2	6	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Starr Rd/Windsor River Rd

Control Type: All-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 21.4
 Level Of Service: C
 Volume to Capacity (v/c): 0.818

Intersection Setup

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	29	189	48	281	167	29	39	96	42	32	63	189
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	189	48	281	167	29	39	96	42	32	63	189
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	47	12	70	42	7	10	24	11	8	16	47
Total Analysis Volume [veh/h]	29	189	48	281	167	29	39	96	42	32	63	189
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	556	583	466	525	553
Degree of Utilization, x	0.48	0.82	0.29	0.08	0.51

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.57	8.30	1.19	0.26	2.91
95th-Percentile Queue Length [ft]	64.23	207.49	29.74	6.49	72.87
Approach Delay [s/veh]	15.27	31.09	12.74		16.18
Approach LOS	C	D	B		C
Intersection Delay [s/veh]	21.38				
Intersection LOS	C				

Intersection Level Of Service Report Intersection 2: Windsor Rd/Windsor River Rd

Control Type:	Signalized	Delay (sec / veh):	36.6
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.651

Intersection Setup

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵			↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	65.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	240.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	64	228	278	37	237	48	112	381	53	183	247	29
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	228	278	37	237	48	112	381	53	183	247	29
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	57	70	9	59	12	28	95	13	46	62	7
Total Analysis Volume [veh/h]	64	228	278	37	237	48	112	381	53	183	247	29
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permis	Permis	ProtPer	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	10	0
Maximum Green [s]	20	35	0	20	35	0	16	35	0	16	35	0
Amber [s]	3.6	3.6	0.0	3.0	3.2	0.0	3.2	3.2	0.0	3.2	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	27	0	13	27	0	24	37	0	23	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	14	0	0	13	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	2.6	0.0	2.0	2.2	0.0	2.2	2.2	0.0	2.2	2.2	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.60	4.60	4.20	4.20	4.20	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.60	0.00	2.20	2.20	2.20	2.20	2.20
g_i, Effective Green Time [s]	49	40	49	38	8	26	12	30
g / C, Green / Cycle	0.49	0.40	0.49	0.38	0.08	0.26	0.12	0.30
(v / s)_i Volume / Saturation Flow Rate	0.05	0.30	0.04	0.16	0.06	0.24	0.10	0.15
s, saturation flow rate [veh/h]	1221	1698	1025	1809	1774	1823	1774	1829
c, Capacity [veh/h]	570	670	413	683	142	476	218	555
d1, Uniform Delay [s]	14.46	26.15	16.90	23.03	45.18	35.88	42.94	28.60
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.17	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.40	7.76	0.09	1.88	9.16	10.37	8.41	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

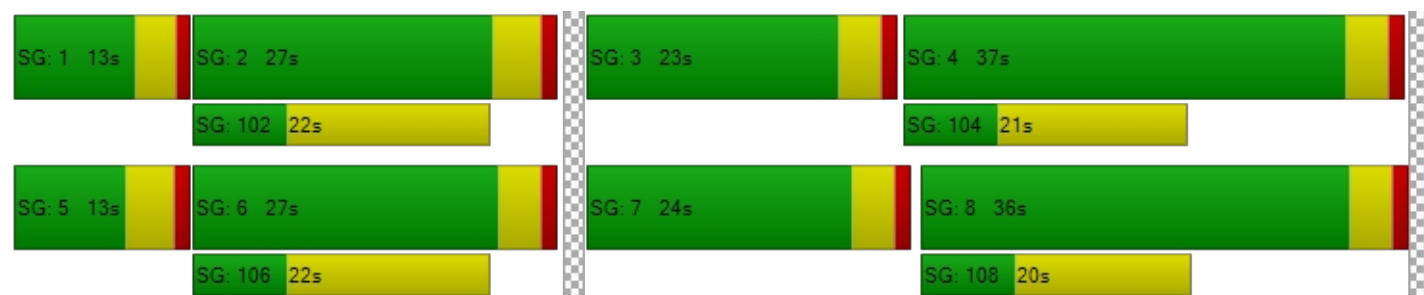
X, volume / capacity	0.11	0.76	0.09	0.42	0.79	0.91	0.84	0.50
d, Delay for Lane Group [s/veh]	14.86	33.90	17.00	24.90	54.35	46.24	51.36	29.30
Lane Group LOS	B	C	B	C	D	D	D	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.80	11.32	0.43	5.15	3.07	11.43	4.90	5.46
50th-Percentile Queue Length [ft/ln]	20.09	282.92	10.69	128.75	76.85	285.77	122.40	136.61
95th-Percentile Queue Length [veh/ln]	1.45	16.83	0.77	8.87	5.53	16.98	8.52	9.30
95th-Percentile Queue Length [ft/ln]	36.15	420.84	19.25	221.79	138.34	424.38	213.12	232.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.86	33.90	33.90	17.00	24.90	24.90	54.35	46.24	46.24	51.36	29.30	29.30
Movement LOS	B	C	C	B	C	C	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	31.77			23.99			47.91			38.09		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.62											
Intersection LOS	D											
Intersection V/C	0.651											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Starr Rd/Jaguary Way

