

A

Appendix A HCM Analysis: Pre-Development



Table of Contents

Intersection Analysis Summary	3
Intersection Level Of Service Report	5
Intersection 1: 109 Street and 100 Ave	5
Intersection 2: Jasper Avenue and 109 Street	20
Intersection 3: 104 Avenue and 109 Street	25
Intersection 4: 102 Avenue and 124 Street	30
Intersection 5: Stony Plain Road and 124 Street	45
Intersection 6: 107 Avenue and 124 Street	50
Intersection 7: 111 Avenue and 124 Street	55
Intersection 8: 118 Avenue and 124 Street	60
Intersection 9: 104 Avenue and 121 Street	65
Intersection 10: 104 Avenue and 116 Street	70
Intersection 11: 104 Avenue and 112 Street	75
Intersection 12: Jasper Avenue and 121 Street	80
Intersection 13: Jasper Avenue and 116 Street	101
Intersection 14: 100 Avenue and 116 Street	106
Intersection 15: Stony Plain Road and 102 Avenue	111
Intersection 16: Stony Plain Road and 142 Street	116
Intersection 17: Stony Plain Road and 149 Street	121
Intersection 18: Stony Plain Road and 156 Street	126
Intersection 19: Stony Plain Road and 158 Street	131
Intersection 20: Stony Plain Road and 163 Street	136
Intersection 21: 95 Avenue and 156 Street	141
Intersection 22: 87 Avenue and Meadowlark Road	146
Intersection 23: 109 Street and 82 Ave	151
Intersection 24: 109 Street and 83 Ave	156

Intersection 25: 109 Street and 86 Ave	171
Intersection 26: 109 Street and 87 Ave	173
Intersection 27: 109 Street and Walterdale Hill Road/Saskatchewan Drive	183
Intersection 28: 109 Street and 88 Ave SB	188
Intersection 29: 114 Street and 82 Ave	193
Intersection 30: 114 Street and 87 Ave	198
Intersection 31: 112 Street and 82 Ave	203
Intersection 32: 110 Street and 87 Ave	208
Study Intersections	223
Lane Configuration and Traffic Control	224
Traffic Volume - Base Volume	228
Traffic Conditions	232

Priority Growth Areas Mobility Study

Vistro File: Z:\...\Z0016285 PGA Primary Model.vistro

Scenario 1 1 Pre-Development AM Peak

Report File: Z:\...\Pre-Development AM Peak.pdf

2025-04-24

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	109 Street and 100 Ave	Signalized	HCM 7th Edition	SB Left	0.602	24.4	C
2	Jasper Avenue and 109 Street	Signalized	HCM 7th Edition	SB Left	0.723	34.9	C
3	104 Avenue and 109 Street	Signalized	HCM 7th Edition	NB Left	0.687	93.8	F
4	102 Avenue and 124 Street	Signalized	HCM 7th Edition	SEB Left	0.463	21.9	C
5	Stony Plain Road and 124 Street	Signalized	HCM 7th Edition	WB Left	0.481	35.7	D
6	107 Avenue and 124 Street	Signalized	HCM 7th Edition	SB Right	0.517	20.8	C
7	111 Avenue and 124 Street	Signalized	HCM 7th Edition	SB Right	0.574	25.9	C
8	118 Avenue and 124 Street	Signalized	HCM 7th Edition	EB Right	0.505	30.4	C
9	104 Avenue and 121 Street	Signalized	HCM 7th Edition	EB Left	0.451	33.2	C
10	104 Avenue and 116 Street	Signalized	HCM 7th Edition	NB Left	0.571	37.2	D
11	104 Avenue and 112 Street	Signalized	HCM 7th Edition	WB Left	0.505	35.9	D
12	Jasper Avenue and 121 Street	Signalized	HCM 7th Edition	NB Left	0.540	19.2	B
13	Jasper Avenue and 116 Street	Signalized	HCM 7th Edition	WB Left	0.699	34.9	C
14	100 Avenue and 116 Street	Signalized	HCM 7th Edition	SB Left	0.447	26.3	C
15	Stony Plain Road and 102 Avenue	Signalized	HCM 7th Edition	EB Left	0.599	13.4	B
16	Stony Plain Road and 142 Street	Signalized	HCM 7th Edition	WB Left	0.770	58.2	E
17	Stony Plain Road and 149 Street	Signalized	HCM 7th Edition	NB Thru	0.663	52.7	D
	Stony Plain Road and 156 Street		HCM 7th Edition				

18	Stony Plain Road and 150 Street	Signalized	HCM 7th Edition	WB Thru	0.614	41.9	D
19	Stony Plain Road and 158 Street	Signalized	HCM 7th Edition	NB Right	0.184	11.3	B
20	Stony Plain Road and 163 Street	Signalized	HCM 7th Edition	SB Left	0.549	33.6	C
21	95 Avenue and 156 Street	Signalized	HCM 7th Edition	SB Left	0.490	38.2	D
22	87 Avenue and Meadowlark Road	Signalized	HCM 7th Edition	SB Left	0.540	34.8	C
23	109 Street and 82 Ave	Signalized	HCM 7th Edition	EB Left	0.693	27.6	C
24	109 Street and 83 Ave	Signalized	HCM 7th Edition	WB Thru	0.394	5.9	A
25	109 Street and 86 Ave	Two-way stop	HCM 7th Edition	WB Thru	0.204	208.1	F
26	109 Street and 87 Ave	Signalized	HCM 7th Edition	SB Right	0.420	27.8	C
27	109 Street and Waltherdale Hill Road/Saskatchewan Drive	Signalized	HCM 7th Edition	SB Left	0.567	22.2	C
28	109 Street and 88 Ave SB	Signalized	HCM 7th Edition	SB Right	0.421	22.4	C
29	114 Street and 82 Ave	Signalized	HCM 7th Edition	EB Left	0.604	36.9	D
30	114 Street and 87 Ave	Signalized	HCM 7th Edition	NB Left	0.534	52.9	D
31	112 Street and 82 Ave	Signalized	HCM 7th Edition	EB Left	0.550	35.3	D
32	110 Street and 87 Ave	Signalized	HCM 7th Edition	SEB Thru	0.414	9.9	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: 109 Street and 100 Ave

Control Type:	Signalized	Delay (sec / veh):	24.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.602

Intersection Setup

Name	109 Street					109 Street				
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Right	Right	Left	Left	Thru	Right	Right
Lane Width [m]	3.66	3.66	3.30	3.66	3.30	3.00	3.66	3.00	3.66	3.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	55.00	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name	109 Street					109 Street				
Base Volume Input [veh/h]	0	0	1007	0	71	156	0	1083	0	32
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	7	0	0	0	0	3
Total Hourly Volume [veh/h]	0	0	1007	0	64	156	0	1083	0	32
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	0	0	252	0	16	39	0	271	0	8
Total Analysis Volume [veh/h]	0	0	1007	0	64	156	0	1083	0	32
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	61					89				
v_di, Inbound Pedestrian Volume crossing th	61					89				
v_co, Outbound Pedestrian Volume along th	50					37				
v_ci, Inbound Pedestrian Volume along the l	50					36				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	17.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	ProtPerm	Permissiv	Overlap	Permissiv	Overlap
Signal Group	0	0	3	0	0	2	0	3	0	3
Auxiliary Signal Groups								2,3		2,3
Maximum Green [s]	0	0	42	0	0	10	0	42	0	42
Amber [s]	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.0	2.0	0.0	0.0	1.0	0.0	2.0	0.0	2.0
Walk [s]	0	0	10	0	0	0	0	10	0	10
Pedestrian Clearance [s]	0	0	14	0	0	0	0	14	0	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	3.0	0.0	0.0	2.0	0.0	3.0	0.0	3.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	0	47	0	0	14	0	47	0	47
Lead / Lag	-	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	0	0	24	0	0	7	0	24	0	24
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0
Minimum Recall			No			No		No		No
Maximum Recall			Yes			Yes		Yes		Yes
Pedestrian Recall			Yes			Yes		Yes		Yes

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Calculated Cycle Length [s]	100	100	100	100	100
L, Total Lost Time per Cycle [s]	5.00	5.00	4.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	2.00	0.00	0.00
g_i, Effective Green Time [s]	42	42	12	59	59
g / C, Green / Cycle	0.42	0.42	0.12	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.22	0.22	0.10	0.24	0.24
s, saturation flow rate [veh/h]	3204	1587	1539	3076	1592
c, Capacity [veh/h]	1345	666	192	1798	931
d1, Uniform Delay [s]	21.67	21.73	42.60	11.34	11.34
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.51	3.08	29.75	0.69	1.33
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	0.53	0.54	0.81	0.41	0.41
d, Delay for Lane Group [s/veh]	23.18	24.81	72.35	12.03	12.67
Lane Group LOS	C	C	E	B	B
Critical Lane Group	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.33	6.64	5.30	4.32	4.64
50th-Percentile Queue Length [m/ln]	48.25	50.57	40.39	32.92	35.34
95th-Percentile Queue Length [veh/ln]	10.46	10.86	9.08	7.73	8.17
95th-Percentile Queue Length [m/ln]	79.69	82.76	69.17	58.89	62.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	23.65	0.00	24.81	72.35	0.00	12.23	0.00	12.67
Movement LOS			C		C	E		B		B
d_A, Approach Delay [s/veh]	23.72					19.62				
Approach LOS	C					B				
d_I, Intersection Delay [s/veh]	24.37									
Intersection LOS	C									
Intersection V/C	0.602									

Emissions

Vehicle Kilometers Traveled [km/h]	114.11	57.05	36.42	171.53	88.79
Stops [stops/h]	455.89	238.89	190.84	311.03	166.98
Fuel consumption [L/h]	33.83	17.61	16.44	30.10	15.91
CO [g/h]	624.72	325.16	303.57	555.89	293.70
NOx [g/h]	121.55	63.27	59.06	108.16	57.14
VOC [g/h]	144.78	75.36	70.36	128.83	68.07

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m ² /ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m ² /ped]	10.57	9.53
d_p, Pedestrian Delay [s]	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersectio	2.962	2.942
Crosswalk LOS	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	840	1120
d_b, Bicycle Delay [s]	16.82	9.68
I_b,int, Bicycle LOS Score for Intersection	2.153	2.260
Bicycle LOS	B	B

Intersection Setup

Name	100 Ave					WB Bike Lane				
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Thru	Right	Left2	Left	Thru	Right	Right2
Lane Width [m]	3.66	3.66	3.20	3.66	3.20	3.66	3.66	3.66	1.50	3.66
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	95.00	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name	100 Ave					WB Bike Lane				
Base Volume Input [veh/h]	0	0	342	0	178	0	0	0	14	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	18	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	342	0	160	0	0	0	13	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	0	0	86	0	40	0	0	0	3	0
Total Analysis Volume [veh/h]	0	0	342	0	160	0	0	0	13	0
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	37					89				
v_di, Inbound Pedestrian Volume crossing th	36					89				
v_co, Outbound Pedestrian Volume along th	61					89				
v_ci, Inbound Pedestrian Volume along the l	61					89				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					14				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	17.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	1	0	0	0	0	0	1	0
Auxiliary Signal Groups										
Maximum Green [s]	0	0	33	0	0	0	0	0	33	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	18	0	0	0	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No						No	
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	0	39	0	0	0	0	0	39	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	25	0	0	0	0	0	25	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Minimum Recall			Yes						Yes	
Maximum Recall			No						No	
Pedestrian Recall			Yes						Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	R
C, Calculated Cycle Length [s]	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00
g_i, Effective Green Time [s]	30	30	30
g / C, Green / Cycle	0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.20	0.13	0.01
s, saturation flow rate [veh/h]	1683	1259	1373
c, Capacity [veh/h]	514	385	419
d1, Uniform Delay [s]	30.28	27.16	24.35
k, delay calibration	0.15	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	2.01	0.72	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.42	0.03
d, Delay for Lane Group [s/veh]	32.29	27.88	24.38
Lane Group LOS	C	C	C
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.32	3.03	0.22
50th-Percentile Queue Length [m/ln]	55.75	23.06	1.66
95th-Percentile Queue Length [veh/ln]	11.75	5.45	0.39
95th-Percentile Queue Length [m/ln]	89.55	41.51	2.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	32.29	0.00	27.88	0.00	0.00	0.00	24.38	0.00
Movement LOS			C		C				C	
d_A, Approach Delay [s/veh]	30.88					24.38				
Approach LOS	C					C				
d_I, Intersection Delay [s/veh]	24.37									
Intersection LOS	C									
Intersection V/C	0.602									

Emissions

Vehicle Kilometers Traveled [km/h]	125.68	58.80	0.91
Stops [stops/h]	263.36	108.95	7.86
Fuel consumption [L/h]	26.37	11.47	0.51
CO [g/h]	486.98	211.89	9.36
NOx [g/h]	94.75	41.23	1.82
VOC [g/h]	112.86	49.11	2.17

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m ² /ped]	0.00	8.47
M_CW, Crosswalk Circulation Area [m ² /ped]	21.25	5.31
d_p, Pedestrian Delay [s]	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersectio	2.227	1.750
Crosswalk LOS	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	660	660
d_b, Bicycle Delay [s]	22.45	22.60
I_b,int, Bicycle LOS Score for Intersection	2.418	1.560
Bicycle LOS	B	A

Intersection Setup

Name	100 Ave					EB Bike Lane				
Approach	Northwestbound					Southeastbound				
Lane Configuration										
Turning Movement	Left	Thru	Thru	Right	Right	Left2	Left	Thru	Right	Right2
Lane Width [m]	3.20	3.20	3.66	3.66	3.20	3.66	1.50	3.66	3.66	3.66
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [m]	50.00	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name	100 Ave					EB Bike Lane				
Base Volume Input [veh/h]	63	206	0	0	65	0	43	0	0	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	7	0	0	0	0	0
Total Hourly Volume [veh/h]	63	206	0	0	65	0	43	0	0	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	16	52	0	0	16	0	11	0	0	0
Total Analysis Volume [veh/h]	63	206	0	0	65	0	43	0	0	0
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	50					36				
v_di, Inbound Pedestrian Volume crossing th	50					37				
v_co, Outbound Pedestrian Volume along th	89					36				
v_ci, Inbound Pedestrian Volume along the l	89					37				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					43				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	17.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Overlap	Permissiv	Permissiv	Protected	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	4	1	0	0	2	0	1	0	0	0
Auxiliary Signal Groups		1,4								
Maximum Green [s]	0	33	0	0	10	0	33	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0
All red [s]	0.0	3.0	0.0	0.0	1.0	0.0	3.0	0.0	0.0	0.0
Walk [s]	5	7	0	0	0	0	7	0	0	0
Pedestrian Clearance [s]	10	18	0	0	0	0	18	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No			
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	2.0	0.0	4.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	39	0	0	14	0	39	0	0	0
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	-
Minimum Green [s]	0	25	0	0	7	0	25	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0
Minimum Recall		Yes			No		Yes			
Maximum Recall		No			Yes		No			
Pedestrian Recall		Yes			Yes		Yes			

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L
C, Calculated Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	4.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	0.00	2.00	4.00
g_i, Effective Green Time [s]	30	32	12	30
g / C, Green / Cycle	0.30	0.32	0.12	0.30
(v / s)_i Volume / Saturation Flow Rate	0.08	0.12	0.05	0.04
s, saturation flow rate [veh/h]	790	1683	1431	991
c, Capacity [veh/h]	157	514	179	303
d1, Uniform Delay [s]	43.24	27.49	40.10	25.22
k, delay calibration	0.11	0.11	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.64	0.51	5.64	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.40	0.36	0.14
d, Delay for Lane Group [s/veh]	44.88	27.99	45.74	25.43
Lane Group LOS	D	C	D	C
Critical Lane Group	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.57	3.92	1.74	0.75
50th-Percentile Queue Length [m/ln]	11.95	29.84	13.23	5.74
95th-Percentile Queue Length [veh/ln]	2.82	7.05	3.12	1.36
95th-Percentile Queue Length [m/ln]	21.51	53.71	23.81	10.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.88	27.99	0.00	0.00	45.74	0.00	25.43	0.00	0.00	0.00
Movement LOS	D	C			D		C			
d_A, Approach Delay [s/veh]	34.63					25.43				
Approach LOS	C					C				
d_I, Intersection Delay [s/veh]	24.37									
Intersection LOS	C									
Intersection V/C	0.602									

Emissions

Vehicle Kilometers Traveled [km/h]	10.98	35.91	11.33	3.28
Stops [stops/h]	56.46	140.96	62.49	27.14
Fuel consumption [L/h]	4.49	11.02	4.77	1.76
CO [g/h]	82.90	203.50	88.08	32.55
NOx [g/h]	16.13	39.59	17.14	6.33
VOC [g/h]	19.21	47.16	20.41	7.54

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	18.84	15.27
d_p, Pedestrian Delay [s]	36.98	36.98
I_p,int, Pedestrian LOS Score for Intersection	2.373	1.746
Crosswalk LOS	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	660	660
d_b, Bicycle Delay [s]	22.45	22.94
I_b,int, Bicycle LOS Score for Intersection	2.122	1.670
Bicycle LOS	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Jasper Avenue and 109 Street

Control Type:	Signalized	Delay (sec / veh):	34.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.723

Intersection Setup

Name	109 Street											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	2.80	2.80	3.00	3.00	3.00	3.00	3.20	3.40	3.20	3.00	3.40	3.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [m]	125.00	30.48	30.48	75.00	30.48	30.48	220.00	30.48	55.00	50.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			40.00		
Grade [%]	0.00			0.00			5.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	109 Street											
Base Volume Input [veh/h]	211	808	59	105	1043	67	93	797	197	106	277	66
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
Proportion of CAVs [%]	0.00											
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	6	0	0	7	0	0	20	0	0	7
Total Hourly Volume [veh/h]	211	808	53	105	1043	60	93	797	177	106	277	59
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]	53	202	13	26	261	15	23	199	44	27	69	15
Total Analysis Volume [veh/h]	211	808	53	105	1043	60	93	797	177	106	277	59
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
v_do, Outbound Pedestrian Volume crossing	114			129			114			129		
v_di, Inbound Pedestrian Volume crossing m	114			129			114			129		
v_co, Outbound Pedestrian Volume crossing	69			67			67			69		
v_ci, Inbound Pedestrian Volume crossing mi	69			67			67			69		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	70.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Overlap	Overlap	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	1	0	0	1	0	2	4	0	3	4	0
Auxiliary Signal Groups	1,5	1,5										
Maximum Green [s]	9	30	0	0	30	0	6	38	0	6	38	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	0.0	3.0	0.0	1.0	4.0	0.0	1.0	4.0	0.0
Detector Location [m]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	5.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	12	35	0	0	35	0	9	44	0	9	44	0
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	25	0	0	25	0	5	26	0	5	26	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	Yes			Yes		No	No		No	No	
Maximum Recall	Yes	No			No		No	Yes		No	Yes	
Pedestrian Recall	Yes	Yes			Yes		Yes	Yes		Yes	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Calculated Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	6.00	6.00	6.00	4.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	3.00	3.00	3.00	3.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	42	42	30	30	30	30	47	38	38	45	38	38
g / C, Green / Cycle	0.42	0.42	0.30	0.30	0.30	0.30	0.47	0.38	0.38	0.45	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.30	0.26	0.04	0.19	0.24	0.24	0.11	0.31	0.19	0.16	0.09	0.05
s, saturation flow rate [veh/h]	703	3076	1184	550	3076	1528	817	2530	928	654	3204	1095
c, Capacity [veh/h]	298	1292	355	112	922	458	438	968	355	256	1226	419
d1, Uniform Delay [s]	23.68	22.80	25.50	48.59	32.14	32.44	15.36	27.83	22.61	18.55	20.87	19.92
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	13.23	2.29	0.89	68.83	6.90	14.69	1.11	7.89	4.94	4.90	0.43	0.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.63	0.15	0.94	0.79	0.81	0.21	0.82	0.50	0.41	0.23	0.14
d, Delay for Lane Group [s/veh]	36.92	25.10	26.39	117.42	39.04	47.12	16.47	35.72	27.55	23.45	21.30	20.62
Lane Group LOS	D	C	C	F	D	D	B	D	C	C	C	C
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	4.32	7.63	1.00	4.76	8.79	10.02	1.32	9.33	3.47	1.63	2.27	0.98
50th-Percentile Queue Length [m/ln]	32.91	58.15	7.61	36.24	66.95	76.36	10.04	71.11	26.45	12.40	17.31	7.43
95th-Percentile Queue Length [veh/ln]	7.73	12.16	1.80	8.33	13.65	15.21	2.37	14.34	6.25	2.93	4.09	1.76
95th-Percentile Queue Length [m/ln]	58.88	92.67	13.69	63.49	104.00	115.93	18.08	109.28	47.61	22.32	31.15	13.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.92	25.10	26.39	117.42	41.47	47.12	16.47	35.72	27.55	23.45	21.30	20.62
Movement LOS	D	C	C	F	D	D	B	D	C	C	C	C
d_A, Approach Delay [s/veh]	27.49			48.35			32.68			21.72		
Approach LOS	C			D			C			C		
d_I, Intersection Delay [s/veh]	34.93											
Intersection LOS	C											
Intersection V/C	0.723											

Emissions

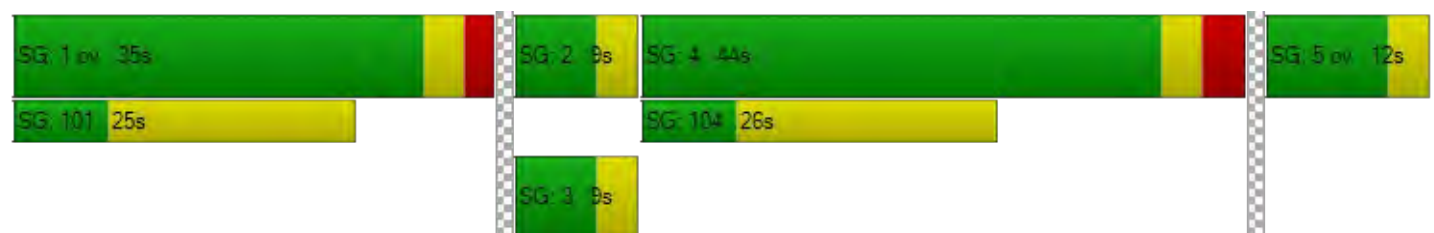
Vehicle Kilometers Traveled [km/h]	49.26	188.65	12.37	15.28	106.23	54.30	64.16	549.84	122.11	11.53	30.12	6.42
Stops [stops/h]	155.48	549.45	35.93	171.20	632.62	360.78	47.45	671.86	124.96	58.58	163.52	35.12
Fuel consumption [L/h]	14.17	45.89	3.06	14.79	46.25	26.80	8.35	89.31	18.18	3.98	10.09	2.12
CO [g/h]	261.75	847.47	56.52	273.11	853.99	494.91	154.16	1649.25	335.66	73.45	186.24	39.18
NOx [g/h]	50.93	164.89	11.00	53.14	166.16	96.29	29.99	320.88	65.31	14.29	36.24	7.62
VOC [g/h]	60.66	196.41	13.10	63.30	197.92	114.70	35.73	382.23	77.79	17.02	43.16	9.08

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	5.47			5.65			9.85			8.92		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersectio	3.015			2.888			2.858			2.807		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	840			600			760			760		
d_b, Bicycle Delay [s]	16.82			24.50			19.22			19.22		
I_b,int, Bicycle LOS Score for Intersection	2.449			2.228			2.456			1.930		
Bicycle LOS	B			B			B			A		

Sequence

Ring 1	1	2	4	5	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: 104 Avenue and 109 Street

Control Type:	Signalized	Delay (sec / veh):	93.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.687

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.66	3.60	3.60
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	1
Entry Pocket Length [m]	100.00	30.48	30.48	100.00	30.48	30.48	70.00	30.48	30.48	30.48	30.48	55.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	106	1199	31	65	1382	20	27	883	113	0	451	142
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
Proportion of CAVs [%]	0.00											
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	3	0	0	2	0	0	11	0	0	14
Total Hourly Volume [veh/h]	106	1199	28	65	1382	18	27	883	102	0	451	128
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]	27	300	7	16	346	5	7	221	26	0	113	32
Total Analysis Volume [veh/h]	106	1199	28	65	1382	18	27	883	102	0	451	128
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
v_do, Outbound Pedestrian Volume crossing	49			49			49			49		
v_di, Inbound Pedestrian Volume crossing m	49			49			49			49		
v_co, Outbound Pedestrian Volume crossing	50			50			50			50		
v_ci, Inbound Pedestrian Volume crossing mi	50			50			50			50		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	150
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	4	0	3	4	0	1	5	0	0	2	0
Auxiliary Signal Groups												
Maximum Green [s]	8	40	0	8	40	0	7	71	0	0	68	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	0.0
All red [s]	3.0	3.0	0.0	3.0	3.0	0.0	2.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	25	0	0	25	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	2.0	0.0
I2, Clearance Lost Time [s]	5.0	5.0	0.0	5.0	5.0	0.0	4.0	5.0	0.0	0.0	5.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	15	47	0	15	47	0	13	88	0	0	75	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	0	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No			No	
Maximum Recall	Yes	Yes		Yes	Yes		Yes	Yes			Yes	
Pedestrian Recall	No	Yes		No	Yes		No	Yes			Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	C	R
C, Calculated Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	7.00	6.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	5.00	5.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	8	40	40	8	40	40	7	81	81	68	68
g / C, Green / Cycle	0.05	0.27	0.27	0.05	0.27	0.27	0.05	0.54	0.54	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.07	0.27	0.28	0.04	0.31	0.31	0.02	0.30	0.30	0.15	0.10
s, saturation flow rate [veh/h]	1476	2951	1517	1476	2951	1531	1476	1683	1601	2951	1338
c, Capacity [veh/h]	79	787	405	79	787	408	69	909	864	1338	606
d1, Uniform Delay [s]	71.00	55.00	55.00	70.31	55.00	55.00	69.43	22.61	22.74	26.46	24.62
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	219.05	38.93	54.48	60.92	89.46	101.83	15.91	2.41	2.61	0.68	0.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	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	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	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.35	1.03	1.04	0.83	1.17	1.18	0.39	0.55	0.56	0.34	0.21
d, Delay for Lane Group [s/veh]	290.05	93.93	109.48	131.22	144.46	156.83	85.35	25.02	25.35	27.14	25.41
Lane Group LOS	F	F	F	F	F	F	F	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.83	19.08	21.36	3.81	24.60	26.93	1.32	12.20	11.87	5.41	2.92
50th-Percentile Queue Length [m/ln]	59.65	145.38	162.78	29.07	187.47	205.24	10.03	93.00	90.48	41.22	22.28
95th-Percentile Queue Length [veh/ln]	13.42	26.67	29.60	6.87	35.82	38.93	2.37	17.93	17.53	9.22	5.26
95th-Percentile Queue Length [m/ln]	102.26	203.21	225.53	52.32	272.93	296.62	18.06	136.66	133.54	70.28	40.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	290.05	99.01	109.48	131.22	148.59	156.83	85.35	25.16	25.35	0.00	27.14	25.41
Movement LOS	F	F	F	F	F	F	F	C	C		C	C
d_A, Approach Delay [s/veh]	114.42			147.93			26.78			26.76		
Approach LOS	F			F			C			C		
d_I, Intersection Delay [s/veh]	93.83											
Intersection LOS	F											
Intersection V/C	0.687											

Emissions

Vehicle Kilometers Traveled [km/h]	47.33	360.63	187.22	13.71	194.08	101.26	6.96	129.32	124.69	103.79	29.46
Stops [stops/h]	187.86	915.79	512.68	91.56	1180.90	646.42	31.59	292.92	284.97	259.64	70.16
Fuel consumption [L/h]	32.40	113.29	64.67	9.93	147.31	82.11	3.15	28.54	27.70	25.13	6.88
CO [g/h]	598.21	2091.99	1194.17	183.32	2720.22	1516.27	58.09	526.98	511.45	463.98	127.07
NOx [g/h]	116.39	407.02	232.34	35.67	529.26	295.01	11.30	102.53	99.51	90.27	24.72
VOC [g/h]	138.64	484.84	276.76	42.49	630.44	351.41	13.46	122.13	118.53	107.53	29.45

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	8.39			7.98			9.88			9.71		
d_p, Pedestrian Delay [s]	64.40			64.40			64.40			64.40		
I_p,int, Pedestrian LOS Score for Intersectio	3.031			3.030			2.663			2.662		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	533			533			1080			907		
d_b, Bicycle Delay [s]	40.33			40.33			15.87			22.41		
I_b,int, Bicycle LOS Score for Intersection	2.294			2.366			2.404			2.049		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: 102 Avenue and 124 Street

Control Type:	Signalized	Delay (sec / veh):	21.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.463

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Right	Right	Left	Left	Thru	Right	Right
Lane Width [m]	3.40	3.66	3.40	3.66	3.40	3.66	3.66	3.60	3.66	3.60
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	10.00	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
Speed [km/h]	50.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	227	0	58	0	4	0	0	194	0	66
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	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	7
Total Hourly Volume [veh/h]	227	0	58	0	4	0	0	194	0	66
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	57	0	15	0	1	0	0	49	0	17
Total Analysis Volume [veh/h]	227	0	58	0	4	0	0	194	0	66
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	5					25				
v_di, Inbound Pedestrian Volume crossing th	5					25				
v_co, Outbound Pedestrian Volume along th	3					13				
v_ci, Inbound Pedestrian Volume along the l	3					13				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	21.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Overlap	Permissiv	Overlap	Permissiv	Overlap	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	1	0	1	0	1	0	0	1	0	3
Auxiliary Signal Groups	1,2		1,2		1,2					
Maximum Green [s]	32	0	32	0	32	0	0	32	0	26
Amber [s]	3.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0
All red [s]	2.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0
Walk [s]	7	0	7	0	7	0	0	7	0	7
Pedestrian Clearance [s]	18	0	18	0	18	0	0	18	0	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	3.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0
Detector Location [m]	1.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0
Detector Length [m]	5.0	0.0	5.0	0.0	5.0	0.0	0.0	5.0	0.0	5.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	37	0	37	0	37	0	0	37	0	31
Lead / Lag	Lag	-	-	-	-	-	-	-	-	-
Minimum Green [s]	25	0	25	0	25	0	0	25	0	10
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0
Minimum Recall	Yes		Yes		Yes			Yes		
Maximum Recall	No		No		No			No		
Pedestrian Recall	Yes		Yes		Yes			Yes		

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Calculated Cycle Length [s]	100	100	100	100	100
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	44	44	44	32	32
g / C, Green / Cycle	0.44	0.44	0.44	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.09	0.11	0.04	0.08	0.08
s, saturation flow rate [veh/h]	1197	1013	1513	1683	1545
c, Capacity [veh/h]	486	427	666	539	494
d1, Uniform Delay [s]	23.09	23.09	16.35	25.06	25.24
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.13	1.52	0.28	1.06	1.29
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	0.23	0.27	0.09	0.24	0.26
d, Delay for Lane Group [s/veh]	24.21	24.61	16.63	26.12	26.54
Lane Group LOS	C	C	B	C	C
Critical Lane Group	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.69	1.72	0.87	2.41	2.44
50th-Percentile Queue Length [m/ln]	12.91	13.12	6.61	18.34	18.61
95th-Percentile Queue Length [veh/ln]	3.05	3.10	1.56	4.33	4.40
95th-Percentile Queue Length [m/ln]	23.23	23.62	11.90	33.01	33.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.41	0.00	16.63	0.00	16.63	0.00	0.00	26.26	0.00	26.54
Movement LOS	C		B		B			C		C
d_A, Approach Delay [s/veh]	22.74					26.33				
Approach LOS	C					C				
d_I, Intersection Delay [s/veh]	21.85									
Intersection LOS	C									
Intersection V/C	0.463									

Emissions

Vehicle Kilometers Traveled [km/h]	16.70	16.70	9.12	55.88	55.88
Stops [stops/h]	60.98	62.00	31.22	86.64	87.94
Fuel consumption [L/h]	5.07	5.13	2.36	9.88	9.95
CO [g/h]	93.69	94.75	43.62	182.35	183.67
NOx [g/h]	18.23	18.44	8.49	35.48	35.74
VOC [g/h]	21.71	21.96	10.11	42.26	42.57

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m ² /ped]	0.00	12.62
M_CW, Crosswalk Circulation Area [m ² /ped]	0.00	22.43
d_p, Pedestrian Delay [s]	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersectio	2.572	2.391
Crosswalk LOS	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	880	640
d_b, Bicycle Delay [s]	15.68	23.12
I_b,int, Bicycle LOS Score for Intersection	1.798	1.780
Bicycle LOS	A	A

Intersection Setup

Name						WB Bike Lane				
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Thru	Right	Left2	Left	Thru	Right	Right2
Lane Width [m]	3.60	3.66	3.66	3.60	3.60	3.66	3.66	3.66	1.20	3.66
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	35.00	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name						WB Bike Lane				
Base Volume Input [veh/h]	251	0	0	136	841	0	0	0	12	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	84	0	0	0	0	0
Total Hourly Volume [veh/h]	251	0	0	136	757	0	0	0	11	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	63	0	0	34	189	0	0	0	3	0
Total Analysis Volume [veh/h]	251	0	0	136	757	0	0	0	11	0
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	13					3				
v_di, Inbound Pedestrian Volume crossing th	13					3				
v_co, Outbound Pedestrian Volume along th	5					25				
v_ci, Inbound Pedestrian Volume along the l	5					25				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					12				

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	21.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Overlap	Permissiv	Permissiv	Overlap	Overlap	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	3	0	0	3	2	0	0	0	4	0
Auxiliary Signal Groups	3,4			3,4	2,3,4					
Maximum Green [s]	26	0	0	26	7	0	0	0	15	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0
Walk [s]	7	0	0	7	0	0	0	0	7	0
Pedestrian Clearance [s]	15	0	0	15	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No					No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	0.0	3.0	3.0	0.0	0.0	0.0	3.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	31	0	0	31	12	0	0	0	20	0
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-
Minimum Green [s]	10	0	0	10	7	0	0	0	10	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0	0.0	0.0	3.0	0.0
Minimum Recall	No			No	No				No	
Maximum Recall	Yes			Yes	Yes				Yes	
Pedestrian Recall	No			No	No				No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	R
C, Calculated Cycle Length [s]	100	100	100
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	3.00
g_i, Effective Green Time [s]	46	53	15
g / C, Green / Cycle	0.46	0.53	0.15
(v / s)_i Volume / Saturation Flow Rate	0.28	0.30	0.01
s, saturation flow rate [veh/h]	1391	2513	1373
c, Capacity [veh/h]	689	1332	206
d1, Uniform Delay [s]	19.26	12.76	36.42
k, delay calibration	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	3.30	1.76	0.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.57	0.05
d, Delay for Lane Group [s/veh]	22.56	14.52	36.91
Lane Group LOS	C	B	D
Critical Lane Group	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	6.75	5.04	0.26
50th-Percentile Queue Length [m/ln]	51.47	38.42	1.96
95th-Percentile Queue Length [veh/ln]	11.02	8.72	0.46
95th-Percentile Queue Length [m/ln]	83.95	66.48	3.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.56	0.00	0.00	22.56	14.52	0.00	0.00	0.00	36.91	0.00
Movement LOS	C			C	B				D	
d_A, Approach Delay [s/veh]	17.24					36.91				
Approach LOS	B					D				
d_I, Intersection Delay [s/veh]	21.85									
Intersection LOS	C									
Intersection V/C	0.463									

Emissions

Vehicle Kilometers Traveled [km/h]	105.43	206.23	1.19
Stops [stops/h]	243.18	363.01	9.27
Fuel consumption [L/h]	22.21	36.23	0.63
CO [g/h]	410.13	669.08	11.71
NOx [g/h]	79.80	130.18	2.28
VOC [g/h]	95.05	155.06	2.71

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m ² /ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m ² /ped]	30.57	39.08
d_p, Pedestrian Delay [s]	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersectio	3.026	1.827
Crosswalk LOS	C	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	920	300
d_b, Bicycle Delay [s]	14.58	36.34
I_b,int, Bicycle LOS Score for Intersection	3.586	1.560
Bicycle LOS	D	A

Intersection Setup

Name						EB Bike Lane				
Approach	Northwestbound					Southeastbound				
Lane Configuration	Y					Y				
Turning Movement	Left	Thru	Thru	Right	Right	Left2	Left	Thru	Right	Right2
Lane Width [m]	3.60	3.66	3.60	3.66	3.60	3.66	1.20	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	40.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name						EB Bike Lane				
Base Volume Input [veh/h]	0	0	75	0	25	0	52	0	0	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	3	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	75	0	22	0	52	0	0	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	0	0	19	0	6	0	13	0	0	0
Total Analysis Volume [veh/h]	0	0	75	0	22	0	52	0	0	0
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	3					13				
v_di, Inbound Pedestrian Volume crossing th	3					13				
v_co, Outbound Pedestrian Volume along th	3					13				
v_ci, Inbound Pedestrian Volume along the l	3					13				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					52				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	21.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	4	0	0	0	4	0	0	0
Auxiliary Signal Groups										
Maximum Green [s]	0	0	15	0	0	0	15	0	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
All red [s]	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0
Pedestrian Clearance [s]	0	0	13	0	0	0	13	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	0	20	0	0	0	20	0	0	0
Lead / Lag	-	-	-	-	-	-	Lag	-	-	-
Minimum Green [s]	0	0	10	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
Minimum Recall			No				No			
Maximum Recall			Yes				Yes			
Pedestrian Recall			No				No			

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	L
C, Calculated Cycle Length [s]	100	100
L, Total Lost Time per Cycle [s]	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00
g_i, Effective Green Time [s]	15	15
g / C, Green / Cycle	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.06	0.05
s, saturation flow rate [veh/h]	1573	980
c, Capacity [veh/h]	236	145
d1, Uniform Delay [s]	38.50	45.25
k, delay calibration	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	5.22	6.80
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.36
d, Delay for Lane Group [s/veh]	43.72	52.05
Lane Group LOS	D	D
Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	2.51	1.52
50th-Percentile Queue Length [m/ln]	19.12	11.62
95th-Percentile Queue Length [veh/ln]	4.52	2.74
95th-Percentile Queue Length [m/ln]	34.41	20.91

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	43.72	0.00	43.72	0.00	52.05	0.00	0.00	0.00
Movement LOS			D		D		D			
d_A, Approach Delay [s/veh]	43.72					52.05				
Approach LOS	D					D				
d_I, Intersection Delay [s/veh]	21.85									
Intersection LOS	C									
Intersection V/C	0.463									

Emissions

Vehicle Kilometers Traveled [km/h]	15.23	5.77
Stops [stops/h]	90.32	54.89
Fuel consumption [L/h]	6.18	3.86
CO [g/h]	114.08	71.36
NOx [g/h]	22.20	13.88
VOC [g/h]	26.44	16.54

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	1181.58	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	190.48	23.05
d_p, Pedestrian Delay [s]	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersectio	1.821	1.752
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	300	300
d_b, Bicycle Delay [s]	36.13	37.09
I_b,int, Bicycle LOS Score for Intersection	1.725	1.560
Bicycle LOS	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Stony Plain Road and 124 Street

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.481

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.60	3.60	3.60	3.60	3.60	3.60	3.66	3.60	3.60	3.60	3.60	3.60
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [m]	105.00	30.48	50.00	50.00	30.48	30.48	30.48	30.48	30.48	25.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	87	354	19	144	461	15	0	367	53	7	76	60
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
Proportion of CAVs [%]	0.00											
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	2	0	0	2	0	0	5	0	0	6
Total Hourly Volume [veh/h]	87	354	17	144	461	13	0	367	48	7	76	54
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]	22	89	4	36	115	3	0	92	12	2	19	14
Total Analysis Volume [veh/h]	87	354	17	144	461	13	0	367	48	7	76	54
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
v_do, Outbound Pedestrian Volume crossing	35			35			35			35		
v_di, Inbound Pedestrian Volume crossing m	35			35			35			35		
v_co, Outbound Pedestrian Volume crossing	35			35			35			35		
v_ci, Inbound Pedestrian Volume crossing mi	35			35			35			35		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	57.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	3	0	1	3	0	0	6	0	5	7	0
Auxiliary Signal Groups												
Maximum Green [s]	9	35	0	9	35	0	0	43	0	11	59	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0	2.0	2.0	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	18	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	5.0	0.0	2.0	5.0	0.0	0.0	4.0	0.0	3.0	4.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	13	42	0	13	42	0	0	49	0	16	65	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	0	10	0	5	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No			No		No	No	
Maximum Recall	Yes	Yes		Yes	Yes			Yes		Yes	Yes	
Pedestrian Recall	No	Yes		No	Yes			Yes		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	L	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	7.00	6.00	5.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	5.00	5.00	0.00	5.00	5.00	4.00	3.00	4.00
g_i, Effective Green Time [s]	48	35	35	48	35	35	43	11	59
g / C, Green / Cycle	0.40	0.29	0.29	0.40	0.29	0.29	0.36	0.09	0.49
(v / s)_i Volume / Saturation Flow Rate	0.09	0.12	0.12	0.14	0.15	0.16	0.25	0.00	0.08
s, saturation flow rate [veh/h]	976	1550	1503	1040	1550	1522	1636	1476	1537
c, Capacity [veh/h]	368	452	438	410	452	444	586	135	756
d1, Uniform Delay [s]	24.09	34.22	34.31	24.63	35.56	35.63	33.10	49.74	16.94
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.51	2.77	2.95	2.35	4.34	4.51	7.07	0.72	0.49
d3, Initial Queue Delay [s]	0.00	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	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.41	0.42	0.35	0.53	0.53	0.71	0.05	0.17
d, Delay for Lane Group [s/veh]	25.60	36.99	37.26	26.99	39.90	40.14	40.17	50.46	17.43
Lane Group LOS	C	D	D	C	D	D	D	D	B
Critical Lane Group	No	No	No	Yes	No	Yes	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.73	4.73	4.71	2.99	6.36	6.33	11.41	0.22	2.09
50th-Percentile Queue Length [m/ln]	13.20	36.07	35.86	22.80	48.45	48.25	86.97	1.67	15.95
95th-Percentile Queue Length [veh/ln]	3.12	8.30	8.26	5.38	10.49	10.46	16.95	0.40	3.77
95th-Percentile Queue Length [m/ln]	23.76	63.26	62.97	41.03	79.97	79.69	129.19	3.01	28.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.60	37.12	37.26	26.99	40.02	40.14	0.00	40.17	40.17	50.46	17.43	17.43
Movement LOS	C	D	D	C	D	D		D	D	D	B	B
d_A, Approach Delay [s/veh]	34.94			36.98			40.17			19.12		
Approach LOS	C			D			D			B		
d_I, Intersection Delay [s/veh]	35.72											
Intersection LOS	D											
Intersection V/C	0.481											

Emissions

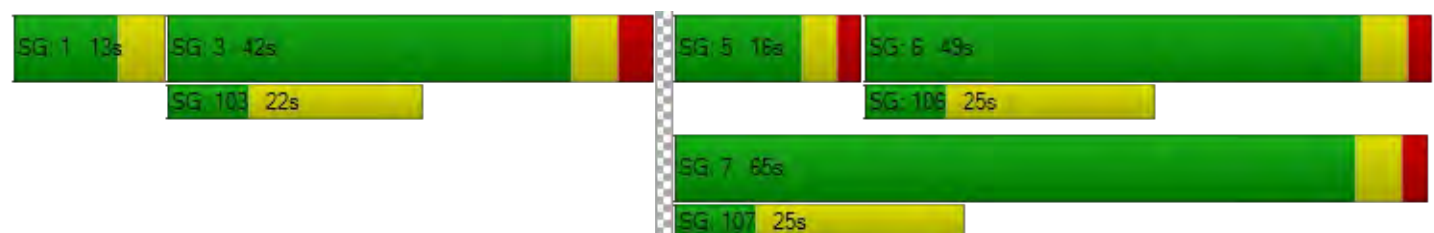
Vehicle Kilometers Traveled [km/h]	37.39	80.20	79.27	65.60	108.42	107.52	128.83	2.40	44.49
Stops [stops/h]	51.97	142.01	141.17	89.74	190.76	189.95	342.41	6.59	62.81
Fuel consumption [L/h]	6.44	16.13	16.00	11.25	21.91	21.79	32.78	0.65	7.39
CO [g/h]	118.90	297.89	295.48	207.70	404.58	402.31	605.30	11.96	136.42
NOx [g/h]	23.13	57.96	57.49	40.41	78.72	78.28	117.77	2.33	26.54
VOC [g/h]	27.56	69.04	68.48	48.14	93.76	93.24	140.28	2.77	31.62

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	15.47	15.26	15.57	15.65
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersectio	2.515	2.525	2.076	2.252
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	583	717	983
d_b, Bicycle Delay [s]	30.10	30.10	24.70	15.50
I_b,int, Bicycle LOS Score for Intersection	1.939	2.071	2.253	1.796
Bicycle LOS	A	B	B	A

Sequence

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



Intersection Level Of Service Report
Intersection 6: 107 Avenue and 124 Street

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.517

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.40	3.40	3.40	3.40	3.40	3.40	3.60	3.60	3.60	3.60	3.60	3.60
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [m]	60.00	30.48	30.48	95.00	30.48	130.00	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	142	230	17	139	471	43	0	1127	164	0	468	77
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	4.00	2.00	2.00	5.00	2.00
Proportion of CAVs [%]	0.00											
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	2	0	0	4	0	0	16	0	0	8
Total Hourly Volume [veh/h]	142	230	15	139	471	39	0	1127	148	0	468	69
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]	36	58	4	35	118	10	0	282	37	0	117	17
Total Analysis Volume [veh/h]	142	230	15	139	471	39	0	1127	148	0	468	69
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
v_do, Outbound Pedestrian Volume crossing	12			7			7			12		
v_di, Inbound Pedestrian Volume crossing m	12			7			7			12		
v_co, Outbound Pedestrian Volume crossing	12			10			12			10		
v_ci, Inbound Pedestrian Volume crossing mi	12			10			12			10		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	67.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	1	0	4	1	0	0	2	0	0	2	0
Auxiliary Signal Groups												
Maximum Green [s]	10	32	0	10	32	0	0	45	0	0	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Detector Location [m]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	5.0	5.0	0.0	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	13	37	0	13	37	0	0	50	0	0	50	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	27	0	7	27	0	0	24	0	0	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	Yes	No		Yes	No			Yes			Yes	
Pedestrian Recall	No	Yes		No	Yes			Yes			Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	C	R
C, Calculated Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	40	27	27	38	27	27	50	50	50	50
g / C, Green / Cycle	0.40	0.27	0.27	0.38	0.27	0.27	0.50	0.50	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.13	0.07	0.07	0.11	0.14	0.14	0.32	0.09	0.13	0.04
s, saturation flow rate [veh/h]	1135	1870	1823	1322	1870	1815	3503	1567	3475	1589
c, Capacity [veh/h]	458	505	493	552	505	490	1751	783	1737	794
d1, Uniform Delay [s]	20.36	28.51	28.53	0.20	30.89	30.92	18.44	13.79	14.46	13.08
k, delay calibration	0.50	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.76	0.25	0.26	0.24	0.80	0.83	1.84	0.54	0.38	0.22
d3, Initial Queue Delay [s]	0.00	0.00	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	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.24	0.25	0.25	0.51	0.51	0.64	0.19	0.27	0.09
d, Delay for Lane Group [s/veh]	22.11	28.76	28.79	0.44	31.69	31.76	20.28	14.33	14.84	13.29
Lane Group LOS	C	C	C	A	C	C	C	B	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.34	2.33	2.30	0.04	5.30	5.19	9.55	1.90	3.06	0.84
50th-Percentile Queue Length [m/ln]	17.85	17.72	17.50	0.28	40.42	39.53	72.78	14.51	23.28	6.39
95th-Percentile Queue Length [veh/ln]	4.22	4.19	4.13	0.07	9.08	8.92	14.62	3.43	5.50	1.51
95th-Percentile Queue Length [m/ln]	32.13	31.89	31.49	0.50	69.20	67.99	111.40	26.13	41.91	11.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.11	28.78	28.79	0.44	31.72	31.76	0.00	20.28	14.33	0.00	14.84	13.29
Movement LOS	C	C	C	A	C	C		C	B		B	B
d_A, Approach Delay [s/veh]	26.33			25.02			19.59			14.64		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	20.81											
Intersection LOS	C											
Intersection V/C	0.517											

Emissions

Vehicle Kilometers Traveled [km/h]	64.69	56.19	55.42	122.86	228.09	222.69	269.50	35.39	134.47	19.83
Stops [stops/h]	84.32	83.70	82.66	1.31	190.95	186.74	687.65	68.57	220.01	30.17
Fuel consumption [L/h]	10.47	9.96	9.83	11.77	32.29	31.54	58.67	6.54	23.08	3.27
CO [g/h]	193.25	183.85	181.44	217.26	596.19	582.40	1083.42	120.75	426.17	60.38
NOx [g/h]	37.60	35.77	35.30	42.27	116.00	113.31	210.79	23.49	82.92	11.75
VOC [g/h]	44.79	42.61	42.05	50.35	138.17	134.98	251.09	27.99	98.77	13.99

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	44.02			63.10			90.90			54.93		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersectio	2.514			2.504			2.779			2.739		
Crosswalk LOS	B			B			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	640			640			900			900		
d_b, Bicycle Delay [s]	23.12			23.12			15.13			15.13		
I_b,int, Bicycle LOS Score for Intersection	1.881			2.098			2.625			2.009		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: 111 Avenue and 124 Street

Control Type:	Signalized	Delay (sec / veh):	25.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.574

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Entry Pocket Length [m]	55.00	30.48	150.00	65.00	30.48	100.00	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	15.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	108	188	71	168	503	62	0	1238	102	47	660	40
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	9.00	2.00	2.00	4.00	2.00	2.00	5.00	2.00	2.00	8.00	2.00
Proportion of CAVs [%]	0.00											
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	7	0	0	6	0	0	10	0	0	4
Total Hourly Volume [veh/h]	108	188	64	168	503	56	0	1238	92	47	660	36
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]	27	47	16	42	126	14	0	310	23	12	165	9
Total Analysis Volume [veh/h]	108	188	64	168	503	56	0	1238	92	47	660	36
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
v_do, Outbound Pedestrian Volume crossing	8			9			9			8		
v_di, Inbound Pedestrian Volume crossing m	8			9			9			8		
v_co, Outbound Pedestrian Volume crossing	12			10			12			10		
v_ci, Inbound Pedestrian Volume crossing mi	12			10			12			10		
v_ab, Corner 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
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	11.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Overlap	Overlap
Signal Group	3	4	0	2	4	0	0	1	0	5	1	1	1
Auxiliary Signal Groups										1,5	1,5	1,5	1,5
Maximum Green [s]	10	26	0	12	26	0	0	59	0	7	59	59	59
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	4.0	0.0	4.0	4.0	4.0	4.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0	1.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7	7
Pedestrian Clearance [s]	0	21	0	0	21	0	0	17	0	0	17	17	17
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	2.0	3.0	3.0	3.0
Detector Location [m]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	5.0	5.0	0.0	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	0.0	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	1.00

Phasing & Timing: Pattern 1

Split [s]	13	31	0	15	31	0	0	43	0	11	43	43	43
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lead	-	-	-
Minimum Green [s]	7	10	0	7	10	0	0	24	0	7	24	24	24
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	3.0	3.0
Minimum Recall	Yes	Yes		Yes	Yes			No		No	No	No	No
Maximum Recall	No	No		No	No			Yes		Yes	Yes	Yes	Yes
Pedestrian Recall	No	Yes		No	Yes			Yes		No	Yes	Yes	Yes

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	C	C
C, Calculated Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	37	28	28	39	28	28	38	38	51	51	51
g / C, Green / Cycle	0.37	0.28	0.28	0.39	0.28	0.28	0.38	0.38	0.51	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.10	0.07	0.08	0.13	0.15	0.16	0.26	0.25	0.22	0.16	0.16
s, saturation flow rate [veh/h]	1084	1765	1600	1283	1840	1768	3475	1753	1021	1620	1577
c, Capacity [veh/h]	399	494	448	545	515	495	1320	666	484	820	799
d1, Uniform Delay [s]	19.31	27.98	28.08	20.51	30.67	30.71	25.81	25.73	15.18	14.52	14.54
k, delay calibration	0.11	0.11	0.11	0.50	0.11	0.11	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	0.36	0.28	0.33	1.47	0.93	0.98	2.74	5.20	3.28	1.01	1.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	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	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	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.26	0.27	0.31	0.55	0.56	0.67	0.67	0.47	0.32	0.32
d, Delay for Lane Group [s/veh]	19.67	28.26	28.41	21.97	31.59	31.68	28.54	30.93	18.46	15.53	15.59
Lane Group LOS	B	C	C	C	C	C	C	C	B	B	B
Critical Lane Group	No	No	No	Yes	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.58	2.42	2.31	2.80	5.87	5.69	9.01	9.44	3.27	3.57	3.51
50th-Percentile Queue Length [m/ln]	12.00	18.46	17.58	21.35	44.71	43.36	68.64	71.96	24.92	27.17	26.76
95th-Percentile Queue Length [veh/ln]	2.84	4.36	4.15	5.04	9.84	9.60	13.93	14.48	5.89	6.42	6.32
95th-Percentile Queue Length [m/ln]	21.61	33.22	31.64	38.43	74.99	73.17	106.14	110.36	44.86	48.91	48.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.67	28.31	28.41	21.97	31.63	31.68	0.00	29.22	30.93	18.46	16.35	15.59
Movement LOS	B	C	C	C	C	C		C	C	B	B	B
d_A, Approach Delay [s/veh]	25.74			29.40			29.34			16.45		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	25.91											
Intersection LOS	C											
Intersection V/C	0.574											

Emissions

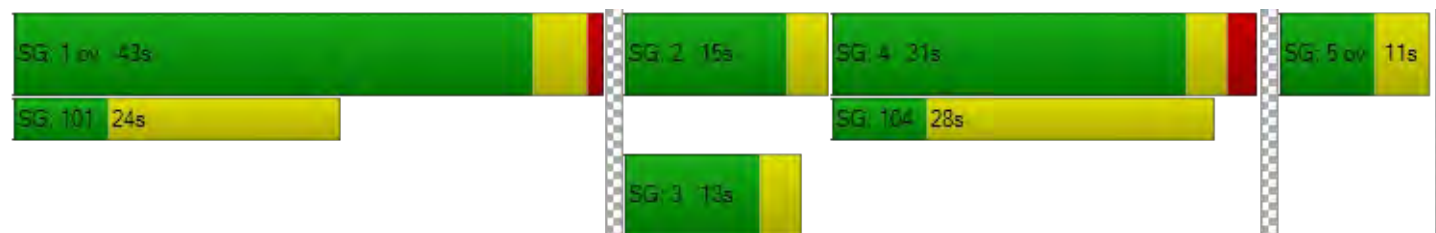
Vehicle Kilometers Traveled [km/h]	95.46	114.38	108.36	213.41	360.92	349.17	254.47	127.24	89.62	101.89	100.00
Stops [stops/h]	56.71	87.19	83.05	100.87	211.25	204.85	648.54	339.95	117.73	128.37	126.41
Fuel consumption [L/h]	11.99	15.66	14.86	25.41	45.99	44.53	58.25	30.30	14.42	15.68	15.41
CO [g/h]	221.43	289.10	274.32	469.24	849.30	822.20	1075.70	559.42	266.19	289.56	284.58
NOx [g/h]	43.08	56.25	53.37	91.30	165.24	159.97	209.29	108.84	51.79	56.34	55.37
VOC [g/h]	51.32	67.00	63.58	108.75	196.83	190.55	249.30	129.65	61.69	67.11	65.95

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	39.23			66.79			71.02			75.87		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersectio	2.650			2.507			2.880			2.909		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	520			520			760			980		
d_b, Bicycle Delay [s]	27.38			27.38			19.22			13.01		
I_b,int, Bicycle LOS Score for Intersection	1.862			2.164			2.297			1.970		
Bicycle LOS	A			B			B			A		

Sequence

Ring 1	1	2	4	5	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: 118 Avenue and 124 Street

Control Type:	Signalized	Delay (sec / veh):	30.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.505

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [m]	95.00	30.48	115.00	25.00	30.48	30.48	50.00	30.48	30.48	50.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	130	32	98	127	96	39	41	1179	296	63	560	53
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
Proportion of CAVs [%]	0.00											
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	10	0	0	4	0	0	30	0	0	5
Total Hourly Volume [veh/h]	130	32	88	127	96	35	41	1179	266	63	560	48
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]	33	8	22	32	24	9	10	295	67	16	140	12
Total Analysis Volume [veh/h]	130	32	88	127	96	35	41	1179	266	63	560	48
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
v_do, Outbound Pedestrian Volume crossing	8			19			19			8		
v_di, Inbound Pedestrian Volume crossing m	8			19			19			8		
v_co, Outbound Pedestrian Volume crossing	12			10			12			10		
v_ci, Inbound Pedestrian Volume crossing mi	12			10			12			10		
v_ab, Corner 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
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	14.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Overlap	Overlap	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Overlap	Overlap
Signal Group	2	3	3	0	3	0	0	1	0	4	1	1
Auxiliary Signal Groups	2,3	2,3	2,3							1,4	1,4	1,4
Maximum Green [s]	10	30	30	0	30	0	0	49	0	7	49	49
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	4.0	0.0	4.0	4.0	4.0
All red [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Walk [s]	0	8	8	0	8	0	0	10	0	0	10	10
Pedestrian Clearance [s]	0	22	22	0	22	0	0	15	0	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	4.0	4.0	0.0	4.0	0.0	0.0	4.0	0.0	2.0	4.0	4.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	5.0	5.0	5.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	13	36	36	0	36	0	0	40	0	11	40	40
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	12	12	0	12	0	0	25	0	7	25	25
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	3.0
Minimum Recall	No	No	No		No			Yes		No	Yes	Yes
Maximum Recall	Yes	Yes	Yes		Yes			No		Yes	No	No
Pedestrian Recall	No	No	No		No			Yes		No	Yes	Yes

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	C	L	C	C
C, Calculated Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	4.00	4.00	4.00	4.00	4.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	43	43	30	30	34	34	34	45	45	45
g / C, Green / Cycle	0.43	0.43	0.30	0.30	0.34	0.34	0.34	0.45	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.10	0.07	0.05	0.27	0.28	0.10	0.11	0.12
s, saturation flow rate [veh/h]	2704	1642	1256	1765	805	3560	1662	651	3560	1785
c, Capacity [veh/h]	1173	706	370	529	273	1211	565	309	1602	803
d1, Uniform Delay [s]	17.03	17.53	32.35	26.46	29.64	30.03	30.29	19.38	17.05	17.09
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	0.52	2.52	1.11	1.16	5.86	12.98	1.48	0.38	0.77
d3, Initial Queue Delay [s]	0.00	0.00	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	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.17	0.34	0.25	0.15	0.81	0.83	0.20	0.25	0.26
d, Delay for Lane Group [s/veh]	17.22	18.05	34.87	27.58	30.80	35.89	43.26	20.86	17.43	17.86
Lane Group LOS	B	B	C	C	C	D	D	C	B	B
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.90	1.77	2.84	2.50	0.86	11.37	12.03	0.93	2.89	3.04
50th-Percentile Queue Length [m/ln]	6.88	13.51	21.62	19.05	6.56	86.65	91.70	7.11	21.99	23.14
95th-Percentile Queue Length [veh/ln]	1.62	3.19	5.11	4.50	1.55	16.90	17.72	1.68	5.19	5.47
95th-Percentile Queue Length [m/ln]	12.38	24.31	38.92	34.29	11.82	128.79	135.05	12.81	39.58	41.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.22	18.05	18.05	34.87	27.58	27.58	30.80	37.15	43.26	20.86	17.55	17.86
Movement LOS	B	B	B	C	C	C	C	D	D	C	B	B
d_A, Approach Delay [s/veh]	17.62			31.17			38.07			17.88		
Approach LOS	B			C			D			B		
d_I, Intersection Delay [s/veh]	30.40											
Intersection LOS	C											
Intersection V/C	0.505											

Emissions

Vehicle Kilometers Traveled [km/h]	165.14	152.43	8.76	9.04	12.09	288.43	137.65	16.85	107.67	54.95
Stops [stops/h]	64.98	63.81	102.16	90.01	31.01	818.72	433.24	33.61	207.75	109.34
Fuel consumption [L/h]	18.89	17.60	6.54	5.66	2.82	72.85	38.37	3.37	20.31	10.51
CO [g/h]	348.90	325.06	120.70	104.55	52.05	1345.25	708.56	62.22	375.04	194.02
NOx [g/h]	67.88	63.24	23.48	20.34	10.13	261.74	137.86	12.11	72.97	37.75
VOC [g/h]	80.86	75.34	27.97	24.23	12.06	311.78	164.21	14.42	86.92	44.97

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	12.0	12.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	42.54	62.68	38.90	74.73
d_p, Pedestrian Delay [s]	36.98	36.98	38.72	38.72
I_p,int, Pedestrian LOS Score for Intersectio	2.360	2.137	3.024	3.086
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	860	600	680	900
d_b, Bicycle Delay [s]	16.25	24.50	21.78	15.13
I_b,int, Bicycle LOS Score for Intersection	1.989	1.992	2.393	1.931
Bicycle LOS	A	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: 104 Avenue and 121 Street

Control Type:	Signalized	Delay (sec / veh):	33.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.451

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [m]	30.48	30.48	40.00	30.48	30.48	30.48	45.00	30.48	30.48	55.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	187	38	96	209	13	40	414	11	6	154	21
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
Proportion of CAVs [%]	0.00											
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	4	0	0	1	0	0	1	0	0	2
Total Hourly Volume [veh/h]	0	187	34	96	209	12	40	414	10	6	154	19
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]	0	47	9	24	52	3	10	104	3	2	39	5
Total Analysis Volume [veh/h]	0	187	34	96	209	12	40	414	10	6	154	19
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
v_do, Outbound Pedestrian Volume crossing	35			35			35			35		
v_di, Inbound Pedestrian Volume crossing m	35			35			35			35		
v_co, Outbound Pedestrian Volume crossing	35			35			35			35		
v_ci, Inbound Pedestrian Volume crossing mi	35			35			35			35		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	5	7	0	1	3	0	1	3	0
Auxiliary Signal Groups												
Maximum Green [s]	0	26	0	12	42	0	9	51	0	9	51	0
Amber [s]	0.0	4.0	0.0	4.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	15	0	0	15	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	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]	0.0	5.0	0.0	2.0	5.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	33	0	16	49	0	14	57	0	14	57	0
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	5	10	0	5	10	0	5	10	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No		No	No		No	No		No	No	
Maximum Recall		Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall		Yes		No	Yes		No	Yes		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	R	L	C	L	C	R
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	5.00	6.00	5.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	5.00	5.00	0.00	5.00	5.00	3.00	4.00	3.00	4.00	4.00
g_i, Effective Green Time [s]	26	26	42	42	42	9	51	9	51	51
g / C, Green / Cycle	0.22	0.22	0.35	0.35	0.35	0.08	0.43	0.08	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.12	0.03	0.08	0.13	0.01	0.03	0.25	0.00	0.09	0.01
s, saturation flow rate [veh/h]	1550	1292	1188	1550	1287	1476	1672	1476	1683	1313
c, Capacity [veh/h]	366	280	388	543	451	111	711	111	715	558
d1, Uniform Delay [s]	41.87	37.71	27.88	29.30	25.56	52.77	26.58	51.55	21.84	20.10
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.03	0.89	1.52	2.06	0.11	8.92	3.67	0.93	0.69	0.11
d3, Initial Queue Delay [s]	0.00	0.00	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	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.12	0.25	0.39	0.03	0.36	0.60	0.05	0.22	0.03
d, Delay for Lane Group [s/veh]	46.90	38.60	29.39	31.36	25.67	61.69	30.25	52.48	22.52	20.22
Lane Group LOS	D	D	C	C	C	E	C	D	C	C
Critical Lane Group	Yes	No	Yes	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	5.44	0.88	2.09	4.84	0.24	1.42	9.95	0.20	2.89	0.33
50th-Percentile Queue Length [m/ln]	41.45	6.68	15.90	36.85	1.83	10.83	75.80	1.50	22.01	2.52
95th-Percentile Queue Length [veh/ln]	9.27	1.58	3.76	8.44	0.43	2.56	15.12	0.35	5.20	0.59
95th-Percentile Queue Length [m/ln]	70.60	12.02	28.63	64.34	3.30	19.50	115.21	2.70	39.62	4.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.90	46.90	38.60	29.39	31.36	25.67	61.69	30.25	30.25	52.48	22.52	20.22
Movement LOS	D	D	D	C	C	C	E	C	C	D	C	C
d_A, Approach Delay [s/veh]	45.62			30.55			32.96			23.28		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	33.22											
Intersection LOS	C											
Intersection V/C	0.451											

Emissions

Vehicle Kilometers Traveled [km/h]	66.59	12.11	22.96	49.98	2.87	13.69	145.12	3.80	97.41	12.02
Stops [stops/h]	163.20	26.29	62.61	145.10	7.21	42.64	298.42	5.90	86.66	9.91
Fuel consumption [L/h]	16.75	2.75	5.76	13.06	0.67	4.16	30.38	0.74	13.88	1.66
CO [g/h]	309.33	50.83	106.40	241.15	12.41	76.81	561.02	13.59	256.37	30.68
NOx [g/h]	60.19	9.89	20.70	46.92	2.41	14.94	109.15	2.64	49.88	5.97
VOC [g/h]	71.69	11.78	24.66	55.89	2.88	17.80	130.02	3.15	59.42	7.11

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	16.57	16.00	17.25	17.02
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersectio	2.111	2.289	2.168	2.496
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	433	700	850	850
d_b, Bicycle Delay [s]	36.82	25.35	19.84	19.84
I_b,int, Bicycle LOS Score for Intersection	1.931	2.084	2.327	1.858
Bicycle LOS	A	B	B	A

Sequence

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



Intersection Level Of Service Report
Intersection 10: 104 Avenue and 116 Street

Control Type:	Signalized	Delay (sec / veh):	37.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.571

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [m]	20.00	30.48	30.48	70.00	30.48	30.48	75.00	30.48	40.00	115.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	27	411	11	190	504	10	58	662	39	31	252	46
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
Proportion of CAVs [%]	0.00											
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	1	0	0	1	0	0	4	0	0	5
Total Hourly Volume [veh/h]	27	411	10	190	504	9	58	662	35	31	252	41
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	103	3	48	126	2	15	166	9	8	63	10
Total Analysis Volume [veh/h]	27	411	10	190	504	9	58	662	35	31	252	41
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
v_do, Outbound Pedestrian Volume crossing	35			35			35			35		
v_di, Inbound Pedestrian Volume crossing m	35			35			35			35		
v_co, Outbound Pedestrian Volume crossing	35			35			35			35		
v_ci, Inbound Pedestrian Volume crossing mi	35			35			35			35		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	5	7	0	1	3	0	1	3	0
Auxiliary Signal Groups												
Maximum Green [s]	0	34	0	17	54	0	10	37	0	10	37	0
Amber [s]	0.0	4.0	0.0	3.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	30	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			Yes			No			No	
I1, Start-Up Lost Time [s]	0.0	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]	0.0	5.0	0.0	1.0	5.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	41	0	20	61	0	16	43	0	16	43	0
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	5	10	0	5	10	0	5	10	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No		No	No		No	No		No	No	
Maximum Recall		Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall		Yes		No	Yes		No	Yes		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	7.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	5.00	5.00	5.00	0.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	34	34	34	54	54	54	10	37	37	10	37	37
g / C, Green / Cycle	0.28	0.28	0.28	0.45	0.45	0.45	0.08	0.31	0.31	0.08	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.03	0.14	0.14	0.18	0.33	0.01	0.04	0.21	0.03	0.02	0.09	0.09
s, saturation flow rate [veh/h]	788	1550	1530	1072	1550	1364	1476	3204	1333	1476	1683	1566
c, Capacity [veh/h]	61	439	434	468	698	614	123	988	411	123	519	483
d1, Uniform Delay [s]	60.00	35.68	35.71	21.83	26.89	18.26	52.48	36.18	29.42	51.50	31.48	31.62
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	21.29	3.73	3.83	2.61	6.39	0.04	12.40	3.61	0.41	4.86	1.38	1.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.48	0.48	0.41	0.72	0.01	0.47	0.67	0.09	0.25	0.29	0.30
d, Delay for Lane Group [s/veh]	81.28	39.41	39.55	24.43	33.29	18.31	64.88	39.79	29.83	56.36	32.87	33.20
Lane Group LOS	F	D	D	C	C	B	E	D	C	E	C	C
Critical Lane Group	No	No	No	No	Yes	No	Yes	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	1.18	5.58	5.56	3.70	12.74	0.15	2.09	8.89	0.77	1.04	3.48	3.42
50th-Percentile Queue Length [m/ln]	9.02	42.50	42.36	28.17	97.08	1.12	15.94	67.75	5.86	7.93	26.50	26.03
95th-Percentile Queue Length [veh/ln]	2.13	9.45	9.43	6.65	18.59	0.26	3.76	13.78	1.38	1.87	6.26	6.15
95th-Percentile Queue Length [m/ln]	16.23	72.01	71.82	50.71	141.69	2.02	28.69	105.01	10.54	14.27	47.69	46.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	81.28	39.48	39.55	24.43	33.29	18.31	64.88	39.79	29.83	56.36	33.01	33.20
Movement LOS	F	D	D	C	C	B	E	D	C	E	C	C
d_A, Approach Delay [s/veh]	42.00			30.70			41.26			35.26		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	37.21											
Intersection LOS	D											
Intersection V/C	0.571											

Emissions

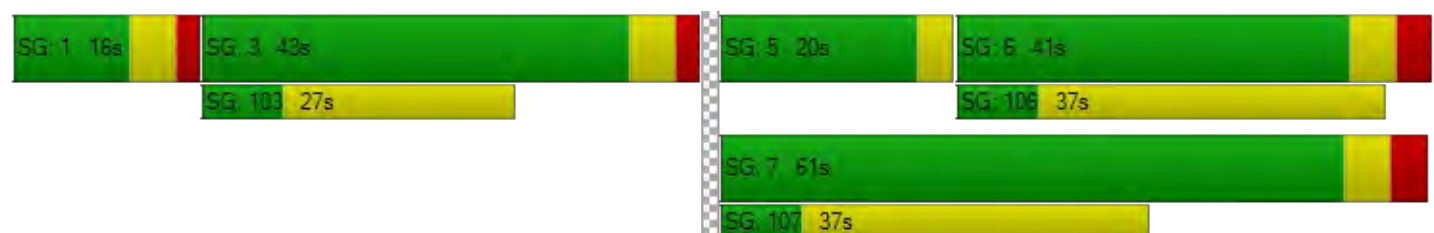
Vehicle Kilometers Traveled [km/h]	13.16	102.91	102.30	41.61	110.36	1.97	36.69	418.72	22.14	15.20	72.81	70.84
Stops [stops/h]	35.50	167.33	166.76	110.91	382.20	4.41	62.75	533.44	23.05	31.22	104.32	102.46
Fuel consumption [L/h]	3.74	19.95	19.87	10.02	32.00	0.41	7.80	72.09	3.43	3.49	13.03	12.73
CO [g/h]	69.04	368.45	366.85	185.07	590.84	7.63	143.97	1331.28	63.29	64.48	240.56	235.15
NOx [g/h]	13.43	71.69	71.38	36.01	114.96	1.48	28.01	259.02	12.31	12.55	46.80	45.75
VOC [g/h]	16.00	85.39	85.02	42.89	136.93	1.77	33.37	308.54	14.67	14.94	55.75	54.50

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	15.93			15.94			18.06			17.13		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersectio	2.522			2.561			2.687			2.643		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	567			900			617			617		
d_b, Bicycle Delay [s]	30.82			18.15			28.70			28.70		
I_b,int, Bicycle LOS Score for Intersection	1.930			2.721			2.186			1.831		
Bicycle LOS	A			B			B			A		

Sequence

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



Intersection Level Of Service Report
Intersection 11: 104 Avenue and 112 Street

Control Type:	Signalized	Delay (sec / veh):	35.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.505

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.80	3.80	3.80	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [m]	30.48	30.48	30.00	40.00	30.48	30.48	75.00	30.48	30.48	60.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	40.00			40.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	6	81	180	50	78	4	8	891	17	76	408	16
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
Proportion of CAVs [%]	0.00											
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	18	0	0	0	0	0	2	0	0	2
Total Hourly Volume [veh/h]	6	81	162	50	78	4	8	891	15	76	408	14
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]	2	20	41	13	20	1	2	223	4	19	102	4
Total Analysis Volume [veh/h]	6	81	162	50	78	4	8	891	15	76	408	14
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
v_do, Outbound Pedestrian Volume crossing	35			35			35			35		
v_di, Inbound Pedestrian Volume crossing m	35			35			35			35		
v_co, Outbound Pedestrian Volume crossing	35			35			35			35		
v_ci, Inbound Pedestrian Volume crossing mi	35			35			35			35		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	46.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	5	0	0	5	0	1	3	0	1	3	0
Auxiliary Signal Groups												
Maximum Green [s]	0	48	0	0	48	0	10	45	0	10	45	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	25	0	0	25	0	0	15	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	54	0	0	54	0	15	51	0	15	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	5	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		Yes			Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall		Yes			Yes		No	Yes		No	Yes	

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	C	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	5.00	6.00	6.00	5.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	3.00	4.00	4.00	3.00	4.00	4.00
g_i, Effective Green Time [s]	48	48	48	48	10	45	45	10	45	45
g / C, Green / Cycle	0.40	0.40	0.40	0.40	0.08	0.38	0.38	0.08	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.01	0.18	0.05	0.05	0.01	0.27	0.27	0.05	0.13	0.13
s, saturation flow rate [veh/h]	1134	1335	996	1532	1476	1683	1667	1476	1683	1650
c, Capacity [veh/h]	456	534	309	613	123	631	625	123	631	619
d1, Uniform Delay [s]	25.53	26.41	35.55	22.82	50.69	32.10	32.15	53.15	26.81	26.86
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	2.78	1.12	0.45	1.02	6.95	7.10	21.07	1.44	1.49
d3, Initial Queue Delay [s]	0.00	0.00	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	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.46	0.16	0.13	0.07	0.72	0.72	0.62	0.34	0.34
d, Delay for Lane Group [s/veh]	25.58	29.19	36.68	23.27	51.71	39.05	39.26	74.22	28.25	28.34
Lane Group LOS	C	C	D	C	D	D	D	E	C	C
Critical Lane Group	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.12	5.57	1.27	1.58	0.26	12.36	12.32	2.93	4.59	4.56
50th-Percentile Queue Length [m/ln]	0.93	42.42	9.70	12.04	1.96	94.16	93.92	22.35	34.99	34.78
95th-Percentile Queue Length [veh/ln]	0.22	9.44	2.29	2.84	0.46	18.12	18.08	5.28	8.11	8.07
95th-Percentile Queue Length [m/ln]	1.67	71.90	17.46	21.67	3.52	138.10	137.79	40.23	61.77	61.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.58	29.19	29.19	36.68	23.27	23.27	51.71	39.15	39.26	74.22	28.29	28.34
Movement LOS	C	C	C	D	C	C	D	D	D	E	C	C
d_A, Approach Delay [s/veh]	29.10			28.35			39.26			35.30		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.95											
Intersection LOS	D											
Intersection V/C	0.505											

Emissions

Vehicle Kilometers Traveled [km/h]	1.70	68.93	4.79	7.86	3.92	222.74	221.45	8.02	22.38	22.18
Stops [stops/h]	3.64	167.00	38.20	47.40	7.71	370.73	369.75	88.00	137.76	136.93
Fuel consumption [L/h]	0.35	15.17	2.47	2.98	0.86	43.17	43.02	7.08	9.83	9.77
CO [g/h]	6.48	280.15	45.60	55.11	15.97	797.25	794.43	130.77	181.54	180.37
NOx [g/h]	1.26	54.51	8.87	10.72	3.11	155.12	154.57	25.44	35.32	35.09
VOC [g/h]	1.50	64.93	10.57	12.77	3.70	184.77	184.12	30.31	42.07	41.80

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	14.76			14.68			18.35			14.04		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersectio	2.098			2.018			2.594			2.715		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	800			800			750			750		
d_b, Bicycle Delay [s]	21.60			21.60			23.44			23.44		
I_b,int, Bicycle LOS Score for Intersection	2.000			1.777			2.315			1.972		
Bicycle LOS	B			A			B			A		

Sequence

Ring 1	1	3	5	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Jasper Avenue and 121 Street

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.540

Intersection Setup

Name														
Approach	Northbound							Southbound						
Lane Configuration														
Turning Movement	Left	Left	Thru	Thru	Thru	Right	Right	Left	Left	Thru	Thru	Thru	Right	Right
Lane Width [m]	3.60	3.66	3.66	3.66	3.60	3.66	3.60	3.60	3.66	3.66	3.66	3.66	3.66	3.60
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	35.00	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00							50.00						
Grade [%]	0.00							0.00						
Curb Present	Yes							Yes						
Crosswalk	Yes							Yes						

Volumes

Name														
Base Volume Input [veh/h]	128	0	0	0	30	0	28	71	0	0	0	0	0	3
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	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	2.00	2.00
Proportion of CAVs [%]	0.00													
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	1.0000	1.0000
In-Process Volume [veh/h]	0	0	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	0	0
Diverted Trips [veh/h]	0	0	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	0	0
Existing Site Adjustment Volume [veh/h]	0	0	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	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	3	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	128	0	0	0	30	0	25	71	0	0	0	0	0	3
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	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	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	0	0	0	8	0	6	18	0	0	0	0	0	1
Total Analysis Volume [veh/h]	128	0	0	0	30	0	25	71	0	0	0	0	0	3
Presence of On-Street Parking	No						No	No						No
On-Street Parking Maneuver Rate [/h]	0	0	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	0	0
v_do, Outbound Pedestrian Volume crossing	12							6						
v_di, Inbound Pedestrian Volume crossing th	12							6						
v_co, Outbound Pedestrian Volume along th	12							6						
v_ci, Inbound Pedestrian Volume along the l	12							6						
v_ab, Corner Pedestrian Volume [ped/h]	0							0						
Bicycle Volume [bicycles/h]	0							0						

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	0	0	0	2	0	0	2	0	0	0	0	0	0
Auxiliary Signal Groups														
Maximum Green [s]	0	0	0	0	28	0	0	28	0	0	0	0	0	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	10	0	0	10	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	8	0	0	8	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No			No						
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	0.0	0.0	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	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	0	0	34	0	0	34	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	-	Lag	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	15	0	0	15	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall					No			No						
Maximum Recall					Yes			Yes						
Pedestrian Recall					Yes			Yes						

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C
C, Calculated Cycle Length [s]	102	102	102
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00
g_i, Effective Green Time [s]	28	28	28
g / C, Green / Cycle	0.27	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.10	0.04	0.08
s, saturation flow rate [veh/h]	1273	1524	966
c, Capacity [veh/h]	280	418	334
d1, Uniform Delay [s]	39.57	27.85	32.72
k, delay calibration	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	5.29	0.65	1.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.13	0.22
d, Delay for Lane Group [s/veh]	44.86	28.50	34.25
Lane Group LOS	D	C	C
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.36	1.08	1.65
50th-Percentile Queue Length [m/ln]	25.62	8.24	12.55
95th-Percentile Queue Length [veh/ln]	6.05	1.95	2.96
95th-Percentile Queue Length [m/ln]	46.12	14.83	22.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.86	0.00	0.00	0.00	28.50	0.00	28.50	34.25	0.00	0.00	0.00	0.00	0.00	34.25
Movement LOS	D				C		C	C						C
d_A, Approach Delay [s/veh]	39.94							34.25						
Approach LOS	D							C						
d_I, Intersection Delay [s/veh]	19.23													
Intersection LOS	B													
Intersection V/C	0.540													

Emissions

Vehicle Kilometers Traveled [km/h]	15.70	6.74	17.44
Stops [stops/h]	118.68	38.16	58.12
Fuel consumption [L/h]	8.58	2.71	4.92
CO [g/h]	158.41	49.95	90.77
NOx [g/h]	30.82	9.72	17.66
VOC [g/h]	36.71	11.58	21.04

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0
M_corner, Corner Circulation Area [m ² /ped]	656.67	1315.55
M_CW, Crosswalk Circulation Area [m ² /ped]	60.79	103.44
d_p, Pedestrian Delay [s]	37.96	37.96
I_p,int, Pedestrian LOS Score for Intersectio	1.816	1.801
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	490	490
d_b, Bicycle Delay [s]	29.06	29.06
I_b,int, Bicycle LOS Score for Intersection	1.867	1.682
Bicycle LOS	A	A

Intersection Setup

Name														
Approach	Eastbound							Westbound						
Lane Configuration														
Turning Movement	Left	Left	Left	Thru	Right	Right	Right	Left	Left	Left	Thru	Right	Right	Right
Lane Width [m]	3.60	3.66	3.66	3.60	3.66	3.66	3.66	3.66	3.66	3.66	3.60	3.66	3.66	3.60
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00							50.00						
Grade [%]	0.00							0.00						
Curb Present	Yes							Yes						
Crosswalk	Yes							Yes						

Volumes

Name														
Base Volume Input [veh/h]	4	0	0	1395	0	0	0	0	0	0	320	0	0	46
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	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
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	1.0000	1.0000
In-Process Volume [veh/h]	0	0	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	0	0
Diverted Trips [veh/h]	0	0	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	0	0
Existing Site Adjustment Volume [veh/h]	0	0	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	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Total Hourly Volume [veh/h]	4	0	0	1395	0	0	0	0	0	0	320	0	0	41
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	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	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	0	349	0	0	0	0	0	0	80	0	0	10
Total Analysis Volume [veh/h]	4	0	0	1395	0	0	0	0	0	0	320	0	0	41
Presence of On-Street Parking	No						No	No						No
On-Street Parking Maneuver Rate [/h]	0	0	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	0	0
v_do, Outbound Pedestrian Volume crossing	1							20						
v_di, Inbound Pedestrian Volume crossing th	1							20						
v_co, Outbound Pedestrian Volume along th	12							6						
v_ci, Inbound Pedestrian Volume along the l	12							6						
v_ab, Corner Pedestrian Volume [ped/h]	0							0						
Bicycle Volume [bicycles/h]	0							0						

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	0	0	1	0	0	0	0	0	0	1	0	0	0
Auxiliary Signal Groups														
Maximum Green [s]	0	0	0	62	0	0	0	0	0	0	62	0	0	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
Walk [s]	0	0	0	10	0	0	0	0	0	0	10	0	0	0
Pedestrian Clearance [s]	0	0	0	15	0	0	0	0	0	0	15	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No							No			
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	0.0	0.0	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	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	0	68	0	0	0	0	0	0	68	0	0	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	25	0	0	0	0	0	0	25	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
Minimum Recall				Yes							Yes			
Maximum Recall				No							No			
Pedestrian Recall				Yes							Yes			

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	C	C
C, Calculated Cycle Length [s]	102	102	102	102
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	62	62	62	62
g / C, Green / Cycle	0.61	0.61	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.44	0.44	0.11	0.11
s, saturation flow rate [veh/h]	1668	1519	1669	1605
c, Capacity [veh/h]	1049	923	1015	976
d1, Uniform Delay [s]	13.97	13.98	8.79	8.84
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.85	4.87	0.38	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.72	0.18	0.19
d, Delay for Lane Group [s/veh]	17.82	18.85	9.18	9.26
Lane Group LOS	B	B	A	A
Critical Lane Group	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	11.79	10.97	1.76	1.78
50th-Percentile Queue Length [m/ln]	89.84	83.58	13.44	13.54
95th-Percentile Queue Length [veh/ln]	17.42	16.40	3.17	3.20
95th-Percentile Queue Length [m/ln]	132.75	124.97	24.18	24.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.82	0.00	0.00	18.32	0.00	0.00	0.00	0.00	0.00	0.00	9.21	0.00	0.00	9.26
Movement LOS	B			B							A			A
d_A, Approach Delay [s/veh]	18.31							9.22						
Approach LOS	B							A						
d_I, Intersection Delay [s/veh]	19.23													
Intersection LOS	B													
Intersection V/C	0.540													

Emissions

Vehicle Kilometers Traveled [km/h]	265.60	241.85	99.66	99.66
Stops [stops/h]	416.14	387.13	62.23	62.70
Fuel consumption [L/h]	44.66	41.38	12.15	12.18
CO [g/h]	824.67	764.07	224.45	224.84
NOx [g/h]	160.45	148.66	43.67	43.75
VOC [g/h]	191.13	177.08	52.02	52.11

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0
M_corner, Corner Circulation Area [m²/ped]	145.26	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	682.44	36.50
d_p, Pedestrian Delay [s]	37.96	37.96
I_p,int, Pedestrian LOS Score for Intersectio	2.783	2.712
Crosswalk LOS	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1216	1216
d_b, Bicycle Delay [s]	7.84	7.84
I_b,int, Bicycle LOS Score for Intersection	2.714	1.862
Bicycle LOS	B	A

Intersection Setup

Name														
Approach	Northeastbound							Southwestbound						
Lane Configuration														
Turning Movement	Left	Thru	Thru	Thru	Right	Right	Right	Left	Left	Thru	Thru	Right	Right	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00							50.00						
Grade [%]	0.00							0.00						
Curb Present														
Crosswalk	Yes							Yes						

Volumes

Name														
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	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	2.00	2.00
Proportion of CAVs [%]	0.00													
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	1.0000	1.0000
In-Process Volume [veh/h]	0	0	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	0	0
Diverted Trips [veh/h]	0	0	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	0	0
Existing Site Adjustment Volume [veh/h]	0	0	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	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	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	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking														
On-Street Parking Maneuver Rate [/h]	0	0	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	0	0
v_do, Outbound Pedestrian Volume crossing	12							6						
v_di, Inbound Pedestrian Volume crossing th	12							6						
v_co, Outbound Pedestrian Volume along th	12							6						
v_ci, Inbound Pedestrian Volume along the l	12							6						
v_ab, Corner Pedestrian Volume [ped/h]	0							0						
Bicycle Volume [bicycles/h]	0							0						

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auxiliary Signal Groups														
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk														
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	0.0	0.0	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	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall														
Maximum Recall														
Pedestrian Recall														

Exclusive Pedestrian Phase

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

Lane Group Calculations

[illegible]

Version 2024 (SP 0-5)

Lane Group Results

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS														
d_A, Approach Delay [s/veh]	0.00							0.00						
Approach LOS	A							A						
d_I, Intersection Delay [s/veh]	19.23													
Intersection LOS	B													
Intersection V/C	0.540													

Emissions

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0
M_corner, Corner Circulation Area [m²/ped]	663.73	1315.55
M_CW, Crosswalk Circulation Area [m²/ped]	32.43	65.25
d_p, Pedestrian Delay [s]	37.96	37.96
I_p,int, Pedestrian LOS Score for Intersectio	1.427	1.427
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0
d_b, Bicycle Delay [s]	51.00	51.00
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132
Bicycle LOS	D	D

Intersection Setup

Name	Northbound Bike Lane							Southbound Bike Lane						
Approach	Northwestbound							Southeastbound						
Lane Configuration														
Turning Movement	Left	Left	Left	Thru	Thru	Right	Right2	Left3	Left2	Left	Thru	Thru	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	2.00	3.66	3.66	3.66	3.66	3.66	3.66	2.00	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	30.00							30.00						
Grade [%]	0.00							0.00						
Curb Present	No							No						
Crosswalk	Yes							Yes						

Volumes

Name	Northbound Bike Lane							Southbound Bike Lane						
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	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	2.00	2.00
Proportion of CAVs [%]	0.00													
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	1.0000	1.0000
In-Process Volume [veh/h]	0	0	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	0	0
Diverted Trips [veh/h]	0	0	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	0	0
Existing Site Adjustment Volume [veh/h]	0	0	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	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	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	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No						No	No						No
On-Street Parking Maneuver Rate [/h]	0	0	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	0	0
v_do, Outbound Pedestrian Volume crossing	12							6						
v_di, Inbound Pedestrian Volume crossing th	12							6						
v_co, Outbound Pedestrian Volume along th	20							1						
v_ci, Inbound Pedestrian Volume along the l	20							1						
v_ab, Corner Pedestrian Volume [ped/h]	0							0						
Bicycle Volume [bicycles/h]	0							0						

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	0	0	0	0	2	0	0	0	0	0	0	2	0
Auxiliary Signal Groups														
Maximum Green [s]	0	0	0	0	0	28	0	0	0	0	0	0	28	0
Amber [s]	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	10	0	0	0	0	0	0	10	0
Pedestrian Clearance [s]	0	0	0	0	0	8	0	0	0	0	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Rest In Walk						No							No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	0.0	0.0	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	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	0	0	0	34	0	0	0	0	0	0	34	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	0	15	0	0	0	0	0	0	15	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Minimum Recall						No							No	
Maximum Recall						Yes							Yes	
Pedestrian Recall						Yes							Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	R	C
C, Calculated Cycle Length [s]	102	102
L, Total Lost Time per Cycle [s]	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00
g_i, Effective Green Time [s]	28	28
g / C, Green / Cycle	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00
s, saturation flow rate [veh/h]	1373	1616
c, Capacity [veh/h]	377	444
d1, Uniform Delay [s]	0.00	0.00
k, delay calibration	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.00
d, Delay for Lane Group [s/veh]	0.00	0.00
Lane Group LOS	A	A
Critical Lane Group	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.00
50th-Percentile Queue Length [m/ln]	0.00	0.00
95th-Percentile Queue Length [veh/ln]	0.00	0.00
95th-Percentile Queue Length [m/ln]	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS						A							A	
d_A, Approach Delay [s/veh]	0.00							0.00						
Approach LOS	A							A						
d_I, Intersection Delay [s/veh]	19.23													
Intersection LOS	B													
Intersection V/C	0.540													

Emissions

Vehicle Kilometers Traveled [km/h]	0.00	0.00
Stops [stops/h]	0.00	0.00
Fuel consumption [L/h]	0.00	0.00
CO [g/h]	0.00	0.00
NOx [g/h]	0.00	0.00
VOC [g/h]	0.00	0.00

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	32.43	65.25
d_p, Pedestrian Delay [s]	37.96	37.96
I_p,int, Pedestrian LOS Score for Intersectio	1.427	1.427
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	490	490
d_b, Bicycle Delay [s]	29.06	29.06
I_b,int, Bicycle LOS Score for Intersection	1.560	1.560
Bicycle LOS	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Jasper Avenue and 116 Street

Control Type:	Signalized	Delay (sec / veh):	34.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.699

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.40	3.40	3.40	3.40	3.40	3.40	3.70	3.70	3.70	3.70	3.70	3.70
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	60.00	30.48	60.00	40.00	30.48	30.48	70.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	131	237	50	117	365	15	38	1325	244	23	386	37
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
Proportion of CAVs [%]	0.00											
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	5	0	0	2	0	0	24	0	0	4
Total Hourly Volume [veh/h]	131	237	45	117	365	13	38	1325	220	23	386	33
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]	33	59	11	29	91	3	10	331	55	6	97	8
Total Analysis Volume [veh/h]	131	237	45	117	365	13	38	1325	220	23	386	33
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
v_do, Outbound Pedestrian Volume crossing	10			22			22			10		
v_di, Inbound Pedestrian Volume crossing m	10			22			22			10		
v_co, Outbound Pedestrian Volume crossing	10			27			10			27		
v_ci, Inbound Pedestrian Volume crossing mi	10			27			10			27		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	54.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	4	0	2	4	0	0	1	0	5	1	0
Auxiliary Signal Groups												
Maximum Green [s]	7	30	0	7	30	0	0	50	0	5	50	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	1.0	2.0	0.0
Walk [s]	0	10	0	0	10	0	0	10	0	0	10	0
Pedestrian Clearance [s]	0	13	0	0	13	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	2.0	3.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	5.0	5.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	10	35	0	10	35	0	0	55	0	9	55	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	7	23	0	7	23	0	0	20	0	5	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No			Yes			Yes	
Maximum Recall	No	Yes		No	Yes			No			No	
Pedestrian Recall	Yes	Yes		Yes	Yes			Yes			Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	38	30	40	30	30	50	50	50	50	50	50
g / C, Green / Cycle	0.38	0.30	0.40	0.30	0.30	0.50	0.50	0.50	0.50	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.13	0.17	0.11	0.11	0.11	0.04	0.47	0.48	0.08	0.13	0.13
s, saturation flow rate [veh/h]	1046	1631	1106	1683	1657	857	1683	1595	302	1683	1620
c, Capacity [veh/h]	421	494	402	509	501	421	842	798	79	842	810
d1, Uniform Delay [s]	18.79	29.40	20.63	27.41	27.43	18.41	23.40	23.89	49.60	14.29	14.33
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	1.92	4.75	1.82	2.09	2.14	0.42	18.31	22.40	8.97	0.72	0.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	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	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	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.57	0.29	0.37	0.38	0.09	0.93	0.95	0.29	0.25	0.26
d, Delay for Lane Group [s/veh]	20.71	34.15	22.45	29.49	29.57	18.83	41.71	46.29	58.57	15.01	15.09
Lane Group LOS	C	C	C	C	C	B	D	D	E	B	B
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.10	6.26	1.94	3.81	3.79	0.59	20.37	20.90	0.77	2.82	2.78
50th-Percentile Queue Length [m/ln]	16.04	47.66	14.76	29.05	28.85	4.48	155.22	159.23	5.86	21.47	21.17
95th-Percentile Queue Length [veh/ln]	3.79	10.36	3.49	6.86	6.82	1.06	27.77	28.39	1.39	5.07	5.00
95th-Percentile Queue Length [m/ln]	28.87	78.92	26.57	52.30	51.94	8.07	211.63	216.36	10.55	38.65	38.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.71	34.15	34.15	22.45	29.53	29.57	18.83	43.58	46.29	58.57	15.05	15.09
Movement LOS	C	C	C	C	C	C	B	D	D	E	B	B
d_A, Approach Delay [s/veh]	29.89			27.86			43.36			17.32		
Approach LOS	C			C			D			B		
d_I, Intersection Delay [s/veh]	34.92											
Intersection LOS	C											
Intersection V/C	0.699											

Emissions

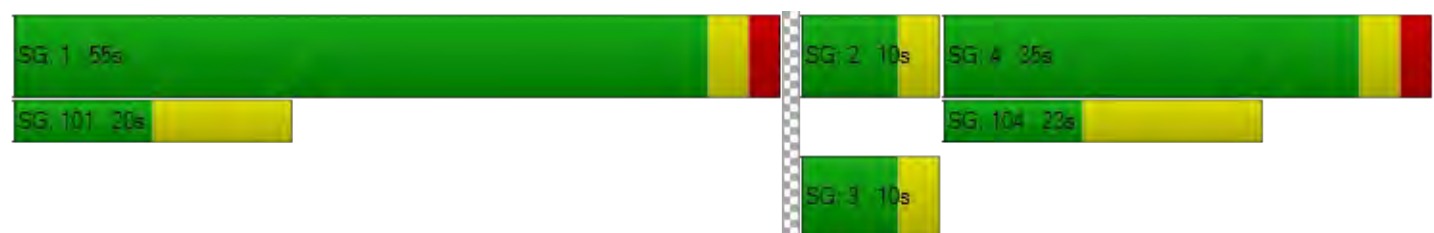
Vehicle Kilometers Traveled [km/h]	30.71	66.11	11.82	19.19	19.01	2.93	60.43	58.62	3.76	34.60	33.93
Stops [stops/h]	75.78	225.19	69.75	137.27	136.32	21.17	733.35	752.28	27.70	101.45	100.01
Fuel consumption [L/h]	6.71	18.76	4.71	9.22	9.15	1.30	47.40	49.58	2.02	8.01	7.88
CO [g/h]	123.94	346.39	87.03	170.23	169.01	24.09	875.25	915.50	37.24	147.97	145.58
NOx [g/h]	24.11	67.40	16.93	33.12	32.88	4.69	170.29	178.12	7.25	28.79	28.32
VOC [g/h]	28.72	80.28	20.17	39.45	39.17	5.58	202.85	212.18	8.63	34.29	33.74

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0			14.0			14.0			14.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	50.90			28.41			39.06			82.49		
d_p, Pedestrian Delay [s]	36.98			36.98			36.98			36.98		
I_p,int, Pedestrian LOS Score for Intersectio	2.438			2.394			2.824			2.753		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	600			600			1000			1000		
d_b, Bicycle Delay [s]	24.50			24.50			12.50			12.50		
I_b,int, Bicycle LOS Score for Intersection	2.249			1.970			2.885			1.928		
Bicycle LOS	B			A			C			A		

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: 100 Avenue and 116 Street

Control Type:	Signalized	Delay (sec / veh):	26.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.447

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	70.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00	100.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			3.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	8	3	9	376	7	256	330	406	11	5	305	92
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
Proportion of CAVs [%]	0.00											
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	1	0	0	26	0	0	1	0	0	9
Total Hourly Volume [veh/h]	8	3	8	376	7	230	330	406	10	5	305	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]	2	1	2	94	2	58	83	102	3	1	76	21
Total Analysis Volume [veh/h]	8	3	8	376	7	230	330	406	10	5	305	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
v_do, Outbound Pedestrian Volume crossing	22			17			17			22		
v_di, Inbound Pedestrian Volume crossing m	22			17			17			22		
v_co, Outbound Pedestrian Volume crossing	16			39			16			39		
v_ci, Inbound Pedestrian Volume crossing mi	16			39			16			39		
v_ab, Corner 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
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Overlap	Overlap	Overlap	Permiss	Permiss	Permiss
Signal Group	0	2	0	2	2	3	3	1	1	0	1	0
Auxiliary Signal Groups						2,3	1,3	1,3	1,3			
Maximum Green [s]	0	36	0	36	36	21	21	30	30	0	30	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Walk [s]	0	7	0	7	7	5	5	10	10	0	10	0
Pedestrian Clearance [s]	0	18	0	18	18	10	10	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	3.0	3.0	1.0	1.0	3.0	3.0	0.0	3.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	5.0	5.0	5.0	0.0	5.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	41	0	41	41	24	24	35	35	0	35	0
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	25	0	25	25	7	7	25	25	0	25	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall		No			No	No	No	Yes	Yes		Yes	
Maximum Recall		Yes			Yes	Yes	Yes	No	No		No	
Pedestrian Recall		Yes			Yes	Yes	Yes	Yes	Yes		Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	R	C	C	C	C	R
C, Calculated Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	36	36	62	54	54	30	30	30
g / C, Green / Cycle	0.36	0.36	0.62	0.54	0.54	0.30	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.05	0.35	0.15	0.37	0.29	0.09	0.09	0.06
s, saturation flow rate [veh/h]	419	1079	1573	962	1336	1855	1702	1466
c, Capacity [veh/h]	202	460	975	574	722	594	511	440
d1, Uniform Delay [s]	24.06	34.10	8.44	14.60	14.87	26.82	26.83	25.85
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.92	16.09	0.57	5.16	2.82	1.14	1.43	0.95
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	0.83	0.24	0.63	0.53	0.27	0.29	0.19
d, Delay for Lane Group [s/veh]	24.98	50.19	9.01	19.76	17.68	27.96	28.27	26.80
Lane Group LOS	C	D	A	B	B	C	C	C
Critical Lane Group	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.34	11.08	2.20	5.59	5.89	3.12	2.88	1.56
50th-Percentile Queue Length [m/ln]	2.57	84.45	16.80	42.61	44.92	23.75	21.94	11.90
95th-Percentile Queue Length [veh/ln]	0.61	16.54	3.97	9.47	9.88	5.61	5.18	2.81
95th-Percentile Queue Length [m/ln]	4.62	126.05	30.23	72.16	75.26	42.75	39.48	21.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.98	24.98	24.98	50.19	50.19	9.01	19.76	17.84	17.68	27.96	28.11	26.80
Movement LOS	C	C	C	D	D	A	B	B	B	C	C	C
d_A, Approach Delay [s/veh]	24.98			34.74			18.69			27.83		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	26.34											
Intersection LOS	C											
Intersection V/C	0.447											

Emissions

Vehicle Kilometers Traveled [km/h]	0.92	89.79	53.92	56.83	60.70	25.29	23.09	12.95
Stops [stops/h]	12.13	398.95	79.35	201.31	212.21	112.20	103.63	56.23
Fuel consumption [L/h]	0.73	32.30	8.51	15.41	15.78	8.41	7.74	4.21
CO [g/h]	13.39	596.41	157.08	284.63	291.47	155.35	142.97	77.69
NOx [g/h]	2.61	116.04	30.56	55.38	56.71	30.23	27.82	15.12
VOC [g/h]	3.10	138.22	36.41	65.97	67.55	36.00	33.14	18.01

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	11.0	11.0
M_corner, Corner Circulation Area [m ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m ² /ped]	44.11	15.22	22.36	11.67
d_p, Pedestrian Delay [s]	36.98	36.98	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersectio	1.747	2.603	2.481	3.093
Crosswalk LOS	A	B	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	720	720	1080	600
d_b, Bicycle Delay [s]	20.48	20.48	10.58	24.50
I_b,int, Bicycle LOS Score for Intersection	1.593	2.614	2.176	1.891
Bicycle LOS	A	B	B	A

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Stony Plain Road and 102 Avenue**

Control Type:	Signalized	Delay (sec / veh):	13.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.599

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [m]	3.66	3.40	3.40	3.40	3.40	3.66
No. of Lanes in Entry Pocket	0	1	0	0	1	0
Entry Pocket Length [m]	30.48	45.00	30.48	30.48	75.00	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	Yes		No		Yes	

Volumes

Name						
Base Volume Input [veh/h]	0	172	381	1632	717	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
Proportion of CAVs [%]	0.00					
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	17	0	0	0	0
Total Hourly Volume [veh/h]	0	155	381	1632	717	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]	0	39	95	408	179	0
Total Analysis Volume [veh/h]	0	155	381	1632	717	0
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
v_do, Outbound Pedestrian Volume crossing	0		0		10	
v_di, Inbound Pedestrian Volume crossing m	0		0		10	
v_co, Outbound Pedestrian Volume crossing	10		10		10	
v_ci, Inbound Pedestrian Volume crossing mi	10		10		10	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	60.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Protected	Overlap	Overlap	Permissive
Signal Group	0	1	1	2	3	0
Auxiliary Signal Groups				1,2	2,3	
Maximum Green [s]	0	39	39	49	14	0
Amber [s]	0.0	4.0	4.0	4.0	3.0	0.0
All red [s]	0.0	2.0	2.0	3.0	2.0	0.0
Walk [s]	0	7	7	7	7	0
Pedestrian Clearance [s]	0	10	10	20	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No		No	No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	4.0	5.0	3.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	74.7	74.7	0.0	0.0	0.0
Advanced Detector Length [m]	0.0	1.8	1.8	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	45	45	56	19	0
Lead / Lag	-	-	Lag	-	-	-
Minimum Green [s]	0	5	5	10	10	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		Yes	Yes	Yes	Yes	
Pedestrian Recall		Yes	Yes	Yes	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	R	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	6.00	4.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	2.00	3.00
g_i, Effective Green Time [s]	39	39	94	70
g / C, Green / Cycle	0.33	0.33	0.78	0.58
(v / s)_i Volume / Saturation Flow Rate	0.06	0.21	0.46	0.14
s, saturation flow rate [veh/h]	2813	1781	3560	5094
c, Capacity [veh/h]	914	579	2789	2971
d1, Uniform Delay [s]	28.93	34.78	5.20	12.12
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.40	5.77	0.91	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.66	0.59	0.24
d, Delay for Lane Group [s/veh]	29.33	40.55	6.11	12.32
Lane Group LOS	C	D	A	B
Critical Lane Group	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.66	10.41	6.81	3.10
50th-Percentile Queue Length [m/ln]	12.62	79.34	51.92	23.63
95th-Percentile Queue Length [veh/ln]	2.98	15.70	11.09	5.58
95th-Percentile Queue Length [m/ln]	22.71	119.67	84.54	42.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	29.33	40.55	6.11	12.32	0.00
Movement LOS		C	D	A	B	
d_A, Approach Delay [s/veh]	29.33		12.63		12.32	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	13.45					
Intersection LOS	B					
Intersection V/C	0.599					