Control Type: Two-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 9.7
 Level Of Service: A
 Volume to Capacity (v/c): 0.005

Intersection Setup

Name	Starr rd		Starr Rd		Jaguar Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Starr rd		Starr Rd		Jaguar Way	
Base Volume Input [veh/h]	264	2	19	224	0	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	264	2	19	224	0	4
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	1	5	56	0	1
Total Analysis Volume [veh/h]	264	2	19	224	0	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.81	0.00	12.18	9.68
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.04	0.04	0.02	0.02
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.11	1.11	0.39	0.39
d_A, Approach Delay [s/veh]	0.00		0.61		9.68	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.36					
Intersection LOS	A					

Intersection Level Of Service Report

Intersection 4: Windsor Rd/Jaguar Way

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 15.2
 Level Of Service: B
 Volume to Capacity (v/c): 0.307

Intersection Setup

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	170.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Base Volume Input [veh/h]	60	424	357	114	45	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	424	357	114	45	33
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	106	89	29	11	8
Total Analysis Volume [veh/h]	60	424	357	114	45	33
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	240
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	8	4	0	2	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	7	7	0	7	0
Maximum Green [s]	30	30	30	0	40	0
Amber [s]	3.0	4.1	4.1	0.0	3.6	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	54	64	118	0	99	0
Vehicle Extension [s]	3.0	4.0	4.0	0.0	2.5	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk						
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	3.1	3.1	0.0	2.6	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	Yes	Yes		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	6
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	15

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	73	73	73	73	73
L, Total Lost Time per Cycle [s]	5.10	5.10	5.10	5.10	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.10	3.10	3.10	2.60
g_i, Effective Green Time [s]	43	30	43	43	6
g / C, Green / Cycle	0.59	0.41	0.59	0.59	0.08
(v / s)_i Volume / Saturation Flow Rate	0.06	0.23	0.19	0.07	0.05
s, saturation flow rate [veh/h]	1020	1863	1863	1583	1688
c, Capacity [veh/h]	577	761	1091	927	132
d1, Uniform Delay [s]	11.16	16.65	7.81	6.80	32.73
k, delay calibration	0.11	0.50	0.50	0.50	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	2.94	0.80	0.27	3.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.56	0.33	0.12	0.59
d, Delay for Lane Group [s/veh]	11.24	19.59	8.61	7.07	35.84
Lane Group LOS	B	B	A	A	D
Critical Lane Group	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.50	5.52	2.59	0.72	1.43
50th-Percentile Queue Length [ft/ln]	12.39	138.05	64.86	18.10	35.85
95th-Percentile Queue Length [veh/ln]	0.89	9.38	4.67	1.30	2.58
95th-Percentile Queue Length [ft/ln]	22.30	234.39	116.74	32.59	64.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.24	19.59	8.61	7.07	35.84	35.84
Movement LOS	B	B	A	A	D	D
d_A, Approach Delay [s/veh]	18.56		8.24		35.84	
Approach LOS	B		A		D	
d_I, Intersection Delay [s/veh]	15.16					
Intersection LOS	B					
Intersection V/C	0.307					

Sequence

Ring 1	3	8	2	6	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Starr Rd/Windsor River Rd

Control Type: All-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 21.4
 Level Of Service: C
 Volume to Capacity (v/c): 0.775

Intersection Setup

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Starr Rd			Starr Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	21	123	64	250	92	35	63	72	21	68	112	279
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	123	64	250	92	35	63	72	21	68	112	279
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	31	16	63	23	9	16	18	5	17	28	70
Total Analysis Volume [veh/h]	21	123	64	250	92	35	63	72	21	68	112	279
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings**Lanes**