Emissions

Vehicle Kilometers Traveled [km/h]	70.25	89.76	384.48	405.92
Stops [stops/h]	99.35	312.37	408.81	279.05
Fuel consumption [L/h]	12.41	27.45	53.43	51.68
CO [g/h]	229.25	506.84	986.63	954.37
NOx [g/h]	44.60	98.61	191.96	185.69
VOC [g/h]	53.13	117.47	228.66	221.19

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	50.68
M_CW, Crosswalk Circulation Area [m²/ped]	57.81	0.00	62.91
d_p, Pedestrian Delay [s]	49.50	0.00	49.50
I_p,int, Pedestrian LOS Score for Intersectio	2.164	0.000	2.788
Crosswalk LOS	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	650	1567	1167
d_b, Bicycle Delay [s]	27.34	2.82	10.42
I_b,int, Bicycle LOS Score for Intersection	1.560	3.220	1.954
Bicycle LOS	A	C	A

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 16: Stony Plain Road and 142 Street**

Control Type:	Signalized	Delay (sec / veh):	58.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
No. of Lanes in Entry Pocket	0	0	1	0	0	2	1	0	0	0	0	1
Entry Pocket Length [m]	30.48	30.48	5.00	30.48	30.48	90.00	110.00	30.48	30.48	30.48	30.48	105.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	45	822	1014	141	374	15	25	849	6	273	585	25
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
Proportion of CAVs [%]	0.00											
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	101	0	0	2	0	0	1	0	0	3
Total Hourly Volume [veh/h]	45	822	913	141	374	13	25	849	5	273	585	22
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]	11	206	228	35	94	3	6	212	1	68	146	6
Total Analysis Volume [veh/h]	45	822	913	141	374	13	25	849	5	273	585	22
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
v_do, Outbound Pedestrian Volume crossing	20			20			20			20		
v_di, Inbound Pedestrian Volume crossing m	20			20			20			20		
v_co, Outbound Pedestrian Volume crossing	20			20			20			20		
v_ci, Inbound Pedestrian Volume crossing mi	20			20			20			20		
v_ab, Corner 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]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	89.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	5	7	0	1	2	0	1	2	0
Auxiliary Signal Groups												
Maximum Green [s]	0	43	0	10	57	0	8	36	0	8	36	0
Amber [s]	0.0	4.0	0.0	4.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	2.0	3.0	0.0	2.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	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]	0.0	5.0	0.0	2.0	5.0	0.0	3.0	5.0	0.0	3.0	5.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	50	0	14	64	0	13	43	0	13	43	0
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	5	10	0	5	10	0	5	10	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No		No	No		No	No		No	No	
Maximum Recall		Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall		Yes		No	Yes		No	Yes		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	7.00	5.00	7.00	7.00	5.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	5.00	5.00	5.00	0.00	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00
g_i, Effective Green Time [s]	43	43	43	57	57	57	8	36	36	8	36	36
g / C, Green / Cycle	0.36	0.36	0.36	0.48	0.48	0.48	0.07	0.30	0.30	0.07	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.28	0.27	0.32	0.25	0.11	0.01	0.02	0.23	0.23	0.08	0.31	0.02
s, saturation flow rate [veh/h]	1634	1567	2813	565	3279	1523	1640	1870	1865	3459	1870	1405
c, Capacity [veh/h]	619	562	1008	291	1558	723	109	561	560	231	561	422
d1, Uniform Delay [s]	33.77	33.62	36.57	24.09	18.67	16.67	53.08	38.11	38.12	56.00	42.00	29.85
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	7.41	8.50	13.10	5.66	0.36	0.05	4.81	9.44	9.48	118.04	49.61	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.74	0.91	0.48	0.24	0.02	0.23	0.76	0.76	1.18	1.04	0.05
d, Delay for Lane Group [s/veh]	41.18	42.12	49.67	29.74	19.03	16.72	57.89	47.55	47.60	174.04	91.61	30.08
Lane Group LOS	D	D	D	C	B	B	E	D	D	F	F	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	12.72	11.76	14.31	2.70	3.15	0.20	0.86	12.77	12.76	7.26	24.08	0.48
50th-Percentile Queue Length [m/ln]	96.91	89.64	109.02	20.61	24.03	1.52	6.56	97.34	97.20	55.33	183.49	3.68
95th-Percentile Queue Length [veh/ln]	18.57	17.39	20.51	4.87	5.68	0.36	1.55	18.64	18.61	12.30	33.02	0.87
95th-Percentile Queue Length [m/ln]	141.47	132.50	156.29	37.10	43.26	2.74	11.82	142.01	141.84	93.71	251.65	6.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.18	41.65	49.67	29.74	19.03	16.72	57.89	47.57	47.60	174.04	91.61	30.08
Movement LOS	D	D	D	C	B	B	E	D	D	F	F	C
d_A, Approach Delay [s/veh]	45.75			21.83			47.87			115.64		
Approach LOS	D			C			D			F		
d_I, Intersection Delay [s/veh]	58.23											
Intersection LOS	E											
Intersection V/C	0.770											

Emissions

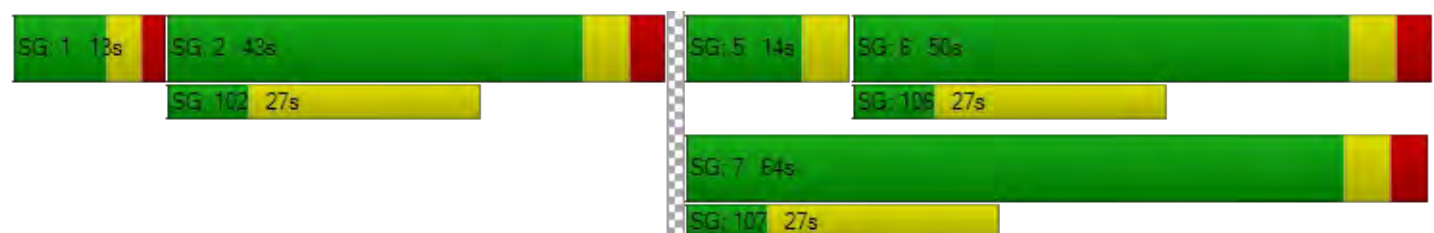
Vehicle Kilometers Traveled [km/h]	139.63	128.53	282.39	54.94	145.72	5.07	3.86	65.98	65.85	64.32	137.82	5.18
Stops [stops/h]	381.53	352.90	858.41	81.15	189.22	6.00	25.85	383.24	382.69	435.65	722.40	14.50
Fuel consumption [L/h]	36.16	33.63	81.05	10.28	23.59	0.78	2.06	30.53	30.49	52.49	70.59	1.33
CO [g/h]	667.74	620.96	1496.70	189.79	435.65	14.48	38.07	563.75	563.00	969.18	1303.56	24.52
NOx [g/h]	129.92	120.82	291.20	36.93	84.76	2.82	7.41	109.68	109.54	188.57	253.62	4.77
VOC [g/h]	154.76	143.91	346.88	43.98	100.97	3.36	8.82	130.65	130.48	224.62	302.11	5.68

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	31.22			30.70			26.40			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersectio	3.067			2.813			2.595			3.104		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	717			950			600			600		
d_b, Bicycle Delay [s]	24.70			16.54			29.40			29.40		
I_b,int, Bicycle LOS Score for Intersection	3.111			1.997			2.286			3.017		
Bicycle LOS	C			A			B			C		

Sequence

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



Intersection Level Of Service Report
Intersection 17: Stony Plain Road and 149 Street

Control Type:	Signalized	Delay (sec / veh):	52.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.663

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [m]	90.00	30.48	30.48	65.00	30.48	75.00	50.00	30.48	0.00	110.00	30.48	75.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	60.00			60.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	3	1106	396	17	619	13	44	440	49	58	547	96
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
Proportion of CAVs [%]	0.00											
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	40	0	0	1	0	0	5	0	0	10
Total Hourly Volume [veh/h]	3	1106	356	17	619	12	44	440	44	58	547	86
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]	1	277	89	4	155	3	11	110	11	15	137	22
Total Analysis Volume [veh/h]	3	1106	356	17	619	12	44	440	44	58	547	86
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
v_do, Outbound Pedestrian Volume crossing	10			10			10			10		
v_di, Inbound Pedestrian Volume crossing m	10			10			10			10		
v_co, Outbound Pedestrian Volume crossing	10			10			10			10		
v_ci, Inbound Pedestrian Volume crossing mi	10			10			10			10		
v_ab, Corner 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]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	44.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	7	0	5	6	0	1	3	0	1	3	0
Auxiliary Signal Groups												
Maximum Green [s]	0	40	0	8	51	0	11	37	0	11	37	0
Amber [s]	0.0	4.0	0.0	3.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	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	30	0	0	30	0	0	30	0	0	30	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	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]	0.0	5.0	0.0	1.0	5.0	0.0	5.0	5.0	0.0	5.0	5.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	47	0	11	58	0	18	44	0	18	44	0
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	5	10	0	5	10	0	5	10	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No		No	No		No	No		No	No	
Maximum Recall		Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall		Yes		No	Yes		No	Yes		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	5.00	5.00	5.00	0.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	40	40	40	51	51	51	11	37	37	11	37	37
g / C, Green / Cycle	0.33	0.33	0.33	0.43	0.43	0.43	0.09	0.31	0.31	0.09	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.00	0.34	0.22	0.03	0.19	0.01	0.03	0.24	0.03	0.02	0.29	0.05
s, saturation flow rate [veh/h]	788	3279	1589	588	3279	1552	1640	1870	1589	3186	1870	1589
c, Capacity [veh/h]	204	1093	530	216	1394	660	150	577	490	292	577	490
d1, Uniform Delay [s]	40.21	40.00	34.36	27.04	24.45	19.99	50.87	37.54	29.52	50.42	40.57	30.35
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	0.13	30.16	6.66	0.71	1.03	0.05	4.88	9.25	0.36	1.52	26.75	0.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	1.01	0.67	0.08	0.44	0.02	0.29	0.76	0.09	0.20	0.95	0.18
d, Delay for Lane Group [s/veh]	40.35	70.16	41.02	27.75	25.48	20.04	55.75	46.79	29.88	51.94	67.32	31.13
Lane Group LOS	D	F	D	C	C	C	E	D	C	D	E	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.08	20.16	9.70	0.32	6.28	0.20	1.44	13.06	0.96	0.87	19.84	1.94
50th-Percentile Queue Length [m/ln]	0.61	153.64	73.91	2.41	47.89	1.54	10.97	99.52	7.31	6.62	151.20	14.75
95th-Percentile Queue Length [veh/ln]	0.14	27.75	14.81	0.57	10.40	0.36	2.59	18.99	1.73	1.56	27.15	3.48
95th-Percentile Queue Length [m/ln]	1.09	211.44	112.83	4.34	79.22	2.77	19.75	144.68	13.17	11.92	206.86	26.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.35	70.16	41.02	27.75	25.48	20.04	55.75	46.79	29.88	51.94	67.32	31.13
Movement LOS	D	F	D	C	C	C	E	D	C	D	E	C
d_A, Approach Delay [s/veh]	63.02			25.44			46.13			61.52		
Approach LOS	E			C			D			E		
d_I, Intersection Delay [s/veh]	52.72											
Intersection LOS	D											
Intersection V/C	0.663											

Emissions

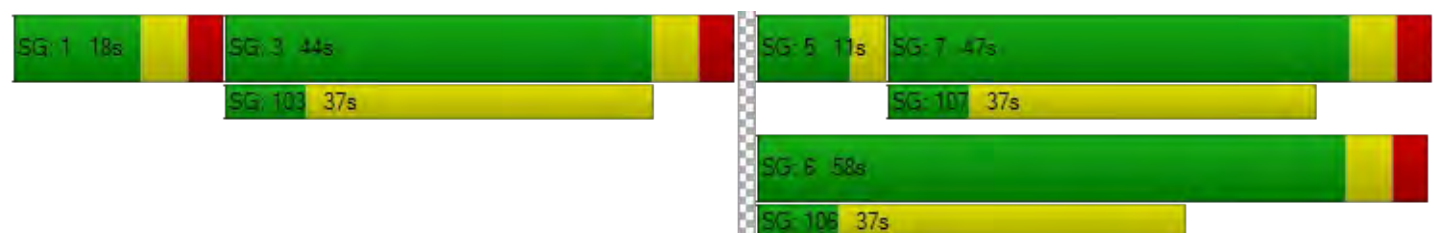
Vehicle Kilometers Traveled [km/h]	0.75	277.79	89.42	3.55	129.28	2.51	10.47	104.74	10.47	20.90	197.11	30.99
Stops [stops/h]	2.39	1209.75	290.99	9.50	377.10	6.06	43.20	391.82	28.80	52.17	595.26	58.07
Fuel consumption [L/h]	0.24	123.01	28.43	0.98	35.58	0.60	3.85	34.61	2.66	5.48	60.47	6.31
CO [g/h]	4.36	2271.43	524.89	18.08	656.92	11.06	71.18	639.14	49.03	101.18	1116.60	116.58
NOx [g/h]	0.85	441.94	102.12	3.52	127.81	2.15	13.85	124.35	9.54	19.69	217.25	22.68
VOC [g/h]	1.01	526.43	121.65	4.19	152.25	2.56	16.50	148.13	11.36	23.45	258.78	27.02

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			92.53			0.00			65.98		
M_CW, Crosswalk Circulation Area [m²/ped]	57.75			52.12			62.30			32.34		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersectio	2.918			2.851			2.443			2.635		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			850			617			617		
d_b, Bicycle Delay [s]	26.67			19.84			28.70			28.70		
I_b,int, Bicycle LOS Score for Intersection	2.801			2.095			2.439			2.716		
Bicycle LOS	C			B			B			B		

Sequence

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



Intersection Level Of Service Report**Intersection 18: Stony Plain Road and 156 Street**

Control Type:	Signalized	Delay (sec / veh):	41.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.614

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑↱			↑↱			↱↑			↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.50	3.50	3.66	3.50	3.50	3.50	3.50	3.50	3.66	3.50	3.50
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	7.50	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	346	114	0	112	179	182	311	35	0	578	55
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
Proportion of CAVs [%]	0.00											
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	11	0	0	18	0	0	4	0	0	6
Total Hourly Volume [veh/h]	0	346	103	0	112	161	182	311	35	0	578	49
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]	0	87	26	0	28	40	46	78	9	0	145	12
Total Analysis Volume [veh/h]	0	346	103	0	112	161	182	311	35	0	578	49
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
v_do, Outbound Pedestrian Volume crossing	20			20			20			20		
v_di, Inbound Pedestrian Volume crossing m	20			20			20			20		
v_co, Outbound Pedestrian Volume crossing	20			20			20			20		
v_ci, Inbound Pedestrian Volume crossing mi	20			20			20			20		
v_ab, Corner 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]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	0	0	5	0	1	2	0	0	3	0
Auxiliary Signal Groups												
Maximum Green [s]	0	52	0	0	52	0	12	57	0	0	41	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	30	0	0	30	0	0	30	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	2.0	4.0	0.0	0.0	4.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	57	0	0	57	0	16	63	0	0	47	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		Yes			Yes		Yes	Yes			Yes	
Pedestrian Recall		Yes			Yes		No	Yes			Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	52	52	52	52	57	57	41
g / C, Green / Cycle	0.43	0.43	0.43	0.43	0.48	0.48	0.34
(v / s)_i Volume / Saturation Flow Rate	0.20	0.06	0.07	0.11	0.18	0.19	0.34
s, saturation flow rate [veh/h]	1722	1589	1722	1516	1005	1828	1834
c, Capacity [veh/h]	746	689	746	657	292	868	627
d1, Uniform Delay [s]	24.11	20.60	20.61	21.44	26.23	20.40	39.50
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.07	0.46	0.43	0.89	9.65	1.37	36.07
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.15	0.15	0.25	0.62	0.40	1.00
d, Delay for Lane Group [s/veh]	26.18	21.06	21.03	22.33	35.88	21.77	75.57
Lane Group LOS	C	C	C	C	D	C	F
Critical Lane Group	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.34	1.85	2.00	3.02	3.76	6.55	24.38
50th-Percentile Queue Length [m/ln]	55.91	14.06	15.24	23.02	28.69	49.89	185.76
95th-Percentile Queue Length [veh/ln]	11.78	3.32	3.60	5.44	6.78	10.74	32.49
95th-Percentile Queue Length [m/ln]	89.76	25.31	27.43	41.43	51.64	81.86	247.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	26.18	21.06	0.00	21.03	22.33	35.88	21.77	21.77	0.00	75.57	75.57
Movement LOS		C	C		C	C	D	C	C		E	E
d_A, Approach Delay [s/veh]	25.00			21.79			26.63			75.57		
Approach LOS	C			C			C			E		
d_I, Intersection Delay [s/veh]	41.89											
Intersection LOS	D											
Intersection V/C	0.614											

Emissions

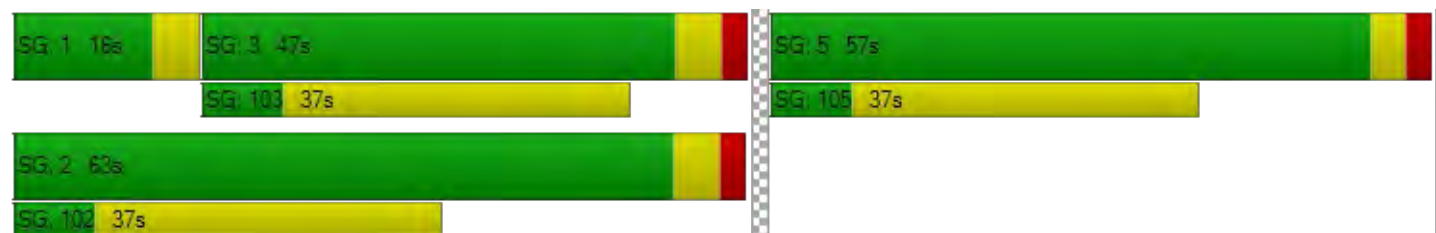
Vehicle Kilometers Traveled [km/h]	70.88	21.10	14.24	20.47	19.03	36.17	363.09
Stops [stops/h]	220.12	55.36	59.99	90.61	112.94	196.41	731.33
Fuel consumption [L/h]	18.66	4.92	4.51	6.75	9.37	13.65	87.45
CO [g/h]	344.53	90.86	83.37	124.62	173.09	252.02	1614.80
NOx [g/h]	67.03	17.68	16.22	24.25	33.68	49.03	314.18
VOC [g/h]	79.85	21.06	19.32	28.88	40.11	58.41	374.25

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	23.61	16.10	19.82	23.19
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersectio	2.232	2.367	2.394	2.271
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	867	867	950	683
d_b, Bicycle Delay [s]	19.27	19.27	16.54	26.00
I_b,int, Bicycle LOS Score for Intersection	2.319	2.040	2.437	2.604
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	3	5	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 19: Stony Plain Road and 158 Street**

Control Type:	Signalized	Delay (sec / veh):	11.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.184

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	32	14	51	5	2	21	18	334	17	21	398	8
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 [%]	70.00	2.00	10.00	2.00	2.00	2.00	2.00	12.00	35.00	5.00	4.00	2.00
Proportion of CAVs [%]	0.00											
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	5	0	0	2	0	0	2	0	0	1
Total Hourly Volume [veh/h]	32	14	46	5	2	19	18	334	15	21	398	7
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]	8	4	12	1	1	5	5	84	4	5	100	2
Total Analysis Volume [veh/h]	32	14	46	5	2	19	18	334	15	21	398	7
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
v_do, Outbound Pedestrian Volume crossing	5			0			0			5		
v_di, Inbound Pedestrian Volume crossing m	5			0			0			5		
v_co, Outbound Pedestrian Volume crossing	5			5			5			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			5			5			5		
v_ab, Corner 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]	65
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	2	0	0	1	0	0	1	0
Auxiliary Signal Groups												
Maximum Green [s]	0	23	0	0	23	0	0	47	0	0	47	0
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	9	0	0	9	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
Detector Location [m]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	28	0	0	28	0	0	37	0	0	37	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	21	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	C	C	C	C
C, Calculated Cycle Length [s]	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	5.00	5.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	23	23	31	31	31	31
g / C, Green / Cycle	0.35	0.35	0.48	0.48	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.06	0.02	0.12	0.11	0.12	0.12
s, saturation flow rate [veh/h]	1569	1586	1650	1540	1772	1664
c, Capacity [veh/h]	630	627	848	735	906	793
d1, Uniform Delay [s]	14.34	13.79	10.00	10.04	10.11	10.14
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.49	0.12	0.62	0.77	0.64	0.79
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	0.04	0.23	0.24	0.24	0.26
d, Delay for Lane Group [s/veh]	14.83	13.91	10.62	10.81	10.75	10.93
Lane Group LOS	B	B	B	B	B	B
Critical Lane Group	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.93	0.25	1.55	1.45	1.80	1.69
50th-Percentile Queue Length [m/ln]	7.12	1.92	11.79	11.04	13.72	12.90
95th-Percentile Queue Length [veh/ln]	1.68	0.45	2.78	2.61	3.24	3.05
95th-Percentile Queue Length [m/ln]	12.82	3.46	21.22	19.87	24.69	23.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.83	14.83	14.83	13.91	13.91	13.91	10.62	10.71	10.81	10.75	10.84	10.93
Movement LOS	B	B	B	B	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	14.83			13.91			10.71			10.83		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	11.28											
Intersection LOS	B											
Intersection V/C	0.184											

Emissions

Vehicle Kilometers Traveled [km/h]	8.51	2.79	94.45	86.78	29.00	26.80
Stops [stops/h]	51.77	13.98	85.67	80.23	99.71	93.74
Fuel consumption [L/h]	3.02	0.86	12.47	11.52	6.83	6.37
CO [g/h]	55.81	15.83	230.33	212.71	126.11	117.71
NOx [g/h]	10.86	3.08	44.81	41.39	24.54	22.90
VOC [g/h]	12.93	3.67	53.38	49.30	29.23	27.28

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	13.0
M_corner, Corner Circulation Area [m²/ped]	54.50	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	127.37	132.97	0.00	237.31
d_p, Pedestrian Delay [s]	24.12	24.12	0.00	20.80
I_p,int, Pedestrian LOS Score for Intersectio	1.806	1.763	0.000	2.325
Crosswalk LOS	A	A	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	708	708	954	954
d_b, Bicycle Delay [s]	13.57	13.57	8.89	8.89
I_b,int, Bicycle LOS Score for Intersection	1.720	1.606	1.864	1.912
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Stony Plain Road and 163 Street

Control Type:	Signalized	Delay (sec / veh):	33.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.549

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	45.00	30.48	30.00	60.00	30.48	30.48	40.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	354	304	212	30	155	116	23	130	4	81	459	12
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	7.00	6.00	10.00	5.00	4.00	2.00	10.00	2.00	7.00	4.00	2.00
Proportion of CAVs [%]	0.00											
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	21	0	0	12	0	0	0	0	0	1
Total Hourly Volume [veh/h]	354	304	191	30	155	104	23	130	4	81	459	11
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]	89	76	48	8	39	26	6	33	1	20	115	3
Total Analysis Volume [veh/h]	354	304	191	30	155	104	23	130	4	81	459	11
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
v_do, Outbound Pedestrian Volume crossing	12			5			3			10		
v_di, Inbound Pedestrian Volume crossing m	10			3			5			12		
v_co, Outbound Pedestrian Volume crossing	5			5			5			7		
v_ci, Inbound Pedestrian Volume crossing mi	5			7			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	100.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	3	0	0	3	0	0	1	0	0	1	0
Auxiliary Signal Groups												
Maximum Green [s]	23	47	0	0	47	0	0	48	0	0	48	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	16	0	0	16	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	2.0	0.0	0.0	2.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	26	51	0	0	51	0	0	53	0	0	53	0
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	7	24	0	0	24	0	0	26	0	0	26	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No			No			Yes			Yes	
Maximum Recall	Yes	Yes			Yes			No			No	
Pedestrian Recall	No	No			No			No			No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Calculated Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	73	47	47	47	47	48	48	48	48	48	48
g / C, Green / Cycle	0.56	0.36	0.36	0.36	0.36	0.37	0.37	0.37	0.37	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.26	0.30	0.04	0.08	0.07	0.02	0.04	0.04	0.07	0.13	0.13
s, saturation flow rate [veh/h]	1337	1667	844	1825	1554	922	1750	1731	1200	1840	1823
c, Capacity [veh/h]	768	603	135	660	562	297	646	639	450	679	673
d1, Uniform Delay [s]	15.93	37.68	55.25	28.96	28.38	36.36	26.89	26.90	31.41	29.66	29.67
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	1.99	11.94	3.75	0.84	0.73	0.51	0.32	0.33	0.88	1.40	1.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	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	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	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.82	0.22	0.23	0.19	0.08	0.10	0.10	0.18	0.35	0.35
d, Delay for Lane Group [s/veh]	17.92	49.62	59.00	29.79	29.11	36.87	27.22	27.23	32.29	31.06	31.09
Lane Group LOS	B	D	E	C	C	D	C	C	C	C	C
Critical Lane Group	Yes	Yes	No	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.12	16.17	1.07	3.56	2.36	0.60	1.44	1.44	1.96	5.63	5.60
50th-Percentile Queue Length [m/ln]	46.67	123.18	8.13	27.14	17.95	4.59	10.99	10.97	14.94	42.91	42.66
95th-Percentile Queue Length [veh/ln]	10.18	22.76	1.92	6.41	4.24	1.08	2.60	2.59	3.53	9.52	9.48
95th-Percentile Queue Length [m/ln]	77.59	173.43	14.63	48.85	32.30	8.26	19.79	19.74	26.89	72.57	72.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.92	49.62	49.62	59.00	29.79	29.11	36.87	27.22	27.23	32.29	31.08	31.09
Movement LOS	B	D	D	E	C	C	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	36.40			32.58			28.64			31.26		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	33.61											
Intersection LOS	C											
Intersection V/C	0.549											

Emissions

Vehicle Kilometers Traveled [km/h]	57.90	80.96	4.34	22.40	15.03	5.64	16.46	16.41	7.31	21.28	21.14
Stops [stops/h]	169.59	447.67	29.54	98.63	65.22	16.67	39.95	39.86	54.29	155.95	155.04
Fuel consumption [L/h]	14.20	36.67	2.44	7.90	5.23	1.56	3.87	3.86	3.93	11.16	11.10
CO [g/h]	262.20	677.05	45.03	145.89	96.48	28.88	71.44	71.24	72.53	206.17	204.94
NOx [g/h]	51.01	131.73	8.76	28.38	18.77	5.62	13.90	13.86	14.11	40.11	39.87
VOC [g/h]	60.77	156.91	10.44	33.81	22.36	6.69	16.56	16.51	16.81	47.78	47.50

Other Modes

g_Walk,mi, Effective Walk Time [s]	4.0	4.0	4.0	4.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	12.06	23.32	0.00	0.00
d_p, Pedestrian Delay [s]	61.06	61.06	61.06	61.06
I_p,int, Pedestrian LOS Score for Intersectio	2.579	2.365	2.731	2.553
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	723	723	738	738
d_b, Bicycle Delay [s]	26.50	26.50	25.86	25.86
I_b,int, Bicycle LOS Score for Intersection	2.995	2.056	1.689	2.015
Bicycle LOS	C	B	A	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: 95 Avenue and 156 Street

Control Type:	Signalized	Delay (sec / veh):	38.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.490

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	75.00	30.48	30.48	75.00	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	162	412	80	44	161	50	54	275	21	50	240	15
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
Proportion of CAVs [%]	0.00											
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	8	0	0	5	0	0	2	0	0	2
Total Hourly Volume [veh/h]	162	412	72	44	161	45	54	275	19	50	240	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]	41	103	18	11	40	11	14	69	5	13	60	3
Total Analysis Volume [veh/h]	162	412	72	44	161	45	54	275	19	50	240	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
v_do, Outbound Pedestrian Volume crossing	20			20			20			20		
v_di, Inbound Pedestrian Volume crossing m	20			20			20			20		
v_co, Outbound Pedestrian Volume crossing	20			20			20			20		
v_ci, Inbound Pedestrian Volume crossing mi	20			20			20			20		
v_ab, Corner 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]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	40.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	3	0	1	5	0	7	9	0	7	9	0
Auxiliary Signal Groups												
Maximum Green [s]	22	47	0	12	37	0	7	36	0	7	36	0
Amber [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
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	30	0	0	30	0	0	30	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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]	3.0	3.0	0.0	3.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	27	52	0	17	42	0	10	41	0	10	41	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	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
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall	No	Yes		No	Yes		No	Yes		No	Yes	

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, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
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]	3.00	3.00	3.00	3.00	0.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	22	47	12	37	46	36	46	36
g / C, Green / Cycle	0.18	0.39	0.10	0.31	0.38	0.30	0.38	0.30
(v / s)_i Volume / Saturation Flow Rate	0.10	0.27	0.03	0.12	0.04	0.17	0.04	0.15
s, saturation flow rate [veh/h]	1640	1812	1640	1783	1216	1694	1182	1700
c, Capacity [veh/h]	301	710	164	550	415	508	381	510
d1, Uniform Delay [s]	44.40	30.29	49.94	32.45	24.54	35.57	24.89	34.54
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.77	5.24	3.97	1.95	0.65	4.74	0.71	3.43
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	0.54	0.68	0.27	0.37	0.13	0.58	0.13	0.50
d, Delay for Lane Group [s/veh]	51.17	35.54	53.91	34.40	25.18	40.32	25.61	37.97
Lane Group LOS	D	D	D	C	C	D	C	D
Critical Lane Group	No	Yes	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.93	12.49	1.40	4.98	1.06	7.93	0.98	6.55
50th-Percentile Queue Length [m/ln]	37.58	95.16	10.71	37.98	8.07	60.41	7.50	49.90
95th-Percentile Queue Length [veh/ln]	8.57	18.28	2.53	8.65	1.91	12.54	1.77	10.75
95th-Percentile Queue Length [m/ln]	65.33	139.32	19.27	65.88	14.52	95.59	13.50	81.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.17	35.54	35.54	53.91	34.40	34.40	25.18	40.32	40.32	25.61	37.97	37.97
Movement LOS	D	D	D	D	C	C	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	39.46			37.84			37.97			35.93		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	38.17											
Intersection LOS	D											
Intersection V/C	0.490											

Emissions

Vehicle Kilometers Traveled [km/h]	40.94	122.31	14.95	70.00	15.45	84.11	17.19	87.00
Stops [stops/h]	147.95	374.63	42.15	149.54	31.76	237.82	29.53	196.48
Fuel consumption [L/h]	13.60	33.29	4.20	15.47	3.23	22.47	3.28	20.08
CO [g/h]	251.12	614.72	77.46	285.72	59.64	414.88	60.65	370.86
NOx [g/h]	48.86	119.60	15.07	55.59	11.60	80.72	11.80	72.15
VOC [g/h]	58.20	142.47	17.95	66.22	13.82	96.15	14.06	85.95

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	28.87	29.13	25.36	23.31
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersectio	2.286	2.233	2.350	2.325
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	783	617	600	600
d_b, Bicycle Delay [s]	22.20	28.70	29.40	29.40
I_b,int, Bicycle LOS Score for Intersection	2.639	1.980	2.137	2.063
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	3	7	9	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 22: 87 Avenue and Meadowlark Road

Control Type:	Signalized	Delay (sec / veh):	34.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.540

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [m]	65.00	30.48	25.00	85.00	30.48	30.48	135.00	30.48	30.48	75.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	170	433	719	10	178	15	60	504	162	143	349	6
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
Proportion of CAVs [%]	0.00											
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	72	0	0	2	0	0	16	0	0	1
Total Hourly Volume [veh/h]	170	433	647	10	178	13	60	504	146	143	349	5
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]	43	108	162	3	45	3	15	126	37	36	87	1
Total Analysis Volume [veh/h]	170	433	647	10	178	13	60	504	146	143	349	5
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
v_do, Outbound Pedestrian Volume crossing	35			35			35			35		
v_di, Inbound Pedestrian Volume crossing m	35			35			35			35		
v_co, Outbound Pedestrian Volume crossing	35			35			35			35		
v_ci, Inbound Pedestrian Volume crossing mi	35			35			35			35		
v_ab, Corner 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]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	115.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	6	5	1	4	7	0	1	3	1	1	3	0
Auxiliary Signal Groups			1,4,5,7									
Maximum Green [s]	21	48	7	7	33	0	7	34	7	7	34	0
Amber [s]	4.0	4.0	4.0	4.0	4.0	0.0	4.0	4.0	4.0	4.0	4.0	0.0
All red [s]	3.0	3.0	0.0	2.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	30	0	0	30	0	0	30	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	5.0	5.0	2.0	4.0	5.0	0.0	2.0	5.0	2.0	2.0	5.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	28	55	11	13	40	0	11	41	11	11	41	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	8	5	5	10	0	5	10	5	5	10	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall	No	Yes	No	No	Yes		No	Yes		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	7.00	7.00	4.00	6.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	5.00	5.00	2.00	4.00	5.00	5.00	0.00	5.00	5.00	0.00	5.00	5.00
g_i, Effective Green Time [s]	21	48	62	7	33	33	45	34	34	45	34	34
g / C, Green / Cycle	0.18	0.40	0.52	0.06	0.28	0.28	0.38	0.28	0.28	0.38	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.10	0.12	0.42	0.01	0.06	0.06	0.05	0.18	0.19	0.15	0.10	0.10
s, saturation flow rate [veh/h]	1640	3560	1532	784	1722	1660	1178	1870	1660	981	1722	1709
c, Capacity [veh/h]	287	1424	792	93	474	457	447	530	470	328	488	484
d1, Uniform Delay [s]	45.56	24.59	17.76	55.82	33.40	33.45	24.69	37.59	37.98	27.52	34.35	34.37
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	8.69	0.55	9.15	2.34	0.96	1.03	0.62	5.73	7.26	4.19	2.09	2.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.30	0.82	0.11	0.20	0.21	0.13	0.64	0.67	0.44	0.36	0.36
d, Delay for Lane Group [s/veh]	54.25	25.14	26.92	58.15	34.36	34.49	25.31	43.32	45.24	31.71	36.44	36.49
Lane Group LOS	D	C	C	E	C	C	C	D	D	C	D	D
Critical Lane Group	Yes	No	Yes	No	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.35	4.32	12.45	0.35	2.28	2.27	1.19	9.46	9.03	3.16	4.43	4.41
50th-Percentile Queue Length [m/ln]	40.79	32.89	94.89	2.70	17.40	17.32	9.06	72.06	68.84	24.11	33.73	33.63
95th-Percentile Queue Length [veh/ln]	9.15	7.72	18.24	0.64	4.11	4.09	2.14	14.50	13.96	5.70	7.88	7.86
95th-Percentile Queue Length [m/ln]	69.70	58.85	138.99	4.86	31.32	31.17	16.31	110.49	106.40	43.40	60.02	59.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.25	25.14	26.92	58.15	34.42	34.49	25.31	43.96	45.24	31.71	36.47	36.49
Movement LOS	D	C	C	E	C	C	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	30.02			35.60			42.65			35.10		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	34.76											
Intersection LOS	C											
Intersection V/C	0.540											

Emissions

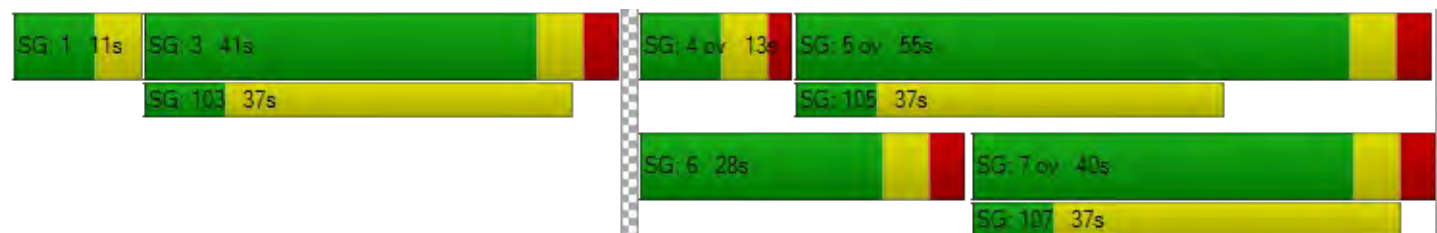
Vehicle Kilometers Traveled [km/h]	30.47	77.60	115.96	2.26	21.71	21.52	23.07	129.58	120.40	39.18	48.58	48.40
Stops [stops/h]	160.58	258.94	373.57	10.62	68.51	68.18	35.67	283.71	271.01	94.93	132.79	132.42
Fuel consumption [L/h]	13.61	21.58	32.83	0.90	6.14	6.10	4.17	29.94	28.44	9.35	12.58	12.54
CO [g/h]	251.23	398.45	606.16	16.65	113.40	112.68	76.92	552.81	525.22	172.65	232.28	231.57
NOx [g/h]	48.88	77.52	117.94	3.24	22.06	21.92	14.97	107.56	102.19	33.59	45.19	45.06
VOC [g/h]	58.22	92.34	140.48	3.86	26.28	26.12	17.83	128.12	121.72	40.01	53.83	53.67

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	13.94			17.48			17.93			1.53		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersectio	2.934			2.484			2.591			2.679		
Crosswalk LOS	C			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	800			550			567			567		
d_b, Bicycle Delay [s]	21.60			31.54			30.82			30.82		
I_b,int, Bicycle LOS Score for Intersection	2.650			1.727			2.159			1.970		
Bicycle LOS	B			A			B			A		

Sequence

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



Intersection Level Of Service Report
Intersection 23: 109 Street and 82 Ave

Control Type: Signalized
Analysis Method: HCM 7th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 27.6
Level Of Service: C
Volume to Capacity (v/c): 0.693

Intersection Setup

Name	109 Street			109 Street			82 Ave			82 Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.00	3.20	4.20	3.50	3.50	3.50	3.20	3.20	5.50	3.00	3.00	3.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [m]	100.00	30.48	30.48	70.00	30.48	30.48	50.00	30.48	30.48	50.00	30.48	15.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	109 Street			109 Street			82 Ave			82 Ave		
Base Volume Input [veh/h]	342	1484	118	73	556	56	54	309	54	107	642	190
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
Proportion of CAVs [%]	0.00											
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	12	0	0	6	0	0	5	0	0	19
Total Hourly Volume [veh/h]	342	1484	106	73	556	50	54	309	49	107	642	171
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]	86	371	27	18	139	13	14	77	12	27	161	43
Total Analysis Volume [veh/h]	342	1484	106	73	556	50	54	309	49	107	642	171
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
v_do, Outbound Pedestrian Volume crossing	21			31			20			31		
v_di, Inbound Pedestrian Volume crossing m	20			31			21			31		
v_co, Outbound Pedestrian Volume crossing	28			26			25			27		
v_ci, Inbound Pedestrian Volume crossing mi	27			25			26			28		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	16			1			3			4		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	1	0	6	7	0	2	4	0	3	4	0
Auxiliary Signal Groups												
Maximum Green [s]	15	50	0	15	50	0	15	50	0	15	50	0
Amber [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
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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]	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	6.0	0.0	6.0	6.0	0.0	6.0	6.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	23	57	0	10	44	0	9	33	0	9	33	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	26	0	7	5	0	6	28	0	6	28	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
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	Yes	No		Yes	No			No			No	
Pedestrian Recall	No	No		No	No			Yes			Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Calculated Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	62	52	52	62	39	39	28	28	28	28	28	28
g / C, Green / Cycle	0.62	0.52	0.52	0.62	0.39	0.39	0.28	0.28	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.35	0.46	0.07	0.16	0.13	0.13	0.09	0.11	0.11	0.12	0.21	0.14
s, saturation flow rate [veh/h]	986	3204	1414	458	3204	1590	596	1683	1639	865	3076	1264
c, Capacity [veh/h]	652	1666	735	270	1250	620	115	471	459	222	861	354
d1, Uniform Delay [s]	10.04	21.46	12.40	18.78	21.27	21.35	47.09	28.99	29.11	38.97	32.76	29.61
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	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	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.00	7.62	0.41	2.45	0.68	1.42	2.94	0.50	0.54	1.62	1.31	1.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.89	0.14	0.27	0.32	0.33	0.47	0.38	0.39	0.48	0.75	0.48
d, Delay for Lane Group [s/veh]	13.05	29.07	12.82	21.24	21.95	22.77	50.03	29.49	29.65	40.59	34.06	30.63
Lane Group LOS	B	C	B	C	C	C	D	C	C	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.90	16.14	1.27	0.77	3.33	3.53	1.44	3.47	3.51	2.58	7.19	3.49
50th-Percentile Queue Length [m/ln]	29.69	122.96	9.69	5.84	25.40	26.93	10.94	26.44	26.77	19.65	54.82	26.59
95th-Percentile Queue Length [veh/ln]	7.01	22.72	2.29	1.38	6.00	6.36	2.58	6.25	6.32	4.64	11.59	6.28
95th-Percentile Queue Length [m/ln]	53.44	173.16	17.44	10.52	45.72	48.48	19.69	47.59	48.19	35.38	88.34	47.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.05	29.07	12.82	21.24	22.18	22.77	50.03	29.56	29.65	40.59	34.06	30.63
Movement LOS	B	C	B	C	C	C	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	25.34			22.12			32.25			34.18		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	27.57											
Intersection LOS	C											
Intersection V/C	0.693											

Emissions

Vehicle Kilometers Traveled [km/h]	106.83	463.53	33.11	8.05	44.27	22.56	31.16	102.89	103.67	18.09	108.56	28.92
Stops [stops/h]	140.25	1161.86	45.76	27.61	240.01	127.23	51.68	124.91	126.49	92.85	517.96	125.61
Fuel consumption [L/h]	16.75	103.40	5.22	2.58	16.38	8.59	6.20	16.64	16.81	6.60	35.79	8.90
CO [g/h]	309.25	1909.36	96.45	47.63	302.54	158.60	114.57	307.31	310.33	121.82	660.94	164.42
NOx [g/h]	60.17	371.49	18.77	9.27	58.86	30.86	22.29	59.79	60.38	23.70	128.60	31.99
VOC [g/h]	71.67	442.51	22.35	11.04	70.12	36.76	26.55	71.22	71.92	28.23	153.18	38.11

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	23.53			19.66			0.00			32.41		
M_CW, Crosswalk Circulation Area [m²/ped]	33.82			17.99			22.71			22.92		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersectio	3.152			2.949			2.805			2.735		
Crosswalk LOS	C			C			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1040			780			560			560		
d_b, Bicycle Delay [s]	11.61			18.61			25.96			25.97		
I_b,int, Bicycle LOS Score for Intersection	3.163			1.936			1.904			2.334		
Bicycle LOS	C			A			A			B		

Sequence

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



Intersection Level Of Service Report
Intersection 24: 109 Street and 83 Ave

Control Type: Signalized
Analysis Method: HCM 7th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 5.9
Level Of Service: A
Volume to Capacity (v/c): 0.394

Intersection Setup

Name	109 Street					109 Street				
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Right	Right2	Left	Left	Thru	Right	Right
Lane Width [m]	3.66	3.66	3.20	3.66	4.20	3.66	3.66	3.50	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	35.00	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name	109 Street					109 Street				
Base Volume Input [veh/h]	0	0	1043	0	11	0	0	582	0	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	1	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	1043	0	10	0	0	582	0	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	0	0	261	0	3	0	0	146	0	0
Total Analysis Volume [veh/h]	0	0	1043	0	10	0	0	582	0	0
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	16					10				
v_di, Inbound Pedestrian Volume crossing th	30					1				
v_co, Outbound Pedestrian Volume along th	13					8				
v_ci, Inbound Pedestrian Volume along the l	13					8				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	19					1				

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	51.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	1	0	0	0	0	1	0	0
Auxiliary Signal Groups										
Maximum Green [s]	0	0	100	0	0	0	0	100	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Walk [s]	0	0	7	0	0	0	0	7	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			Yes					Yes		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	0	68	0	0	0	0	68	0	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	30	0	0	0	0	30	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Minimum Recall			Yes					Yes		
Maximum Recall			No					No		
Pedestrian Recall			No					No		

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	C
C, Calculated Cycle Length [s]	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	81	81	81
g / C, Green / Cycle	0.81	0.81	0.81
(v / s)_i Volume / Saturation Flow Rate	0.33	0.01	0.18
s, saturation flow rate [veh/h]	3204	1422	3204
c, Capacity [veh/h]	2586	1147	2586
d1, Uniform Delay [s]	2.76	1.88	2.28
k, delay calibration	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	0.47	0.01	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.01	0.23
d, Delay for Lane Group [s/veh]	3.23	1.89	2.48
Lane Group LOS	A	A	A
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.03	0.03	0.93
50th-Percentile Queue Length [m/ln]	15.50	0.22	7.09
95th-Percentile Queue Length [veh/ln]	3.66	0.05	1.68
95th-Percentile Queue Length [m/ln]	27.91	0.39	12.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	3.23	0.00	1.89	0.00	0.00	2.48	0.00	0.00
Movement LOS			A		A			A		
d_A, Approach Delay [s/veh]	3.22					2.48				
Approach LOS	A					A				
d_I, Intersection Delay [s/veh]	5.90									
Intersection LOS	A									
Intersection V/C	0.394									

Emissions

Vehicle Kilometers Traveled [km/h]	115.02	1.10	184.01
Stops [stops/h]	146.50	1.03	67.01
Fuel consumption [L/h]	16.83	0.14	20.12
CO [g/h]	310.76	2.63	371.59
NOx [g/h]	60.46	0.51	72.30
VOC [g/h]	72.02	0.61	86.12

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m ² /ped]	0.00	42.64
M_CW, Crosswalk Circulation Area [m ² /ped]	31.83	136.78
d_p, Pedestrian Delay [s]	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersectio	2.742	2.546
Crosswalk LOS	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1280	1280
d_b, Bicycle Delay [s]	6.54	6.48
I_b,int, Bicycle LOS Score for Intersection	2.429	2.040
Bicycle LOS	B	B

Intersection Setup

Name	83 Ave					WB Bike Lane				
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Thru	Right	Left2	Left	Thru	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	5.00	3.66	3.66	3.66	1.50	1.50
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	40.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name	83 Ave					WB Bike Lane				
Base Volume Input [veh/h]	0	0	0	0	44	0	0	0	110	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	33	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	11	0	0	0	110	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	0	0	0	0	3	0	0	0	28	0
Total Analysis Volume [veh/h]	0	0	0	0	11	0	0	0	110	0
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	8					13				
v_di, Inbound Pedestrian Volume crossing th	8					13				
v_co, Outbound Pedestrian Volume along th	30					1				
v_ci, Inbound Pedestrian Volume along the l	16					10				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					110				

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	51.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	0	0	2	0	0	0	2	0
Auxiliary Signal Groups										
Maximum Green [s]	0	0	0	0	29	0	0	0	29	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	22	0	0	0	22	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No				No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	0	0	0	32	0	0	0	32	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	29	0	0	0	29	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall					No				No	
Maximum Recall					No				No	
Pedestrian Recall					No				No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	R	C
C, Calculated Cycle Length [s]	100	100
L, Total Lost Time per Cycle [s]	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00
g_i, Effective Green Time [s]	12	12
g / C, Green / Cycle	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.01	0.07
s, saturation flow rate [veh/h]	1321	1616
c, Capacity [veh/h]	163	199
d1, Uniform Delay [s]	38.73	41.26
k, delay calibration	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	0.06	0.89
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.55
d, Delay for Lane Group [s/veh]	38.80	42.15
Lane Group LOS	D	D
Critical Lane Group	No	Yes
50th-Percentile Queue Length [veh/ln]	0.24	2.65
50th-Percentile Queue Length [m/ln]	1.86	20.17
95th-Percentile Queue Length [veh/ln]	0.44	4.76
95th-Percentile Queue Length [m/ln]	3.34	36.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	38.80	0.00	0.00	0.00	42.15	0.00
Movement LOS					D				D	
d_A, Approach Delay [s/veh]	38.80					42.15				
Approach LOS	D					D				
d_I, Intersection Delay [s/veh]	5.90									
Intersection LOS	A									
Intersection V/C	0.394									

Emissions

Vehicle Kilometers Traveled [km/h]	1.40	8.03
Stops [stops/h]	8.77	95.28
Fuel consumption [L/h]	0.60	5.30
CO [g/h]	11.14	97.90
NOx [g/h]	2.17	19.05
VOC [g/h]	2.58	22.69

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	24.0
M_corner, Corner Circulation Area [m ² /ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m ² /ped]	63.57	66.64
d_p, Pedestrian Delay [s]	39.61	28.88
I_p,int, Pedestrian LOS Score for Intersectio	1.511	1.745
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	580	580
d_b, Bicycle Delay [s]	25.21	26.67
I_b,int, Bicycle LOS Score for Intersection	1.560	1.741
Bicycle LOS	A	A

Intersection Setup

Name	83 Avenue					EB Bike Lane				
Approach	Northwestbound					Southeastbound				
Lane Configuration						1				
Turning Movement	Left	Thru	Thru	Right	Right	Left2	Left	Thru	Right	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	1.50	1.50	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00					30.00				
Grade [%]	0.00					0.00				
Curb Present						Yes				
Crosswalk	Yes					Yes				

Volumes

Name	83 Avenue					EB Bike Lane				
Base Volume Input [veh/h]	0	0	0	0	0	0	14	0	0	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	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
Total Hourly Volume [veh/h]	0	0	0	0	0	0	14	0	0	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	4	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	14	0	0	0
Presence of On-Street Parking						No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	13					8				
v_di, Inbound Pedestrian Volume crossing th	13					8				
v_co, Outbound Pedestrian Volume along th	13					8				
v_ci, Inbound Pedestrian Volume along the l	13					8				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					14				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	51.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	0	0	0	0	2	0	0	0
Auxiliary Signal Groups										
Maximum Green [s]	0	0	0	0	0	0	29	0	0	0
Amber [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	7	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	22	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk							No			
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	0	0	0	0	0	32	0	0	0
Lead / Lag	-	-	-	-	-	-	Lag	-	-	-
Minimum Green [s]	0	0	0	0	0	0	29	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall							No			
Maximum Recall							No			
Pedestrian Recall							No			

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group		L
C, Calculated Cycle Length [s]		100
L, Total Lost Time per Cycle [s]		3.00
l1_p, Permitted Start-Up Lost Time [s]		0.00
l2, Clearance Lost Time [s]		1.00
g_i, Effective Green Time [s]		12
g / C, Green / Cycle		0.12
(v / s)_i Volume / Saturation Flow Rate		0.01
s, saturation flow rate [veh/h]		1539
c, Capacity [veh/h]		189
d1, Uniform Delay [s]		38.80
k, delay calibration		0.04
l, Upstream Filtering Factor		1.00
d2, Incremental Delay [s]		0.06
d3, Initial Queue Delay [s]		0.00
Rp, platoon ratio		1.00
PF, progression factor		1.00

Lane Group Results

X, volume / capacity		0.07
d, Delay for Lane Group [s/veh]		38.86
Lane Group LOS		D
Critical Lane Group		No
50th-Percentile Queue Length [veh/ln]		0.31
50th-Percentile Queue Length [m/ln]		2.39
95th-Percentile Queue Length [veh/ln]		0.57
95th-Percentile Queue Length [m/ln]		4.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	38.86	0.00	0.00	0.00
Movement LOS							D			
d_A, Approach Delay [s/veh]	0.00						38.86			
Approach LOS	A						D			
d_I, Intersection Delay [s/veh]	5.90									
Intersection LOS	A									
Intersection V/C	0.394									

Emissions

Vehicle Kilometers Traveled [km/h]		1.77
Stops [stops/h]		11.31
Fuel consumption [L/h]		0.72
CO [g/h]		13.34
NOx [g/h]		2.60
VOC [g/h]		3.09

Other Modes

g_Walk,mi, Effective Walk Time [s]	24.0	24.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	76.26	108.69
d_p, Pedestrian Delay [s]	28.88	28.88
I_p,int, Pedestrian LOS Score for Intersectio	1.427	1.745
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	580
d_b, Bicycle Delay [s]	50.00	25.38
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560
Bicycle LOS	D	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: 109 Street and 86 Ave

Control Type: Two-way stop
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 208.1
 Level Of Service: F
 Volume to Capacity (v/c): 0.204

Intersection Setup

Name	109 Street			109 Street			86 Ave			86 Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.20	4.20	3.50	3.50	3.50	3.66	3.66	3.66	3.00	3.00	3.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	40.00	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	109 Street			109 Street			86 Ave			86 Ave		
Base Volume Input [veh/h]	0	1774	24	19	755	69	0	0	0	1	4	47
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]	0	1774	24	19	755	69	0	0	0	1	4	47
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]	0	444	6	5	189	17	0	0	0	0	1	12
Total Analysis Volume [veh/h]	0	1774	24	19	755	69	0	0	0	1	4	47
Pedestrian Volume [ped/h]	0			0			26			10		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.00	0.06	0.01	0.00	0.00	0.00	0.00	0.04	0.20	0.17
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	15.83	0.00	0.00	0.00	0.00	0.00	182.52	208.15	37.00
Movement LOS		A	A	C	A	A				F	F	E
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.00	1.79	1.79	1.79
95th-Percentile Queue Length [m/ln]	0.00	0.00	0.00	0.24	0.12	0.00	0.00	0.00	0.00	13.63	13.63	13.63
d_A, Approach Delay [s/veh]	0.00			0.36			0.00			52.96		
Approach LOS	A			A			A			F		
d_I, Intersection Delay [s/veh]	1.13											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 26: 109 Street and 87 Ave

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.420

Intersection Setup

Name	109 Street				109 Street				87 Ave			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration	T T T T				T T T				T T T			
Turning Movement	Left	Thru	Thru	Right	Left	Left	Thru	Right	Left	Left	Thru	Right
Lane Width [m]	3.20	3.66	3.20	4.00	3.66	3.66	3.60	4.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [m]	80.00	30.48	30.48	35.00	30.48	30.48	30.48	30.48	30.48	30.48	30.48	45.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00				50.00				50.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	Yes				Yes				Yes			
Crosswalk	Yes				No				Yes			

Volumes

Name	109 Street				109 Street				87 Ave			
Base Volume Input [veh/h]	536	1302	0	4	0	0	618	375	299	0	1	193
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
Proportion of CAVs [%]	0.00											
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	38	0	0	0	19
Total Hourly Volume [veh/h]	536	1302	0	4	0	0	618	337	299	0	1	174
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]	134	326	0	1	0	0	155	84	75	0	0	44
Total Analysis Volume [veh/h]	536	1302	0	4	0	0	618	337	299	0	1	174
Presence of On-Street Parking	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
v_do, Outbound Pedestrian Volume crossing	53				0				13			
v_di, Inbound Pedestrian Volume crossing th	52				0				14			
v_co, Outbound Pedestrian Volume along th	16				14				52			
v_ci, Inbound Pedestrian Volume along the l	16				13				53			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	25				6				5			

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	85.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Overlap	Overlap	Permiss	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	1	0	3	0	0	1	0	0	0	3	2
Auxiliary Signal Groups	1,2	1,2		1,3								
Maximum Green [s]	30	59	0	26	0	0	59	0	0	0	26	30
Amber [s]	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
All red [s]	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	2.0
Walk [s]	0	8	0	7	0	0	8	0	0	0	7	0
Pedestrian Clearance [s]	0	16	0	19	0	0	16	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	35	34	0	31	0	0	34	0	0	0	31	35
Lead / Lag	Lag	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	24	0	26	0	0	24	0	0	0	26	5
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Minimum Recall	No	Yes		No			Yes				No	
Maximum Recall	Yes	No		No			No				No	
Pedestrian Recall	No	No		Yes			No				Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	C	C	L	C	R
C, Calculated Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	64	64	60	29	29	26	26	26
g / C, Green / Cycle	0.64	0.64	0.60	0.29	0.29	0.26	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.47	0.41	0.00	0.19	0.24	0.11	0.14	0.14
s, saturation flow rate [veh/h]	1150	3204	1441	3204	1379	1274	1175	1239
c, Capacity [veh/h]	650	2051	866	929	400	378	377	322
d1, Uniform Delay [s]	25.19	10.91	8.02	31.23	33.35	32.28	33.19	31.17
k, delay calibration	0.50	0.50	0.50	0.50	0.50	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]	11.35	1.51	0.01	3.75	18.99	0.57	0.81	1.41
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	0.82	0.63	0.00	0.67	0.84	0.36	0.44	0.54
d, Delay for Lane Group [s/veh]	36.54	12.43	8.03	34.98	52.34	32.85	34.00	32.58
Lane Group LOS	D	B	A	C	D	C	C	C
Critical Lane Group	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.74	8.18	0.04	6.91	9.60	2.79	3.55	3.62
50th-Percentile Queue Length [m/ln]	58.99	62.34	0.27	52.67	73.13	21.24	27.04	27.56
95th-Percentile Queue Length [veh/ln]	12.31	12.87	0.06	11.22	14.68	5.02	6.39	6.51
95th-Percentile Queue Length [m/ln]	93.77	98.08	0.48	85.52	111.85	38.23	48.66	49.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.54	12.43	0.00	8.03	0.00	0.00	34.98	52.34	33.48	0.00	34.00	32.58
Movement LOS	D	B		A			C	D	C		C	C
d_A, Approach Delay [s/veh]	19.43				41.11				33.15			
Approach LOS	B				D				C			
d_I, Intersection Delay [s/veh]	27.76											
Intersection LOS	C											
Intersection V/C	0.420											

Emissions

Vehicle Kilometers Traveled [km/h]	56.63	137.55	0.42	63.99	34.89	26.50	32.71	34.34
Stops [stops/h]	278.71	588.99	1.26	497.66	345.51	100.35	127.73	130.22
Fuel consumption [L/h]	26.72	38.76	0.09	33.90	24.66	8.17	10.32	10.56
CO [g/h]	493.49	715.81	1.72	626.04	455.32	150.85	190.52	194.91
NOx [g/h]	96.01	139.27	0.34	121.81	88.59	29.35	37.07	37.92
VOC [g/h]	114.37	165.90	0.40	145.09	105.52	34.96	44.15	45.17

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	12.0
M_corner, Corner Circulation Area [m ² /ped]	21.08	214.00	0.00
M_CW, Crosswalk Circulation Area [m ² /ped]	11.11	0.00	9.10
d_p, Pedestrian Delay [s]	39.61	0.00	38.72
I_p,int, Pedestrian LOS Score for Intersectio	2.988	0.000	2.643
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1280	580	520
d_b, Bicycle Delay [s]	6.56	25.28	27.45
I_b,int, Bicycle LOS Score for Intersection	3.079	2.106	2.373
Bicycle LOS	C	B	B

Intersection Setup

Name	87 Ave							
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right	Left	Thru	Right	Right
Lane Width [m]	3.50	3.66	3.50	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	10.00	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	30.00				50.00			
Grade [%]	0.00				0.00			
Curb Present	Yes							
Crosswalk	Yes				No			

Volumes

Name	87 Ave							
Base Volume Input [veh/h]	4	0	0	1	0	0	0	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00							
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	0	0	1	0	0	0	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	1	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	4	0	0	1	0	0	0	0
Presence of On-Street Parking	No			No				
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	16				0			
v_di, Inbound Pedestrian Volume crossing th	16				0			
v_co, Outbound Pedestrian Volume along th	0				0			
v_ci, Inbound Pedestrian Volume along the l	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	85.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	0	0	0	0	0	0	0
Auxiliary Signal Groups								
Maximum Green [s]	26	0	0	0	0	0	0	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All red [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	0	0	0	0	0
Pedestrian Clearance [s]	19	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	31	0	0	0	0	0	0	0
Lead / Lag	Lag	-	-	-	-	-	-	-
Minimum Green [s]	26	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No							
Maximum Recall	No							
Pedestrian Recall	Yes							

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	
C, Calculated Cycle Length [s]	100	100	
L, Total Lost Time per Cycle [s]	5.00	5.00	
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	
l2, Clearance Lost Time [s]	3.00	3.00	
g_i, Effective Green Time [s]	26	26	
g / C, Green / Cycle	0.26	0.26	
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	
s, saturation flow rate [veh/h]	1014	1431	
c, Capacity [veh/h]	184	372	
d1, Uniform Delay [s]	39.76	27.40	
k, delay calibration	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	
d2, Incremental Delay [s]	0.05	0.00	
d3, Initial Queue Delay [s]	0.00	0.00	
Rp, platoon ratio	1.00	1.00	
PF, progression factor	1.00	1.00	

Lane Group Results

X, volume / capacity	0.02	0.00	
d, Delay for Lane Group [s/veh]	39.80	27.40	
Lane Group LOS	D	C	
Critical Lane Group	No	No	
50th-Percentile Queue Length [veh/ln]	0.09	0.02	
50th-Percentile Queue Length [m/ln]	0.70	0.14	
95th-Percentile Queue Length [veh/ln]	0.17	0.03	
95th-Percentile Queue Length [m/ln]	1.26	0.25	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.80	0.00	0.00	27.40	0.00	0.00	0.00	0.00
Movement LOS	D			C				
d_A, Approach Delay [s/veh]	37.32				0.00			
Approach LOS	D				A			
d_I, Intersection Delay [s/veh]	27.76							
Intersection LOS	C							
Intersection V/C	0.420							

Emissions

Vehicle Kilometers Traveled [km/h]	0.15	0.04	
Stops [stops/h]	3.32	0.67	
Fuel consumption [L/h]	0.17	0.03	
CO [g/h]	3.08	0.57	
NOx [g/h]	0.60	0.11	
VOC [g/h]	0.71	0.13	

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	44.00	0.00
d_p, Pedestrian Delay [s]	38.72	0.00
I_p,int, Pedestrian LOS Score for Intersectio	1.946	0.000
Crosswalk LOS	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	520	0
d_b, Bicycle Delay [s]	27.38	50.00
I_b,int, Bicycle LOS Score for Intersection	1.560	4.132
Bicycle LOS	A	D

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: 109 Street and Walterdale Hill Road/Saskatchewan Drive**

Control Type:	Signalized	Delay (sec / veh):	22.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.567

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↑↑			↑↑↗					
Turning Movement	Left	Right	Right	Left2	Left	Thru	Thru	Right	Right2	Left	Left	Right
Lane Width [m]	3.66	3.66	3.66	3.50	3.50	3.66	3.66	3.50	3.50	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.00	30.48	30.48	30.48	30.48	50.00	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				Yes			Yes					
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	19	399	0	0	1480	127	0	0	0
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
Proportion of CAVs [%]	0.00											
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	13	0	0	0
Total Hourly Volume [veh/h]	0	0	0	19	399	0	0	1480	127	0	0	0
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]	0	0	0	5	100	0	0	370	32	0	0	0
Total Analysis Volume [veh/h]	0	0	0	19	399	0	0	1480	127	0	0	0
Presence of On-Street Parking				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
v_do, Outbound Pedestrian Volume crossing	0			16			30			16		
v_di, Inbound Pedestrian Volume crossing m	0			16			30			16		
v_co, Outbound Pedestrian Volume crossing	11			30			11			0		
v_ci, Inbound Pedestrian Volume crossing mi	11			30			11			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			5			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	90.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	0	2	2	0	0	1	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	0	0	27	27	0	0	55	0	0	0	0
Amber [s]	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	2.0	2.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	7	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	20	20	0	0	16	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk												
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	3.0	3.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	0	0	32	32	0	0	61	0	0	0	0
Lead / Lag	-	-	-	Lead	Lead	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	27	27	0	0	23	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Minimum Recall					No			Yes				
Maximum Recall					Yes			No				
Pedestrian Recall					No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	4
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	
C, Calculated Cycle Length [s]		100	100	
L, Total Lost Time per Cycle [s]		5.00	6.00	
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	
l2, Clearance Lost Time [s]		3.00	4.00	
g_i, Effective Green Time [s]		27	56	
g / C, Green / Cycle		0.27	0.56	
(v / s)_i Volume / Saturation Flow Rate		0.13	0.43	
s, saturation flow rate [veh/h]		3113	3711	
c, Capacity [veh/h]		840	2086	
d1, Uniform Delay [s]		30.78	16.61	
k, delay calibration		0.50	0.50	
l, Upstream Filtering Factor		1.00	1.00	
d2, Incremental Delay [s]		2.10	2.82	
d3, Initial Queue Delay [s]		0.00	0.00	
Rp, platoon ratio		1.00	1.00	
PF, progression factor		1.00	1.00	

Lane Group Results

X, volume / capacity		0.50	0.77	
d, Delay for Lane Group [s/veh]		32.88	19.43	
Lane Group LOS		C	B	
Critical Lane Group		Yes	Yes	
50th-Percentile Queue Length [veh/ln]		4.43	9.09	
50th-Percentile Queue Length [m/ln]		33.78	69.27	
95th-Percentile Queue Length [veh/ln]		7.89	14.04	
95th-Percentile Queue Length [m/ln]		60.09	106.95	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	32.88	32.88	0.00	0.00	19.43	19.43	0.00	0.00	0.00
Movement LOS				C	C			F	B			
d_A, Approach Delay [s/veh]	0.00			32.88			19.43			0.00		
Approach LOS	A			C			B			A		
d_I, Intersection Delay [s/veh]	22.21											
Intersection LOS	C											
Intersection V/C	0.567											

Emissions

Vehicle Kilometers Traveled [km/h]		75.08	86.56	
Stops [stops/h]		319.15	981.84	
Fuel consumption [L/h]		24.89	54.31	
CO [g/h]		459.58	1002.93	
NOx [g/h]		89.42	195.13	
VOC [g/h]		106.51	232.44	

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	56.26	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	24.75	36.46	22.61	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersectio	1.992	1.931	2.769	2.551
Crosswalk LOS	A	A	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	540	1100	0
d_b, Bicycle Delay [s]	50.00	26.66	10.15	50.00
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560	1.560	4.132
Bicycle LOS	D	A	A	D

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: 109 Street and 88 Ave SB

Control Type:	Signalized	Delay (sec / veh):	22.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.421

Intersection Setup

Name	109 Street		109 Street		88 Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [m]	3.66	3.66	3.50	3.50	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		2.00		0.00	
Curb Present			Yes			
Crosswalk	Yes		Yes		Yes	

Volumes

Name	109 Street		109 Street		88 Ave	
Base Volume Input [veh/h]	0	0	1021	78	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
Proportion of CAVs [%]	0.00					
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	8	0	0
Total Hourly Volume [veh/h]	0	0	1021	70	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]	0	0	255	18	0	0
Total Analysis Volume [veh/h]	0	0	1021	70	0	0
Presence of On-Street Parking			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
v_do, Outbound Pedestrian Volume crossing	30		16		30	
v_di, Inbound Pedestrian Volume crossing m	30		16		30	
v_co, Outbound Pedestrian Volume crossing	16		3		2	
v_ci, Inbound Pedestrian Volume crossing mi	16		2		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		2		0	

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	90.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	0	1	3	0	0
Auxiliary Signal Groups						
Maximum Green [s]	0	0	55	7	0	0
Amber [s]	0.0	0.0	3.0	3.0	0.0	0.0
All red [s]	0.0	0.0	3.0	2.0	0.0	0.0
Walk [s]	0	0	7	5	0	0
Pedestrian Clearance [s]	0	0	16	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk						
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	4.0	3.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	0	61	14	0	0
Lead / Lag	-	-	-	-	-	-
Minimum Green [s]	0	0	23	10	0	0
Vehicle Extension [s]	0.0	0.0	3.0	3.0	0.0	0.0
Minimum Recall			Yes			
Maximum Recall			No			
Pedestrian Recall			No			

Exclusive Pedestrian Phase

Pedestrian Signal Group	4
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		C	C	
C, Calculated Cycle Length [s]		100	100	
L, Total Lost Time per Cycle [s]		6.00	6.00	
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	
l2, Clearance Lost Time [s]		4.00	4.00	
g_i, Effective Green Time [s]		57	57	
g / C, Green / Cycle		0.57	0.57	
(v / s)_i Volume / Saturation Flow Rate		0.41	0.42	
s, saturation flow rate [veh/h]		1329	1295	
c, Capacity [veh/h]		753	734	
d1, Uniform Delay [s]		15.93	16.22	
k, delay calibration		0.50	0.50	
l, Upstream Filtering Factor		1.00	1.00	
d2, Incremental Delay [s]		5.99	6.71	
d3, Initial Queue Delay [s]		0.00	0.00	
Rp, platoon ratio		1.00	1.00	
PF, progression factor		1.00	1.00	

Lane Group Results

X, volume / capacity		0.72	0.74	
d, Delay for Lane Group [s/veh]		21.92	22.93	
Lane Group LOS		C	C	
Critical Lane Group		No	Yes	
50th-Percentile Queue Length [veh/ln]		9.67	9.93	
50th-Percentile Queue Length [m/ln]		73.65	75.70	
95th-Percentile Queue Length [veh/ln]		14.76	15.10	
95th-Percentile Queue Length [m/ln]		112.50	115.08	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	22.39	22.93	0.00	0.00
Movement LOS			C	C		
d_A, Approach Delay [s/veh]	0.00		22.43		0.00	
Approach LOS	A		C		A	
d_I, Intersection Delay [s/veh]	22.43					
Intersection LOS	C					
Intersection V/C	0.421					

Emissions

Vehicle Kilometers Traveled [km/h]		188.74	188.74	
Stops [stops/h]		347.95	357.62	
Fuel consumption [L/h]		34.98	35.62	
CO [g/h]		645.84	657.66	
NOx [g/h]		125.66	127.96	
VOC [g/h]		149.68	152.42	

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	53.95
M_CW, Crosswalk Circulation Area [m²/ped]	21.74	36.46	72.80
d_p, Pedestrian Delay [s]	39.61	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersectio	2.289	2.286	1.507
Crosswalk LOS	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1100	0
d_b, Bicycle Delay [s]	50.00	10.14	50.00
I_b,int, Bicycle LOS Score for Intersection	4.132	2.466	4.132
Bicycle LOS	D	B	D

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: 114 Street and 82 Ave

Control Type: Signalized
 Analysis Method: HCM 7th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 36.9
 Level Of Service: D
 Volume to Capacity (v/c): 0.604

Intersection Setup

Name	114 Street			114 Street			University Ave			82 Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.70	3.60	3.66	3.60	3.60	4.00	3.60	3.60	3.66	3.66	3.66
No. of Lanes in Entry Pocket	2	0	1	0	0	1	1	0	1	2	0	0
Entry Pocket Length [m]	170.00	30.48	2.00	30.48	30.48	105.00	95.00	30.48	95.00	100.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	114 Street			114 Street			University Ave			82 Ave		
Base Volume Input [veh/h]	667	1023	211	0	213	52	36	168	483	121	263	17
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
Proportion of CAVs [%]	0.00											
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	21	0	0	5	0	0	0	0	0	2
Total Hourly Volume [veh/h]	667	1023	190	0	213	47	36	168	483	121	263	15
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]	167	256	48	0	53	12	9	42	121	30	66	4
Total Analysis Volume [veh/h]	667	1023	190	0	213	47	36	168	483	121	263	15
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
v_do, Outbound Pedestrian Volume crossing	2			2			2			2		
v_di, Inbound Pedestrian Volume crossing m	2			2			2			2		
v_co, Outbound Pedestrian Volume crossing	18			0			0			18		
v_ci, Inbound Pedestrian Volume crossing mi	18			0			0			18		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	158
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Overlap	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	2	1	0	0	1	2	3	6	2	5	4	0
Auxiliary Signal Groups		1,2				1,2			2,6			
Maximum Green [s]	60	27	0	0	27	60	10	38	60	16	38	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0	0.0
Walk [s]	0	9	0	0	9	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	22	0	0	22	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	0.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	66	33	0	0	33	66	17	36	66	23	36	0
Lead / Lag	Lag	-	-	-	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	27	0	0	27	10	7	29	10	7	29	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Minimum Recall	No	Yes			Yes	No	No	No	No	No	No	
Maximum Recall	No	No			No	No	No	Yes	No	No	Yes	
Pedestrian Recall	No	No			No	No	No	No	No	No	No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	C	R	L	C	R	L	C	C
C, Calculated Cycle Length [s]	148	148	148	148	148	148	148	148	148	148	148
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	7.00	7.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	0.00	4.00	4.00	0.00	5.00	5.00	0.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	49	82	27	27	82	5	38	93	8	40	40
g / C, Green / Cycle	0.33	0.56	0.18	0.18	0.56	0.04	0.26	0.63	0.05	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.28	0.32	0.13	0.07	0.04	0.02	0.06	0.21	0.04	0.09	0.09
s, saturation flow rate [veh/h]	2374	3204	1431	3204	1318	1535	2951	2329	3113	1550	1520
c, Capacity [veh/h]	804	1782	261	584	733	56	757	1468	163	422	414
d1, Uniform Delay [s]	47.88	21.45	57.13	53.07	15.14	70.43	43.43	12.77	69.20	43.11	43.14
k, delay calibration	0.11	0.31	0.21	0.11	0.11	0.11	0.50	0.11	0.11	0.50	0.50
l, 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
d2, Incremental Delay [s]	2.28	0.85	7.48	0.38	0.04	11.63	0.68	0.13	6.45	2.10	2.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	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	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	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.57	0.73	0.36	0.06	0.64	0.22	0.33	0.74	0.33	0.33
d, Delay for Lane Group [s/veh]	50.16	22.30	64.61	53.45	15.18	82.06	44.11	12.90	75.65	45.20	45.30
Lane Group LOS	D	C	E	D	B	F	D	B	E	D	D
Critical Lane Group	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	11.91	11.74	7.28	3.54	0.76	1.54	2.54	3.77	2.42	4.40	4.36
50th-Percentile Queue Length [m/ln]	90.74	89.43	55.47	26.97	5.75	11.70	19.34	28.71	18.43	33.55	33.20
95th-Percentile Queue Length [veh/ln]	17.57	17.36	11.70	6.37	1.36	2.76	4.57	6.78	4.35	7.84	7.78
95th-Percentile Queue Length [m/ln]	133.87	132.25	89.18	48.54	10.36	21.07	34.81	51.68	33.17	59.77	59.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.16	22.30	64.61	0.00	53.45	15.18	82.06	44.11	12.90	75.65	45.25	45.30
Movement LOS	D	C	E		D	B	F	D	B	E	D	D
d_A, Approach Delay [s/veh]	36.46			46.54			24.15			54.47		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	36.88											
Intersection LOS	D											
Intersection V/C	0.604											

Emissions

Vehicle Kilometers Traveled [km/h]	188.80	289.57	53.78	49.23	10.86	11.84	55.24	158.81	20.07	23.20	22.92
Stops [stops/h]	578.30	569.96	176.75	171.87	18.33	37.29	123.26	182.98	117.43	106.90	105.78
Fuel consumption [L/h]	56.71	57.91	18.54	17.31	1.99	4.24	13.73	24.01	11.59	9.48	9.37
CO [g/h]	1047.11	1069.31	342.30	319.63	36.83	78.26	253.50	443.44	214.10	174.96	173.07
NOx [g/h]	203.73	208.05	66.60	62.19	7.17	15.23	49.32	86.28	41.66	34.04	33.67
VOC [g/h]	242.68	247.82	79.33	74.08	8.53	18.14	58.75	102.77	49.62	40.55	40.11

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			13.0		
M_corner, Corner Circulation Area [m²/ped]	20.26			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	45.52			250.83			0.00			22.55		
d_p, Pedestrian Delay [s]	63.54			63.54			0.00			61.70		
I_p,int, Pedestrian LOS Score for Intersectio	2.972			2.602			0.000			2.610		
Crosswalk LOS	C			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1255			364			391			391		
d_b, Bicycle Delay [s]	10.30			49.59			47.97			47.97		
I_b,int, Bicycle LOS Score for Intersection	3.128			1.778			2.126			1.890		
Bicycle LOS	C			A			B			A		

Sequence

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



Intersection Level Of Service Report
Intersection 30: 114 Street and 87 Ave

Control Type: Signalized
Analysis Method: HCM 7th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 52.9
Level Of Service: D
Volume to Capacity (v/c): 0.534

Intersection Setup

Name	114 Street			114 Street			87 Ave			87 Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	4.00	3.70	4.00	4.00	4.00	4.00	3.70	3.70	3.70	3.70	3.70	3.80
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	1	0	0
Entry Pocket Length [m]	80.00	30.48	30.48	30.48	30.48	40.00	35.00	30.48	30.48	85.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	114 Street			114 Street			87 Ave			87 Ave		
Base Volume Input [veh/h]	461	154	140	19	18	24	69	280	254	82	494	87
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
Proportion of CAVs [%]	0.00											
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	14	0	0	2	0	0	25	0	0	9
Total Hourly Volume [veh/h]	461	154	126	19	18	22	69	280	229	82	494	78
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]	115	39	32	5	5	6	17	70	57	21	124	20
Total Analysis Volume [veh/h]	461	154	126	19	18	22	69	280	229	82	494	78
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
v_do, Outbound Pedestrian Volume crossing	65			42			42			65		
v_di, Inbound Pedestrian Volume crossing m	65			42			42			65		
v_co, Outbound Pedestrian Volume crossing	70			133			70			133		
v_ci, Inbound Pedestrian Volume crossing mi	70			133			70			133		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	60.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Overlap	Overlap	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	3	3	0	3	0	4	1	0	5	6	0
Auxiliary Signal Groups		2,3	2,3									
Maximum Green [s]	25	24	24	0	24	0	10	43	0	10	43	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	17	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	0.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	28	29	29	0	29	0	13	30	0	13	30	0
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	24	24	0	24	0	7	24	0	7	24	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No	No		No		No	Yes		No	Yes	
Maximum Recall	Yes	Yes	Yes		Yes		No	No		Yes	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	0.00	0.00	3.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	25	52	52	24	24	24	38	29	29	38	25	25
g / C, Green / Cycle	0.25	0.52	0.52	0.24	0.24	0.24	0.38	0.29	0.29	0.38	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.28	0.09	0.10	0.02	0.01	0.02	0.07	0.16	0.19	0.09	0.17	0.20
s, saturation flow rate [veh/h]	1667	1683	1331	932	1750	1332	1001	1683	1235	951	1683	1419
c, Capacity [veh/h]	417	875	692	229	420	320	346	486	357	327	421	355
d1, Uniform Delay [s]	37.50	12.65	12.76	35.27	29.18	29.37	21.93	30.13	31.30	21.93	34.03	35.03
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.21	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	76.06	0.43	0.60	0.71	0.19	0.42	0.54	4.56	9.45	1.84	9.11	16.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.11	0.17	0.19	0.08	0.04	0.07	0.20	0.56	0.67	0.25	0.69	0.79
d, Delay for Lane Group [s/veh]	113.56	13.08	13.36	35.98	29.37	29.78	22.46	34.70	40.74	23.76	43.15	51.22
Lane Group LOS	F	B	B	D	C	C	C	C	D	C	D	D
Critical Lane Group	Yes	No	Yes	No	No	No	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	18.75	1.82	1.61	0.44	0.35	0.44	1.08	6.05	5.88	1.40	7.39	7.84
50th-Percentile Queue Length [m/ln]	142.89	13.89	12.25	3.32	2.69	3.38	8.24	46.12	44.80	10.68	56.34	59.71
95th-Percentile Queue Length [veh/ln]	27.39	3.28	2.89	0.78	0.64	0.80	1.95	10.09	9.86	2.52	11.85	12.43
95th-Percentile Queue Length [m/ln]	208.69	25.00	22.04	5.98	4.84	6.08	14.84	76.86	75.11	19.22	90.32	94.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	113.56	13.08	13.36	35.98	29.37	29.78	22.46	34.88	40.74	23.76	46.45	51.22
Movement LOS	F	B	B	D	C	C	C	C	D	C	D	D
d_A, Approach Delay [s/veh]	75.64			31.65			35.72			44.17		
Approach LOS	E			C			D			D		
d_I, Intersection Delay [s/veh]	52.88											
Intersection LOS	D											
Intersection V/C	0.534											

Emissions

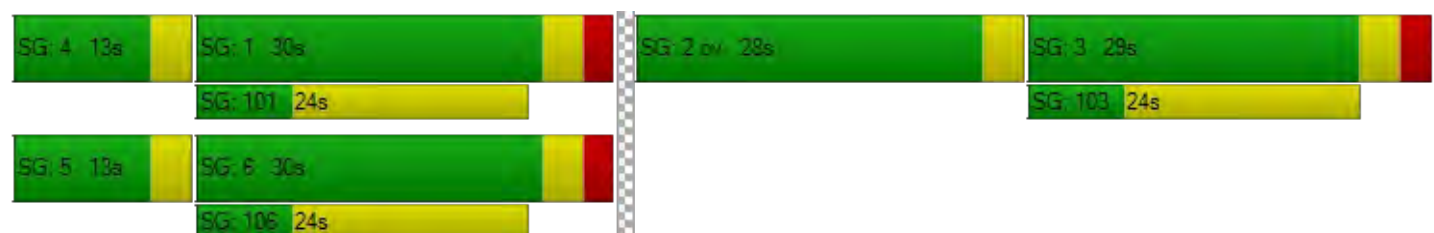
Vehicle Kilometers Traveled [km/h]	218.59	71.36	61.41	3.78	3.58	4.38	18.59	73.10	64.01	37.81	134.70	129.03
Stops [stops/h]	675.06	65.61	57.86	15.70	12.71	15.97	38.95	217.87	211.68	50.46	266.16	282.09
Fuel consumption [L/h]	76.26	9.78	8.47	1.24	1.03	1.28	3.84	19.10	18.30	6.23	28.50	29.65
CO [g/h]	1408.24	180.54	156.48	22.87	19.08	23.63	70.84	352.61	337.85	115.05	526.19	547.44
NOx [g/h]	273.99	35.13	30.44	4.45	3.71	4.60	13.78	68.61	65.73	22.38	102.38	106.51
VOC [g/h]	326.37	41.84	36.26	5.30	4.42	5.48	16.42	81.72	78.30	26.66	121.95	126.88

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			106.99			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	6.14			4.55			16.67			8.48		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersectio	2.585			2.409			2.660			2.567		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1040			480			500			500		
d_b, Bicycle Delay [s]	11.52			28.88			28.13			28.13		
I_b,int, Bicycle LOS Score for Intersection	2.182			1.610			2.057			2.107		
Bicycle LOS	B			A			B			B		

Sequence

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



Intersection Level Of Service Report
Intersection 31: 112 Street and 82 Ave

Control Type: Signalized
Analysis Method: HCM 7th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 35.3
Level Of Service: D
Volume to Capacity (v/c): 0.550

Intersection Setup

Name	112 Street			112 Street			82 Ave			82 Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	4.50	4.50	3.50	3.66	3.50	3.50	3.50	3.66	3.66	3.50	3.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	65.00	30.48	30.48	85.00	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	112 Street			112 Street			82 Ave			82 Ave		
Base Volume Input [veh/h]	0	26	18	174	0	58	186	249	0	0	401	531
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
Proportion of CAVs [%]	0.00											
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	2	0	0	6	0	0	0	0	0	53
Total Hourly Volume [veh/h]	0	26	16	174	0	52	186	249	0	0	401	478
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]	0	7	4	44	0	13	47	62	0	0	100	120
Total Analysis Volume [veh/h]	0	26	16	174	0	52	186	249	0	0	401	478
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
v_do, Outbound Pedestrian Volume crossing	54			27			26			54		
v_di, Inbound Pedestrian Volume crossing m	54			26			27			54		
v_co, Outbound Pedestrian Volume crossing	17			26			17			26		
v_ci, Inbound Pedestrian Volume crossing mi	17			26			17			26		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	46.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	2	0	0	3	1	0	0	1	0
Auxiliary Signal Groups												
Maximum Green [s]	0	60	0	60	0	0	19	46	0	0	46	0
Amber [s]	0.0	3.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	8	0	8	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	23	0	23	0	0	0	18	0	0	18	0
Delayed Vehicle Green [s]	0.0	8.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	37	0	37	0	0	24	39	0	0	39	0
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	23	0	23	0	0	7	25	0	0	25	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No		No			No	Yes			Yes	
Maximum Recall		Yes		Yes			No	No			No	
Pedestrian Recall		No		No			No	No			No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	L	R	L	C	C	C
C, Calculated Cycle Length [s]	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	32	32	32	14	39	39	39
g / C, Green / Cycle	0.32	0.32	0.32	0.14	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.03	0.09	0.04	0.12	0.08	0.24	0.35
s, saturation flow rate [veh/h]	1566	2034	1359	1603	3204	1683	1374
c, Capacity [veh/h]	501	639	435	217	1264	664	542
d1, Uniform Delay [s]	23.76	28.44	23.99	42.27	19.88	24.07	28.12
k, delay calibration	0.50	0.50	0.50	0.13	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	1.05	0.56	10.91	0.35	4.05	18.44
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.27	0.12	0.86	0.20	0.60	0.88
d, Delay for Lane Group [s/veh]	24.09	29.49	24.55	53.18	20.23	28.12	46.56
Lane Group LOS	C	C	C	D	C	C	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.73	1.72	0.93	5.10	1.93	8.05	12.95
50th-Percentile Queue Length [m/ln]	5.60	13.11	7.08	38.84	14.74	61.35	98.65
95th-Percentile Queue Length [veh/ln]	1.32	3.10	1.67	8.80	3.48	12.70	18.85
95th-Percentile Queue Length [m/ln]	10.07	23.59	12.74	67.05	26.53	96.80	143.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	24.09	24.09	29.49	0.00	24.55	53.18	20.23	0.00	0.00	28.12	46.56
Movement LOS		C	C	C		C	D	C			C	D
d_A, Approach Delay [s/veh]	24.09			28.35			34.32			38.15		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	35.32											
Intersection LOS	D											
Intersection V/C	0.550											

Emissions

Vehicle Kilometers Traveled [km/h]	4.14	38.15	11.40	53.13	71.12	231.37	275.79
Stops [stops/h]	26.44	123.85	33.44	183.49	139.27	289.82	466.08
Fuel consumption [L/h]	1.77	10.36	2.82	16.79	13.77	37.20	53.84
CO [g/h]	32.62	191.31	52.04	310.02	254.30	686.93	994.15
NOx [g/h]	6.35	37.22	10.13	60.32	49.48	133.65	193.43
VOC [g/h]	7.56	44.34	12.06	71.85	58.94	159.20	230.40

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	12.0	12.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	28.42	5.04	27.94	10.43
d_p, Pedestrian Delay [s]	39.61	39.61	38.72	38.72
I_p,int, Pedestrian LOS Score for Intersectio	1.475	2.510	2.484	2.805
Crosswalk LOS	A	B	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	480	480	680	680
d_b, Bicycle Delay [s]	28.88	28.88	21.78	21.78
I_b,int, Bicycle LOS Score for Intersection	1.632	1.560	1.918	2.329
Bicycle LOS	A	A	A	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 32: 110 Street and 87 Ave

Control Type: Signalized
Analysis Method: HCM 7th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 9.9
Level Of Service: A
Volume to Capacity (v/c): 0.414

Intersection Setup

Name	110 Street									
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Thru	Right	Left	Thru	Thru	Right	Right
Lane Width [m]	4.50	3.66	3.66	4.50	4.50	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	30.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes									
Crosswalk	Yes					Yes				

Volumes

Name	110 Street									
Base Volume Input [veh/h]	4	0	0	67	79	0	0	0	0	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	75	0	0	0	0	0
Total Hourly Volume [veh/h]	4	0	0	67	4	0	0	0	0	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	1	0	0	17	1	0	0	0	0	0
Total Analysis Volume [veh/h]	4	0	0	67	4	0	0	0	0	0
Presence of On-Street Parking	No				No					
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	43					10				
v_di, Inbound Pedestrian Volume crossing th	7					3				
v_co, Outbound Pedestrian Volume along th	11					5				
v_ci, Inbound Pedestrian Volume along the l	3					5				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	7.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	0	2	0	0	0	0	0	0
Auxiliary Signal Groups										
Maximum Green [s]	0	0	0	22	0	0	0	0	0	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	7	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	15	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No						
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	0	0	25	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	22	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall				No						
Maximum Recall				No						
Pedestrian Recall				No						

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	
C, Calculated Cycle Length [s]	100	
L, Total Lost Time per Cycle [s]	3.00	
l1_p, Permitted Start-Up Lost Time [s]	2.00	
l2, Clearance Lost Time [s]	1.00	
g_i, Effective Green Time [s]	9	
g / C, Green / Cycle	0.09	
(v / s)_i Volume / Saturation Flow Rate	0.07	
s, saturation flow rate [veh/h]	1084	
c, Capacity [veh/h]	133	
d1, Uniform Delay [s]	43.52	
k, delay calibration	0.11	
l, Upstream Filtering Factor	1.00	
d2, Incremental Delay [s]	3.67	
d3, Initial Queue Delay [s]	0.00	
Rp, platoon ratio	1.00	
PF, progression factor	1.00	

Lane Group Results

X, volume / capacity	0.56	
d, Delay for Lane Group [s/veh]	47.19	
Lane Group LOS	D	
Critical Lane Group	Yes	
50th-Percentile Queue Length [veh/ln]	1.94	
50th-Percentile Queue Length [m/ln]	14.76	
95th-Percentile Queue Length [veh/ln]	3.49	
95th-Percentile Queue Length [m/ln]	26.57	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.19	0.00	0.00	47.19	47.19	0.00	0.00	0.00	0.00	0.00
Movement LOS	D			D	D					
d_A, Approach Delay [s/veh]	47.19					0.00				
Approach LOS	D					A				
d_I, Intersection Delay [s/veh]	9.86									
Intersection LOS	A									
Intersection V/C	0.414									

Emissions

Vehicle Kilometers Traveled [km/h]	5.50	
Stops [stops/h]	69.74	
Fuel consumption [L/h]	3.95	
CO [g/h]	72.89	
NOx [g/h]	14.18	
VOC [g/h]	16.89	

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	19.0
M_corner, Corner Circulation Area [m ² /ped]	0.00	123.77
M_CW, Crosswalk Circulation Area [m ² /ped]	19.05	41.23
d_p, Pedestrian Delay [s]	39.61	32.81
I_p,int, Pedestrian LOS Score for Intersectio	1.626	1.669
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	440	0
d_b, Bicycle Delay [s]	30.42	50.00
I_b,int, Bicycle LOS Score for Intersection	1.918	4.132
Bicycle LOS	A	D

Intersection Setup

Name	87 Ave					87 Ave				
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Right	Right	Left	Left	Thru	Right	Right
Lane Width [m]	3.50	3.66	3.50	3.66	3.66	3.66	3.66	3.50	3.66	3.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	7.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name	87 Ave					87 Ave				
Base Volume Input [veh/h]	13	0	350	0	0	0	0	580	0	148
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	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	15
Total Hourly Volume [veh/h]	13	0	350	0	0	0	0	580	0	133
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	3	0	88	0	0	0	0	145	0	33
Total Analysis Volume [veh/h]	13	0	350	0	0	0	0	580	0	133
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	24					3				
v_di, Inbound Pedestrian Volume crossing th	4					11				
v_co, Outbound Pedestrian Volume along th	21					3				
v_ci, Inbound Pedestrian Volume along the l	8					10				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	7.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	1	0	0	0	0	1	0	0
Auxiliary Signal Groups										
Maximum Green [s]	0	0	80	0	0	0	0	80	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Walk [s]	0	0	7	0	0	0	0	7	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	0	15	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			Yes					Yes		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	0	75	0	0	0	0	75	0	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	25	0	0	0	0	25	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			Yes					Yes		

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	C	R
C, Calculated Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	83	83	83	83
g / C, Green / Cycle	0.83	0.83	0.83	0.83
(v / s)_i Volume / Saturation Flow Rate	0.12	0.12	0.34	0.10
s, saturation flow rate [veh/h]	1565	1532	1683	1363
c, Capacity [veh/h]	1341	1274	1400	1134
d1, Uniform Delay [s]	1.59	1.60	2.16	1.56
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	0.23	0.91	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.14	0.41	0.12
d, Delay for Lane Group [s/veh]	1.81	1.83	3.06	1.78
Lane Group LOS	A	A	A	A
Critical Lane Group	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.44	0.43	2.37	0.40
50th-Percentile Queue Length [m/ln]	3.36	3.24	18.09	3.07
95th-Percentile Queue Length [veh/ln]	0.79	0.77	4.27	0.72
95th-Percentile Queue Length [m/ln]	6.05	5.83	32.56	5.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1.81	0.00	1.82	0.00	0.00	0.00	0.00	3.06	0.00	1.78
Movement LOS	A		A					A		A
d_A, Approach Delay [s/veh]	1.82					2.82				
Approach LOS	A					A				
d_I, Intersection Delay [s/veh]	9.86									
Intersection LOS	A									
Intersection V/C	0.414									

Emissions

Vehicle Kilometers Traveled [km/h]	44.44	42.26	114.47	26.25
Stops [stops/h]	15.87	15.31	85.45	14.50
Fuel consumption [L/h]	4.84	4.61	15.76	3.44
CO [g/h]	89.43	85.18	291.04	63.54
NOx [g/h]	17.40	16.57	56.63	12.36
VOC [g/h]	20.73	19.74	67.45	14.73

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m ² /ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m ² /ped]	46.66	99.76
d_p, Pedestrian Delay [s]	39.61	39.61
I_p,int, Pedestrian LOS Score for Intersectio	2.269	2.332
Crosswalk LOS	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1400	1400
d_b, Bicycle Delay [s]	4.50	4.50
I_b,int, Bicycle LOS Score for Intersection	1.859	2.761
Bicycle LOS	A	C

Intersection Setup

Name	NB Bike Lane					SB Bike Lane				
Approach	Northeastbound					Southeastbound				
Lane Configuration	↶					↷				
Turning Movement	Left2	Left	Thru	Right	Right	Left2	Left	Thru	Thru	Right
Lane Width [m]	3.66	1.50	3.66	3.66	3.66	3.66	3.66	3.66	1.50	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name	NB Bike Lane					SB Bike Lane				
Base Volume Input [veh/h]	0	11	0	0	0	0	0	0	110	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	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
Total Hourly Volume [veh/h]	0	11	0	0	0	0	0	0	110	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	0	3	0	0	0	0	0	0	28	0
Total Analysis Volume [veh/h]	0	11	0	0	0	0	0	0	110	0
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	8					5				
v_di, Inbound Pedestrian Volume crossing th	21					5				
v_co, Outbound Pedestrian Volume along th	7					4				
v_ci, Inbound Pedestrian Volume along the l	43					24				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	11					110				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	7.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	2	0	0	0	0	0	0	2	0
Auxiliary Signal Groups										
Maximum Green [s]	0	22	0	0	0	0	0	0	22	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No							No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	25	0	0	0	0	0	0	25	0
Lead / Lag	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	0	22	0	0	0	0	0	0	22	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Minimum Recall		No							No	
Maximum Recall		No							No	
Pedestrian Recall		No							No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C
C, Calculated Cycle Length [s]	100	100
L, Total Lost Time per Cycle [s]	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00
g_i, Effective Green Time [s]	9	9
g / C, Green / Cycle	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.01	0.07
s, saturation flow rate [veh/h]	1148	1616
c, Capacity [veh/h]	75	142
d1, Uniform Delay [s]	42.50	44.61
k, delay calibration	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	0.88	8.57
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	0.77
d, Delay for Lane Group [s/veh]	43.38	53.18
Lane Group LOS	D	D
Critical Lane Group	No	No
50th-Percentile Queue Length [veh/ln]	0.28	3.05
50th-Percentile Queue Length [m/ln]	2.11	23.24
95th-Percentile Queue Length [veh/ln]	0.50	5.49
95th-Percentile Queue Length [m/ln]	3.80	41.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	43.38	0.00	0.00	0.00	0.00	0.00	0.00	53.18	0.00
Movement LOS		D							D	
d_A, Approach Delay [s/veh]	43.38					53.18				
Approach LOS	D					D				
d_I, Intersection Delay [s/veh]	9.86									
Intersection LOS	A									
Intersection V/C	0.414									

Emissions

Vehicle Kilometers Traveled [km/h]	0.81	4.24
Stops [stops/h]	9.96	109.81
Fuel consumption [L/h]	0.55	5.90
CO [g/h]	10.07	108.93
NOx [g/h]	1.96	21.19
VOC [g/h]	2.33	25.25

Other Modes

g_Walk,mi, Effective Walk Time [s]	19.0	19.0
M_corner, Corner Circulation Area [m²/ped]	35.51	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	47.11	128.92
d_p, Pedestrian Delay [s]	32.81	32.81
I_p,int, Pedestrian LOS Score for Intersectio	1.749	1.764
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	440	440
d_b, Bicycle Delay [s]	30.59	32.19
I_b,int, Bicycle LOS Score for Intersection	1.560	1.741
Bicycle LOS	A	A

Sequence

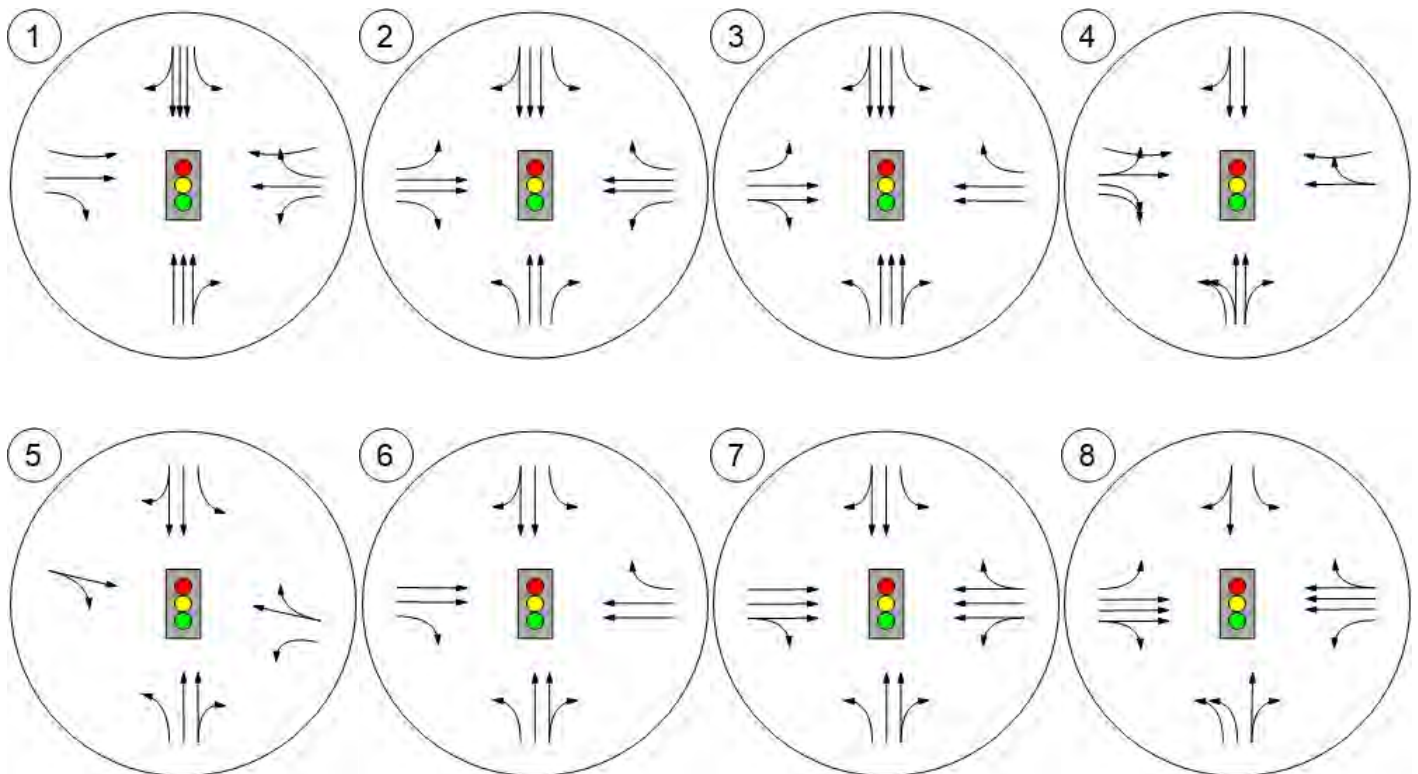
Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