Capacity per Entry Lane [veh/h]	536	553	466	533	593
Degree of Utilization, x	0.39	0.68	0.29	0.04	0.77

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.82	5.19	1.19	0.12	7.20
95th-Percentile Queue Length [ft]	45.50	129.69	29.70	3.07	180.02
Approach Delay [s/veh]	13.90	22.26	13.02		26.83
Approach LOS	B	C	B		D
Intersection Delay [s/veh]	21.36				
Intersection LOS	C				

Intersection Level Of Service Report Intersection 2: Windsor Rd/Windsor River Rd

Control Type:	Signalized	Delay (sec / veh):	37.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.580

Intersection Setup

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵			↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	65.00	100.00	100.00	150.00	100.00	100.00	90.00	100.00	100.00	240.00	100.00	100.00
Speed [mph]	35.00			35.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Windsor Rd			Windsor Rd			Windsor River Rd			Windsor River Rd		
Base Volume Input [veh/h]	80	131	185	99	101	130	122	359	39	201	441	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	131	185	99	101	130	122	359	39	201	441	83
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	33	46	25	25	33	31	90	10	50	110	21
Total Analysis Volume [veh/h]	80	131	185	99	101	130	122	359	39	201	441	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permis	Permis	ProtPer	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	8	0	8	8	0	8	8	0	8	10	0
Maximum Green [s]	20	35	0	20	35	0	16	35	0	16	35	0
Amber [s]	3.6	3.6	0.0	3.0	3.2	0.0	3.2	3.2	0.0	3.2	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	28	0	12	27	0	13	32	0	28	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	15	0	0	14	0	0	13	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	2.6	0.0	2.0	2.2	0.0	2.2	2.2	0.0	2.2	2.2	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.60	4.60	4.20	4.20	4.20	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.60	0.00	2.20	2.20	2.20	2.20	2.20
g_i, Effective Green Time [s]	47	36	48	36	9	26	13	31
g / C, Green / Cycle	0.47	0.36	0.48	0.36	0.09	0.26	0.13	0.31
(v / s)_i Volume / Saturation Flow Rate	0.06	0.19	0.08	0.14	0.07	0.22	0.11	0.29
s, saturation flow rate [veh/h]	1276	1688	1234	1694	1774	1831	1774	1812
c, Capacity [veh/h]	588	601	567	606	152	483	238	567
d1, Uniform Delay [s]	15.23	25.54	15.89	23.93	44.98	34.67	42.34	33.29
k, delay calibration	0.50	0.50	0.11	0.50	0.11	0.14	0.11	0.22
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.48	3.26	0.15	1.82	9.47	4.59	7.94	12.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

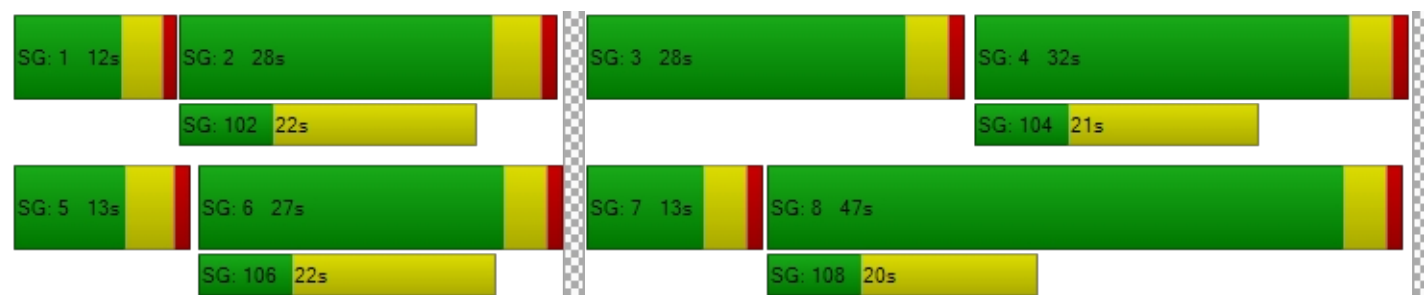
X, volume / capacity	0.14	0.53	0.17	0.38	0.80	0.82	0.84	0.92
d, Delay for Lane Group [s/veh]	15.72	28.81	16.04	25.75	54.45	39.26	50.28	45.79
Lane Group LOS	B	C	B	C	D	D	D	D
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.05	6.28	1.22	4.24	3.35	9.56	5.33	13.94
50th-Percentile Queue Length [ft/ln]	26.15	157.03	30.55	106.02	83.85	239.10	133.25	348.48
95th-Percentile Queue Length [veh/ln]	1.88	10.39	2.20	7.62	6.04	14.64	9.12	20.06
95th-Percentile Queue Length [ft/ln]	47.07	259.79	54.99	190.46	150.92	365.90	227.90	501.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.72	28.81	28.81	16.04	25.75	25.75	54.45	39.26	39.26	50.28	45.79	45.79
Movement LOS	B	C	C	B	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	26.16			22.83			42.82			47.04		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	37.68											
Intersection LOS	D											
Intersection V/C	0.580											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Starr Rd/Jaguar Way