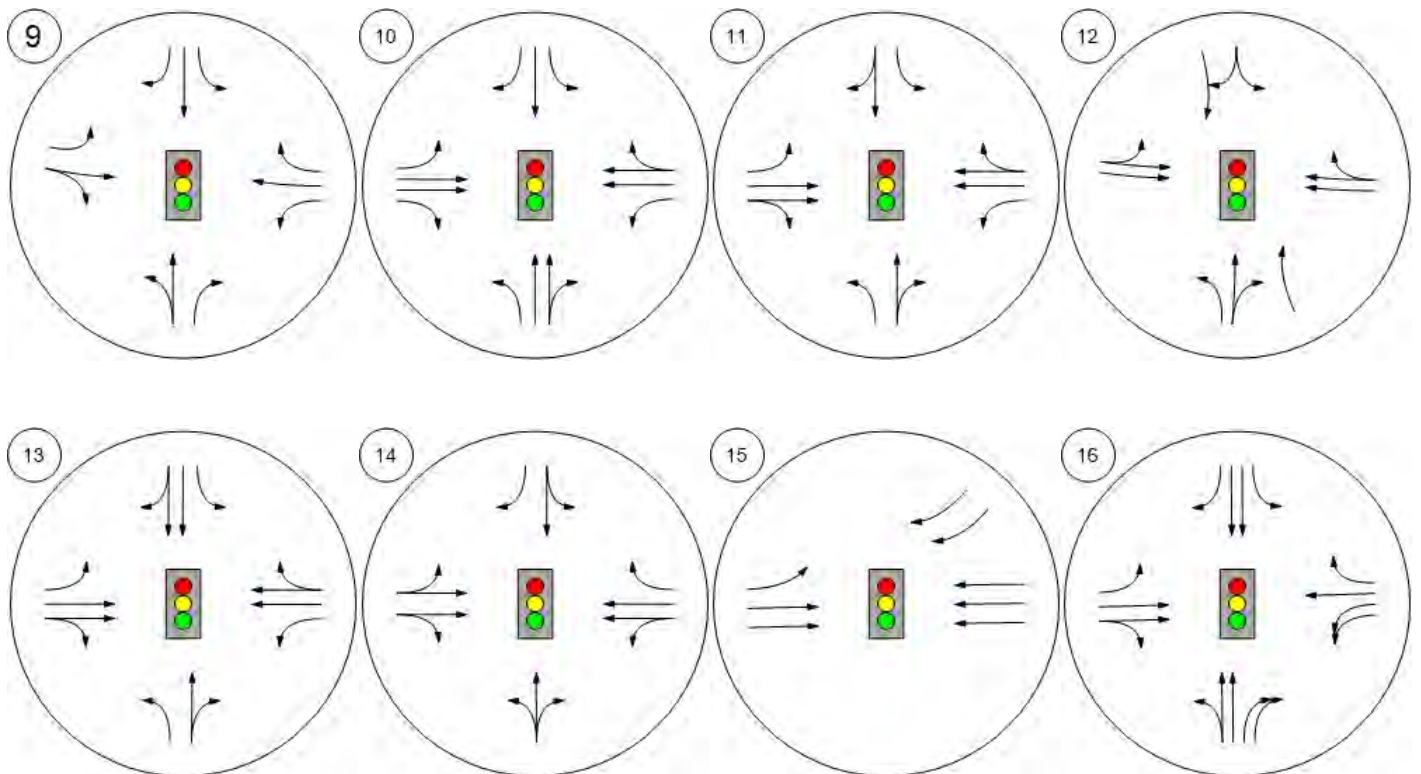
Study Intersections



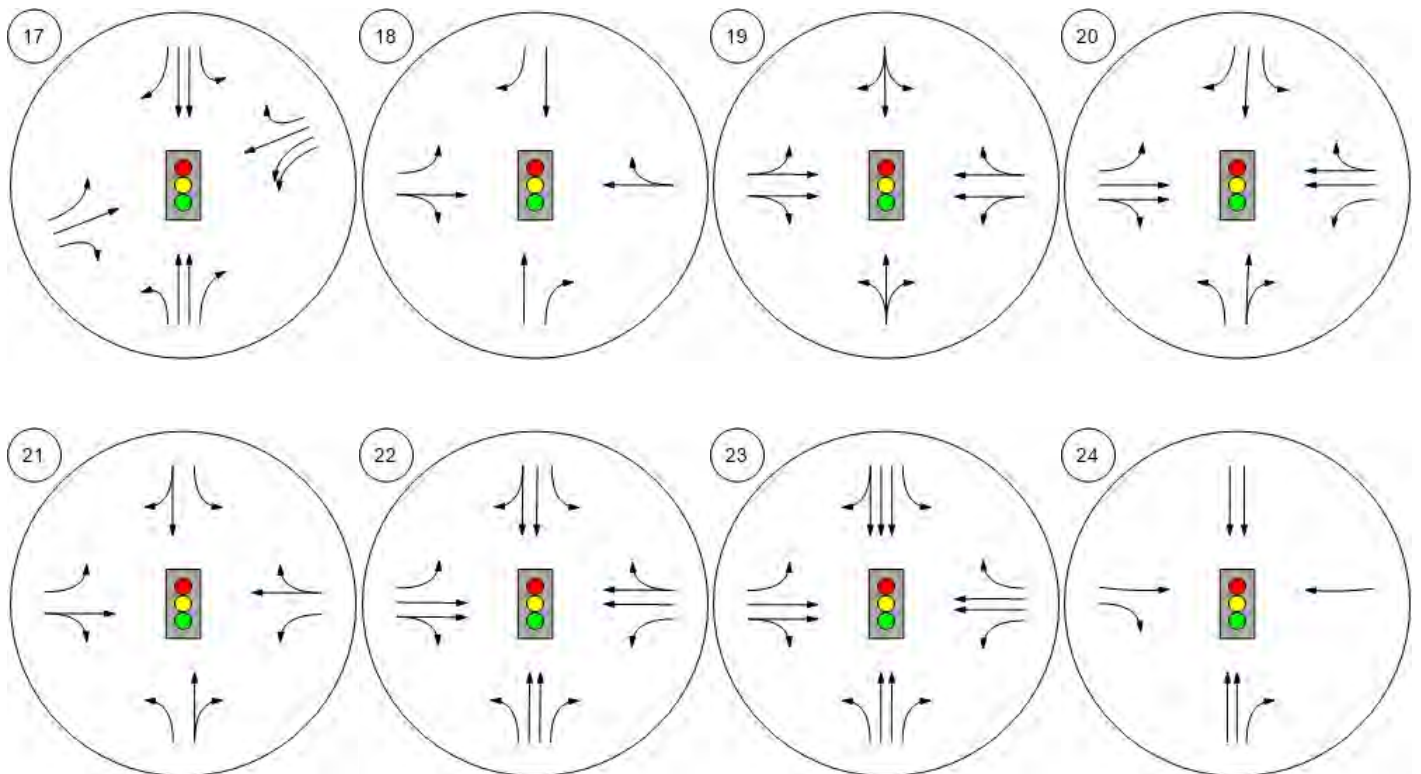
Lane Configuration and Traffic Control



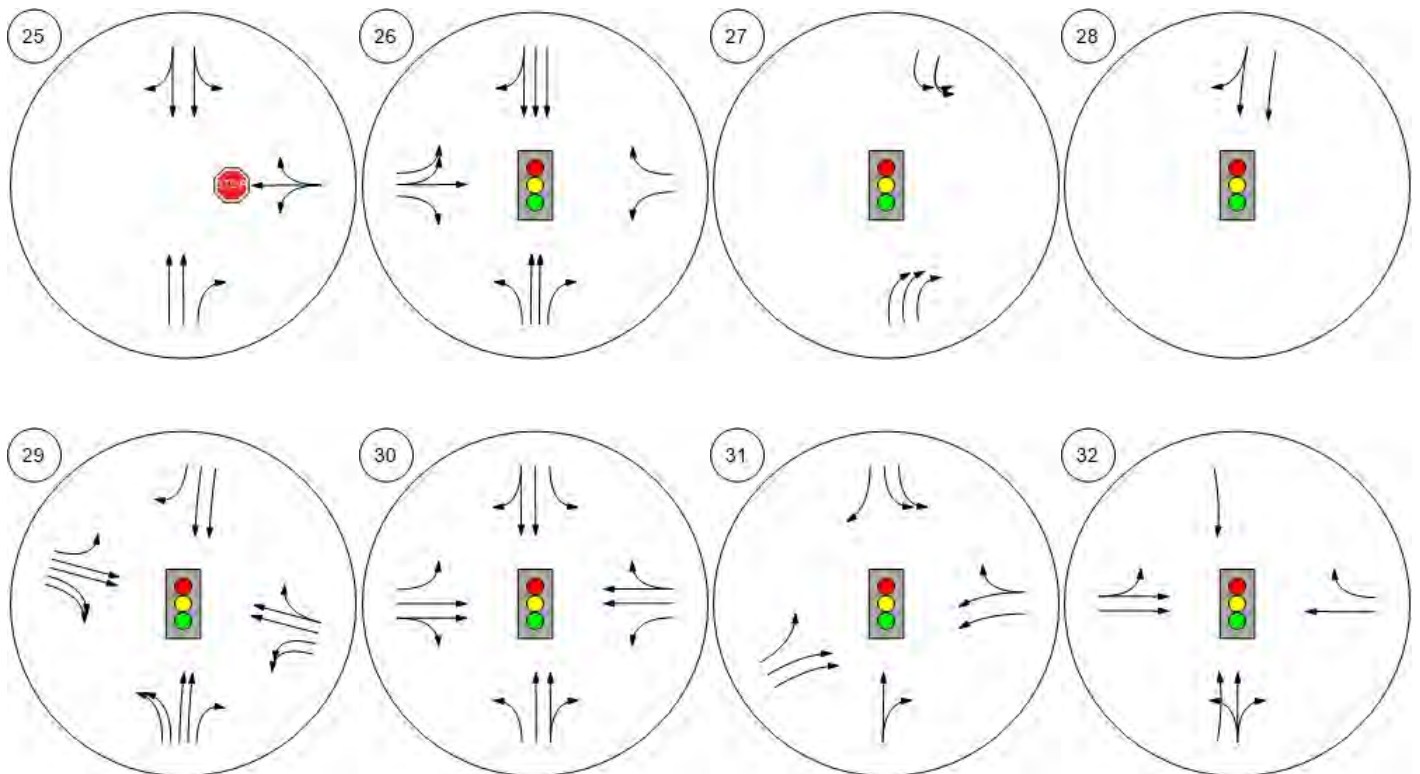
Lane Configuration and Traffic Control



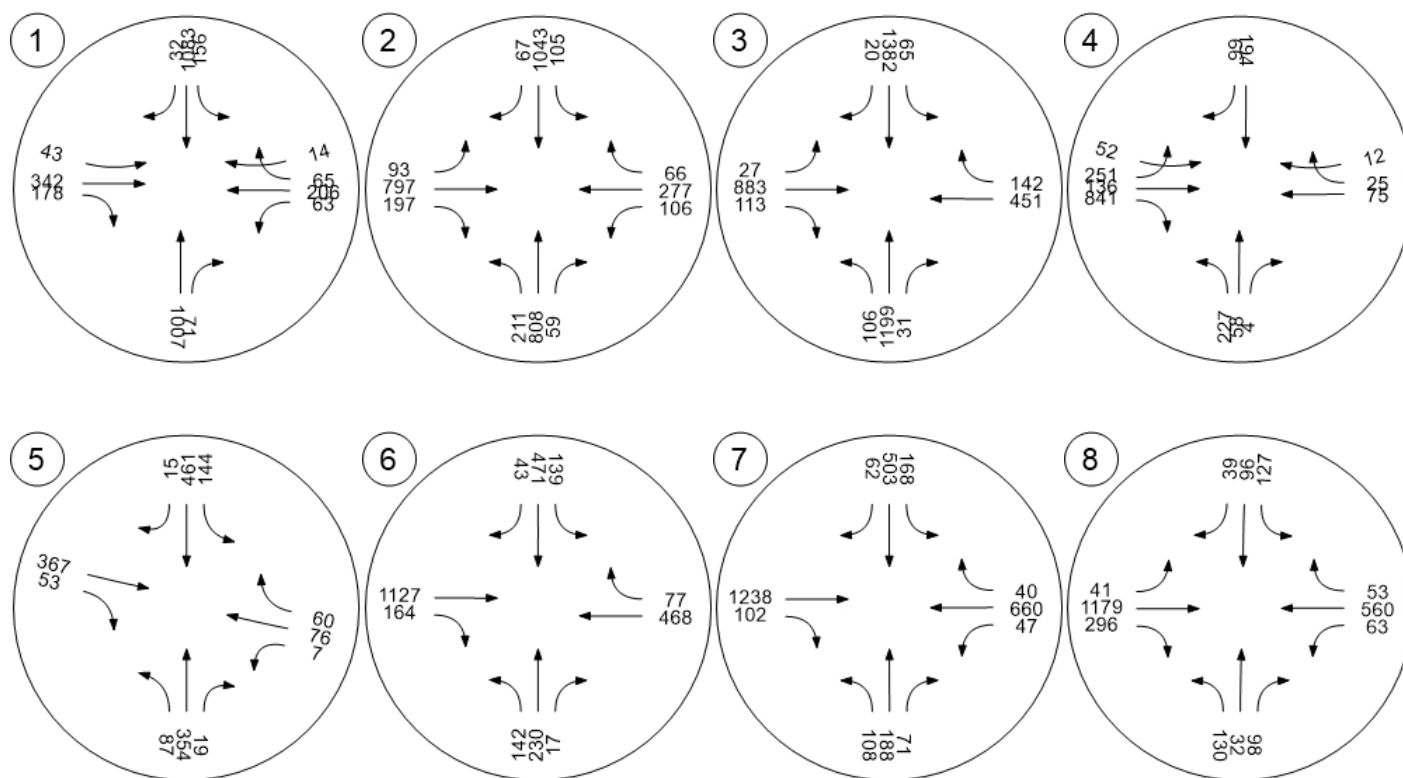
Lane Configuration and Traffic Control



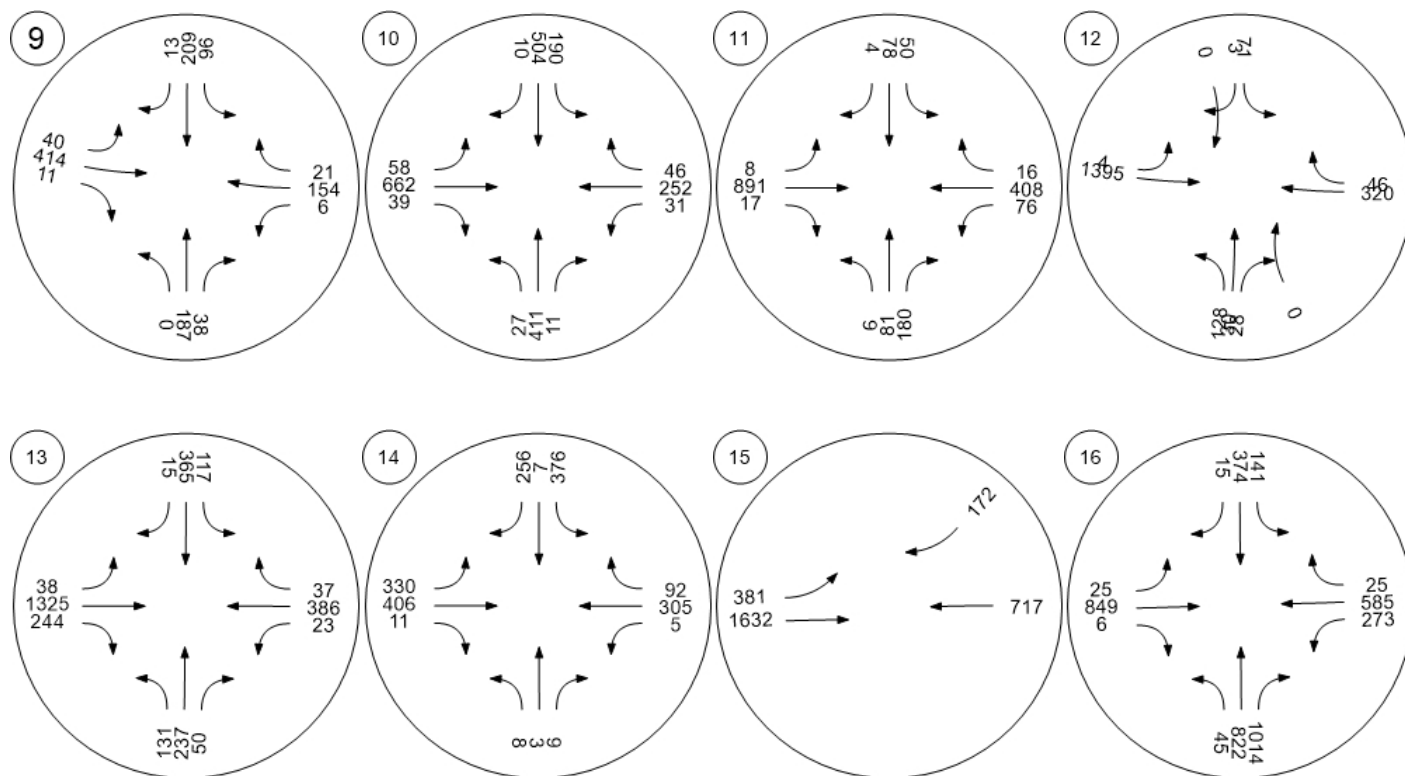
Lane Configuration and Traffic Control



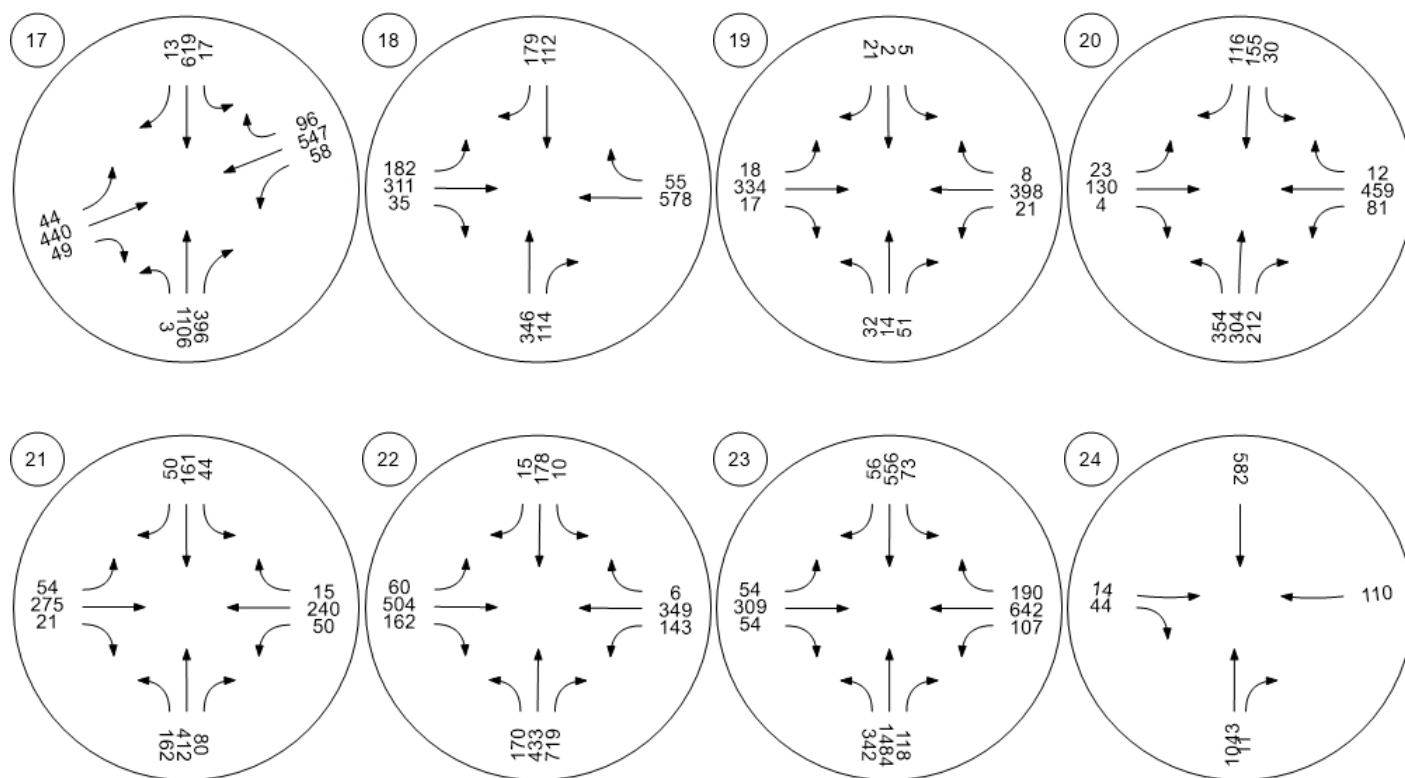
Traffic Volume - Base Volume



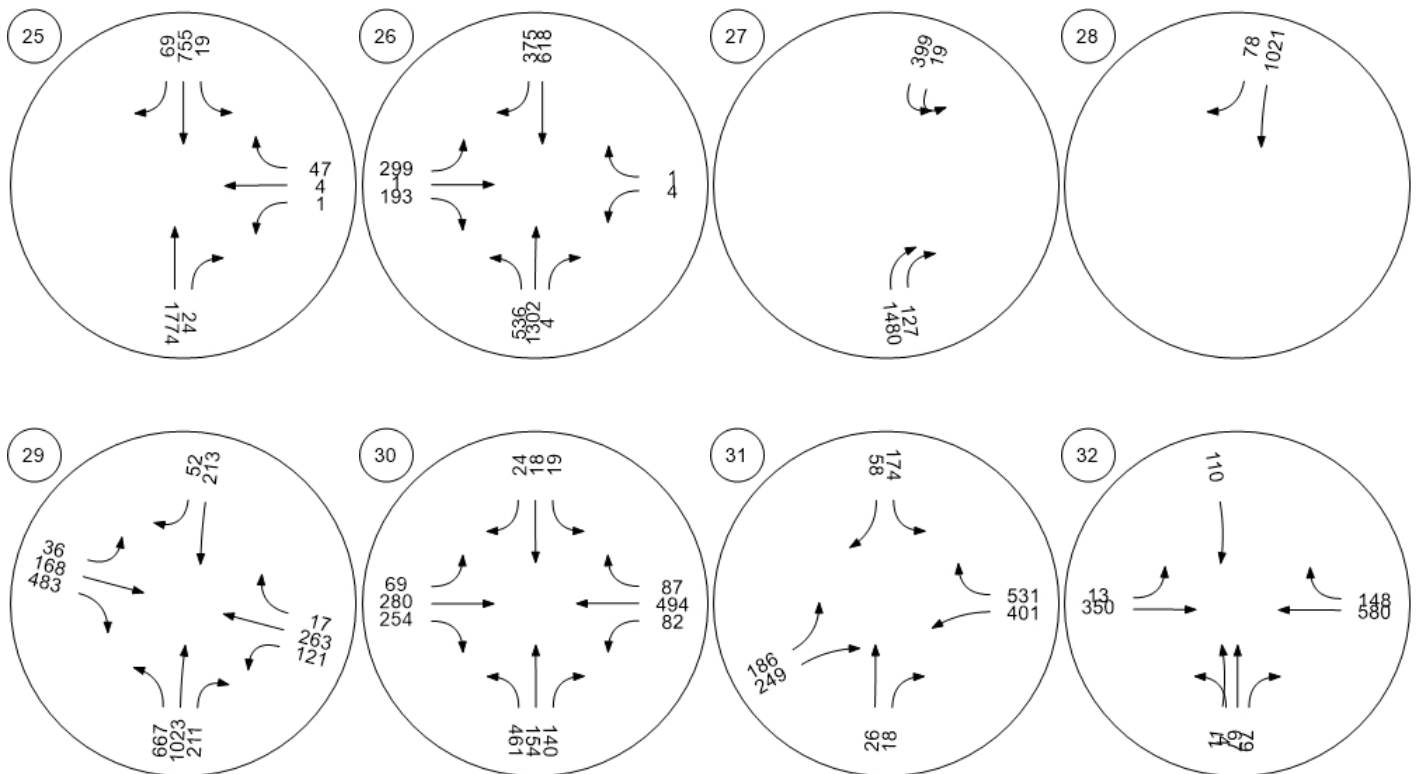
Traffic Volume - Base Volume



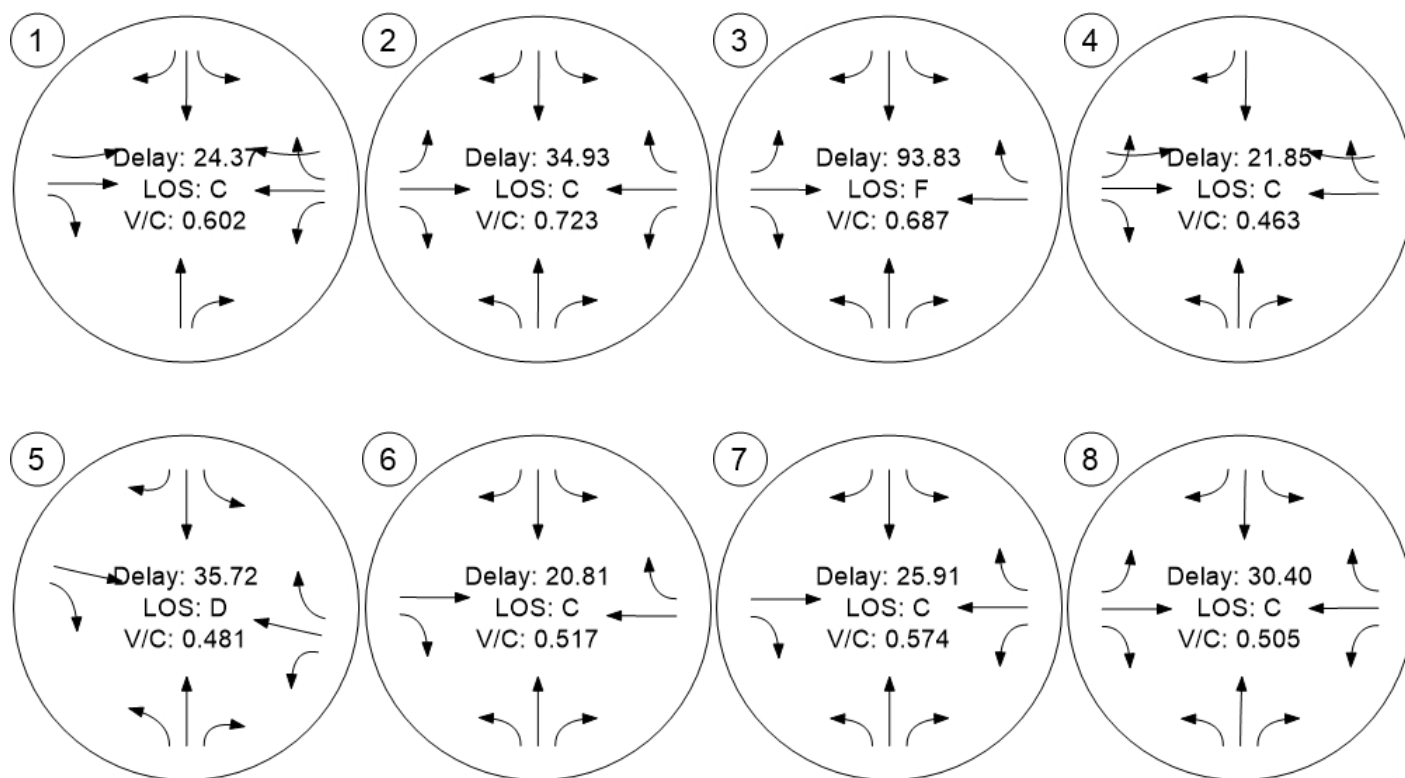
Traffic Volume - Base Volume



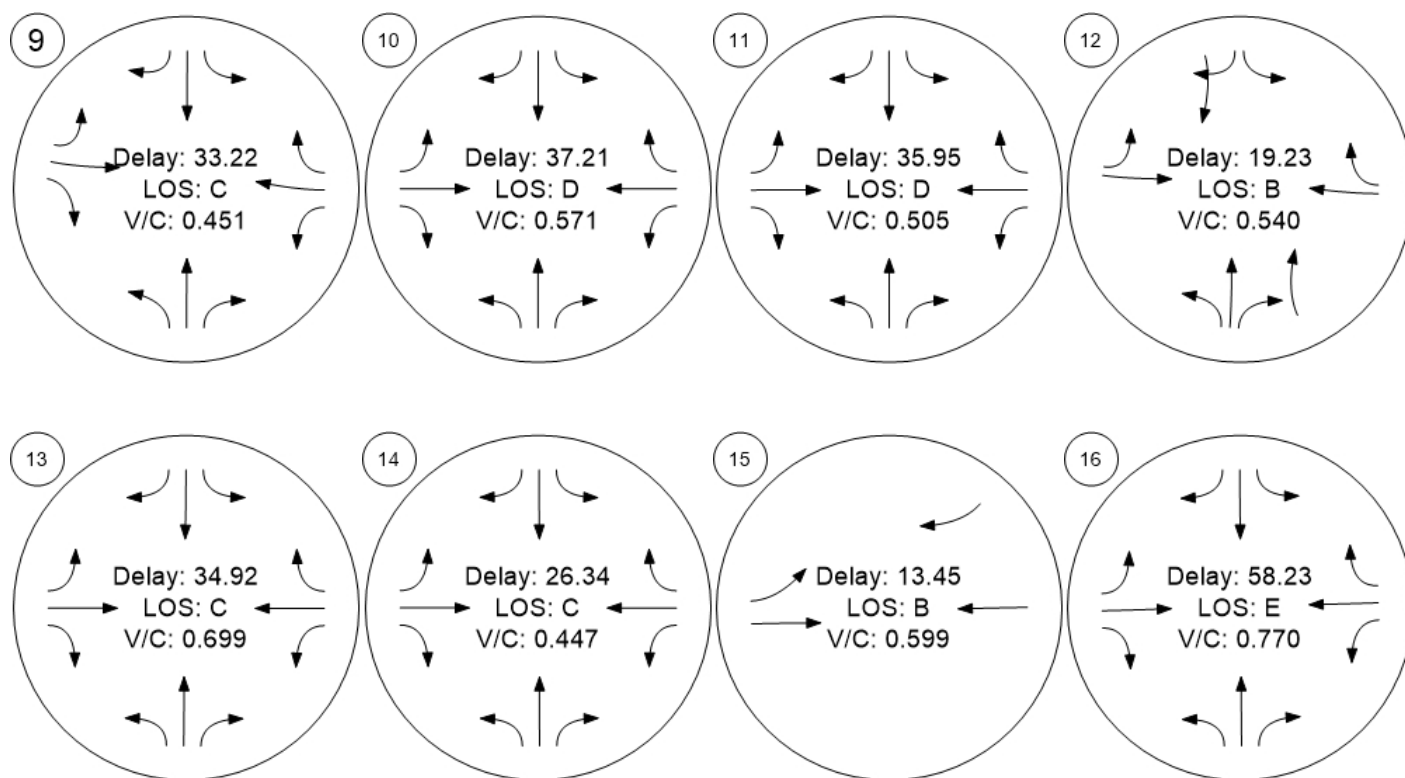
Traffic Volume - Base Volume



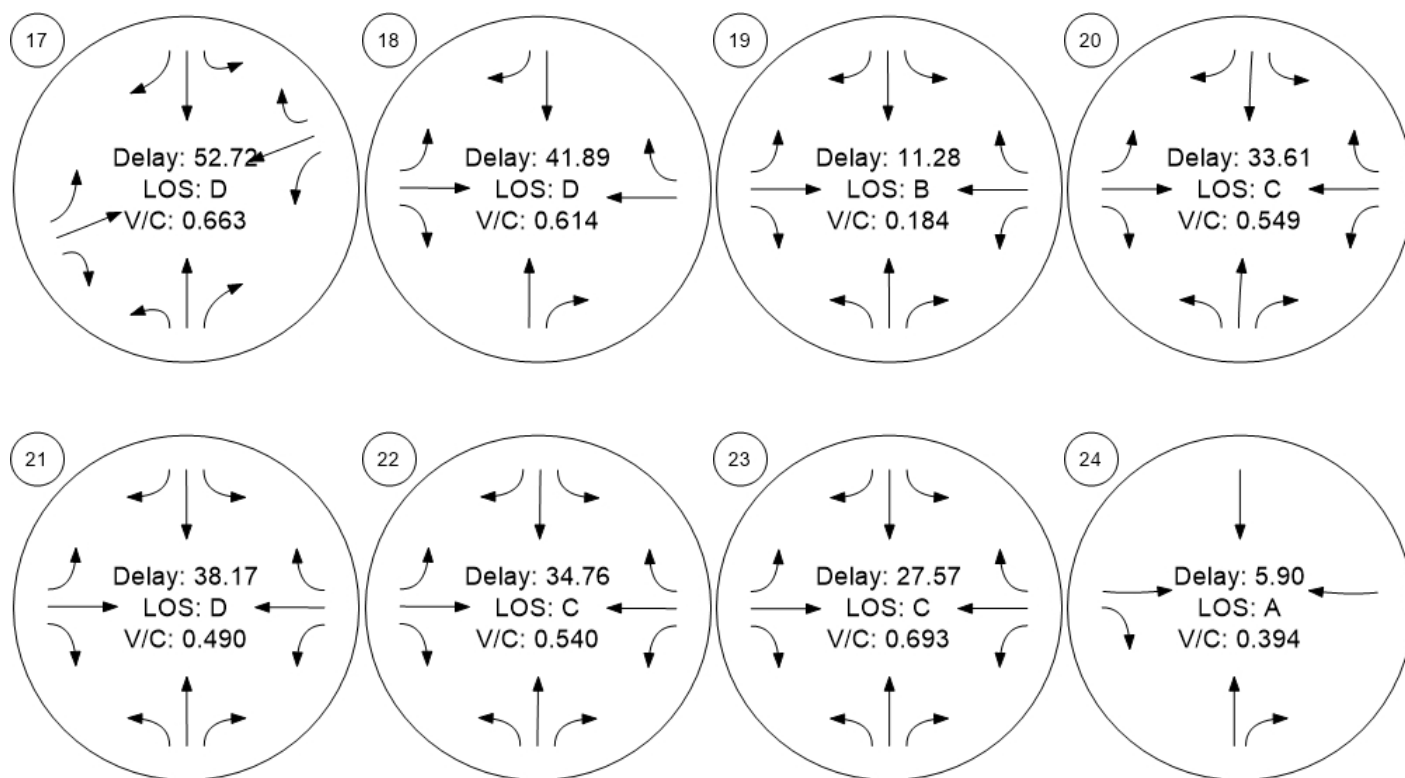
Traffic Conditions



Traffic Conditions



Traffic Conditions



Traffic Conditions

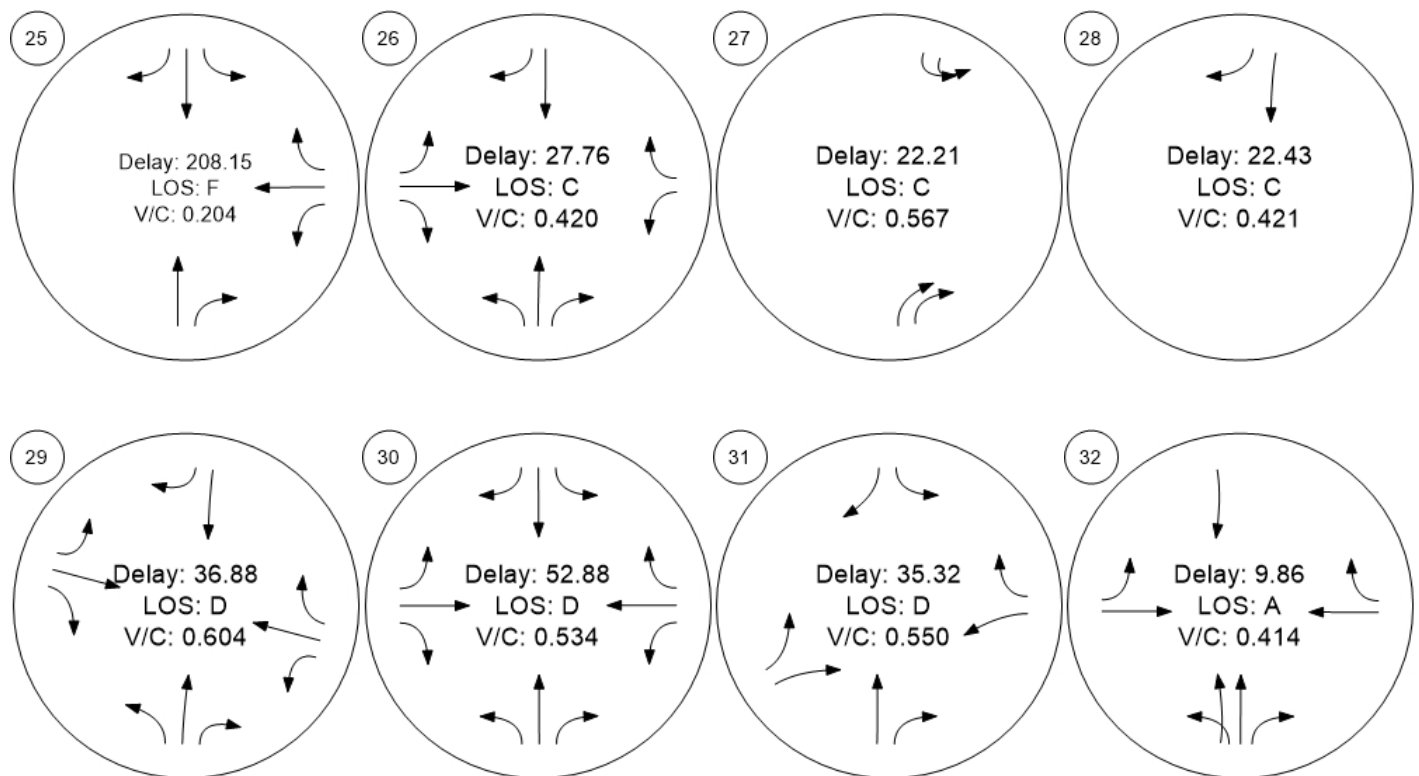


Table of Contents

Intersection Analysis Summary	3
Intersection Level Of Service Report	5
Intersection 1: 109 Street and 100 Ave	5
Intersection 2: Jasper Avenue and 109 Street	20
Intersection 3: 104 Avenue and 109 Street	25
Intersection 4: 102 Avenue and 124 Street	30
Intersection 5: Stony Plain Road and 124 Street	45
Intersection 6: 107 Avenue and 124 Street	50
Intersection 7: 111 Avenue and 124 Street	55
Intersection 8: 118 Avenue and 124 Street	60
Intersection 9: 104 Avenue and 121 Street	65
Intersection 10: 104 Avenue and 116 Street	70
Intersection 11: 104 Avenue and 112 Street	75
Intersection 12: Jasper Avenue and 121 Street	80
Intersection 13: Jasper Avenue and 116 Street	101
Intersection 14: 100 Avenue and 116 Street	106
Intersection 15: Stony Plain Road and 102 Avenue	111
Intersection 16: Stony Plain Road and 142 Street	116
Intersection 17: Stony Plain Road and 149 Street	121
Intersection 18: Stony Plain Road and 156 Street	126
Intersection 19: Stony Plain Road and 158 Street	131
Intersection 20: Stony Plain Road and 163 Street	136
Intersection 21: 95 Avenue and 156 Street	141
Intersection 22: 87 Avenue and Meadowlark Road	146
Intersection 23: 109 Street and 82 Ave	151
Intersection 24: 109 Street and 83 Ave	156

Intersection 25: 109 Street and 86 Ave	171
Intersection 26: 109 Street and 87 Ave	173
Intersection 27: 109 Street and Walterdale Hill Road/Saskatchewan Drive	183
Intersection 28: 109 Street and 88 Ave SB	188
Intersection 29: 114 Street and 82 Ave	193
Intersection 30: 114 Street and 87 Ave	198
Intersection 31: 112 Street and 82 Ave	203
Intersection 32: 110 Street and 87 Ave	208
Study Intersections	223
Lane Configuration and Traffic Control	224
Traffic Volume - Base Volume	228
Traffic Conditions	232

Priority Growth Areas Mobility Study

Vistro File: Z:\...\Z0016285 PGA Primary Model.vistro

Scenario 2 2 Pre-Development PM Peak

Report File: Z:\...\Pre-Development PM Peak.pdf

2025-04-24

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	109 Street and 100 Ave	Signalized	HCM 7th Edition	EB Right	0.679	29.5	C
2	Jasper Avenue and 109 Street	Signalized	HCM 7th Edition	SB Left	0.742	34.7	C
3	104 Avenue and 109 Street	Signalized	HCM 7th Edition	EB Left	0.770	95.1	F
4	102 Avenue and 124 Street	Signalized	HCM 7th Edition	NWB Thru	0.400	24.9	C
5	Stony Plain Road and 124 Street	Signalized	HCM 7th Edition	WB Left	0.652	40.8	D
6	107 Avenue and 124 Street	Signalized	HCM 7th Edition	SB Thru	0.616	25.5	C
7	111 Avenue and 124 Street	Signalized	HCM 7th Edition	SB Right	0.539	25.8	C
8	118 Avenue and 124 Street	Signalized	HCM 7th Edition	SB Left	0.523	30.0	C
9	104 Avenue and 121 Street	Signalized	HCM 7th Edition	EB Left	0.617	51.4	D
10	104 Avenue and 116 Street	Signalized	HCM 7th Edition	WB Right	0.621	78.6	E
11	104 Avenue and 112 Street	Signalized	HCM 7th Edition	WB Left	0.417	38.6	D
12	Jasper Avenue and 121 Street	Signalized	HCM 7th Edition	NB Left	0.575	36.0	D
13	Jasper Avenue and 116 Street	Signalized	HCM 7th Edition	EB Left	0.676	35.4	D
14	100 Avenue and 116 Street	Signalized	HCM 7th Edition	EB Left	0.634	30.9	C
15	Stony Plain Road and 102 Avenue	Signalized	HCM 7th Edition	WB Thru	0.472	18.9	B
16	Stony Plain Road and 142 Street	Signalized	HCM 7th Edition	EB Right	0.770	64.4	E
17	Stony Plain Road and 149 Street	Signalized	HCM 7th Edition	WB Thru	0.650	83.5	F
	Stony Plain Road and 156 Street		HCM 7th Edition				

18	Stony Plain Road and 150 Street	Signalized	HCM 7th Edition	WB Thru	0.639	40.9	D
19	Stony Plain Road and 158 Street	Signalized	HCM 7th Edition	WB Right	0.241	12.3	B
20	Stony Plain Road and 163 Street	Signalized	HCM 7th Edition	SB Left	0.575	33.2	C
21	95 Avenue and 156 Street	Signalized	HCM 7th Edition	SB Thru	0.597	46.4	D
22	87 Avenue and Meadowlark Road	Signalized	HCM 7th Edition	EB Right	0.584	39.8	D
23	109 Street and 82 Ave	Signalized	HCM 7th Edition	EB Right	0.752	36.8	D
24	109 Street and 83 Ave	Signalized	HCM 7th Edition	SEB Left	0.324	9.1	A
25	109 Street and 86 Ave	Two-way stop	HCM 7th Edition	WB Thru	0.214	406.4	F
26	109 Street and 87 Ave	Signalized	HCM 7th Edition	EB Right	0.653	34.6	C
27	109 Street and Waltherdale Hill Road/Saskatchewan Drive	Signalized	HCM 7th Edition	EB Right	0.407	24.9	C
28	109 Street and 88 Ave SB	Signalized	HCM 7th Edition	SB Right	0.468	26.1	C
29	114 Street and 82 Ave	Signalized	HCM 7th Edition	SB Thru	0.551	82.7	F
30	114 Street and 87 Ave	Signalized	HCM 7th Edition	NB Left	0.652	51.1	D
31	112 Street and 82 Ave	Signalized	HCM 7th Edition	WB Right	0.603	37.1	D
32	110 Street and 87 Ave	Signalized	HCM 7th Edition	NEB Left	0.263	10.6	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: 109 Street and 100 Ave

Control Type:	Signalized	Delay (sec / veh):	29.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.679

Intersection Setup										
Name	109 Street					109 Street				
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Right	Right	Left	Left	Thru	Right	Right
Lane Width [m]	3.66	3.66	3.30	3.66	3.30	3.00	3.66	3.00	3.66	3.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	55.00	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name	109 Street					109 Street				
Base Volume Input [veh/h]	0	0	795	0	19	45	0	1335	0	22
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	2	0	0	0	0	2
Total Hourly Volume [veh/h]	0	0	795	0	17	45	0	1335	0	22
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	0	0	199	0	4	11	0	334	0	6
Total Analysis Volume [veh/h]	0	0	795	0	17	45	0	1335	0	22
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	85					60				
v_di, Inbound Pedestrian Volume crossing th	85					60				
v_co, Outbound Pedestrian Volume along th	86					28				
v_ci, Inbound Pedestrian Volume along the l	86					28				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	24.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	ProtPerm	Permissiv	Overlap	Permissiv	Overlap
Signal Group	0	0	3	0	0	2	0	3	0	3
Auxiliary Signal Groups								2,3		2,3
Maximum Green [s]	0	0	31	0	0	15	0	31	0	31
Amber [s]	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0
All red [s]	0.0	0.0	2.0	0.0	0.0	1.0	0.0	2.0	0.0	2.0
Walk [s]	0	0	10	0	0	0	0	10	0	10
Pedestrian Clearance [s]	0	0	14	0	0	0	0	14	0	14
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	3.0	0.0	0.0	2.0	0.0	3.0	0.0	3.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	0	0	36	0	0	19	0	36	0	36
Lead / Lag	-	-	-	-	-	Lead	-	-	-	-
Minimum Green [s]	0	0	24	0	0	7	0	24	0	24
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0
Minimum Recall			No			No		No		No
Maximum Recall			Yes			Yes		Yes		Yes
Pedestrian Recall			No			No		No		No

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	L	C	C
C, Calculated Cycle Length [s]	110	110	110	110	110
L, Total Lost Time per Cycle [s]	5.00	5.00	4.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	2.00	0.00	0.00
g_i, Effective Green Time [s]	31	31	26	61	61
g / C, Green / Cycle	0.28	0.28	0.24	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.17	0.17	0.03	0.29	0.29
s, saturation flow rate [veh/h]	3204	1613	1539	3076	1602
c, Capacity [veh/h]	907	456	362	1706	888
d1, Uniform Delay [s]	34.03	33.98	33.15	15.38	15.38
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.90	5.58	0.71	1.15	2.20
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	0.60	0.59	0.12	0.52	0.52
d, Delay for Lane Group [s/veh]	36.92	39.56	33.85	16.53	17.58
Lane Group LOS	D	D	C	B	B
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.55	6.88	1.02	6.98	7.53
50th-Percentile Queue Length [m/ln]	49.91	52.46	7.75	53.22	57.41
95th-Percentile Queue Length [veh/ln]	10.75	11.19	1.83	11.32	12.04
95th-Percentile Queue Length [m/ln]	81.90	85.25	13.96	86.25	91.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	37.77	0.00	39.56	33.85	0.00	16.88	0.00	17.58
Movement LOS			D		D	C		B		B
d_A, Approach Delay [s/veh]	37.80					17.44				
Approach LOS	D					B				
d_I, Intersection Delay [s/veh]	29.52									
Intersection LOS	C									
Intersection V/C	0.679									

Emissions

Vehicle Kilometers Traveled [km/h]	86.51	43.26	10.51	208.32	108.51
Stops [stops/h]	428.75	225.31	33.30	457.15	246.58
Fuel consumption [L/h]	33.25	17.42	2.92	41.44	22.15
CO [g/h]	613.90	321.62	53.92	765.20	409.01
NOx [g/h]	119.44	62.58	10.49	148.88	79.58
VOC [g/h]	142.28	74.54	12.50	177.34	94.79

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m ² /ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m ² /ped]	5.85	12.34
d_p, Pedestrian Delay [s]	44.55	44.55
I_p,int, Pedestrian LOS Score for Intersectio	2.992	2.937
Crosswalk LOS	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	564	909
d_b, Bicycle Delay [s]	28.37	16.36
I_b,int, Bicycle LOS Score for Intersection	2.007	2.332
Bicycle LOS	B	B

Intersection Setup										
Name	100 Ave					WB Bike Lane				
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Thru	Right	Left2	Left	Thru	Right	Right2
Lane Width [m]	3.66	3.66	3.20	3.66	3.20	3.66	3.66	3.66	1.50	3.66
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	95.00	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name	100 Ave					WB Bike Lane				
Base Volume Input [veh/h]	0	0	165	0	233	0	0	0	52	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	23	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	165	0	210	0	0	0	47	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	0	0	41	0	53	0	0	0	12	0
Total Analysis Volume [veh/h]	0	0	165	0	210	0	0	0	47	0
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	28					86				
v_di, Inbound Pedestrian Volume crossing th	28					86				
v_co, Outbound Pedestrian Volume along th	85					60				
v_ci, Inbound Pedestrian Volume along the l	85					60				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					52				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	24.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	1	0	0	0	0	0	1	0
Auxiliary Signal Groups										
Maximum Green [s]	0	0	36	0	0	0	0	0	36	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	18	0	0	0	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No						No	
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	0	0	42	0	0	0	0	0	42	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	25	0	0	0	0	0	25	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Minimum Recall			Yes						Yes	
Maximum Recall			No						No	
Pedestrian Recall			No						No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	R
C, Calculated Cycle Length [s]	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00
g_i, Effective Green Time [s]	25	25	25
g / C, Green / Cycle	0.23	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.10	0.19	0.03
s, saturation flow rate [veh/h]	1683	1110	1373
c, Capacity [veh/h]	383	252	312
d1, Uniform Delay [s]	36.40	38.48	33.99
k, delay calibration	0.11	0.12	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	0.77	7.94	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.83	0.15
d, Delay for Lane Group [s/veh]	37.17	46.42	34.22
Lane Group LOS	D	D	C
Critical Lane Group	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.86	5.65	1.03
50th-Percentile Queue Length [m/ln]	29.44	43.02	7.81
95th-Percentile Queue Length [veh/ln]	6.96	9.54	1.85
95th-Percentile Queue Length [m/ln]	53.00	72.72	14.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	37.17	0.00	46.42	0.00	0.00	0.00	34.22	0.00
Movement LOS			D		D				C	
d_A, Approach Delay [s/veh]	42.35					34.22				
Approach LOS	D					C				
d_I, Intersection Delay [s/veh]	29.52									
Intersection LOS	C									
Intersection V/C	0.679									

Emissions

Vehicle Kilometers Traveled [km/h]	60.64	77.17	3.29
Stops [stops/h]	126.46	184.78	33.56
Fuel consumption [L/h]	13.33	19.00	2.30
CO [g/h]	246.15	350.79	42.55
NOx [g/h]	47.89	68.25	8.28
VOC [g/h]	57.05	81.30	9.86

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	10.54
M_CW, Crosswalk Circulation Area [m²/ped]	25.75	4.97
d_p, Pedestrian Delay [s]	44.55	44.55
I_p,int, Pedestrian LOS Score for Intersectio	2.277	1.766
Crosswalk LOS	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	655	655
d_b, Bicycle Delay [s]	24.89	25.56
I_b,int, Bicycle LOS Score for Intersection	2.216	1.560
Bicycle LOS	B	A

Intersection Setup										
Name	100 Ave					EB Bike Lane				
Approach	Northwestbound					Southeastbound				
Lane Configuration										
Turning Movement	Left	Thru	Thru	Right	Right	Left2	Left	Thru	Right	Right2
Lane Width [m]	3.20	3.20	3.66	3.66	3.20	3.66	1.50	3.66	3.66	3.66
No. of Lanes in Entry Pocket	1	0	0	0	1	0	0	0	0	0
Entry Pocket Length [m]	50.00	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name	100 Ave					EB Bike Lane				
Base Volume Input [veh/h]	243	452	0	0	86	0	17	0	0	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	9	0	0	0	0	0
Total Hourly Volume [veh/h]	243	452	0	0	86	0	17	0	0	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	61	113	0	0	22	0	4	0	0	0
Total Analysis Volume [veh/h]	243	452	0	0	86	0	17	0	0	0
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	86					28				
v_di, Inbound Pedestrian Volume crossing th	86					28				
v_co, Outbound Pedestrian Volume along th	86					28				
v_ci, Inbound Pedestrian Volume along the l	86					28				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					17				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	24.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Overlap	Overlap	Permissiv	Permissiv	Protected	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	4	1	0	0	2	0	1	0	0	0
Auxiliary Signal Groups	1,4	1,4								
Maximum Green [s]	10	36	0	0	15	0	36	0	0	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0
All red [s]	0.0	3.0	0.0	0.0	1.0	0.0	3.0	0.0	0.0	0.0
Walk [s]	5	7	0	0	0	0	7	0	0	0
Pedestrian Clearance [s]	10	18	0	0	0	0	18	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No			
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	1.0	4.0	0.0	0.0	2.0	0.0	4.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	13	42	0	0	19	0	42	0	0	0
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	-
Minimum Green [s]	7	25	0	0	7	0	25	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0
Minimum Recall	No	Yes			No		Yes			
Maximum Recall	Yes	No			Yes		No			
Pedestrian Recall	No	No			No		No			

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L
C, Calculated Cycle Length [s]	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	2.00	4.00
g_i, Effective Green Time [s]	38	38	26	25
g / C, Green / Cycle	0.35	0.35	0.24	0.23
(v / s)_i Volume / Saturation Flow Rate	0.22	0.27	0.06	0.02
s, saturation flow rate [veh/h]	1108	1683	1431	956
c, Capacity [veh/h]	402	582	336	217
d1, Uniform Delay [s]	29.57	32.20	34.23	33.43
k, delay calibration	0.19	0.30	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.55	6.01	1.83	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.78	0.26	0.08
d, Delay for Lane Group [s/veh]	32.11	38.21	36.06	33.58
Lane Group LOS	C	D	D	C
Critical Lane Group	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.17	11.52	2.04	0.37
50th-Percentile Queue Length [m/ln]	39.41	87.76	15.54	2.80
95th-Percentile Queue Length [veh/ln]	8.90	17.08	3.67	0.66
95th-Percentile Queue Length [m/ln]	67.84	130.17	27.97	5.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.11	38.21	0.00	0.00	36.06	0.00	33.58	0.00	0.00	0.00
Movement LOS	C	D			D		C			
d_A, Approach Delay [s/veh]	36.08					33.58				
Approach LOS	D					C				
d_I, Intersection Delay [s/veh]	29.52									
Intersection LOS	C									
Intersection V/C	0.679									

Emissions

Vehicle Kilometers Traveled [km/h]	42.36	78.79	14.99	1.30
Stops [stops/h]	169.28	376.92	66.74	12.01
Fuel consumption [L/h]	13.84	29.26	5.31	0.83
CO [g/h]	255.53	540.24	98.10	15.37
NOx [g/h]	49.72	105.11	19.09	2.99
VOC [g/h]	59.22	125.20	22.73	3.56

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	10.80	11.83
d_p, Pedestrian Delay [s]	41.89	41.89
I_p,int, Pedestrian LOS Score for Intersection	2.408	1.757
Crosswalk LOS	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	891	655
d_b, Bicycle Delay [s]	16.91	25.10
I_b,int, Bicycle LOS Score for Intersection	2.863	1.670
Bicycle LOS	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Jasper Avenue and 109 Street

Control Type:	Signalized	Delay (sec / veh):	34.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.742

Intersection Setup

Name	109 Street											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	2.80	2.80	3.00	3.00	3.00	3.00	3.20	3.40	3.20	3.00	3.40	3.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [m]	125.00	30.48	30.48	75.00	30.48	30.48	220.00	30.48	55.00	50.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			40.00		
Grade [%]	0.00			0.00			5.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	109 Street											
Base Volume Input [veh/h]	211	667	80	67	952	116	123	505	292	164	790	131
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
Proportion of CAVs [%]	0.00											
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	8	0	0	12	0	0	29	0	0	13
Total Hourly Volume [veh/h]	211	667	72	67	952	104	123	505	263	164	790	118
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]	53	167	18	17	238	26	31	126	66	41	198	30
Total Analysis Volume [veh/h]	211	667	72	67	952	104	123	505	263	164	790	118
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
v_do, Outbound Pedestrian Volume crossing	145			250			145			250		
v_di, Inbound Pedestrian Volume crossing m	145			250			145			250		
v_co, Outbound Pedestrian Volume crossing	111			113			113			111		
v_ci, Inbound Pedestrian Volume crossing mi	111			113			113			111		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	73.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Overlap	Overlap	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	1	0	0	1	0	2	4	0	3	4	0
Auxiliary Signal Groups	1,5	1,5										
Maximum Green [s]	12	34	0	0	34	0	8	39	0	8	39	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	0.0	3.0	0.0	1.0	4.0	0.0	1.0	4.0	0.0
Detector Location [m]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	5.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	15	39	0	0	39	0	11	45	0	11	45	0
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	25	0	0	25	0	5	26	0	5	26	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	Yes			Yes		No	No		No	No	
Maximum Recall	Yes	No			No		No	Yes		No	Yes	
Pedestrian Recall	Yes	Yes			Yes		Yes	Yes		Yes	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Calculated Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	6.00	6.00	6.00	4.50	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	3.00	3.00	3.00	3.00	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	49	49	34	34	34	34	50	39	39	48	39	39
g / C, Green / Cycle	0.45	0.45	0.31	0.31	0.31	0.31	0.45	0.35	0.35	0.44	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.28	0.22	0.07	0.11	0.23	0.25	0.21	0.20	0.29	0.21	0.25	0.11
s, saturation flow rate [veh/h]	747	3076	1077	605	3076	1405	586	2530	893	780	3204	1037
c, Capacity [veh/h]	320	1370	333	149	951	434	262	897	317	337	1136	368
d1, Uniform Delay [s]	24.38	21.60	27.71	46.02	34.04	35.04	21.54	28.63	29.87	18.48	30.41	25.07
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	10.24	1.24	1.48	9.58	5.16	15.10	5.90	2.55	21.65	4.98	3.53	2.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.49	0.22	0.45	0.74	0.81	0.47	0.56	0.83	0.49	0.70	0.32
d, Delay for Lane Group [s/veh]	34.61	22.84	29.19	55.60	39.21	50.13	27.45	31.18	51.52	23.46	33.94	27.36
Lane Group LOS	C	C	C	E	D	D	C	C	D	C	C	C
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	4.34	6.20	1.52	2.16	8.98	10.37	2.30	5.61	7.66	2.88	9.51	2.44
50th-Percentile Queue Length [m/ln]	33.04	47.26	11.57	16.46	68.40	78.99	17.54	42.78	58.38	21.98	72.43	18.58
95th-Percentile Queue Length [veh/ln]	7.75	10.29	2.73	3.89	13.89	15.65	4.14	9.50	12.20	5.19	14.56	4.39
95th-Percentile Queue Length [m/ln]	59.06	78.39	20.83	29.63	105.84	119.23	31.57	72.39	92.97	39.57	110.96	33.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.61	22.84	29.19	55.60	42.06	50.13	27.45	31.18	51.52	23.46	33.94	27.36
Movement LOS	C	C	C	E	D	D	C	C	D	C	C	C
d_A, Approach Delay [s/veh]	25.93			43.61			36.67			31.61		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	34.73											
Intersection LOS	C											
Intersection V/C	0.742											

Emissions

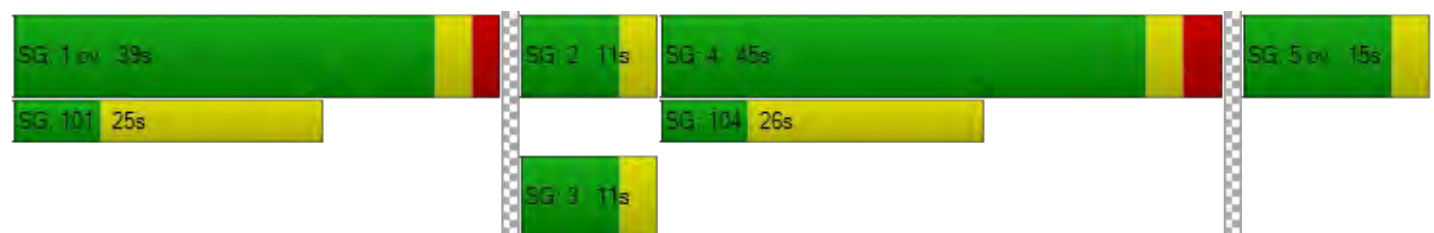
Vehicle Kilometers Traveled [km/h]	49.26	155.73	16.81	9.75	102.43	51.27	84.86	348.39	181.44	17.83	85.90	12.83
Stops [stops/h]	141.89	405.98	49.70	70.69	587.53	339.27	75.32	367.48	250.72	94.41	622.18	79.79
Fuel consumption [L/h]	13.50	35.66	4.33	5.38	44.18	26.09	12.36	53.52	33.32	6.21	38.69	4.99
CO [g/h]	249.21	658.42	80.02	99.40	815.77	481.77	228.31	988.27	615.35	114.67	714.48	92.20
NOx [g/h]	48.49	128.11	15.57	19.34	158.72	93.74	44.42	192.28	119.73	22.31	139.01	17.94
VOC [g/h]	57.76	152.60	18.54	23.04	189.06	111.66	52.91	229.04	142.61	26.58	165.59	21.37

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	2.92			2.20			4.52			5.04		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersectio	3.039			2.891			2.945			2.810		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	891			618			709			709		
d_b, Bicycle Delay [s]	16.91			26.25			22.91			22.91		
I_b,int, Bicycle LOS Score for Intersection	2.350			2.184			2.319			2.455		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	4	5	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: 104 Avenue and 109 Street

Control Type:	Signalized	Delay (sec / veh):	95.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.66	3.60	3.60
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	1
Entry Pocket Length [m]	100.00	30.48	30.48	100.00	30.48	30.48	70.00	30.48	30.48	30.48	30.48	55.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	164	1396	27	144	1274	156	138	315	87	0	690	291
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
Proportion of CAVs [%]	0.00											
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	3	0	0	16	0	0	9	0	0	29
Total Hourly Volume [veh/h]	164	1396	24	144	1274	140	138	315	78	0	690	262
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]	41	349	6	36	319	35	35	79	20	0	173	66
Total Analysis Volume [veh/h]	164	1396	24	144	1274	140	138	315	78	0	690	262
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
v_do, Outbound Pedestrian Volume crossing	50			50			50			50		
v_di, Inbound Pedestrian Volume crossing m	50			50			50			50		
v_co, Outbound Pedestrian Volume crossing	50			50			50			50		
v_ci, Inbound Pedestrian Volume crossing mi	50			50			50			50		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	4	0	3	4	0	1	5	0	0	2	0
Auxiliary Signal Groups												
Maximum Green [s]	17	48	0	17	48	0	13	74	0	0	55	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	0.0
All red [s]	3.0	3.0	0.0	3.0	3.0	0.0	2.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	25	0	0	25	0	0	25	0	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	2.0	0.0
I2, Clearance Lost Time [s]	5.0	5.0	0.0	5.0	5.0	0.0	4.0	5.0	0.0	0.0	5.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	24	55	0	24	55	0	19	81	0	0	62	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	0	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No			No	
Maximum Recall	Yes	Yes		Yes	Yes		Yes	Yes			Yes	
Pedestrian Recall	No	Yes		No	Yes		No	Yes			Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	C	R
C, Calculated Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	7.00	6.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	5.00	5.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	17	48	48	17	48	48	13	74	74	55	55
g / C, Green / Cycle	0.11	0.30	0.30	0.11	0.30	0.30	0.08	0.46	0.46	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.11	0.32	0.32	0.10	0.32	0.33	0.09	0.12	0.13	0.23	0.20
s, saturation flow rate [veh/h]	1476	2951	1527	1476	2951	1420	1476	1683	1523	2951	1306
c, Capacity [veh/h]	157	885	458	157	885	426	120	778	704	1015	449
d1, Uniform Delay [s]	71.50	56.00	56.00	70.81	56.00	56.00	73.50	26.26	26.43	44.97	42.18
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	84.44	45.69	59.29	52.84	49.18	75.14	128.28	0.81	0.95	3.68	5.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	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	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	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.05	1.05	1.06	0.92	1.07	1.10	1.15	0.26	0.27	0.68	0.58
d, Delay for Lane Group [s/veh]	155.94	101.69	115.29	123.65	105.18	131.14	201.78	27.07	27.38	48.64	47.64
Lane Group LOS	F	F	F	F	F	F	F	C	C	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.14	23.44	25.99	8.17	23.87	26.05	9.22	4.98	4.76	12.33	9.10
50th-Percentile Queue Length [m/ln]	77.23	178.61	198.01	62.27	181.89	198.48	70.28	37.98	36.30	93.96	69.31
95th-Percentile Queue Length [veh/ln]	15.64	32.48	35.71	12.86	33.21	36.65	14.91	8.65	8.34	18.09	14.04
95th-Percentile Queue Length [m/ln]	119.19	247.51	272.10	98.00	253.05	279.31	113.62	65.88	63.57	137.84	107.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	155.94	106.19	115.29	123.65	111.92	131.14	201.78	27.18	27.38	0.00	48.64	47.64
Movement LOS	F	F	F	F	F	F	F	C	C		D	D
d_A, Approach Delay [s/veh]	111.48			114.73			72.59			48.37		
Approach LOS	F			F			E			D		
d_I, Intersection Delay [s/veh]	95.12											
Intersection LOS	F											
Intersection V/C	0.770											

Emissions

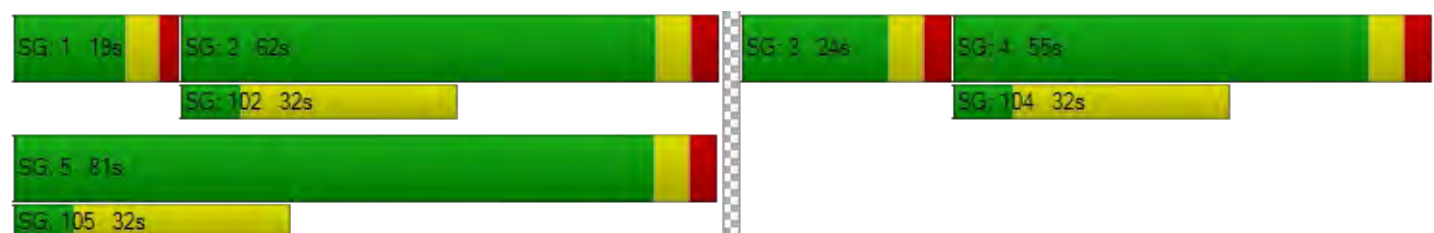
Vehicle Kilometers Traveled [km/h]	73.23	416.93	217.10	30.38	198.97	99.32	35.59	52.08	49.26	158.79	60.29
Stops [stops/h]	228.05	1054.80	584.67	183.88	1074.13	586.05	207.51	112.15	107.18	554.88	204.65
Fuel consumption [L/h]	31.78	136.46	76.95	20.73	119.44	70.15	29.49	11.68	11.12	53.41	19.94
CO [g/h]	586.82	2519.89	1420.86	382.76	2205.46	1295.28	544.49	215.72	205.34	986.19	368.24
NOx [g/h]	114.17	490.28	276.45	74.47	429.10	252.01	105.94	41.97	39.95	191.88	71.65
VOC [g/h]	136.00	584.01	329.30	88.71	511.14	300.19	126.19	50.00	47.59	228.56	85.34

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	8.02			4.80			7.18			9.13		
d_p, Pedestrian Delay [s]	69.38			69.38			69.38			69.38		
I_p,int, Pedestrian LOS Score for Intersectio	3.051			3.134			2.653			2.665		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	600			600			925			688		
d_b, Bicycle Delay [s]	39.20			39.20			23.11			34.45		
I_b,int, Bicycle LOS Score for Intersection	2.432			2.425			2.005			2.369		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: 102 Avenue and 124 Street

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.400

Intersection Setup

Name										
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Right	Right	Left	Left	Thru	Right	Right
Lane Width [m]	3.40	3.66	3.40	3.66	3.40	3.66	3.66	3.60	3.66	3.60
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
Speed [km/h]	50.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name										
Base Volume Input [veh/h]	537	0	183	0	9	0	0	274	0	122
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	1	0	0	0	0	12
Total Hourly Volume [veh/h]	537	0	183	0	8	0	0	274	0	110
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	134	0	46	0	2	0	0	69	0	28
Total Analysis Volume [veh/h]	537	0	183	0	8	0	0	274	0	110
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	12					23				
v_di, Inbound Pedestrian Volume crossing th	7					23				
v_co, Outbound Pedestrian Volume along th	6					7				
v_ci, Inbound Pedestrian Volume along the l	3					7				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	91.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Overlap	Permissiv	Overlap	Permissiv	Overlap	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	1	0	1	0	1	0	0	1	0	0
Auxiliary Signal Groups	1,2		1,2		1,2					
Maximum Green [s]	32	0	32	0	32	0	0	32	0	0
Amber [s]	3.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
All red [s]	2.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
Walk [s]	7	0	7	0	7	0	0	7	0	0
Pedestrian Clearance [s]	18	0	18	0	18	0	0	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Detector Location [m]	1.0	0.0	1.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0
Detector Length [m]	5.0	0.0	5.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	37	0	37	0	37	0	0	37	0	0
Lead / Lag	Lag	-	-	-	-	-	-	-	-	-
Minimum Green [s]	25	0	25	0	25	0	0	25	0	0
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Minimum Recall	Yes		Yes		Yes			Yes		
Maximum Recall	No		No		No			No		
Pedestrian Recall	Yes		Yes		Yes			Yes		

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	C	C
C, Calculated Cycle Length [s]	110	110	110	110	110
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	64	64	64	32	32
g / C, Green / Cycle	0.58	0.58	0.58	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.21	0.25	0.13	0.11	0.13
s, saturation flow rate [veh/h]	1273	1095	1520	1683	1528
c, Capacity [veh/h]	673	613	884	490	445
d1, Uniform Delay [s]	21.70	21.70	11.00	31.22	31.63
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.76	2.27	0.56	2.35	3.04
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	0.40	0.44	0.22	0.39	0.43
d, Delay for Lane Group [s/veh]	23.46	23.96	11.56	33.57	34.67
Lane Group LOS	C	C	B	C	C
Critical Lane Group	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.50	3.56	2.29	4.38	4.49
50th-Percentile Queue Length [m/ln]	26.71	27.14	17.44	33.38	34.21
95th-Percentile Queue Length [veh/ln]	6.31	6.41	4.12	7.81	7.96
95th-Percentile Queue Length [m/ln]	48.07	48.85	31.39	59.53	60.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.71	0.00	11.56	0.00	11.56	0.00	0.00	33.90	0.00	34.67
Movement LOS	C		B		B			C		C
d_A, Approach Delay [s/veh]	20.52					34.12				
Approach LOS	C					C				
d_I, Intersection Delay [s/veh]	24.85									
Intersection LOS	C									
Intersection V/C	0.400									

Emissions

Vehicle Kilometers Traveled [km/h]	39.50	39.50	28.10	82.53	82.53
Stops [stops/h]	114.71	116.55	74.89	143.34	146.92
Fuel consumption [L/h]	11.18	11.33	6.05	16.03	16.27
CO [g/h]	206.51	209.19	111.80	296.04	300.52
NOx [g/h]	40.18	40.70	21.75	57.60	58.47
VOC [g/h]	47.86	48.48	25.91	68.61	69.65

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	16.31
M_CW, Crosswalk Circulation Area [m²/ped]	6.70	24.09
d_p, Pedestrian Delay [s]	44.55	44.55
I_p,int, Pedestrian LOS Score for Intersectio	2.618	2.362
Crosswalk LOS	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1164	582
d_b, Bicycle Delay [s]	9.62	27.65
I_b,int, Bicycle LOS Score for Intersection	2.161	1.886
Bicycle LOS	B	A

Intersection Setup										
Name						WB Bike Lane				
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Thru	Right	Left2	Left	Thru	Right	Right2
Lane Width [m]	3.60	3.66	3.66	3.60	3.60	3.66	3.66	3.66	1.20	3.66
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	35.00	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name						WB Bike Lane				
Base Volume Input [veh/h]	75	0	0	69	516	0	0	0	60	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	52	0	0	0	0	0
Total Hourly Volume [veh/h]	75	0	0	69	464	0	0	0	54	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	19	0	0	17	116	0	0	0	14	0
Total Analysis Volume [veh/h]	75	0	0	69	464	0	0	0	54	0
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	7					9				
v_di, Inbound Pedestrian Volume crossing th	7					9				
v_co, Outbound Pedestrian Volume along th	7					23				
v_ci, Inbound Pedestrian Volume along the l	12					23				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					60				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	91.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Overlap	Permissiv	Permissiv	Overlap	Overlap	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	3	0	0	3	2	0	0	0	4	0
Auxiliary Signal Groups	3,4			3,4	2,3,4					
Maximum Green [s]	16	0	0	16	27	0	0	0	15	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0
Walk [s]	7	0	0	7	0	0	0	0	7	0
Pedestrian Clearance [s]	14	0	0	14	0	0	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No					No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	0.0	3.0	3.0	0.0	0.0	0.0	3.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	21	0	0	21	32	0	0	0	20	0
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-
Minimum Green [s]	10	0	0	10	7	0	0	0	10	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0	0.0	0.0	3.0	0.0
Minimum Recall	No			No	No				No	
Maximum Recall	Yes			Yes	Yes				Yes	
Pedestrian Recall	No			No	No				No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	R
C, Calculated Cycle Length [s]	110	110	110
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	3.00
g_i, Effective Green Time [s]	36	63	15
g / C, Green / Cycle	0.33	0.57	0.14
(v / s)_i Volume / Saturation Flow Rate	0.11	0.18	0.04
s, saturation flow rate [veh/h]	1280	2510	1373
c, Capacity [veh/h]	450	1438	187
d1, Uniform Delay [s]	27.48	9.96	42.70
k, delay calibration	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	1.87	0.59	3.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.32	0.29
d, Delay for Lane Group [s/veh]	29.35	10.55	46.55
Lane Group LOS	C	B	D
Critical Lane Group	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.02	2.60	1.52
50th-Percentile Queue Length [m/ln]	22.98	19.81	11.57
95th-Percentile Queue Length [veh/ln]	5.43	4.68	2.73
95th-Percentile Queue Length [m/ln]	41.37	35.66	20.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.35	0.00	0.00	29.35	10.55	0.00	0.00	0.00	46.55	0.00
Movement LOS	C			C	B				D	
d_A, Approach Delay [s/veh]	15.00					46.55				
Approach LOS	B					D				
d_I, Intersection Delay [s/veh]	24.85									
Intersection LOS	C									
Intersection V/C	0.400									

Emissions

Vehicle Kilometers Traveled [km/h]	41.70	134.36	5.86
Stops [stops/h]	98.70	170.17	49.70
Fuel consumption [L/h]	9.44	20.37	3.61
CO [g/h]	174.26	376.19	66.64
NOx [g/h]	33.90	73.19	12.97
VOC [g/h]	40.39	87.19	15.45

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	14.90	27.36
d_p, Pedestrian Delay [s]	44.55	44.55
I_p,int, Pedestrian LOS Score for Intersectio	3.143	1.794
Crosswalk LOS	C	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	655	273
d_b, Bicycle Delay [s]	24.89	42.29
I_b,int, Bicycle LOS Score for Intersection	2.649	1.560
Bicycle LOS	B	A

Intersection Setup										
Name						EB Bike Lane				
Approach	Northwestbound					Southeastbound				
Lane Configuration	Y					J				
Turning Movement	Left	Thru	Thru	Right	Right	Left2	Left	Thru	Right	Right2
Lane Width [m]	3.60	3.66	3.60	3.66	3.60	3.66	1.20	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	40.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name						EB Bike Lane				
Base Volume Input [veh/h]	0	0	99	0	31	0	16	0	0	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	3	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	99	0	28	0	16	0	0	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	0	0	25	0	7	0	4	0	0	0
Total Analysis Volume [veh/h]	0	0	99	0	28	0	16	0	0	0
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	3					7				
v_di, Inbound Pedestrian Volume crossing th	6					7				
v_co, Outbound Pedestrian Volume along th	9					7				
v_ci, Inbound Pedestrian Volume along the l	9					7				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					16				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	91.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	4	0	0	0	4	0	0	0
Auxiliary Signal Groups										
Maximum Green [s]	0	0	15	0	0	0	15	0	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
All red [s]	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
Walk [s]	0	0	7	0	0	0	7	0	0	0
Pedestrian Clearance [s]	0	0	13	0	0	0	13	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No				No			
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	0	20	0	0	0	20	0	0	0
Lead / Lag	-	-	-	-	-	-	Lag	-	-	-
Minimum Green [s]	0	0	10	0	0	0	10	0	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
Minimum Recall			No				No			
Maximum Recall			Yes				Yes			
Pedestrian Recall			No				No			

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	L
C, Calculated Cycle Length [s]	110	110
L, Total Lost Time per Cycle [s]	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00
g_i, Effective Green Time [s]	15	15
g / C, Green / Cycle	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.08	0.02
s, saturation flow rate [veh/h]	1576	989
c, Capacity [veh/h]	215	113
d1, Uniform Delay [s]	44.62	50.65
k, delay calibration	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	11.40	2.61
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.14
d, Delay for Lane Group [s/veh]	56.02	53.25
Lane Group LOS	E	D
Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	3.96	0.51
50th-Percentile Queue Length [m/ln]	30.17	3.86
95th-Percentile Queue Length [veh/ln]	7.13	0.91
95th-Percentile Queue Length [m/ln]	54.31	6.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	56.02	0.00	56.02	0.00	53.25	0.00	0.00	0.00
Movement LOS			E		E		D			
d_A, Approach Delay [s/veh]	56.02					53.25				
Approach LOS	E					D				
d_I, Intersection Delay [s/veh]	24.85									
Intersection LOS	C									
Intersection V/C	0.400									

Emissions

Vehicle Kilometers Traveled [km/h]	19.94	1.77
Stops [stops/h]	129.58	16.60
Fuel consumption [L/h]	9.45	1.20
CO [g/h]	174.58	22.11
NOx [g/h]	33.97	4.30
VOC [g/h]	40.46	5.12

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	523.87	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	112.84	10.84
d_p, Pedestrian Delay [s]	44.55	44.55
I_p,int, Pedestrian LOS Score for Intersectio	1.813	1.763
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	273	273
d_b, Bicycle Delay [s]	41.02	41.35
I_b,int, Bicycle LOS Score for Intersection	1.774	1.560
Bicycle LOS	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Stony Plain Road and 124 Street

Control Type:	Signalized	Delay (sec / veh):	40.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.652

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.60	3.60	3.60	3.60	3.60	3.60	3.66	3.60	3.60	3.60	3.60	3.60
No. of Lanes in Entry Pocket	1	0	1	1	0	0	0	0	0	1	0	0
Entry Pocket Length [m]	105.00	30.48	50.00	50.00	30.48	30.48	30.48	30.48	30.48	25.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	137	664	1	167	478	42	0	214	62	4	489	105
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
Proportion of CAVs [%]	0.00											
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	4	0	0	6	0	0	11
Total Hourly Volume [veh/h]	137	664	1	167	478	38	0	214	56	4	489	94
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]	34	166	0	42	120	10	0	54	14	1	122	24
Total Analysis Volume [veh/h]	137	664	1	167	478	38	0	214	56	4	489	94
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
v_do, Outbound Pedestrian Volume crossing	35			35			35			35		
v_di, Inbound Pedestrian Volume crossing m	35			35			35			35		
v_co, Outbound Pedestrian Volume crossing	35			35			35			35		
v_ci, Inbound Pedestrian Volume crossing mi	35			35			35			35		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	57.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	3	0	1	3	0	0	6	0	5	7	0
Auxiliary Signal Groups												
Maximum Green [s]	15	35	0	15	35	0	0	36	0	12	53	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	0.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	2.0	0.0	2.0	2.0	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	18	0	0	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	5.0	0.0	2.0	5.0	0.0	0.0	4.0	0.0	3.0	4.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	19	42	0	19	42	0	0	42	0	17	59	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	0	10	0	5	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No			No		No	No	
Maximum Recall	Yes	Yes		Yes	Yes			Yes		Yes	Yes	
Pedestrian Recall	No	Yes		No	Yes			Yes		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	L	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	7.00	6.00	5.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	5.00	5.00	0.00	5.00	5.00	4.00	3.00	4.00
g_i, Effective Green Time [s]	54	35	35	54	35	35	36	12	53
g / C, Green / Cycle	0.45	0.29	0.29	0.45	0.29	0.29	0.30	0.10	0.44
(v / s)_i Volume / Saturation Flow Rate	0.14	0.21	0.21	0.18	0.17	0.17	0.17	0.00	0.36
s, saturation flow rate [veh/h]	1010	1550	1549	940	1550	1476	1595	1476	1621
c, Capacity [veh/h]	422	452	452	373	452	430	479	148	716
d1, Uniform Delay [s]	21.59	38.33	38.33	23.43	36.20	36.39	35.39	48.73	29.20
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.04	10.20	10.23	3.84	5.29	5.88	4.75	0.34	9.85
d3, Initial Queue Delay [s]	0.00	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	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.33	0.74	0.74	0.45	0.58	0.59	0.56	0.03	0.81
d, Delay for Lane Group [s/veh]	23.63	48.53	48.56	27.27	41.49	42.27	40.14	49.07	39.05
Lane Group LOS	C	D	D	C	D	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.56	10.04	10.04	3.30	7.16	7.08	7.26	0.12	16.23
50th-Percentile Queue Length [m/ln]	19.54	76.48	76.47	25.13	54.53	53.92	55.34	0.93	123.68
95th-Percentile Queue Length [veh/ln]	4.62	15.23	15.23	5.94	11.54	11.44	11.68	0.22	22.84
95th-Percentile Queue Length [m/ln]	35.18	116.08	116.06	45.24	87.96	87.16	89.02	1.68	174.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.63	48.55	48.56	27.27	41.85	42.27	0.00	40.14	40.14	49.07	39.05	39.05
Movement LOS	C	D	D	C	D	D		D	D	D	D	D
d_A, Approach Delay [s/veh]	44.29			38.31			40.14			39.12		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	40.77											
Intersection LOS	D											
Intersection V/C	0.652											

Emissions

Vehicle Kilometers Traveled [km/h]	58.89	142.95	142.88	76.08	118.93	116.14	83.82	1.37	199.54
Stops [stops/h]	76.95	301.12	301.08	98.96	214.68	212.29	217.87	3.67	486.92
Fuel consumption [L/h]	9.82	32.79	32.78	12.97	24.47	24.11	21.21	0.36	47.44
CO [g/h]	181.39	605.45	605.34	239.43	451.94	445.28	391.67	6.72	876.08
NOx [g/h]	35.29	117.80	117.78	46.59	87.93	86.64	76.21	1.31	170.45
VOC [g/h]	42.04	140.32	140.29	55.49	104.74	103.20	90.77	1.56	203.04

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	15.19	13.85	14.09	15.93
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersectio	2.585	2.613	2.274	2.373
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	583	583	600	883
d_b, Bicycle Delay [s]	30.10	30.10	29.40	18.70
I_b,int, Bicycle LOS Score for Intersection	2.221	2.126	2.015	2.546
Bicycle LOS	B	B	B	B

Sequence

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



Intersection Level Of Service Report
Intersection 6: 107 Avenue and 124 Street

Control Type:	Signalized	Delay (sec / veh):	25.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.616

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.40	3.40	3.40	3.40	3.40	3.40	3.60	3.60	3.60	3.60	3.60	3.60
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	1
Entry Pocket Length [m]	60.00	30.48	30.48	95.00	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	185	567	63	135	362	54	0	773	224	0	1101	208
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	3.00	2.00	2.00	4.00	2.00
Proportion of CAVs [%]	0.00											
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	6	0	0	5	0	0	22	0	0	21
Total Hourly Volume [veh/h]	185	567	57	135	362	49	0	773	202	0	1101	187
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]	46	142	14	34	91	12	0	193	51	0	275	47
Total Analysis Volume [veh/h]	185	567	57	135	362	49	0	773	202	0	1101	187
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
v_do, Outbound Pedestrian Volume crossing	29			35			35			29		
v_di, Inbound Pedestrian Volume crossing m	29			35			35			29		
v_co, Outbound Pedestrian Volume crossing	28			19			28			19		
v_ci, Inbound Pedestrian Volume crossing mi	28			19			28			19		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	1	0	4	1	0	0	2	0	0	2	0
Auxiliary Signal Groups												
Maximum Green [s]	13	41	0	13	41	0	0	49	0	0	49	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Detector Location [m]	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	5.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	16	40	0	16	40	0	0	54	0	0	54	0
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	27	0	7	27	0	0	24	0	0	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	Yes	No		Yes	No			Yes			Yes	
Pedestrian Recall	No	Yes		No	Yes			Yes			Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	R	C	R
C, Calculated Cycle Length [s]	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	4.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	45	29	29	43	29	55	55	55	55
g / C, Green / Cycle	0.41	0.26	0.26	0.39	0.26	0.50	0.50	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.15	0.17	0.17	0.12	0.23	0.22	0.13	0.31	0.12
s, saturation flow rate [veh/h]	1226	1870	1784	1121	1810	3532	1536	3503	1589
c, Capacity [veh/h]	388	491	469	413	475	1769	769	1755	796
d1, Uniform Delay [s]	24.66	36.00	36.11	1.58	38.68	17.54	15.69	19.98	15.53
k, delay calibration	0.50	0.11	0.11	0.11	0.16	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.16	1.43	1.56	0.46	6.98	0.79	0.83	1.71	0.69
d3, Initial Queue Delay [s]	0.00	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	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.65	0.66	0.33	0.86	0.44	0.26	0.63	0.23
d, Delay for Lane Group [s/veh]	28.81	37.42	37.68	2.04	45.66	18.33	16.52	21.69	16.22
Lane Group LOS	C	D	D	A	D	B	B	C	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.58	7.67	7.47	0.05	11.34	6.29	3.03	10.30	2.76
50th-Percentile Queue Length [m/ln]	27.25	58.45	56.94	0.40	86.42	47.91	23.07	78.52	21.06
95th-Percentile Queue Length [veh/ln]	6.44	12.21	11.96	0.09	16.86	10.40	5.45	15.57	4.97
95th-Percentile Queue Length [m/ln]	49.04	93.07	91.11	0.72	128.51	79.25	41.53	118.64	37.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.81	37.53	37.68	2.04	45.66	45.66	0.00	18.33	16.52	0.00	21.69	16.22
Movement LOS	C	D	D	A	D	D		B	B		C	B
d_A, Approach Delay [s/veh]	35.55			34.87			17.95			20.89		
Approach LOS	D			C			B			C		
d_I, Intersection Delay [s/veh]	25.49											
Intersection LOS	C											
Intersection V/C	0.616											

Emissions

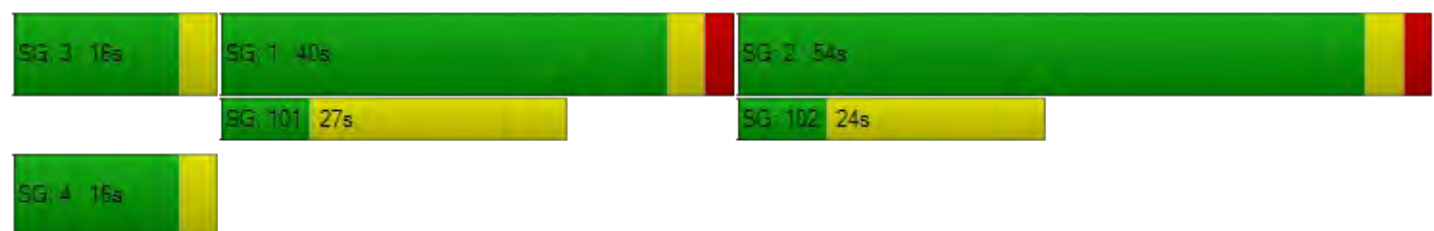
Vehicle Kilometers Traveled [km/h]	84.28	144.36	139.91	119.32	363.28	184.84	48.30	316.35	53.73
Stops [stops/h]	117.02	251.06	244.57	1.72	371.18	411.56	99.09	674.50	90.44
Fuel consumption [L/h]	14.75	28.50	27.71	11.60	57.35	37.73	9.39	63.62	9.48
CO [g/h]	272.36	526.30	511.69	214.28	1058.91	696.74	173.39	1174.86	175.01
NOx [g/h]	52.99	102.40	99.56	41.69	206.03	135.56	33.74	228.58	34.05
VOC [g/h]	63.12	121.97	118.59	49.66	245.41	161.48	40.19	272.28	40.56

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	13.95			21.64			15.44			18.63		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersectio	2.601			2.482			2.887			2.850		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	636			636			891			891		
d_b, Bicycle Delay [s]	25.57			25.57			16.91			16.91		
I_b,int, Bicycle LOS Score for Intersection	2.232			2.469			2.382			2.640		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: 111 Avenue and 124 Street

Control Type:	Signalized	Delay (sec / veh):	25.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.539

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Entry Pocket Length [m]	55.00	30.48	150.00	65.00	30.48	100.00	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	15.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	192	529	102	114	333	93	19	877	182	94	1214	102
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	4.00	2.00	2.00	6.00	2.00	2.00	4.00	2.00	2.00	4.00	2.00
Proportion of CAVs [%]	0.00											
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	10	0	0	9	0	0	18	0	0	10
Total Hourly Volume [veh/h]	192	529	92	114	333	84	19	877	164	94	1214	92
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]	48	132	23	29	83	21	5	219	41	24	304	23
Total Analysis Volume [veh/h]	192	529	92	114	333	84	19	877	164	94	1214	92
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
v_do, Outbound Pedestrian Volume crossing	11			13			13			11		
v_di, Inbound Pedestrian Volume crossing m	11			13			13			11		
v_co, Outbound Pedestrian Volume crossing	10			15			10			15		
v_ci, Inbound Pedestrian Volume crossing mi	10			15			10			15		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	17.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Overlap	Overlap
Signal Group	3	4	0	2	6	0	0	1	0	5	1	1
Auxiliary Signal Groups										1,5	1,5	1,5
Maximum Green [s]	15	30	0	10	30	0	0	69	0	7	69	69
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	4.0	0.0	4.0	4.0	4.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	21	0	0	21	0	0	17	0	0	17	17
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	2.0	3.0	3.0
Detector Location [m]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	5.0	5.0	0.0	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	18	35	0	13	35	0	0	46	0	11	46	46
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	7	10	0	7	10	0	0	24	0	7	24	24
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	3.0
Minimum Recall	Yes	Yes		Yes	Yes			No		No	No	No
Maximum Recall	No	No		No	No			Yes		Yes	Yes	Yes
Pedestrian Recall	No	Yes		No	No			Yes		No	Yes	Yes

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C	C	C	C	C
C, Calculated Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	38	28	28	38	24	24	51	51	51	62	62	62
g / C, Green / Cycle	0.34	0.26	0.26	0.34	0.22	0.22	0.46	0.46	0.46	0.56	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.16	0.17	0.17	0.21	0.12	0.12	0.22	0.21	0.22	0.37	0.29	0.29
s, saturation flow rate [veh/h]	1230	1840	1731	551	1810	1658	1699	1674	1530	1179	1674	1613
c, Capacity [veh/h]	420	470	442	311	391	358	823	777	710	642	945	910
d1, Uniform Delay [s]	27.21	36.86	36.94	26.85	38.36	38.52	19.74	20.11	20.18	14.46	14.75	14.77
k, delay calibration	0.11	0.13	0.13	0.50	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	0.78	2.05	2.32	3.30	1.20	1.41	1.75	1.98	2.22	5.84	2.02	2.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.68	0.68	0.37	0.55	0.57	0.45	0.46	0.47	0.68	0.52	0.52
d, Delay for Lane Group [s/veh]	27.99	38.91	39.26	30.15	39.56	39.93	21.49	22.09	22.40	20.30	16.77	16.88
Lane Group LOS	C	D	D	C	D	D	C	C	C	C	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.77	7.90	7.56	2.37	5.25	5.00	6.57	6.57	6.14	7.05	7.67	7.45
50th-Percentile Queue Length [m/ln]	28.74	60.22	57.58	18.05	40.01	38.09	50.03	50.08	46.82	53.71	58.47	56.77
95th-Percentile Queue Length [veh/ln]	6.79	12.51	12.07	4.26	9.01	8.67	10.77	10.78	10.21	11.40	12.22	11.93
95th-Percentile Queue Length [m/ln]	51.73	95.35	91.94	32.49	68.64	66.04	82.05	82.12	77.80	86.89	93.09	90.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.99	39.05	39.26	30.15	39.69	39.93	21.49	21.91	22.40	20.30	17.81	16.88
Movement LOS	C	D	D	C	D	D	C	C	C	C	B	B
d_A, Approach Delay [s/veh]	36.46			37.68			21.98			17.92		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	25.77											
Intersection LOS	C											
Intersection V/C	0.539											

Emissions

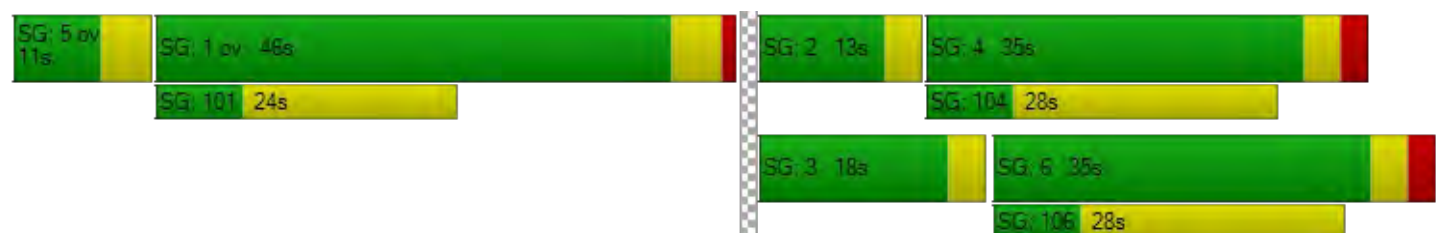
Vehicle Kilometers Traveled [km/h]	169.71	281.43	267.46	144.81	272.33	257.38	105.50	103.20	95.52	172.50	191.57	185.21
Stops [stops/h]	123.43	258.63	247.31	77.53	171.83	163.61	214.86	215.08	201.10	230.69	251.12	243.83
Fuel consumption [L/h]	23.06	42.12	40.15	18.17	36.30	34.39	20.94	20.76	19.34	28.46	30.17	29.23
CO [g/h]	425.73	777.78	741.34	335.43	670.27	635.05	386.72	383.40	357.17	525.56	557.07	539.78
NOx [g/h]	82.83	151.33	144.24	65.26	130.41	123.56	75.24	74.60	69.49	102.25	108.39	105.02
VOC [g/h]	98.67	180.26	171.81	77.74	155.34	147.18	89.63	88.86	82.78	121.80	129.11	125.10

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	8.76			33.45			40.19			48.11		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersectio	2.979			2.590			2.985			2.942		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	545			545			745			945		
d_b, Bicycle Delay [s]	29.09			29.09			21.64			15.29		
I_b,int, Bicycle LOS Score for Intersection	2.239			2.005			2.153			2.335		
Bicycle LOS	B			B			B			B		

Sequence

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



Intersection Level Of Service Report
Intersection 8: 118 Avenue and 124 Street

Control Type:	Signalized	Delay (sec / veh):	30.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.523

Intersection Setup												
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [m]	95.00	30.48	115.00	25.00	30.48	30.48	50.00	30.48	30.48	50.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	255	80	209	96	67	48	40	939	193	81	896	104
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
Proportion of CAVs [%]	0.00											
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	21	0	0	5	0	0	19	0	0	10
Total Hourly Volume [veh/h]	255	80	188	96	67	43	40	939	174	81	896	94
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]	64	20	47	24	17	11	10	235	44	20	224	24
Total Analysis Volume [veh/h]	255	80	188	96	67	43	40	939	174	81	896	94
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
v_do, Outbound Pedestrian Volume crossing	19			26			26			19		
v_di, Inbound Pedestrian Volume crossing m	19			26			26			19		
v_co, Outbound Pedestrian Volume crossing	20			16			20			16		
v_ci, Inbound Pedestrian Volume crossing mi	20			16			20			16		
v_ab, Corner 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]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	85.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Overlap	Overlap	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Overlap	Overlap
Signal Group	2	3	3	0	3	0	0	1	0	4	1	1
Auxiliary Signal Groups	2,3	2,3	2,3							1,4	1,4	1,4
Maximum Green [s]	20	30	30	0	30	0	0	52	0	7	52	52
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	4.0	0.0	4.0	4.0	4.0
All red [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Walk [s]	0	8	8	0	8	0	0	10	0	0	10	10
Pedestrian Clearance [s]	0	22	22	0	22	0	0	15	0	0	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	4.0	4.0	0.0	4.0	0.0	0.0	4.0	0.0	2.0	4.0	4.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	5.0	5.0	5.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	23	36	36	0	36	0	0	40	0	11	40	40
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	5	12	12	0	12	0	0	25	0	7	25	25
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	3.0
Minimum Recall	No	No	No		No			Yes		No	Yes	Yes
Maximum Recall	Yes	Yes	Yes		Yes			No		Yes	No	No
Pedestrian Recall	No	No	No		No			Yes		No	Yes	Yes

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	C	L	C	C
C, Calculated Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	4.00	4.00	4.00	4.00	4.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	53	53	30	30	34	34	34	45	45	45
g / C, Green / Cycle	0.48	0.48	0.27	0.27	0.31	0.31	0.31	0.41	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.09	0.16	0.09	0.06	0.07	0.21	0.22	0.11	0.19	0.19
s, saturation flow rate [veh/h]	2875	1635	1085	1705	565	3560	1665	761	3560	1758
c, Capacity [veh/h]	1397	788	238	465	154	1101	515	315	1457	719
d1, Uniform Delay [s]	16.08	17.66	42.64	31.10	42.03	33.25	33.60	22.38	23.57	23.66
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	1.17	5.00	1.20	4.03	3.40	7.98	1.97	1.02	2.11
d3, Initial Queue Delay [s]	0.00	0.00	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	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.34	0.40	0.24	0.26	0.68	0.71	0.26	0.45	0.46
d, Delay for Lane Group [s/veh]	16.37	18.84	47.64	32.29	46.06	36.65	41.58	24.35	24.59	25.77
Lane Group LOS	B	B	D	C	D	D	D	C	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.83	4.39	2.73	2.42	1.15	9.14	9.61	1.46	6.32	6.58
50th-Percentile Queue Length [m/ln]	13.96	33.47	20.78	18.46	8.80	69.66	73.22	11.09	48.18	50.17
95th-Percentile Queue Length [veh/ln]	3.30	7.83	4.91	4.36	2.08	14.10	14.69	2.62	10.45	10.79
95th-Percentile Queue Length [m/ln]	25.12	59.66	37.41	33.23	15.84	107.44	111.96	19.96	79.60	82.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.37	18.84	18.84	47.64	32.29	32.29	46.06	37.65	41.58	24.35	24.90	25.77
Movement LOS	B	B	B	D	C	C	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	17.63			39.44			38.53			24.93		
Approach LOS	B			D			D			C		
d_I, Intersection Delay [s/veh]	29.96											
Intersection LOS	C											
Intersection V/C	0.523											

Emissions

Vehicle Kilometers Traveled [km/h]	323.92	340.44	6.62	7.59	11.79	220.84	107.34	21.66	176.31	88.48
Stops [stops/h]	119.88	143.74	89.26	79.29	37.80	598.36	314.48	47.63	413.86	215.50
Fuel consumption [L/h]	36.72	39.50	6.15	5.24	3.39	55.58	28.92	4.65	38.54	19.82
CO [g/h]	678.14	729.48	113.65	96.70	62.58	1026.34	534.11	85.85	711.72	365.97
NOx [g/h]	131.94	141.93	22.11	18.81	12.18	199.69	103.92	16.70	138.48	71.20
VOC [g/h]	157.16	169.06	26.34	22.41	14.50	237.86	123.79	19.90	164.95	84.82

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	12.0	12.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	27.37	28.76	23.91	23.72
d_p, Pedestrian Delay [s]	41.89	41.89	43.65	43.65
I_p,int, Pedestrian LOS Score for Intersectio	2.429	2.158	3.077	3.089
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	964	545	618	818
d_b, Bicycle Delay [s]	14.77	29.09	26.25	19.20
I_b,int, Bicycle LOS Score for Intersection	2.457	1.908	2.204	2.154
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: 104 Avenue and 121 Street

Control Type:	Signalized	Delay (sec / veh):	51.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.617

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
No. of Lanes in Entry Pocket	0	0	1	0	0	1	1	0	0	1	0	0
Entry Pocket Length [m]	30.48	30.48	40.00	30.48	30.48	30.48	45.00	30.48	30.48	55.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	272	19	44	290	12	82	199	12	6	612	76
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
Proportion of CAVs [%]	0.00											
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	2	0	0	1	0	0	1	0	0	8
Total Hourly Volume [veh/h]	0	272	17	44	290	11	82	199	11	6	612	68
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]	0	68	4	11	73	3	21	50	3	2	153	17
Total Analysis Volume [veh/h]	0	272	17	44	290	11	82	199	11	6	612	68
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
v_do, Outbound Pedestrian Volume crossing	35			35			35			35		
v_di, Inbound Pedestrian Volume crossing m	35			35			35			35		
v_co, Outbound Pedestrian Volume crossing	35			35			35			35		
v_ci, Inbound Pedestrian Volume crossing mi	35			35			35			35		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	116.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	5	7	0	1	3	0	1	3	0
Auxiliary Signal Groups												
Maximum Green [s]	0	29	0	13	48	0	10	44	0	10	44	0
Amber [s]	0.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.0	0.0	3.0	3.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	15	0	0	15	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	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]	0.0	5.0	0.0	4.0	5.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	36	0	19	55	0	15	50	0	15	50	0
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	5	10	0	5	10	0	5	10	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No		No	No		No	No		No	No	
Maximum Recall		Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall		Yes		No	Yes		No	Yes		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	L	C	R	L	C	L	C	R
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	5.00	6.00	5.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	5.00	5.00	0.00	5.00	5.00	3.00	4.00	3.00	4.00	4.00
g_i, Effective Green Time [s]	29	29	48	48	48	10	44	10	44	44
g / C, Green / Cycle	0.24	0.24	0.40	0.40	0.40	0.08	0.37	0.08	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.18	0.01	0.04	0.19	0.01	0.06	0.13	0.00	0.36	0.05
s, saturation flow rate [veh/h]	1550	1306	1156	1550	1305	1476	1657	1476	1683	1294
c, Capacity [veh/h]	405	316	389	620	522	123	608	123	617	474
d1, Uniform Delay [s]	41.85	34.92	23.90	26.57	21.77	53.38	27.56	50.62	37.82	25.27
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.62	0.32	0.59	2.52	0.07	25.06	1.56	0.75	34.27	0.63
d3, Initial Queue Delay [s]	0.00	0.00	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	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.05	0.11	0.47	0.02	0.67	0.35	0.05	0.99	0.14
d, Delay for Lane Group [s/veh]	50.47	35.24	24.49	29.10	21.84	78.44	29.12	51.37	72.09	25.90
Lane Group LOS	D	D	C	C	C	E	C	D	E	C
Critical Lane Group	Yes	No	Yes	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.34	0.41	0.84	6.52	0.20	3.25	4.63	0.19	23.36	1.38
50th-Percentile Queue Length [m/ln]	63.55	3.15	6.38	49.71	1.52	24.80	35.31	1.46	177.98	10.53
95th-Percentile Queue Length [veh/ln]	13.08	0.74	1.51	10.71	0.36	5.86	8.16	0.35	31.28	2.49
95th-Percentile Queue Length [m/ln]	99.64	5.66	11.49	81.63	2.74	44.64	62.22	2.63	238.38	18.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.47	50.47	35.24	24.49	29.10	21.84	78.44	29.12	29.12	51.37	72.09	25.90
Movement LOS	D	D	D	C	C	C	E	C	C	D	E	C
d_A, Approach Delay [s/veh]	49.57			28.28			42.97			67.33		
Approach LOS	D			C			D			E		
d_I, Intersection Delay [s/veh]	51.38											
Intersection LOS	D											
Intersection V/C	0.617											

Emissions

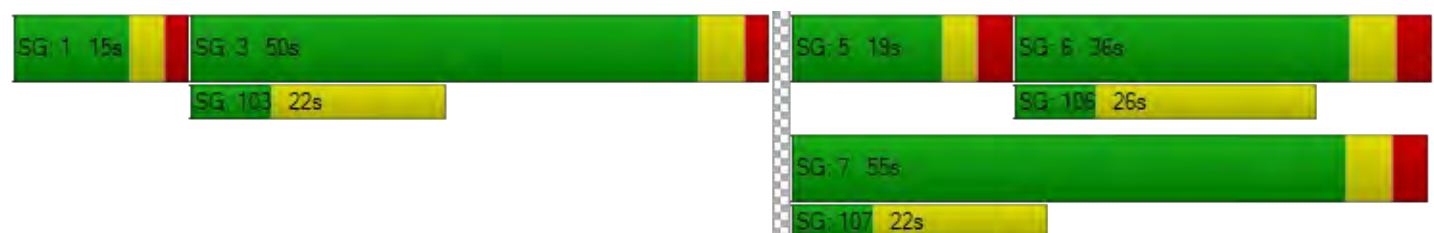
Vehicle Kilometers Traveled [km/h]	96.86	6.05	10.52	69.35	2.63	28.07	71.87	3.80	387.09	43.01
Stops [stops/h]	250.21	12.39	25.13	195.70	6.00	97.64	139.03	5.76	700.72	41.44
Fuel consumption [L/h]	25.40	1.32	2.39	17.49	0.57	9.81	14.67	0.73	86.53	6.38
CO [g/h]	469.07	24.29	44.22	322.91	10.52	181.24	270.84	13.44	1597.84	117.78
NOx [g/h]	91.26	4.73	8.60	62.83	2.05	35.26	52.70	2.61	310.88	22.92
VOC [g/h]	108.71	5.63	10.25	74.84	2.44	42.00	62.77	3.11	370.32	27.30

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	16.53	14.08	17.28	17.68
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersectio	2.158	2.342	2.264	2.534
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	483	800	733	733
d_b, Bicycle Delay [s]	34.50	21.60	24.07	24.07
I_b,int, Bicycle LOS Score for Intersection	2.040	2.131	2.043	2.705
Bicycle LOS	B	B	B	B

Sequence

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



Intersection Level Of Service Report
Intersection 10: 104 Avenue and 116 Street

Control Type:	Signalized	Delay (sec / veh):	78.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.621

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Entry Pocket Length [m]	20.00	30.48	30.48	70.00	30.48	30.48	75.00	30.48	40.00	115.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	94	512	29	95	327	51	92	260	28	86	752	229
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
Proportion of CAVs [%]	0.00											
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	3	0	0	5	0	0	3	0	0	23
Total Hourly Volume [veh/h]	94	512	26	95	327	46	92	260	25	86	752	206
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]	24	128	7	24	82	12	23	65	6	22	188	52
Total Analysis Volume [veh/h]	94	512	26	95	327	46	92	260	25	86	752	206
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
v_do, Outbound Pedestrian Volume crossing	35			35			35			35		
v_di, Inbound Pedestrian Volume crossing m	35			35			35			35		
v_co, Outbound Pedestrian Volume crossing	35			35			35			35		
v_ci, Inbound Pedestrian Volume crossing mi	35			35			35			35		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	45.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	9	0	7	6	0	1	3	0	1	3	0
Auxiliary Signal Groups												
Maximum Green [s]	10	40	0	17	47	0	17	34	0	17	34	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Walk [s]	0	7	0	7	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	30	30	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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]	1.0	5.0	0.0	1.0	5.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	13	47	0	20	54	0	23	40	0	23	40	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	4	4	0	5	10	0	5	10	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
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall	No	Yes		No	Yes		No	Yes		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C	C
C, Calculated Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	7.00	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	5.00	5.00	0.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	60	40	40	60	47	47	17	34	34	17	34	34
g / C, Green / Cycle	0.46	0.31	0.31	0.46	0.36	0.36	0.13	0.26	0.26	0.13	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.09	0.17	0.18	0.10	0.21	0.03	0.06	0.08	0.02	0.06	0.30	0.31
s, saturation flow rate [veh/h]	1012	1550	1511	989	1550	1347	1476	3204	1316	1476	1683	1496
c, Capacity [veh/h]	390	477	465	419	560	487	193	838	344	193	440	391
d1, Uniform Delay [s]	22.24	37.75	37.84	21.78	33.58	27.38	52.38	38.58	36.08	52.15	48.00	48.00
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	1.46	4.85	5.08	1.26	4.40	0.38	8.20	0.96	0.41	7.28	83.17	103.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.57	0.57	0.23	0.58	0.09	0.48	0.31	0.07	0.45	1.13	1.18
d, Delay for Lane Group [s/veh]	23.70	42.60	42.92	23.03	37.98	27.76	60.58	39.54	36.49	59.43	131.17	151.56
Lane Group LOS	C	D	D	C	D	C	E	D	D	E	F	F
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.82	7.89	7.81	1.82	9.02	1.01	3.23	3.47	0.64	2.99	24.32	23.83
50th-Percentile Queue Length [m/ln]	13.83	60.12	59.53	13.89	68.76	7.68	24.63	26.44	4.90	22.78	185.29	181.62
95th-Percentile Queue Length [veh/ln]	3.27	12.50	12.40	3.28	13.95	1.82	5.82	6.25	1.16	5.38	34.81	34.94
95th-Percentile Queue Length [m/ln]	24.90	95.22	94.46	25.00	106.30	13.83	44.33	47.59	8.82	41.00	265.24	266.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.70	42.75	42.92	23.03	37.98	27.76	60.58	39.54	36.49	59.43	138.08	151.56
Movement LOS	C	D	D	C	D	C	E	D	D	E	F	F
d_A, Approach Delay [s/veh]	39.92			33.94			44.47			134.26		
Approach LOS	D			C			D			F		
d_I, Intersection Delay [s/veh]	78.56											
Intersection LOS	E											
Intersection V/C	0.621											

Emissions

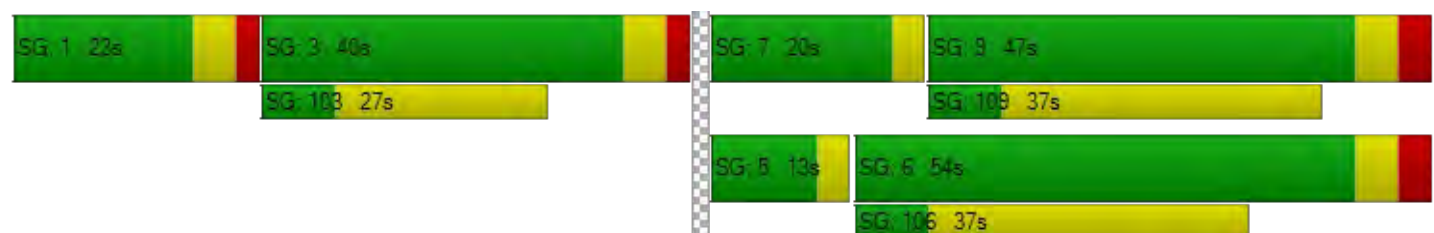
Vehicle Kilometers Traveled [km/h]	45.82	132.10	130.13	20.80	71.60	10.07	58.19	164.45	15.81	42.16	243.71	225.98
Stops [stops/h]	50.28	218.48	216.34	50.48	249.89	27.93	89.50	192.18	17.81	82.77	673.37	660.04
Fuel consumption [L/h]	7.20	26.36	26.06	4.80	21.98	2.57	11.84	27.88	2.61	9.80	88.51	90.11
CO [g/h]	133.01	486.79	481.23	88.58	405.94	47.43	218.58	514.75	48.13	181.05	1634.42	1663.91
NOx [g/h]	25.88	94.71	93.63	17.23	78.98	9.23	42.53	100.15	9.36	35.23	318.00	323.74
VOC [g/h]	30.83	112.82	111.53	20.53	94.08	10.99	50.66	119.30	11.16	41.96	378.79	385.63

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	14.94			9.04			15.72			15.91		
d_p, Pedestrian Delay [s]	54.47			54.47			54.47			54.47		
I_p,int, Pedestrian LOS Score for Intersectio	2.539			2.588			2.740			2.687		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	615			723			523			523		
d_b, Bicycle Delay [s]	31.15			26.50			35.45			35.45		
I_b,int, Bicycle LOS Score for Intersection	2.083			2.340			1.873			2.440		
Bicycle LOS	B			B			A			B		

Sequence

Ring 1	1	3	7	9	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: 104 Avenue and 112 Street

Control Type:	Signalized	Delay (sec / veh):	38.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.417

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.80	3.80	3.80	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [m]	30.48	30.48	30.00	40.00	30.48	30.48	75.00	30.48	30.48	60.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	40.00			40.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	78	107	44	27	107	17	6	434	11	46	921	28
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
Proportion of CAVs [%]	0.00											
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	4	0	0	2	0	0	1	0	0	3
Total Hourly Volume [veh/h]	78	107	40	27	107	15	6	434	10	46	921	25
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	27	10	7	27	4	2	109	3	12	230	6
Total Analysis Volume [veh/h]	78	107	40	27	107	15	6	434	10	46	921	25
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
v_do, Outbound Pedestrian Volume crossing	35			35			35			35		
v_di, Inbound Pedestrian Volume crossing m	35			35			35			35		
v_co, Outbound Pedestrian Volume crossing	35			35			35			35		
v_ci, Inbound Pedestrian Volume crossing mi	35			35			35			35		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	46.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	5	0	0	5	0	1	3	0	1	3	0
Auxiliary Signal Groups												
Maximum Green [s]	0	44	0	0	44	0	20	49	0	20	49	0
Amber [s]	0.0	4.0	0.0	0.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	25	0	0	25	0	0	15	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	0.0	0.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	50	0	0	50	0	25	55	0	25	55	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	5	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		Yes			Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall		Yes			Yes		No	Yes		No	Yes	

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	C	L	C	C
C, Calculated Cycle Length [s]	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	5.00	6.00	6.00	5.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	3.00	4.00	4.00	3.00	4.00	4.00
g_i, Effective Green Time [s]	44	44	44	44	20	49	49	20	49	49
g / C, Green / Cycle	0.34	0.34	0.34	0.34	0.15	0.38	0.38	0.15	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.03	0.08	0.00	0.13	0.13	0.03	0.28	0.28
s, saturation flow rate [veh/h]	1092	1450	1071	1503	1476	1683	1661	1476	1683	1657
c, Capacity [veh/h]	344	491	322	509	227	634	626	227	634	625
d1, Uniform Delay [s]	37.85	31.66	37.66	30.96	46.73	29.08	29.12	48.04	35.16	35.25
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.52	1.56	0.51	1.11	0.21	1.53	1.56	2.00	7.92	8.22
d3, Initial Queue Delay [s]	0.00	0.00	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	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.30	0.08	0.24	0.03	0.35	0.35	0.20	0.75	0.75
d, Delay for Lane Group [s/veh]	39.38	33.22	38.18	32.07	46.94	30.61	30.68	50.04	43.08	43.47
Lane Group LOS	D	C	D	C	D	C	C	D	D	D
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.15	3.69	0.72	2.98	0.18	5.29	5.27	1.44	14.35	14.29
50th-Percentile Queue Length [m/ln]	16.41	28.09	5.52	22.68	1.37	40.30	40.16	10.96	109.36	108.92
95th-Percentile Queue Length [veh/ln]	3.88	6.64	1.30	5.36	0.32	9.06	9.03	2.59	20.57	20.50
95th-Percentile Queue Length [m/ln]	29.54	50.57	9.93	40.83	2.47	69.05	68.85	19.72	156.71	156.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.38	33.22	33.22	38.18	32.07	32.07	46.94	30.64	30.68	50.04	43.27	43.47
Movement LOS	D	C	C	D	C	C	D	C	C	D	D	D
d_A, Approach Delay [s/veh]	35.35			33.18			30.86			43.59		
Approach LOS	D			C			C			D		
d_I, Intersection Delay [s/veh]	38.56											
Intersection LOS	D											
Intersection V/C	0.417											

Emissions

Vehicle Kilometers Traveled [km/h]	22.13	41.70	2.59	11.70	2.94	109.15	108.53	4.86	50.17	49.70
Stops [stops/h]	59.64	102.10	20.05	82.44	4.98	146.47	145.94	39.82	397.45	395.85
Fuel consumption [L/h]	5.57	9.65	1.36	5.44	0.61	18.92	18.83	3.13	29.46	29.37
CO [g/h]	102.82	178.18	25.05	100.41	11.24	349.36	347.74	57.76	543.95	542.37
NOx [g/h]	20.01	34.67	4.87	19.54	2.19	67.97	67.66	11.24	105.83	105.53
VOC [g/h]	23.83	41.29	5.80	23.27	2.60	80.97	80.59	13.39	126.07	125.70

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	13.80			12.90			15.14			15.70		
d_p, Pedestrian Delay [s]	54.47			54.47			54.47			54.47		
I_p,int, Pedestrian LOS Score for Intersectio	2.069			2.039			2.726			2.663		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	677			677			754			754		
d_b, Bicycle Delay [s]	28.45			28.45			25.23			25.23		
I_b,int, Bicycle LOS Score for Intersection	1.937			1.809			1.932			2.380		
Bicycle LOS	A			A			A			B		

Sequence

Ring 1	1	3	5	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Jasper Avenue and 121 Street

Control Type:	Signalized	Delay (sec / veh):	36.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name														
Approach	Northbound							Southbound						
Lane Configuration														
Turning Movement	Left	Left	Thru	Thru	Thru	Right	Right	Left	Left	Thru	Thru	Thru	Right	Right
Lane Width [m]	3.60	3.66	3.66	3.66	3.60	3.66	3.60	3.60	3.66	3.66	3.66	3.66	3.66	3.60
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	35.00	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00							50.00						
Grade [%]	0.00							0.00						
Curb Present	Yes							Yes						
Crosswalk	Yes							Yes						

Volumes

Name														
Base Volume Input [veh/h]	275	0	0	0	63	0	32	76	0	0	0	0	0	22
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	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	2.00	2.00
Proportion of CAVs [%]	0.00													
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	1.0000	1.0000
In-Process Volume [veh/h]	0	0	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	0	0
Diverted Trips [veh/h]	0	0	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	0	0
Existing Site Adjustment Volume [veh/h]	0	0	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	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	3	0	0	0	0	0	0	2
Total Hourly Volume [veh/h]	275	0	0	0	63	0	29	76	0	0	0	0	0	20
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	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	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	0	0	0	16	0	7	19	0	0	0	0	0	5
Total Analysis Volume [veh/h]	275	0	0	0	63	0	29	76	0	0	0	0	0	20
Presence of On-Street Parking	No						No	No						No
On-Street Parking Maneuver Rate [/h]	0	0	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	0	0
v_do, Outbound Pedestrian Volume crossing	17							26						
v_di, Inbound Pedestrian Volume crossing th	17							26						
v_co, Outbound Pedestrian Volume along th	17							26						
v_ci, Inbound Pedestrian Volume along the l	17							26						
v_ab, Corner Pedestrian Volume [ped/h]	0							0						
Bicycle Volume [bicycles/h]	0							0						

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	84.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	0	0	0	2	0	0	2	0	0	0	0	0	0
Auxiliary Signal Groups														
Maximum Green [s]	0	0	0	0	28	0	0	28	0	0	0	0	0	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	10	0	0	10	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	8	0	0	8	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No			No						
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	0.0	0.0	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	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	0	0	34	0	0	34	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	-	Lag	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	15	0	0	15	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall					No			No						
Maximum Recall					Yes			Yes						
Pedestrian Recall					Yes			Yes						

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C
C, Calculated Cycle Length [s]	112	112	112
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00
g_i, Effective Green Time [s]	28	28	28
g / C, Green / Cycle	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.22	0.06	0.11
s, saturation flow rate [veh/h]	1275	1545	881
c, Capacity [veh/h]	215	386	278
d1, Uniform Delay [s]	51.35	33.50	39.75
k, delay calibration	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	155.68	1.45	3.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.28	0.24	0.35
d, Delay for Lane Group [s/veh]	207.03	34.95	43.13
Lane Group LOS	F	C	D
Critical Lane Group	Yes	No	No
50th-Percentile Queue Length [veh/ln]	15.38	2.15	2.60
50th-Percentile Queue Length [m/ln]	117.17	16.39	19.78
95th-Percentile Queue Length [veh/ln]	24.61	3.87	4.67
95th-Percentile Queue Length [m/ln]	187.50	29.51	35.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	207.03	0.00	0.00	0.00	34.95	0.00	34.95	43.13	0.00	0.00	0.00	0.00	0.00	43.13
Movement LOS	F				C		C	D						D
d_A, Approach Delay [s/veh]	163.89							43.13						
Approach LOS	F							D						
d_I, Intersection Delay [s/veh]	35.95													
Intersection LOS	D													
Intersection V/C	0.575													

Emissions

Vehicle Kilometers Traveled [km/h]	33.72	11.28	22.63
Stops [stops/h]	494.25	69.15	83.45
Fuel consumption [L/h]	58.14	5.10	7.21
CO [g/h]	1073.66	94.20	133.21
NOx [g/h]	208.90	18.33	25.92
VOC [g/h]	248.83	21.83	30.87

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0
M_corner, Corner Circulation Area [m²/ped]	462.60	301.61
M_CW, Crosswalk Circulation Area [m²/ped]	38.94	17.36
d_p, Pedestrian Delay [s]	42.88	42.88
I_p,int, Pedestrian LOS Score for Intersectio	1.914	1.875
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	446	446
d_b, Bicycle Delay [s]	33.79	33.79
I_b,int, Bicycle LOS Score for Intersection	2.170	1.721
Bicycle LOS	B	A

Intersection Setup														
Name														
Approach	Eastbound							Westbound						
Lane Configuration														
Turning Movement	Left	Left	Left	Thru	Right	Right	Right	Left	Left	Left	Thru	Right	Right	Right
Lane Width [m]	3.60	3.66	3.66	3.60	3.66	3.66	3.66	3.66	3.66	3.66	3.60	3.66	3.66	3.60
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00							50.00						
Grade [%]	0.00							0.00						
Curb Present	Yes							Yes						
Crosswalk	Yes							Yes						

Volumes

Name														
Base Volume Input [veh/h]	15	0	0	810	0	0	0	0	0	0	1114	0	0	78
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	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	5.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00													
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	1.0000	1.0000
In-Process Volume [veh/h]	0	0	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	0	0
Diverted Trips [veh/h]	0	0	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	0	0
Existing Site Adjustment Volume [veh/h]	0	0	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	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Total Hourly Volume [veh/h]	15	0	0	810	0	0	0	0	0	0	1114	0	0	70
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	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	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	0	203	0	0	0	0	0	0	279	0	0	18
Total Analysis Volume [veh/h]	15	0	0	810	0	0	0	0	0	0	1114	0	0	70
Presence of On-Street Parking	No						No	No						No
On-Street Parking Maneuver Rate [/h]	0	0	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	0	0
v_do, Outbound Pedestrian Volume crossing	0							35						
v_di, Inbound Pedestrian Volume crossing th	0							35						
v_co, Outbound Pedestrian Volume along th	17							26						
v_ci, Inbound Pedestrian Volume along the l	17							26						
v_ab, Corner Pedestrian Volume [ped/h]	0							0						
Bicycle Volume [bicycles/h]	0							0						

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	84.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	0	0	1	0	0	0	0	0	0	1	0	0	0
Auxiliary Signal Groups														
Maximum Green [s]	0	0	0	72	0	0	0	0	0	0	72	0	0	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
Walk [s]	0	0	0	10	0	0	0	0	0	0	10	0	0	0
Pedestrian Clearance [s]	0	0	0	15	0	0	0	0	0	0	15	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No							No			
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	0.0	0.0	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	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	0	78	0	0	0	0	0	0	78	0	0	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	25	0	0	0	0	0	0	25	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
Minimum Recall				Yes							Yes			
Maximum Recall				No							No			
Pedestrian Recall				Yes							Yes			

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	C	C
C, Calculated Cycle Length [s]	112	112	112	112
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	72	72	72	72
g / C, Green / Cycle	0.64	0.64	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.35	0.36
s, saturation flow rate [veh/h]	1572	1495	1683	1649
c, Capacity [veh/h]	1044	961	1082	1060
d1, Uniform Delay [s]	9.62	9.77	11.02	11.14
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.17	1.34	1.99	2.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.42	0.55	0.56
d, Delay for Lane Group [s/veh]	10.79	11.11	13.01	13.27
Lane Group LOS	B	B	B	B
Critical Lane Group	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.01	4.85	8.07	8.18
50th-Percentile Queue Length [m/ln]	38.14	36.95	61.47	62.34
95th-Percentile Queue Length [veh/ln]	8.67	8.46	12.73	12.87
95th-Percentile Queue Length [m/ln]	66.10	64.46	96.97	98.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.79	0.00	0.00	10.95	0.00	0.00	0.00	0.00	0.00	0.00	13.13	0.00	0.00	13.27
Movement LOS	B			B							B			B
d_A, Approach Delay [s/veh]	10.95							13.14						
Approach LOS	B							B						
d_I, Intersection Delay [s/veh]	35.95													
Intersection LOS	D													
Intersection V/C	0.575													

Emissions

Vehicle Kilometers Traveled [km/h]	153.58	145.67	326.87	326.87
Stops [stops/h]	160.88	155.85	259.31	262.95
Fuel consumption [L/h]	21.74	20.79	42.85	43.05
CO [g/h]	401.48	383.93	791.27	794.98
NOx [g/h]	78.11	74.70	153.95	154.67
VOC [g/h]	93.05	88.98	183.38	184.24

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0
M_corner, Corner Circulation Area [m²/ped]	110.28	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	18.15
d_p, Pedestrian Delay [s]	42.88	42.88
I_p,int, Pedestrian LOS Score for Intersectio	3.095	2.791
Crosswalk LOS	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1286	1286
d_b, Bicycle Delay [s]	7.14	7.14
I_b,int, Bicycle LOS Score for Intersection	2.240	2.543
Bicycle LOS	B	B

Intersection Setup

Name														
Approach	Northeastbound							Southwestbound						
Lane Configuration														
Turning Movement	Left	Thru	Thru	Thru	Right	Right	Right	Left	Left	Thru	Thru	Right	Right	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00							50.00						
Grade [%]	0.00							0.00						
Curb Present														
Crosswalk	Yes							Yes						

Volumes

Name														
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	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	2.00	2.00
Proportion of CAVs [%]	0.00													
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	1.0000	1.0000
In-Process Volume [veh/h]	0	0	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	0	0
Diverted Trips [veh/h]	0	0	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	0	0
Existing Site Adjustment Volume [veh/h]	0	0	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	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	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	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking														
On-Street Parking Maneuver Rate [/h]	0	0	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	0	0
v_do, Outbound Pedestrian Volume crossing	17							26						
v_di, Inbound Pedestrian Volume crossing th	17							26						
v_co, Outbound Pedestrian Volume along th	17							26						
v_ci, Inbound Pedestrian Volume along the l	17							26						
v_ab, Corner Pedestrian Volume [ped/h]	0							0						
Bicycle Volume [bicycles/h]	0							0						

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	84.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auxiliary Signal Groups														
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk														
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	0.0	0.0	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	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall														
Maximum Recall														
Pedestrian Recall														

Exclusive Pedestrian Phase

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

Lane Group Calculations

[illegible]

Version 2024 (SP 0-5)

Lane Group Results

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS														
d_A, Approach Delay [s/veh]	0.00							0.00						
Approach LOS	A							A						
d_I, Intersection Delay [s/veh]	35.95													
Intersection LOS	D													
Intersection V/C	0.575													

Emissions

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0
M_corner, Corner Circulation Area [m²/ped]	467.58	301.61
M_CW, Crosswalk Circulation Area [m²/ped]	20.71	13.41
d_p, Pedestrian Delay [s]	42.88	42.88
I_p,int, Pedestrian LOS Score for Intersectio	1.431	1.431
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0
d_b, Bicycle Delay [s]	56.00	56.00
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132
Bicycle LOS	D	D

Intersection Setup

Name	Northbound Bike Lane							Southbound Bike Lane						
Approach	Northwestbound							Southeastbound						
Lane Configuration														
Turning Movement	Left	Left	Left	Thru	Thru	Right	Right2	Left3	Left2	Left	Thru	Thru	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	2.00	3.66	3.66	3.66	3.66	3.66	3.66	2.00	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	30.00							30.00						
Grade [%]	0.00							0.00						
Curb Present	No							No						
Crosswalk	Yes							Yes						

Volumes

Name	Northbound Bike Lane							Southbound Bike Lane						
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	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	2.00	2.00
Proportion of CAVs [%]	0.00													
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	1.0000	1.0000
In-Process Volume [veh/h]	0	0	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	0	0
Diverted Trips [veh/h]	0	0	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	0	0
Existing Site Adjustment Volume [veh/h]	0	0	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	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	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	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No						No	No						No
On-Street Parking Maneuver Rate [/h]	0	0	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	0	0
v_do, Outbound Pedestrian Volume crossing	17							26						
v_di, Inbound Pedestrian Volume crossing th	17							26						
v_co, Outbound Pedestrian Volume along th	35							0						
v_ci, Inbound Pedestrian Volume along the l	35							0						
v_ab, Corner Pedestrian Volume [ped/h]	0							0						
Bicycle Volume [bicycles/h]	0							0						

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	84.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	0	0	0	0	2	0	0	0	0	0	0	2	0
Auxiliary Signal Groups														
Maximum Green [s]	0	0	0	0	0	28	0	0	0	0	0	0	28	0
Amber [s]	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	10	0	0	0	0	0	0	10	0
Pedestrian Clearance [s]	0	0	0	0	0	8	0	0	0	0	0	0	8	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Rest In Walk						No							No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	0.0	0.0	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	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	0	0	0	34	0	0	0	0	0	0	34	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	0	15	0	0	0	0	0	0	15	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Minimum Recall						No							No	
Maximum Recall						Yes							Yes	
Pedestrian Recall						Yes							Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	R	C
C, Calculated Cycle Length [s]	112	112
L, Total Lost Time per Cycle [s]	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00
g_i, Effective Green Time [s]	28	28
g / C, Green / Cycle	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00
s, saturation flow rate [veh/h]	1373	1616
c, Capacity [veh/h]	343	404
d1, Uniform Delay [s]	0.00	0.00
k, delay calibration	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.00
d, Delay for Lane Group [s/veh]	0.00	0.00
Lane Group LOS	A	A
Critical Lane Group	No	No
50th-Percentile Queue Length [veh/ln]	0.00	0.00
50th-Percentile Queue Length [m/ln]	0.00	0.00
95th-Percentile Queue Length [veh/ln]	0.00	0.00
95th-Percentile Queue Length [m/ln]	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS						A							A	
d_A, Approach Delay [s/veh]	0.00							0.00						
Approach LOS	A							A						
d_I, Intersection Delay [s/veh]	35.95													
Intersection LOS	D													
Intersection V/C	0.575													

Emissions

Vehicle Kilometers Traveled [km/h]	0.00	0.00
Stops [stops/h]	0.00	0.00
Fuel consumption [L/h]	0.00	0.00
CO [g/h]	0.00	0.00
NOx [g/h]	0.00	0.00
VOC [g/h]	0.00	0.00

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	20.71	13.41
d_p, Pedestrian Delay [s]	42.88	42.88
I_p,int, Pedestrian LOS Score for Intersectio	1.431	1.431
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	446	446
d_b, Bicycle Delay [s]	33.79	33.79
I_b,int, Bicycle LOS Score for Intersection	1.560	1.560
Bicycle LOS	A	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Jasper Avenue and 116 Street

Control Type:	Signalized	Delay (sec / veh):	35.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.676

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.40	3.40	3.40	3.40	3.40	3.40	3.70	3.70	3.70	3.70	3.70	3.70
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	60.00	30.48	60.00	40.00	30.48	30.48	70.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	188	341	42	112	447	38	46	772	213	114	1189	110
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
Proportion of CAVs [%]	0.00											
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	4	0	0	4	0	0	21	0	0	11
Total Hourly Volume [veh/h]	188	341	38	112	447	34	46	772	192	114	1189	99
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]	47	85	10	28	112	9	12	193	48	29	297	25
Total Analysis Volume [veh/h]	188	341	38	112	447	34	46	772	192	114	1189	99
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
v_do, Outbound Pedestrian Volume crossing	20			25			25			20		
v_di, Inbound Pedestrian Volume crossing m	20			25			25			20		
v_co, Outbound Pedestrian Volume crossing	20			72			20			72		
v_ci, Inbound Pedestrian Volume crossing mi	20			72			20			72		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	60.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Overlap	Overlap
Signal Group	3	4	0	2	4	0	0	1	0	5	1	1
Auxiliary Signal Groups										1,5	1,5	1,5
Maximum Green [s]	7	38	0	7	38	0	0	42	0	7	42	42
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Walk [s]	0	10	0	0	10	0	0	10	0	0	10	10
Pedestrian Clearance [s]	0	13	0	0	13	0	0	10	0	0	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	1.0	3.0	3.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	1.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	5.0	5.0	5.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	10	43	0	10	43	0	0	47	0	10	47	47
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	7	23	0	7	23	0	0	20	0	7	20	20
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	3.0
Minimum Recall	No	No		No	No			Yes		No	Yes	Yes
Maximum Recall	No	Yes		No	Yes			No		No	No	No
Pedestrian Recall	Yes	Yes		Yes	Yes			Yes		Yes	Yes	Yes

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	46	38	48	38	38	42	42	42	8	52	52
g / C, Green / Cycle	0.42	0.35	0.44	0.35	0.35	0.38	0.38	0.38	0.07	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.20	0.23	0.11	0.14	0.15	0.12	0.30	0.30	0.10	0.39	0.40
s, saturation flow rate [veh/h]	954	1647	1017	1683	1630	386	1683	1546	1200	1683	1587
c, Capacity [veh/h]	402	572	362	585	566	69	642	590	168	796	750
d1, Uniform Delay [s]	13.75	30.42	21.18	27.37	27.42	54.95	29.89	30.08	16.50	24.93	25.53
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	3.88	5.94	2.21	2.17	2.28	40.21	8.95	10.25	19.91	9.16	11.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	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	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	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.66	0.31	0.42	0.42	0.66	0.78	0.79	0.68	0.82	0.85
d, Delay for Lane Group [s/veh]	17.63	36.36	23.40	29.54	29.71	95.16	38.84	40.33	36.41	34.09	37.05
Lane Group LOS	B	D	C	C	C	F	D	D	D	C	D
Critical Lane Group	No	Yes	Yes	No	No	No	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	2.77	9.32	1.94	5.18	5.10	2.05	12.91	12.30	2.55	16.02	16.42
50th-Percentile Queue Length [m/ln]	21.07	70.98	14.81	39.50	38.85	15.59	98.41	93.70	19.40	122.03	125.11
95th-Percentile Queue Length [veh/ln]	4.98	14.32	3.50	8.92	8.80	3.68	18.81	18.05	4.58	22.58	23.06
95th-Percentile Queue Length [m/ln]	37.93	109.12	26.66	67.95	67.06	28.07	143.32	137.52	34.92	172.05	175.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.63	36.36	36.36	23.40	29.62	29.71	95.16	39.37	40.33	36.41	35.43	37.05
Movement LOS	B	D	D	C	C	C	F	D	D	D	D	D
d_A, Approach Delay [s/veh]	30.15			28.45			42.09			35.62		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.39											
Intersection LOS	D											
Intersection V/C	0.676											

Emissions

Vehicle Kilometers Traveled [km/h]	44.07	88.85	11.32	24.56	24.05	3.54	38.44	35.84	18.64	106.47	104.17
Stops [stops/h]	90.51	304.87	63.60	169.63	166.84	66.97	422.67	402.44	83.33	524.13	537.36
Fuel consumption [L/h]	8.78	25.91	4.52	11.67	11.48	5.21	28.07	26.88	6.84	38.98	40.14
CO [g/h]	162.07	478.38	83.50	215.55	211.91	96.22	518.26	496.45	126.31	719.82	741.23
NOx [g/h]	31.53	93.08	16.25	41.94	41.23	18.72	100.83	96.59	24.58	140.05	144.22
VOC [g/h]	37.56	110.87	19.35	49.96	49.11	22.30	120.11	115.06	29.27	166.82	171.79

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	14.0	14.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	25.02	7.84	28.68	37.15
d_p, Pedestrian Delay [s]	41.89	41.89	41.89	41.89
I_p,int, Pedestrian LOS Score for Intersectio	2.488	2.485	2.924	2.853
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	691	691	764	945
d_b, Bicycle Delay [s]	23.56	23.56	21.02	15.29
I_b,int, Bicycle LOS Score for Intersection	2.502	2.052	2.410	2.725
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	4	5	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: 100 Avenue and 116 Street

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.634

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	70.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00	100.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			3.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	27	27	9	268	3	482	394	237	35	7	801	155
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
Proportion of CAVs [%]	0.00											
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	1	0	0	48	0	0	4	0	0	16
Total Hourly Volume [veh/h]	27	27	8	268	3	434	394	237	31	7	801	139
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	7	2	67	1	109	99	59	8	2	200	35
Total Analysis Volume [veh/h]	27	27	8	268	3	434	394	237	31	7	801	139
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
v_do, Outbound Pedestrian Volume crossing	22			28			28			22		
v_di, Inbound Pedestrian Volume crossing m	22			28			28			22		
v_co, Outbound Pedestrian Volume crossing	26			39			26			39		
v_ci, Inbound Pedestrian Volume crossing mi	26			39			26			39		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	85.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Overlap	Overlap	Overlap	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	2	3	3	1	1	0	1	0
Auxiliary Signal Groups						2,3	1,3	1,3	1,3			
Maximum Green [s]	0	33	0	0	33	18	18	46	46	0	46	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	10	10	0	10	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	1.0	1.0	3.0	3.0	0.0	3.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	5.0	5.0	5.0	0.0	5.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	0	38	0	0	38	21	21	51	51	0	51	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	25	0	0	25	7	7	25	25	0	25	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall		No			No	No	No	Yes	Yes		Yes	
Maximum Recall		Yes			Yes	Yes	Yes	No	No		No	
Pedestrian Recall		Yes			Yes	Yes	Yes	Yes	Yes		Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	R	C	C	C	C	R
C, Calculated Cycle Length [s]	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	33	33	56	67	67	46	46	46
g / C, Green / Cycle	0.30	0.30	0.51	0.61	0.61	0.42	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.11	0.25	0.28	0.66	0.20	0.23	0.23	0.09
s, saturation flow rate [veh/h]	540	1087	1556	601	1309	1863	1702	1501
c, Capacity [veh/h]	209	391	791	408	797	812	712	627
d1, Uniform Delay [s]	30.56	37.94	18.23	17.66	10.57	24.05	24.07	20.40
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.60	9.68	2.73	36.98	1.14	2.37	2.95	0.81
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	0.30	0.69	0.55	0.97	0.34	0.52	0.54	0.22
d, Delay for Lane Group [s/veh]	34.15	47.62	20.96	54.65	11.71	26.43	27.02	21.22
Lane Group LOS	C	D	C	D	B	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.39	7.91	7.80	9.12	3.29	8.64	7.98	2.40
50th-Percentile Queue Length [m/ln]	10.62	60.28	59.47	69.49	25.06	65.82	60.83	18.31
95th-Percentile Queue Length [veh/ln]	2.51	12.52	12.39	14.07	5.92	13.46	12.62	4.33
95th-Percentile Queue Length [m/ln]	19.11	95.43	94.38	107.23	45.11	102.54	96.14	32.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.15	34.15	34.15	47.62	47.62	20.96	54.65	11.71	11.71	26.43	26.71	21.22
Movement LOS	C	C	C	D	D	C	D	B	B	C	C	C
d_A, Approach Delay [s/veh]	34.15			31.21			37.26			25.90		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	30.86											
Intersection LOS	C											
Intersection V/C	0.634											

Emissions

Vehicle Kilometers Traveled [km/h]	3.00	63.53	101.74	62.07	42.22	65.92	60.16	21.69
Stops [stops/h]	45.60	258.89	255.41	298.45	107.64	282.68	261.26	78.65
Fuel consumption [L/h]	2.94	21.79	22.42	29.18	8.85	21.21	19.61	6.10
CO [g/h]	54.28	402.42	413.96	538.90	163.40	391.70	362.11	112.63
NOx [g/h]	10.56	78.30	80.54	104.85	31.79	76.21	70.45	21.91
VOC [g/h]	12.58	93.27	95.94	124.90	37.87	90.78	83.92	26.10

Other Modes

g_Walk,mi, Effective Walk Time [s]	14.0	14.0	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	22.23	8.94	0.27	14.67
d_p, Pedestrian Delay [s]	41.89	41.89	44.55	44.55
I_p,int, Pedestrian LOS Score for Intersection	1.788	2.786	2.684	3.012
Crosswalk LOS	A	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	600	1218	836
d_b, Bicycle Delay [s]	26.95	26.95	8.40	18.62
I_b,int, Bicycle LOS Score for Intersection	1.664	2.802	2.109	2.354
Bicycle LOS	A	C	B	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Stony Plain Road and 102 Avenue

Control Type:	Signalized	Delay (sec / veh):	18.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.472

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [m]	3.66	3.40	3.40	3.40	3.40	3.66
No. of Lanes in Entry Pocket	0	1	0	0	1	0
Entry Pocket Length [m]	30.48	45.00	30.48	30.48	75.00	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	Yes		Yes		Yes	
Crosswalk	Yes		No		Yes	

Volumes

Name						
Base Volume Input [veh/h]	0	773	247	697	1143	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
Proportion of CAVs [%]	0.00					
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	77	0	0	0	0
Total Hourly Volume [veh/h]	0	696	247	697	1143	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]	0	174	62	174	286	0
Total Analysis Volume [veh/h]	0	696	247	697	1143	0
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
v_do, Outbound Pedestrian Volume crossing	0		0		10	
v_di, Inbound Pedestrian Volume crossing m	0		0		10	
v_co, Outbound Pedestrian Volume crossing	10		10		10	
v_ci, Inbound Pedestrian Volume crossing mi	10		10		10	
v_ab, Corner Pedestrian Volume [ped/h]	10		10		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Protected	Overlap	Overlap	Permissive
Signal Group	0	1	1	2	3	0
Auxiliary Signal Groups				1,2	2,3	
Maximum Green [s]	0	59	59	19	14	0
Amber [s]	0.0	4.0	4.0	4.0	3.0	0.0
All red [s]	0.0	2.0	2.0	3.0	2.0	0.0
Walk [s]	0	7	7	7	7	0
Pedestrian Clearance [s]	0	10	10	20	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No		No	No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	4.0	5.0	3.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	65	65	26	19	0
Lead / Lag	-	-	Lag	-	-	-
Minimum Green [s]	0	5	5	10	10	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0
Minimum Recall		No	No	No	No	
Maximum Recall		Yes	Yes	Yes	Yes	
Pedestrian Recall		Yes	Yes	Yes	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	R	L	C	C
C, Calculated Cycle Length [s]	110	110	110	110
L, Total Lost Time per Cycle [s]	6.00	6.00	4.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	2.00	3.00
g_i, Effective Green Time [s]	59	59	84	40
g / C, Green / Cycle	0.54	0.54	0.76	0.36
(v / s)_i Volume / Saturation Flow Rate	0.25	0.14	0.20	0.22
s, saturation flow rate [veh/h]	2813	1781	3560	5094
c, Capacity [veh/h]	1509	955	2719	1852
d1, Uniform Delay [s]	15.71	13.73	3.82	28.72
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.02	0.66	0.23	1.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.26	0.26	0.62
d, Delay for Lane Group [s/veh]	16.73	14.38	4.05	30.27
Lane Group LOS	B	B	A	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.41	3.40	1.94	8.38
50th-Percentile Queue Length [m/ln]	41.21	25.88	14.82	63.83
95th-Percentile Queue Length [veh/ln]	9.22	6.11	3.50	13.12
95th-Percentile Queue Length [m/ln]	70.27	46.58	26.68	100.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	16.73	14.38	4.05	30.27	0.00
Movement LOS		B	B	A	C	
d_A, Approach Delay [s/veh]	16.73		6.75		30.27	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	18.90					
Intersection LOS	B					
Intersection V/C	0.472					

Emissions

Vehicle Kilometers Traveled [km/h]	315.44	58.19	164.21	647.09
Stops [stops/h]	353.96	111.13	127.31	822.49
Fuel consumption [L/h]	46.92	10.77	20.65	106.67
CO [g/h]	866.42	198.80	381.38	1969.69
NOx [g/h]	168.57	38.68	74.20	383.23
VOC [g/h]	200.80	46.07	88.39	456.50

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	50.96
M_CW, Crosswalk Circulation Area [m²/ped]	63.08	0.00	68.64
d_p, Pedestrian Delay [s]	44.55	0.00	44.55
I_p,int, Pedestrian LOS Score for Intersectio	2.403	0.000	2.681
Crosswalk LOS	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1073	1527	727
d_b, Bicycle Delay [s]	11.82	3.07	22.27
I_b,int, Bicycle LOS Score for Intersection	1.560	2.338	2.188
Bicycle LOS	A	B	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: Stony Plain Road and 142 Street

Control Type:	Signalized	Delay (sec / veh):	64.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
No. of Lanes in Entry Pocket	0	0	1	0	0	2	1	0	0	0	0	1
Entry Pocket Length [m]	30.48	30.48	5.00	30.48	30.48	90.00	110.00	30.48	30.48	30.48	30.48	105.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	28	528	271	5	677	21	4	670	60	1042	709	166
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
Proportion of CAVs [%]	0.00											
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	27	0	0	2	0	0	6	0	0	17
Total Hourly Volume [veh/h]	28	528	244	5	677	19	4	670	54	1042	709	149
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	132	61	1	169	5	1	168	14	261	177	37
Total Analysis Volume [veh/h]	28	528	244	5	677	19	4	670	54	1042	709	149
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
v_do, Outbound Pedestrian Volume crossing	20			20			20			20		
v_di, Inbound Pedestrian Volume crossing m	20			20			20			20		
v_co, Outbound Pedestrian Volume crossing	20			20			20			20		
v_ci, Inbound Pedestrian Volume crossing mi	20			20			20			20		
v_ab, Corner 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]	160
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	48.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	9	0	0	8	0	1	5	0	2	3	0
Auxiliary Signal Groups												
Maximum Green [s]	7	48	0	0	37	0	11	30	0	63	83	0
Amber [s]	4.0	4.0	0.0	0.0	4.0	0.0	3.0	4.0	0.0	3.0	3.0	0.0
All red [s]	0.0	3.0	0.0	0.0	3.0	0.0	2.0	3.0	0.0	2.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	5.0	0.0	0.0	5.0	0.0	3.0	5.0	0.0	3.0	4.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	11	55	0	0	44	0	16	37	0	68	89	0
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	0	10	0	5	10	0	5	10	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No			No		No	No		No	No	
Maximum Recall	Yes	Yes			Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall	No	Yes			Yes		No	Yes		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	R	L	C	R	L	C	C	L	C	R
C, Calculated Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	7.00	7.00	7.00	7.00	7.00	7.00	5.00	7.00	7.00	5.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00	5.00	3.00	4.00	4.00
g_i, Effective Green Time [s]	48	48	48	37	37	37	11	30	30	63	83	83
g / C, Green / Cycle	0.30	0.30	0.30	0.23	0.23	0.23	0.07	0.19	0.19	0.39	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.25	0.19	0.09	0.01	0.21	0.01	0.00	0.19	0.19	0.30	0.36	0.10
s, saturation flow rate [veh/h]	1063	1567	2813	691	3279	1452	1640	1968	1798	3459	1968	1430
c, Capacity [veh/h]	266	470	844	84	758	336	113	369	337	1362	1021	742
d1, Uniform Delay [s]	47.40	48.26	42.92	71.67	59.58	47.85	69.55	65.00	65.00	42.08	28.96	20.63
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	51.52	6.18	0.86	1.34	15.06	0.32	0.59	51.59	57.65	4.14	3.89	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.63	0.29	0.06	0.89	0.06	0.04	1.02	1.03	0.77	0.69	0.20
d, Delay for Lane Group [s/veh]	98.92	54.44	43.79	73.02	74.63	48.17	70.13	116.59	122.65	46.23	32.85	21.24
Lane Group LOS	F	D	D	E	E	D	E	F	F	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	12.50	11.02	3.87	0.23	14.91	0.63	0.17	20.36	19.17	18.69	21.56	3.19
50th-Percentile Queue Length [m/ln]	95.28	83.96	29.46	1.74	113.61	4.81	1.31	155.15	146.06	142.40	164.26	24.29
95th-Percentile Queue Length [veh/ln]	18.30	16.46	6.96	0.41	21.24	1.14	0.31	28.05	26.82	25.78	29.17	5.74
95th-Percentile Queue Length [m/ln]	139.47	125.45	53.02	3.12	161.86	8.65	2.37	213.71	204.35	196.43	222.28	43.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	98.92	74.13	43.79	73.02	74.63	48.17	70.13	119.25	122.65	46.23	32.85	21.24
Movement LOS	F	E	D	E	E	D	E	F	F	D	C	C
d_A, Approach Delay [s/veh]	65.74			73.91			119.23			39.28		
Approach LOS	E			E			F			D		
d_I, Intersection Delay [s/veh]	64.38											
Intersection LOS	E											
Intersection V/C	0.770											

Emissions

Vehicle Kilometers Traveled [km/h]	80.93	91.04	75.47	1.95	263.78	7.40	0.62	58.02	53.74	245.49	167.03	35.10
Stops [stops/h]	281.34	247.93	173.95	5.12	670.91	14.19	3.88	458.11	431.29	840.97	485.03	71.71
Fuel consumption [L/h]	33.95	26.57	19.31	0.58	79.06	1.73	0.36	49.55	47.67	79.32	44.71	7.39
CO [g/h]	626.86	490.56	356.61	10.74	1459.97	31.90	6.68	914.94	880.33	1464.72	825.68	136.38
NOx [g/h]	121.96	95.45	69.38	2.09	284.06	6.21	1.30	178.01	171.28	284.98	160.65	26.54
VOC [g/h]	145.28	113.69	82.65	2.49	338.36	7.39	1.55	212.05	204.02	339.46	191.36	31.61

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	16.64			12.54			8.15			7.66		
d_p, Pedestrian Delay [s]	71.25			71.25			71.25			71.25		
I_p,int, Pedestrian LOS Score for Intersectio	2.980			2.827			2.749			3.067		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	600			463			375			1038		
d_b, Bicycle Delay [s]	39.20			47.28			52.81			18.53		
I_b,int, Bicycle LOS Score for Intersection	2.242			2.140			2.165			4.723		
Bicycle LOS	B			B			B			E		

Sequence

Ring 1	2	5	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	1	3	9	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Stony Plain Road and 149 Street

Control Type:	Signalized	Delay (sec / veh):	83.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.650

Intersection Setup												
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	1	1	0	1
Entry Pocket Length [m]	90.00	30.48	30.48	65.00	30.48	75.00	50.00	30.48	0.00	110.00	30.48	75.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	60.00			60.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	9	448	402	34	691	2	88	277	233	252	616	96
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
Proportion of CAVs [%]	0.00											
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	40	0	0	0	0	0	23	0	0	10
Total Hourly Volume [veh/h]	9	448	362	34	691	2	88	277	210	252	616	86
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]	2	112	91	9	173	1	22	69	53	63	154	22
Total Analysis Volume [veh/h]	9	448	362	34	691	2	88	277	210	252	616	86
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
v_do, Outbound Pedestrian Volume crossing	10			10			10			10		
v_di, Inbound Pedestrian Volume crossing m	10			10			10			10		
v_co, Outbound Pedestrian Volume crossing	10			10			10			10		
v_ci, Inbound Pedestrian Volume crossing mi	10			10			10			10		
v_ab, Corner 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
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	92.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	7	0	5	7	0	1	3	0	1	3	0
Auxiliary Signal Groups												
Maximum Green [s]	7	34	0	7	34	0	12	22	0	12	22	0
Amber [s]	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	0.0	3.0	0.0	0.0	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	30	0	0	30	0	0	19	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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]	2.0	5.0	0.0	2.0	5.0	0.0	5.0	5.0	0.0	5.0	5.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	11	41	0	11	41	0	19	29	0	19	29	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	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
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall	No	Yes		No	Yes		No	Yes		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Calculated Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	4.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	5.00	5.00	0.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	45	34	34	45	34	34	12	22	22	12	22	22
g / C, Green / Cycle	0.45	0.34	0.34	0.45	0.34	0.34	0.12	0.22	0.22	0.12	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.01	0.14	0.23	0.04	0.21	0.00	0.05	0.15	0.13	0.08	0.33	0.05
s, saturation flow rate [veh/h]	929	3279	1589	867	3279	1543	1640	1870	1589	3186	1870	1589
c, Capacity [veh/h]	390	1115	540	424	1115	525	197	411	350	382	411	350
d1, Uniform Delay [s]	16.78	25.23	28.20	16.02	27.59	21.81	40.91	35.71	35.05	42.05	39.00	32.16
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	0.11	1.08	6.48	0.37	2.59	0.01	7.19	8.52	7.43	8.62	236.28	1.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.40	0.67	0.08	0.62	0.00	0.45	0.67	0.60	0.66	1.50	0.25
d, Delay for Lane Group [s/veh]	16.89	26.31	34.68	16.39	30.19	21.82	48.10	44.23	42.48	50.67	275.28	33.83
Lane Group LOS	B	C	C	B	C	C	D	D	D	D	F	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.12	4.09	8.06	0.46	7.02	0.03	2.39	7.07	5.25	3.40	36.88	1.87
50th-Percentile Queue Length [m/ln]	0.92	31.16	61.41	3.52	53.49	0.25	18.24	53.84	40.04	25.92	281.04	14.22
95th-Percentile Queue Length [veh/ln]	0.22	7.36	12.72	0.83	11.36	0.06	4.31	11.43	9.01	6.12	56.37	3.36
95th-Percentile Queue Length [m/ln]	1.66	56.10	96.89	6.34	86.60	0.44	32.83	87.06	68.69	46.65	429.54	25.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.89	26.31	34.68	16.39	30.19	21.82	48.10	44.23	42.48	50.67	275.28	33.83
Movement LOS	B	C	C	B	C	C	D	D	D	D	F	C
d_A, Approach Delay [s/veh]	29.90			29.52			44.19			194.18		
Approach LOS	C			C			D			F		
d_I, Intersection Delay [s/veh]	83.45											
Intersection LOS	F											
Intersection V/C	0.650											

Emissions

Vehicle Kilometers Traveled [km/h]	2.26	112.52	90.92	7.10	144.32	0.42	20.95	65.94	49.99	90.81	221.97	30.99
Stops [stops/h]	4.35	294.46	290.13	16.64	505.41	1.16	86.16	254.37	189.18	244.89	1327.76	67.16
Fuel consumption [L/h]	0.45	28.38	26.95	1.58	44.95	0.11	7.19	21.42	15.87	23.97	181.50	6.70
CO [g/h]	8.39	524.00	497.65	29.26	829.96	1.98	132.70	395.48	293.08	442.59	3351.58	123.65
NOx [g/h]	1.63	101.95	96.83	5.69	161.48	0.39	25.82	76.95	57.02	86.11	652.10	24.06
VOC [g/h]	1.94	121.44	115.34	6.78	192.35	0.46	30.75	91.66	67.92	102.58	776.76	28.66

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			93.10			0.00			66.55		
M_CW, Crosswalk Circulation Area [m²/ped]	52.78			64.51			75.96			44.10		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersectio	2.891			2.732			2.470			2.643		
Crosswalk LOS	C			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	680			680			440			440		
d_b, Bicycle Delay [s]	21.78			21.78			30.42			30.42		
I_b,int, Bicycle LOS Score for Intersection	2.268			2.159			2.546			3.150		
Bicycle LOS	B			B			B			C		

Sequence

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



Intersection Level Of Service Report
Intersection 18: Stony Plain Road and 156 Street

Control Type:	Signalized	Delay (sec / veh):	40.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup												
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.50	3.50	3.66	3.50	3.50	3.50	3.50	3.50	3.66	3.50	3.50
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	7.50	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	244	89	0	282	131	92	188	18	0	780	48
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
Proportion of CAVs [%]	0.00											
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	9	0	0	13	0	0	2	0	0	5
Total Hourly Volume [veh/h]	0	244	80	0	282	118	92	188	18	0	780	43
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]	0	61	20	0	71	30	23	47	5	0	195	11
Total Analysis Volume [veh/h]	0	244	80	0	282	118	92	188	18	0	780	43
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
v_do, Outbound Pedestrian Volume crossing	20			20			20			20		
v_di, Inbound Pedestrian Volume crossing m	20			20			20			20		
v_co, Outbound Pedestrian Volume crossing	20			20			20			20		
v_ci, Inbound Pedestrian Volume crossing mi	20			20			20			20		
v_ab, Corner 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]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	5	0	0	5	0	1	2	0	0	3	0
Auxiliary Signal Groups												
Maximum Green [s]	0	40	0	0	40	0	10	69	0	0	55	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	4.0	4.0	0.0	0.0	4.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	30	0	0	30	0	0	30	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	2.0	4.0	0.0	0.0	4.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	45	0	0	45	0	14	75	0	0	61	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		Yes			Yes		Yes	Yes			Yes	
Pedestrian Recall		Yes			Yes		No	Yes			Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	C	R	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	40	40	40	40	69	69	55
g / C, Green / Cycle	0.33	0.33	0.33	0.33	0.58	0.58	0.46
(v / s)_i Volume / Saturation Flow Rate	0.14	0.05	0.16	0.08	0.11	0.11	0.45
s, saturation flow rate [veh/h]	1722	1589	1722	1494	835	1835	1848
c, Capacity [veh/h]	574	530	574	498	278	1055	847
d1, Uniform Delay [s]	31.07	28.08	31.89	28.81	24.33	12.21	31.74
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.30	0.60	2.99	1.12	3.17	0.41	24.79
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.15	0.49	0.24	0.33	0.20	0.97
d, Delay for Lane Group [s/veh]	33.36	28.68	34.88	29.92	27.50	12.62	56.54
Lane Group LOS	C	C	C	C	C	B	E
Critical Lane Group	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.85	1.71	6.98	2.61	1.34	2.73	28.27
50th-Percentile Queue Length [m/ln]	44.58	13.06	53.20	19.91	10.21	20.79	215.45
95th-Percentile Queue Length [veh/ln]	9.82	3.08	11.31	4.70	2.41	4.91	37.00
95th-Percentile Queue Length [m/ln]	74.80	23.51	86.22	35.85	18.38	37.42	281.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	33.36	28.68	0.00	34.88	29.92	27.50	12.62	12.62	0.00	56.54	56.54
Movement LOS		C	C		C	C	C	B	B		E	E
d_A, Approach Delay [s/veh]	32.21			33.41			17.21			56.54		
Approach LOS	C			C			B			E		
d_I, Intersection Delay [s/veh]	40.90											
Intersection LOS	D											
Intersection V/C	0.639											

Emissions

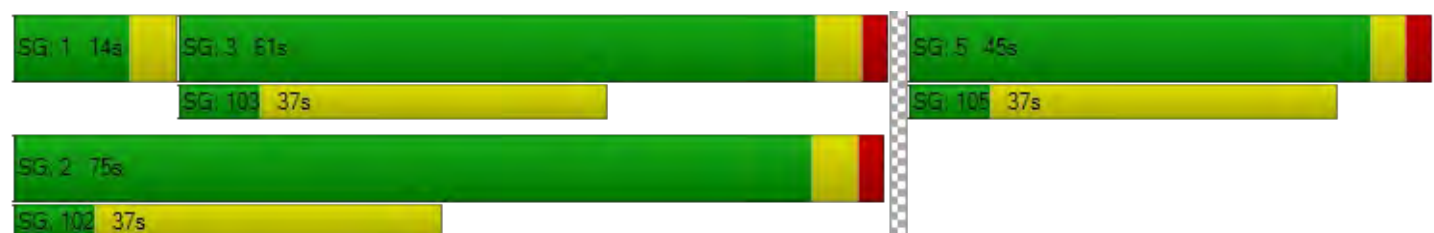
Vehicle Kilometers Traveled [km/h]	49.98	16.39	35.85	15.00	9.62	21.53	476.60
Stops [stops/h]	175.49	51.41	209.43	78.40	40.19	81.84	848.24
Fuel consumption [L/h]	14.96	4.48	15.68	5.91	3.77	5.89	100.21
CO [g/h]	276.31	82.73	289.62	109.06	69.52	108.72	1850.49
NOx [g/h]	53.76	16.10	56.35	21.22	13.53	21.15	360.04
VOC [g/h]	64.04	19.17	67.12	25.27	16.11	25.20	428.87

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	25.22	18.71	22.55	24.68
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersectio	2.232	2.303	2.364	2.294
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	667	1150	917
d_b, Bicycle Delay [s]	26.67	26.67	10.84	17.60
I_b,int, Bicycle LOS Score for Intersection	2.109	2.241	2.055	2.926
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	3	5	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Stony Plain Road and 158 Street

Control Type:	Signalized	Delay (sec / veh):	12.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.241

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	36	18	66	6	9	35	20	314	15	46	516	10
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 [%]	60.00	2.00	8.00	2.00	2.00	2.00	2.00	6.00	20.00	2.00	2.00	10.00
Proportion of CAVs [%]	0.00											
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	7	0	0	4	0	0	2	0	0	1
Total Hourly Volume [veh/h]	36	18	59	6	9	31	20	314	13	46	516	9
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]	9	5	15	2	2	8	5	79	3	12	129	2
Total Analysis Volume [veh/h]	36	18	59	6	9	31	20	314	13	46	516	9
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
v_do, Outbound Pedestrian Volume crossing	10			0			0			10		
v_di, Inbound Pedestrian Volume crossing m	10			0			0			10		
v_co, Outbound Pedestrian Volume crossing	10			10			10			10		
v_ci, Inbound Pedestrian Volume crossing mi	10			10			10			10		
v_ab, Corner 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]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	36.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	2	0	0	1	0	0	1	0
Auxiliary Signal Groups												
Maximum Green [s]	0	23	0	0	23	0	0	42	0	0	42	0
Amber [s]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	9	0	0	9	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	14	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	4.0	0.0	0.0	4.0	0.0
Detector Location [m]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	5.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	28	0	0	28	0	0	32	0	0	32	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	7	0	0	7	0	0	21	0	0	21	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			Yes			Yes	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	C	C	C	C
C, Calculated Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	5.00	5.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	23	23	26	26	26	26
g / C, Green / Cycle	0.38	0.38	0.43	0.43	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.07	0.03	0.11	0.10	0.17	0.16
s, saturation flow rate [veh/h]	1564	1628	1705	1621	1740	1691
c, Capacity [veh/h]	679	692	805	703	823	733
d1, Uniform Delay [s]	12.22	11.73	10.70	10.74	11.42	11.53
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.53	0.19	0.64	0.80	1.20	1.49
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.07	0.22	0.24	0.36	0.38
d, Delay for Lane Group [s/veh]	12.75	11.92	11.34	11.54	12.63	13.02
Lane Group LOS	B	B	B	B	B	B
Critical Lane Group	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.99	0.38	1.45	1.37	2.54	2.47
50th-Percentile Queue Length [m/ln]	7.54	2.92	11.02	10.42	19.34	18.83
95th-Percentile Queue Length [veh/ln]	1.78	0.69	2.60	2.46	4.57	4.45
95th-Percentile Queue Length [m/ln]	13.56	5.25	19.83	18.75	34.81	33.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.75	12.75	12.75	11.92	11.92	11.92	11.34	11.44	11.54	12.63	12.83	13.02
Movement LOS	B	B	B	B	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	12.75			11.92			11.43			12.82		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	12.33											
Intersection LOS	B											
Intersection V/C	0.241											

Emissions

Vehicle Kilometers Traveled [km/h]	10.46	4.93	88.92	82.43	38.38	36.41
Stops [stops/h]	59.34	22.98	86.75	82.04	152.26	148.24
Fuel consumption [L/h]	3.44	1.41	11.98	11.17	9.92	9.58
CO [g/h]	63.45	25.98	221.21	206.21	183.12	176.88
NOx [g/h]	12.35	5.06	43.04	40.12	35.63	34.42
VOC [g/h]	14.71	6.02	51.27	47.79	42.44	40.99

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0	13.0
M_corner, Corner Circulation Area [m²/ped]	26.74	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	63.81	71.44	0.00	126.96
d_p, Pedestrian Delay [s]	21.68	21.68	0.00	18.41
I_p,int, Pedestrian LOS Score for Intersectio	1.867	1.779	0.000	2.357
Crosswalk LOS	A	A	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	767	867	867
d_b, Bicycle Delay [s]	11.41	11.41	9.63	9.63
I_b,int, Bicycle LOS Score for Intersection	1.758	1.642	1.848	2.032
Bicycle LOS	A	A	A	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: Stony Plain Road and 163 Street

Control Type:	Signalized	Delay (sec / veh):	33.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	45.00	30.48	30.00	60.00	30.48	30.48	40.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	282	262	153	13	210	152	41	192	22	118	710	19
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 [%]	3.00	2.00	7.00	15.00	6.00	4.00	7.00	7.00	2.00	12.00	4.00	5.00
Proportion of CAVs [%]	0.00											
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	15	0	0	15	0	0	2	0	0	2
Total Hourly Volume [veh/h]	282	262	138	13	210	137	41	192	20	118	710	17
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]	71	66	35	3	53	34	10	48	5	30	178	4
Total Analysis Volume [veh/h]	282	262	138	13	210	137	41	192	20	118	710	17
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
v_do, Outbound Pedestrian Volume crossing	17			11			7			15		
v_di, Inbound Pedestrian Volume crossing m	15			7			11			17		
v_co, Outbound Pedestrian Volume crossing	12			18			14			10		
v_ci, Inbound Pedestrian Volume crossing mi	14			10			12			18		
v_ab, Corner 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]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	3	0	0	3	0	0	1	0	4	1	0
Auxiliary Signal Groups												
Maximum Green [s]	10	33	0	0	33	0	0	55	0	7	55	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	16	0	0	16	0	0	16	0	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	2.0	0.0	0.0	2.0	0.0	0.0	3.0	0.0	1.0	3.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	13	37	0	0	37	0	0	60	0	10	60	0
Lead / Lag	Lead	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	7	24	0	0	24	0	0	26	0	7	26	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No			No			Yes		Yes	Yes	
Maximum Recall	Yes	Yes			Yes			No		No	No	
Pedestrian Recall	No	No			No			No		No	No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	2.00	2.00	3.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	46	33	33	33	33	55	55	55	65	55	55
g / C, Green / Cycle	0.38	0.28	0.28	0.28	0.28	0.46	0.46	0.46	0.54	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.23	0.23	0.01	0.12	0.09	0.06	0.06	0.06	0.10	0.20	0.20
s, saturation flow rate [veh/h]	1203	1739	880	1810	1533	692	1795	1730	1145	1840	1822
c, Capacity [veh/h]	453	478	97	498	422	273	823	793	670	843	835
d1, Uniform Delay [s]	30.22	40.96	55.93	35.68	34.57	30.60	18.72	18.74	13.67	21.96	21.97
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	6.32	15.86	2.87	2.61	2.04	1.16	0.33	0.35	0.57	1.62	1.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	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	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	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.84	0.13	0.42	0.32	0.15	0.13	0.13	0.18	0.43	0.43
d, Delay for Lane Group [s/veh]	36.54	56.82	58.80	38.29	36.61	31.76	19.04	19.09	14.24	23.58	23.61
Lane Group LOS	D	E	E	D	D	C	B	B	B	C	C
Critical Lane Group	Yes	Yes	No	No	No	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	6.71	13.14	0.46	5.41	3.43	0.97	1.79	1.77	1.68	7.26	7.21
50th-Percentile Queue Length [m/ln]	51.12	100.11	3.50	41.19	26.12	7.37	13.65	13.49	12.78	55.35	54.96
95th-Percentile Queue Length [veh/ln]	10.96	19.08	0.83	9.22	6.17	1.74	3.23	3.19	3.02	11.68	11.62
95th-Percentile Queue Length [m/ln]	83.49	145.41	6.31	70.25	47.01	13.26	24.58	24.28	23.00	89.04	88.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.54	56.82	56.82	58.80	38.29	36.61	31.76	19.06	19.09	14.24	23.59	23.61
Movement LOS	D	E	E	E	D	D	C	B	B	B	C	C
d_A, Approach Delay [s/veh]	48.43			38.39			21.12			22.29		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	33.19											
Intersection LOS	C											
Intersection V/C	0.575											

Emissions

Vehicle Kilometers Traveled [km/h]	46.12	65.42	1.88	30.35	19.80	10.05	26.19	25.80	10.65	32.94	32.67
Stops [stops/h]	201.28	394.13	13.80	162.17	102.82	29.00	53.75	53.11	50.30	217.93	216.39
Fuel consumption [L/h]	16.84	32.57	1.08	12.72	8.05	2.61	5.26	5.19	3.44	14.65	14.55
CO [g/h]	310.97	601.46	19.89	234.86	148.71	48.20	97.21	95.90	63.45	270.55	268.62
NOx [g/h]	60.50	117.02	3.87	45.70	28.93	9.38	18.91	18.66	12.34	52.64	52.26
VOC [g/h]	72.07	139.39	4.61	54.43	34.46	11.17	22.53	22.22	14.70	62.70	62.25

Other Modes

g_Walk,mi, Effective Walk Time [s]	4.0	4.0	4.0	4.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	6.93	8.43	0.00	1.33
d_p, Pedestrian Delay [s]	56.07	56.07	56.07	56.07
I_p,int, Pedestrian LOS Score for Intersectio	2.515	2.405	2.733	2.583
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	550	917	917
d_b, Bicycle Delay [s]	31.54	31.54	17.60	17.60
I_b,int, Bicycle LOS Score for Intersection	2.710	2.178	1.770	2.258
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: 95 Avenue and 156 Street

Control Type:	Signalized	Delay (sec / veh):	46.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.597

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	75.00	30.48	30.48	75.00	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	104	265	92	36	426	43	62	408	19	69	438	1
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
Proportion of CAVs [%]	0.00											
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	9	0	0	4	0	0	2	0	0	0
Total Hourly Volume [veh/h]	104	265	83	36	426	39	62	408	17	69	438	1
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]	26	66	21	9	107	10	16	102	4	17	110	0
Total Analysis Volume [veh/h]	104	265	83	36	426	39	62	408	17	69	438	1
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
v_do, Outbound Pedestrian Volume crossing	20			20			20			20		
v_di, Inbound Pedestrian Volume crossing m	20			20			20			20		
v_co, Outbound Pedestrian Volume crossing	20			20			20			20		
v_ci, Inbound Pedestrian Volume crossing mi	20			20			20			20		
v_ab, Corner 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]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	3	0	1	3	0	5	7	0	5	7	0
Auxiliary Signal Groups												
Maximum Green [s]	14	33	0	14	33	0	10	45	0	10	45	0
Amber [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
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	29	0	0	29	0	0	30	0	0	30	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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]	3.0	3.0	0.0	3.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	19	38	0	19	38	0	13	50	0	13	50	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	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
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall	No	Yes		No	Yes		No	Yes		No	Yes	

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, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	3.00	5.00	3.00	5.00
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]	3.00	3.00	3.00	3.00	0.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	14	33	14	33	58	45	58	45
g / C, Green / Cycle	0.12	0.28	0.12	0.28	0.48	0.38	0.48	0.38
(v / s)_i Volume / Saturation Flow Rate	0.06	0.20	0.02	0.25	0.06	0.25	0.06	0.26
s, saturation flow rate [veh/h]	1640	1773	1640	1835	1081	1706	1091	1721
c, Capacity [veh/h]	191	487	191	505	406	640	415	646
d1, Uniform Delay [s]	49.99	39.24	47.87	42.25	19.58	31.21	19.50	31.46
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.64	8.63	2.17	24.69	0.80	5.38	0.86	5.70
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	0.54	0.71	0.19	0.92	0.15	0.66	0.17	0.68
d, Delay for Lane Group [s/veh]	60.63	47.87	50.03	66.94	20.38	36.59	20.36	37.16
Lane Group LOS	E	D	D	E	C	D	C	D
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	3.51	10.36	1.09	16.69	1.01	11.09	1.13	11.57
50th-Percentile Queue Length [m/ln]	26.74	78.97	8.31	127.15	7.70	84.49	8.60	88.17
95th-Percentile Queue Length [veh/ln]	6.32	15.64	1.96	23.39	1.82	16.55	2.03	17.15
95th-Percentile Queue Length [m/ln]	48.14	119.20	14.96	178.20	13.86	126.10	15.48	130.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.63	47.87	47.87	50.03	66.94	66.94	20.38	36.59	36.59	20.36	37.16	37.16
Movement LOS	E	D	D	D	E	E	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	50.81			65.72			34.53			34.88		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	46.42											
Intersection LOS	D											
Intersection V/C	0.597											

Emissions

Vehicle Kilometers Traveled [km/h]	26.28	87.95	12.21	157.66	17.74	121.58	23.73	150.95
Stops [stops/h]	105.29	310.91	32.73	500.60	30.32	332.64	33.86	347.13
Fuel consumption [L/h]	9.72	28.17	3.28	50.20	3.34	31.01	4.10	34.72
CO [g/h]	179.47	520.26	60.62	927.05	61.69	572.61	75.70	641.05
NOx [g/h]	34.92	101.22	11.79	180.37	12.00	111.41	14.73	124.72
VOC [g/h]	41.59	120.57	14.05	214.85	14.30	132.71	17.54	148.57

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	28.36	29.40	25.82	22.48
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersectio	2.333	2.275	2.419	2.408
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	550	750	750
d_b, Bicycle Delay [s]	31.54	31.54	23.44	23.44
I_b,int, Bicycle LOS Score for Intersection	2.320	2.393	2.366	2.398
Bicycle LOS	B	B	B	B

Sequence

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



Intersection Level Of Service Report
Intersection 22: 87 Avenue and Meadowlark Road

Control Type:	Signalized	Delay (sec / veh):	39.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.584

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [m]	65.00	30.48	25.00	85.00	30.48	30.48	135.00	30.48	30.48	75.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	70	371	371	18	432	43	177	395	427	210	331	3
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
Proportion of CAVs [%]	0.00											
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	37	0	0	4	0	0	43	0	0	0
Total Hourly Volume [veh/h]	70	371	334	18	432	39	177	395	384	210	331	3
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	93	84	5	108	10	44	99	96	53	83	1
Total Analysis Volume [veh/h]	70	371	334	18	432	39	177	395	384	210	331	3
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
v_do, Outbound Pedestrian Volume crossing	35			35			35			35		
v_di, Inbound Pedestrian Volume crossing m	35			35			35			35		
v_co, Outbound Pedestrian Volume crossing	35			35			35			35		
v_ci, Inbound Pedestrian Volume crossing mi	35			35			35			35		
v_ab, Corner 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]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	50.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	7	1	5	7	0	1	4	0	2	3	0
Auxiliary Signal Groups			1,7									
Maximum Green [s]	11	33	10	11	33	0	10	35	0	17	42	0
Amber [s]	4.0	4.0	4.0	4.0	4.0	0.0	4.0	4.0	0.0	4.0	4.0	0.0
All red [s]	2.0	3.0	0.0	2.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	30	0	0	30	0	0	30	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	5.0	2.0	4.0	5.0	0.0	2.0	5.0	0.0	2.0	5.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	17	40	14	17	40	0	14	42	0	21	49	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	5	5	10	0	5	10	0	5	10	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No	No	No	No		No	No		No	No	
Maximum Recall	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Pedestrian Recall	No	Yes	No	No	Yes		No	Yes		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	C
C, Calculated Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	6.00	7.00	4.00	6.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	5.00	0.00	4.00	5.00	5.00	0.00	5.00	5.00	0.00	5.00	5.00
g_i, Effective Green Time [s]	11	33	50	11	33	33	56	35	35	56	42	42
g / C, Green / Cycle	0.09	0.28	0.42	0.09	0.28	0.28	0.47	0.29	0.29	0.47	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.04	0.10	0.22	0.01	0.14	0.14	0.15	0.21	0.26	0.20	0.10	0.10
s, saturation flow rate [veh/h]	1640	3560	1529	1640	1722	1647	1203	1870	1475	1062	1722	1715
c, Capacity [veh/h]	150	979	636	150	474	453	578	545	430	413	603	600
d1, Uniform Delay [s]	51.71	35.21	25.85	50.05	36.60	36.73	19.30	38.17	40.70	24.36	28.08	28.08
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	10.01	1.12	3.09	1.62	3.78	4.13	1.37	8.13	23.42	4.43	1.14	1.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.38	0.53	0.12	0.50	0.51	0.31	0.72	0.89	0.51	0.28	0.28
d, Delay for Lane Group [s/veh]	61.72	36.32	28.94	51.67	40.37	40.86	20.67	46.30	64.12	28.80	29.22	29.23
Lane Group LOS	E	D	C	D	D	D	C	D	E	C	C	C
Critical Lane Group	Yes	No	Yes	No	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.42	4.55	7.53	0.57	6.36	6.28	3.14	11.59	13.53	4.04	3.66	3.65
50th-Percentile Queue Length [m/ln]	18.42	34.66	57.36	4.31	48.49	47.85	23.91	88.30	103.13	30.80	27.89	27.84
95th-Percentile Queue Length [veh/ln]	4.35	8.05	12.03	1.02	10.50	10.39	5.65	17.17	19.57	7.28	6.59	6.58
95th-Percentile Queue Length [m/ln]	33.16	61.32	91.65	7.75	80.02	79.17	43.03	130.84	149.10	55.45	50.21	50.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.72	36.32	28.94	51.67	40.59	40.86	20.67	46.30	64.12	28.80	29.22	29.23
Movement LOS	E	D	C	D	D	D	C	D	E	C	C	C
d_A, Approach Delay [s/veh]	35.44			41.02			48.71			29.06		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	39.76											
Intersection LOS	D											
Intersection V/C	0.584											

Emissions

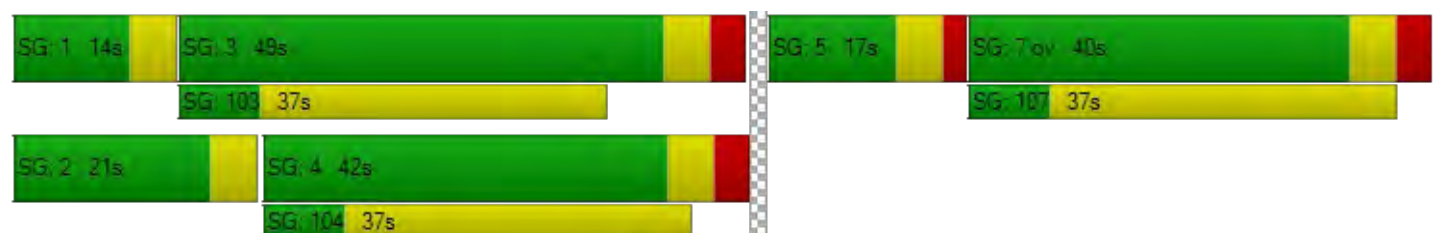
Vehicle Kilometers Traveled [km/h]	12.55	66.49	59.86	4.07	53.89	52.71	68.07	151.91	147.68	57.53	45.81	45.69
Stops [stops/h]	72.53	272.94	225.84	16.96	190.91	188.40	94.12	347.63	406.01	121.27	109.82	109.59
Fuel consumption [L/h]	6.15	22.83	18.21	1.48	16.81	16.57	11.41	36.34	42.12	12.85	10.59	10.56
CO [g/h]	113.53	421.55	336.20	27.41	310.48	306.02	210.63	671.01	777.82	237.32	195.47	195.02
NOx [g/h]	22.09	82.02	65.41	5.33	60.41	59.54	40.98	130.55	151.34	46.17	38.03	37.94
VOC [g/h]	26.31	97.70	77.92	6.35	71.96	70.92	48.82	155.51	180.27	55.00	45.30	45.20

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	7.86			16.30			17.29			9.71		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersectio	2.928			2.622			2.666			2.582		
Crosswalk LOS	C			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			550			583			700		
d_b, Bicycle Delay [s]	31.54			31.54			30.10			25.35		
I_b,int, Bicycle LOS Score for Intersection	2.230			1.966			2.384			2.008		
Bicycle LOS	B			A			B			B		

Sequence

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



Intersection Level Of Service Report
Intersection 23: 109 Street and 82 Ave

Control Type:
Analysis Method:
Analysis Period:

Signalized
HCM 7th Edition
15 minutes

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

36.8
D
0.752

Intersection Setup												
Name	109 Street			109 Street			82 Ave			82 Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.00	3.20	4.20	3.50	3.50	3.50	3.20	3.20	5.50	3.00	3.00	3.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [m]	100.00	30.48	30.48	70.00	30.48	30.48	50.00	30.48	30.48	50.00	30.48	15.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	109 Street			109 Street			82 Ave			82 Ave		
Base Volume Input [veh/h]	175	731	158	224	1542	42	117	678	266	159	476	157
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
Proportion of CAVs [%]	0.00											
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	16	0	0	4	0	0	27	0	0	16
Total Hourly Volume [veh/h]	175	731	142	224	1542	38	117	678	239	159	476	141
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]	44	183	36	56	386	10	29	170	60	40	119	35
Total Analysis Volume [veh/h]	175	731	142	224	1542	38	117	678	239	159	476	141
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
v_do, Outbound Pedestrian Volume crossing	73			93			72			93		
v_di, Inbound Pedestrian Volume crossing m	72			93			73			93		
v_co, Outbound Pedestrian Volume crossing	56			76			75			55		
v_ci, Inbound Pedestrian Volume crossing mi	55			75			76			56		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	7			17			7			12		

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	55.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	5	1	0	6	7	0	2	4	0	3	4	0
Auxiliary Signal Groups												
Maximum Green [s]	15	50	0	15	50	0	15	50	0	15	50	0
Amber [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
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	21	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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]	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	13	46	0	15	48	0	9	40	0	9	40	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	26	0	7	26	0	6	28	0	6	28	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
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	Yes	No		Yes	No		Yes	No		Yes	No	
Pedestrian Recall	No	No		No	No		No	Yes		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Calculated Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	56	41	41	56	43	43	44	35	35	42	35	35
g / C, Green / Cycle	0.51	0.37	0.37	0.51	0.39	0.39	0.40	0.32	0.32	0.38	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.33	0.23	0.11	0.28	0.32	0.33	0.14	0.28	0.31	0.23	0.15	0.13
s, saturation flow rate [veh/h]	527	3204	1334	811	3204	1642	865	1683	1452	695	3076	1113
c, Capacity [veh/h]	278	1194	497	401	1253	642	350	535	462	200	979	354
d1, Uniform Delay [s]	23.08	28.04	23.92	18.52	30.21	30.40	22.38	35.48	36.93	27.32	30.25	28.49
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.17	0.22	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	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.32	2.35	1.44	5.51	6.48	12.64	2.56	7.28	20.70	7.09	0.38	0.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.61	0.29	0.56	0.83	0.84	0.33	0.88	0.97	0.80	0.49	0.40
d, Delay for Lane Group [s/veh]	33.41	30.38	25.36	24.03	36.69	43.04	24.94	42.76	57.63	34.41	30.62	29.22
Lane Group LOS	C	C	C	C	D	D	C	D	E	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	3.18	8.08	2.75	3.76	13.20	14.87	2.19	12.76	14.21	3.08	5.17	2.93
50th-Percentile Queue Length [m/ln]	24.24	61.54	20.94	28.62	100.58	113.28	16.71	97.23	108.30	23.43	39.40	22.31
95th-Percentile Queue Length [veh/ln]	5.73	12.74	4.95	6.76	19.16	21.19	3.95	18.62	20.40	5.54	8.90	5.27
95th-Percentile Queue Length [m/ln]	43.63	97.06	37.68	51.52	145.98	161.47	30.07	141.87	155.41	42.18	67.81	40.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.41	30.38	25.36	24.03	38.76	43.04	24.94	47.32	57.63	34.41	30.62	29.22
Movement LOS	C	C	C	C	D	D	C	D	E	C	C	C
d_A, Approach Delay [s/veh]	30.21			37.02			47.17			31.14		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	36.76											
Intersection LOS	D											
Intersection V/C	0.752											

Emissions

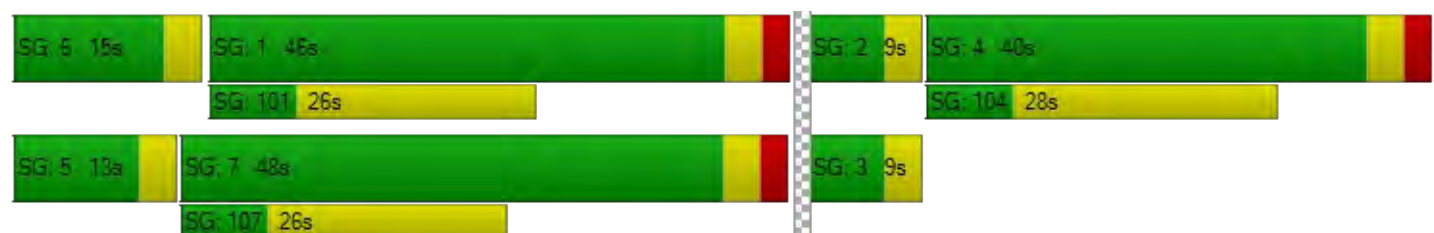
Vehicle Kilometers Traveled [km/h]	54.66	228.33	44.35	24.70	114.70	59.54	67.51	271.24	257.85	26.89	80.49	23.84
Stops [stops/h]	104.10	528.63	89.91	122.94	863.95	486.54	71.76	417.58	465.14	100.64	338.43	95.83
Fuel consumption [L/h]	12.04	50.69	9.01	9.25	59.69	34.48	10.28	50.66	54.81	8.51	24.62	7.08
CO [g/h]	222.31	936.04	166.40	170.87	1102.18	636.68	189.84	935.41	1012.02	157.14	454.68	130.69
NOx [g/h]	43.25	182.12	32.38	33.25	214.44	123.87	36.94	182.00	196.90	30.57	88.46	25.43
VOC [g/h]	51.52	216.94	38.57	39.60	255.44	147.56	44.00	216.79	234.55	36.42	105.38	30.29

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	7.10			4.78			0.00			11.09		
M_CW, Crosswalk Circulation Area [m²/ped]	6.49			5.69			7.96			7.94		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersectio	3.135			2.997			2.804			2.859		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	745			782			636			636		
d_b, Bicycle Delay [s]	21.72			20.58			25.66			25.72		
I_b,int, Bicycle LOS Score for Intersection	2.437			2.554			2.435			2.213		
Bicycle LOS	B			B			B			B		

Sequence

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



Intersection Level Of Service Report
Intersection 24: 109 Street and 83 Ave

Control Type:	Signalized	Delay (sec / veh):	9.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.324

Intersection Setup										
Name	109 Street					109 Street				
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Right	Right2	Left	Left	Thru	Right	Right
Lane Width [m]	3.66	3.66	3.20	3.66	4.20	3.66	3.66	3.50	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	35.00	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name	109 Street					109 Street				
Base Volume Input [veh/h]	0	0	860	0	33	0	0	1272	0	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	3	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	860	0	30	0	0	1272	0	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	0	0	215	0	8	0	0	318	0	0
Total Analysis Volume [veh/h]	0	0	860	0	30	0	0	1272	0	0
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	20					17				
v_di, Inbound Pedestrian Volume crossing th	14					17				
v_co, Outbound Pedestrian Volume along th	20					20				
v_ci, Inbound Pedestrian Volume along the l	20					20				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	7					6				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	29.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	1	0	0	0	0	1	0	0
Auxiliary Signal Groups										
Maximum Green [s]	0	0	100	0	0	0	0	100	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Walk [s]	0	0	7	0	0	0	0	7	0	0
Pedestrian Clearance [s]	0	0	10	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			Yes					Yes		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	0	78	0	0	0	0	78	0	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	30	0	0	0	0	30	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Minimum Recall			Yes					Yes		
Maximum Recall			No					No		
Pedestrian Recall			No					No		

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	C
C, Calculated Cycle Length [s]	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00
g_i, Effective Green Time [s]	76	76	76
g / C, Green / Cycle	0.69	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.27	0.02	0.28
s, saturation flow rate [veh/h]	3204	1410	4584
c, Capacity [veh/h]	2207	971	3158
d1, Uniform Delay [s]	7.28	5.43	7.37
k, delay calibration	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	0.06	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.03	0.40
d, Delay for Lane Group [s/veh]	7.80	5.49	7.75
Lane Group LOS	A	A	A
Critical Lane Group	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.01	0.22	3.96
50th-Percentile Queue Length [m/ln]	30.59	1.65	30.18
95th-Percentile Queue Length [veh/ln]	7.22	0.39	7.13
95th-Percentile Queue Length [m/ln]	55.05	2.97	54.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	7.80	0.00	5.49	0.00	0.00	7.75	0.00	0.00
Movement LOS			A		A			A		
d_A, Approach Delay [s/veh]	7.72					7.75				
Approach LOS	A					A				
d_I, Intersection Delay [s/veh]	9.14									
Intersection LOS	A									
Intersection V/C	0.324									

Emissions

Vehicle Kilometers Traveled [km/h]	94.84	3.31	402.16
Stops [stops/h]	262.73	7.09	388.88
Fuel consumption [L/h]	20.08	0.60	54.59
CO [g/h]	370.86	11.10	1007.96
NOx [g/h]	72.16	2.16	196.11
VOC [g/h]	85.95	2.57	233.60

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	14.30
M_CW, Crosswalk Circulation Area [m²/ped]	37.82	40.15
d_p, Pedestrian Delay [s]	44.55	44.55
I_p,int, Pedestrian LOS Score for Intersectio	2.853	2.740
Crosswalk LOS	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1345	1345
d_b, Bicycle Delay [s]	5.91	5.91
I_b,int, Bicycle LOS Score for Intersection	2.296	2.259
Bicycle LOS	B	B

Intersection Setup

Name	83 Ave					WB Bike Lane				
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Thru	Right	Left2	Left	Thru	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	5.00	3.66	3.66	3.66	1.50	1.50
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	40.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name	83 Ave					WB Bike Lane				
Base Volume Input [veh/h]	0	0	0	0	130	0	0	0	27	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	98	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	32	0	0	0	27	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	0	0	0	0	8	0	0	0	7	0
Total Analysis Volume [veh/h]	0	0	0	0	32	0	0	0	27	0
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	20					20				
v_di, Inbound Pedestrian Volume crossing th	20					14				
v_co, Outbound Pedestrian Volume along th	14					17				
v_ci, Inbound Pedestrian Volume along the l	20					17				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					27				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	29.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	0	0	2	0	0	0	2	0
Auxiliary Signal Groups										
Maximum Green [s]	0	0	0	0	29	0	0	0	29	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	22	0	0	0	22	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk					No				No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	0	0	0	32	0	0	0	32	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	29	0	0	0	29	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall					No				No	
Maximum Recall					No				No	
Pedestrian Recall					No				No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	R	C
C, Calculated Cycle Length [s]	110	110
L, Total Lost Time per Cycle [s]	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00
g_i, Effective Green Time [s]	27	27
g / C, Green / Cycle	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02
s, saturation flow rate [veh/h]	1426	1616
c, Capacity [veh/h]	353	400
d1, Uniform Delay [s]	31.83	31.67
k, delay calibration	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	0.04	0.03
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.07
d, Delay for Lane Group [s/veh]	31.87	31.70
Lane Group LOS	C	C
Critical Lane Group	No	No
50th-Percentile Queue Length [veh/ln]	0.67	0.57
50th-Percentile Queue Length [m/ln]	5.10	4.34
95th-Percentile Queue Length [veh/ln]	1.21	1.03
95th-Percentile Queue Length [m/ln]	9.19	7.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	31.87	0.00	0.00	0.00	31.70	0.00
Movement LOS					C				C	
d_A, Approach Delay [s/veh]	31.87					31.70				
Approach LOS	C					C				
d_I, Intersection Delay [s/veh]	9.14									
Intersection LOS	A									
Intersection V/C	0.324									

Emissions

Vehicle Kilometers Traveled [km/h]	4.08	1.97
Stops [stops/h]	21.92	18.64
Fuel consumption [L/h]	1.53	1.05
CO [g/h]	28.30	19.31
NOx [g/h]	5.51	3.76
VOC [g/h]	6.56	4.48

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	24.0
M_corner, Corner Circulation Area [m ² /ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m ² /ped]	22.90	46.10
d_p, Pedestrian Delay [s]	44.55	33.62
I_p,int, Pedestrian LOS Score for Intersectio	1.677	1.743
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	527	527
d_b, Bicycle Delay [s]	29.82	30.23
I_b,int, Bicycle LOS Score for Intersection	1.560	1.604
Bicycle LOS	A	A

Intersection Setup

Name	83 Avenue					EB Bike Lane				
Approach	Northwestbound					Southeastbound				
Lane Configuration						1				
Turning Movement	Left	Thru	Thru	Right	Right	Left2	Left	Thru	Right	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	1.50	1.50	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00					30.00				
Grade [%]	0.00					0.00				
Curb Present						Yes				
Crosswalk	Yes					Yes				

Volumes

Name	83 Avenue					EB Bike Lane				
Base Volume Input [veh/h]	0	0	0	0	0	0	72	0	0	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	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
Total Hourly Volume [veh/h]	0	0	0	0	0	0	72	0	0	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	18	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	72	0	0	0
Presence of On-Street Parking						No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	20					20				
v_di, Inbound Pedestrian Volume crossing th	20					20				
v_co, Outbound Pedestrian Volume along th	14					20				
v_ci, Inbound Pedestrian Volume along the l	20					20				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					72				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	29.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	0	0	0	0	2	0	0	0
Auxiliary Signal Groups										
Maximum Green [s]	0	0	0	0	0	0	29	0	0	0
Amber [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	7	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	22	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk							No			
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 1

Split [s]	0	0	0	0	0	0	32	0	0	0
Lead / Lag	-	-	-	-	-	-	Lag	-	-	-
Minimum Green [s]	0	0	0	0	0	0	29	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall							No			
Maximum Recall							No			
Pedestrian Recall							No			

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group		L
C, Calculated Cycle Length [s]		110
L, Total Lost Time per Cycle [s]		3.00
l1_p, Permitted Start-Up Lost Time [s]		0.00
l2, Clearance Lost Time [s]		1.00
g_i, Effective Green Time [s]		27
g / C, Green / Cycle		0.25
(v / s)_i Volume / Saturation Flow Rate		0.05
s, saturation flow rate [veh/h]		1539
c, Capacity [veh/h]		381
d1, Uniform Delay [s]		32.67
k, delay calibration		0.04
l, Upstream Filtering Factor		1.00
d2, Incremental Delay [s]		0.09
d3, Initial Queue Delay [s]		0.00
Rp, platoon ratio		1.00
PF, progression factor		1.00

Lane Group Results

X, volume / capacity		0.19
d, Delay for Lane Group [s/veh]		32.76
Lane Group LOS		C
Critical Lane Group		Yes
50th-Percentile Queue Length [veh/ln]		1.57
50th-Percentile Queue Length [m/ln]		11.95
95th-Percentile Queue Length [veh/ln]		2.82
95th-Percentile Queue Length [m/ln]		21.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	32.76	0.00	0.00	0.00
Movement LOS							C			
d_A, Approach Delay [s/veh]	0.00						32.76			
Approach LOS	A						C			
d_I, Intersection Delay [s/veh]	9.14									
Intersection LOS	A									
Intersection V/C	0.324									

Emissions

Vehicle Kilometers Traveled [km/h]		9.12
Stops [stops/h]		51.32
Fuel consumption [L/h]		3.32
CO [g/h]		61.35
NOx [g/h]		11.94
VOC [g/h]		14.22

Other Modes

g_Walk,mi, Effective Walk Time [s]	24.0	24.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	41.22	39.11
d_p, Pedestrian Delay [s]	33.62	33.62
I_p,int, Pedestrian LOS Score for Intersectio	1.455	1.743
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	527
d_b, Bicycle Delay [s]	55.00	30.94
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560
Bicycle LOS	D	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: 109 Street and 86 Ave

Control Type: Two-way stop
Analysis Method: HCM 7th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 406.4
Level Of Service: F
Volume to Capacity (v/c): 0.214

Intersection Setup

Name	109 Street			109 Street			86 Ave			86 Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.20	4.20	3.50	3.50	3.50	3.66	3.66	3.66	3.00	3.00	3.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	40.00	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	109 Street			109 Street			86 Ave			86 Ave		
Base Volume Input [veh/h]	0	1039	38	54	1689	46	0	0	0	2	2	34
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]	0	1039	38	54	1689	46	0	0	0	2	2	34
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]	0	260	10	14	422	12	0	0	0	1	1	9
Total Analysis Volume [veh/h]	0	1039	38	54	1689	46	0	0	0	2	2	34
Pedestrian Volume [ped/h]	0			0			65			82		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.10	0.02	0.00	0.00	0.00	0.00	0.04	0.21	0.10
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	11.59	0.00	0.00	0.00	0.00	0.00	84.50	406.36	31.71
Movement LOS		A	A	B	A	A				F	F	D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.09	0.03	0.00	0.00	0.00	0.00	1.38	1.38	1.38
95th-Percentile Queue Length [m/ln]	0.00	0.00	0.00	0.71	0.24	0.00	0.00	0.00	0.00	10.49	10.49	10.49
d_A, Approach Delay [s/veh]	0.00			0.35			0.00			54.21		
Approach LOS	A			A			A			F		
d_I, Intersection Delay [s/veh]	0.92											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 26: 109 Street and 87 Ave

Control Type:	Signalized	Delay (sec / veh):	34.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.653

Intersection Setup

Name	109 Street				109 Street				87 Ave			
Approach	Northbound				Southbound				Eastbound			
Lane Configuration												
Turning Movement	Left	Thru	Thru	Right	Left	Left	Thru	Right	Left	Left	Thru	Right
Lane Width [m]	3.20	3.66	3.20	4.00	3.66	3.66	3.60	4.50	3.50	3.50	3.50	3.50
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	1
Entry Pocket Length [m]	80.00	30.48	30.48	35.00	30.48	30.48	30.48	30.48	30.48	30.48	30.48	45.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00				50.00				50.00			
Grade [%]	0.00				0.00				0.00			
Curb Present	Yes				Yes				Yes			
Crosswalk	Yes				No				Yes			

Volumes

Name	109 Street				109 Street				87 Ave			
Base Volume Input [veh/h]	181	824	0	35	0	0	1489	197	525	0	22	311
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
Proportion of CAVs [%]	0.00											
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	4	0	0	0	20	0	0	0	31
Total Hourly Volume [veh/h]	181	824	0	31	0	0	1489	177	525	0	22	280
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]	45	206	0	8	0	0	372	44	131	0	6	70
Total Analysis Volume [veh/h]	181	824	0	31	0	0	1489	177	525	0	22	280
Presence of On-Street Parking	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
v_do, Outbound Pedestrian Volume crossing	106				0				51			
v_di, Inbound Pedestrian Volume crossing th	105				0				51			
v_co, Outbound Pedestrian Volume along th	41				51				105			
v_ci, Inbound Pedestrian Volume along the l	40				51				106			
v_ab, Corner Pedestrian Volume [ped/h]	0				0				0			
Bicycle Volume [bicycles/h]	19				25				9			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	3.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Overlap	Overlap	Permiss	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	1	0	3	0	0	1	0	0	0	3	2
Auxiliary Signal Groups	1,2	1,2		1,3								
Maximum Green [s]	30	59	0	26	0	0	59	0	0	0	26	30
Amber [s]	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
All red [s]	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	2.0
Walk [s]	0	8	0	7	0	0	8	0	0	0	7	0
Pedestrian Clearance [s]	0	16	0	19	0	0	16	0	0	0	19	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No					No				No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	15	64	0	31	0	0	64	0	0	0	31	15
Lead / Lag	Lag	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	24	0	26	0	0	24	0	0	0	26	5
Vehicle Extension [s]	3.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Minimum Recall	No	Yes		No			Yes				No	
Maximum Recall	Yes	No		No			No				No	
Pedestrian Recall	No	No		Yes			No				Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	C	C	L	C	R
C, Calculated Cycle Length [s]	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	74	74	90	59	59	26	26	26
g / C, Green / Cycle	0.67	0.67	0.82	0.54	0.54	0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.31	0.26	0.02	0.35	0.35	0.20	0.26	0.27
s, saturation flow rate [veh/h]	575	3204	1410	3204	1574	1271	1164	1031
c, Capacity [veh/h]	353	2156	1156	1719	844	343	338	244
d1, Uniform Delay [s]	34.05	7.93	1.86	18.09	18.27	41.86	43.88	38.66
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.30	0.47	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.25	0.52	0.04	1.89	3.99	8.03	24.97	103.74
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	0.51	0.38	0.03	0.65	0.66	0.73	0.88	1.15
d, Delay for Lane Group [s/veh]	39.31	8.45	1.90	19.98	22.26	49.89	68.84	142.40
Lane Group LOS	D	A	A	B	C	D	E	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.96	4.07	0.10	10.00	10.57	7.29	10.48	13.02
50th-Percentile Queue Length [m/ln]	14.91	31.04	0.74	76.20	80.58	55.58	79.85	99.19
95th-Percentile Queue Length [veh/ln]	3.52	7.33	0.17	15.19	15.91	11.72	15.79	20.34
95th-Percentile Queue Length [m/ln]	26.84	55.88	1.33	115.71	121.21	89.33	120.30	155.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.31	8.45	0.00	1.90	0.00	0.00	20.56	22.26	59.78	0.00	68.84	142.40
Movement LOS	D	A		A			C	C	E		E	F
d_A, Approach Delay [s/veh]	13.64				20.74				88.01			
Approach LOS	B				C				F			
d_I, Intersection Delay [s/veh]	34.61											
Intersection LOS	C											
Intersection V/C	0.653											

Emissions

Vehicle Kilometers Traveled [km/h]	19.12	87.05	3.28	115.00	57.50	49.38	58.57	55.26
Stops [stops/h]	64.04	266.67	3.17	654.51	346.07	238.71	342.95	426.03
Fuel consumption [L/h]	8.74	19.63	0.43	42.72	22.75	19.67	29.00	45.52
CO [g/h]	161.30	362.41	7.90	788.89	420.17	363.20	535.56	840.61
NOx [g/h]	31.38	70.51	1.54	153.49	81.75	70.67	104.20	163.55
VOC [g/h]	37.38	83.99	1.83	182.83	97.38	84.18	124.12	194.82

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	12.0
M_corner, Corner Circulation Area [m²/ped]	8.38	54.73	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	3.66	0.00	4.37
d_p, Pedestrian Delay [s]	44.55	0.00	43.65
I_p,int, Pedestrian LOS Score for Intersectio	3.063	0.000	2.687
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1345	1073	473
d_b, Bicycle Delay [s]	5.95	11.97	32.22
I_b,int, Bicycle LOS Score for Intersection	2.418	2.487	2.975
Bicycle LOS	B	B	C

Intersection Setup

Name	87 Ave							
Approach	Westbound				Southwestbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right	Left	Thru	Right	Right
Lane Width [m]	3.50	3.66	3.50	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	10.00	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	30.00				50.00			
Grade [%]	0.00				0.00			
Curb Present	Yes							
Crosswalk	Yes				No			

Volumes

Name	87 Ave							
Base Volume Input [veh/h]	28	0	0	5	0	0	0	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00							
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	1	0	0	0	0
Total Hourly Volume [veh/h]	28	0	0	4	0	0	0	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	7	0	0	1	0	0	0	0
Total Analysis Volume [veh/h]	28	0	0	4	0	0	0	0
Presence of On-Street Parking	No			No				
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	40				0			
v_di, Inbound Pedestrian Volume crossing th	41				0			
v_co, Outbound Pedestrian Volume along th	0				0			
v_ci, Inbound Pedestrian Volume along the l	0				0			
v_ab, Corner Pedestrian Volume [ped/h]	0				0			
Bicycle Volume [bicycles/h]	0				0			

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	3.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	3	0	0	0	0	0	0	0
Auxiliary Signal Groups								
Maximum Green [s]	26	0	0	0	0	0	0	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All red [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	0	0	0	0	0
Pedestrian Clearance [s]	19	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No							
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	31	0	0	0	0	0	0	0
Lead / Lag	Lag	-	-	-	-	-	-	-
Minimum Green [s]	26	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No							
Maximum Recall	No							
Pedestrian Recall	Yes							

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	R	
C, Calculated Cycle Length [s]	110	110	
L, Total Lost Time per Cycle [s]	5.00	5.00	
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	
l2, Clearance Lost Time [s]	3.00	3.00	
g_i, Effective Green Time [s]	26	26	
g / C, Green / Cycle	0.24	0.24	
(v / s)_i Volume / Saturation Flow Rate	0.03	0.00	
s, saturation flow rate [veh/h]	884	1431	
c, Capacity [veh/h]	66	338	
d1, Uniform Delay [s]	55.00	32.16	
k, delay calibration	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	
d2, Incremental Delay [s]	4.29	0.01	
d3, Initial Queue Delay [s]	0.00	0.00	
Rp, platoon ratio	1.00	1.00	
PF, progression factor	1.00	1.00	

Lane Group Results

X, volume / capacity	0.42	0.01	
d, Delay for Lane Group [s/veh]	59.29	32.18	
Lane Group LOS	E	C	
Critical Lane Group	No	No	
50th-Percentile Queue Length [veh/ln]	0.87	0.09	
50th-Percentile Queue Length [m/ln]	6.61	0.65	
95th-Percentile Queue Length [veh/ln]	1.56	0.15	
95th-Percentile Queue Length [m/ln]	11.90	1.17	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.29	0.00	0.00	32.18	0.00	0.00	0.00	0.00
Movement LOS	E			C				
d_A, Approach Delay [s/veh]	55.90				0.00			
Approach LOS	E				A			
d_I, Intersection Delay [s/veh]	34.61							
Intersection LOS	C							
Intersection V/C	0.653							

Emissions

Vehicle Kilometers Traveled [km/h]	1.02	0.15	
Stops [stops/h]	28.40	2.79	
Fuel consumption [L/h]	1.63	0.14	
CO [g/h]	30.09	2.57	
NOx [g/h]	5.85	0.50	
VOC [g/h]	6.97	0.60	

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	14.38	0.00
d_p, Pedestrian Delay [s]	43.65	0.00
I_p,int, Pedestrian LOS Score for Intersectio	1.969	0.000
Crosswalk LOS	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	473	0
d_b, Bicycle Delay [s]	32.07	55.00
I_b,int, Bicycle LOS Score for Intersection	1.560	4.132
Bicycle LOS	A	D

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: 109 Street and Walterdale Hill Road/Saskatchewan Drive

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.407

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Right	Right	Left2	Left	Thru	Thru	Right	Right2	Left	Left	Right
Lane Width [m]	3.66	3.66	3.66	3.50	3.50	3.66	3.66	3.50	3.50	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.00	30.48	30.48	30.48	30.48	50.00	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				Yes			Yes					
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	61	484	0	0	1051	273	0	0	0
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
Proportion of CAVs [%]	0.00											
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	27	0	0	0
Total Hourly Volume [veh/h]	0	0	0	61	484	0	0	1051	273	0	0	0
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]	0	0	0	15	121	0	0	263	68	0	0	0
Total Analysis Volume [veh/h]	0	0	0	61	484	0	0	1051	273	0	0	0
Presence of On-Street Parking				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
v_do, Outbound Pedestrian Volume crossing	0			27			46			26		
v_di, Inbound Pedestrian Volume crossing m	0			26			46			27		
v_co, Outbound Pedestrian Volume crossing	22			46			23			0		
v_ci, Inbound Pedestrian Volume crossing mi	23			46			22			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			7			10			0		

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	105.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Overlap	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	0	2	2	0	0	1	0	0	0	0
Auxiliary Signal Groups				2,3	2,3							
Maximum Green [s]	0	0	0	27	27	0	0	55	0	0	0	0
Amber [s]	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	2.0	2.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	7	7	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	20	20	0	0	16	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk												
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	3.0	3.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	0	0	0	32	32	0	0	59	0	0	0	0
Lead / Lag	-	-	-	Lead	Lead	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	7	7	0	0	23	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Minimum Recall				No	No			Yes				
Maximum Recall				Yes	Yes			No				
Pedestrian Recall				No	No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	4
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	
C, Calculated Cycle Length [s]		110	110	
L, Total Lost Time per Cycle [s]		5.00	6.00	
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	
l2, Clearance Lost Time [s]		0.00	4.00	
g_i, Effective Green Time [s]		46	53	
g / C, Green / Cycle		0.42	0.48	
(v / s)_i Volume / Saturation