Control Type: Two-way stop
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 11.0
 Level Of Service: B
 Volume to Capacity (v/c): 0.003

Intersection Setup

Name	Starr rd		Starr Rd		Jaguar Way	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Starr rd		Starr Rd		Jaguar Way	
Base Volume Input [veh/h]	200	1	7	178	2	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	200	1	7	178	2	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	0	2	45	1	3
Total Analysis Volume [veh/h]	200	1	7	178	2	11
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.64	0.00	10.99	9.36
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.02	0.02	0.05	0.05
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.38	0.38	1.25	1.25
d_A, Approach Delay [s/veh]	0.00		0.29		9.61	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.45					
Intersection LOS	B					

Intersection Level Of Service Report

Intersection 4: Windsor Rd/Jaguar Way

Control Type: Signalized
 Analysis Method: HCM 2010
 Analysis Period: 15 minutes

Delay (sec / veh): 13.8
 Level Of Service: B
 Volume to Capacity (v/c): 0.225

Intersection Setup

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0
Pocket Length [ft]	280.00	100.00	100.00	170.00	100.00	100.00
Speed [mph]	35.00		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Windsor Rd		Windsor Rd		Jaguar Way	
Base Volume Input [veh/h]	35	324	222	48	48	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	35	324	222	48	48	35
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	81	56	12	12	9
Total Analysis Volume [veh/h]	35	324	222	48	48	35
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPerm	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	8	4	0	2	0
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	7	7	0	7	0
Maximum Green [s]	35	30	30	0	40	0
Amber [s]	4.1	4.1	4.1	0.0	3.6	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	9	12	12	0	12	0
Vehicle Extension [s]	0.0	4.0	4.0	0.0	2.5	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0
Rest In Walk						
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.1	3.1	3.1	0.0	2.6	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	Yes	Yes		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	6
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	15

Lane Group Calculations

Lane Group	L	C	C	R	C
C, Cycle Length [s]	67	67	67	67	67
L, Total Lost Time per Cycle [s]	5.10	5.10	5.10	5.10	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.10	3.10	3.10	2.60
g_i, Effective Green Time [s]	37	30	37	37	6
g / C, Green / Cycle	0.55	0.44	0.55	0.55	0.08
(v / s)_i Volume / Saturation Flow Rate	0.03	0.17	0.12	0.03	0.05
s, saturation flow rate [veh/h]	1154	1863	1863	1583	1688
c, Capacity [veh/h]	598	826	1024	871	143
d1, Uniform Delay [s]	10.34	12.68	7.78	7.07	29.81
k, delay calibration	0.50	0.50	0.50	0.50	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	1.40	0.49	0.12	2.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.39	0.22	0.06	0.58
d, Delay for Lane Group [s/veh]	10.53	14.08	8.27	7.19	32.57
Lane Group LOS	B	B	A	A	C
Critical Lane Group	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.29	3.18	1.48	0.29	1.38
50th-Percentile Queue Length [ft/ln]	7.18	79.53	36.96	7.31	34.41
95th-Percentile Queue Length [veh/ln]	0.52	5.73	2.66	0.53	2.48
95th-Percentile Queue Length [ft/ln]	12.92	143.16	66.52	13.16	61.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.53	14.08	8.27	7.19	32.57	32.57
Movement LOS	B	B	A	A	C	C
d_A, Approach Delay [s/veh]	13.74		8.08		32.57	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	13.78					
Intersection LOS	B					
Intersection V/C	0.225					

Sequence

Ring 1	3	8	2	6	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

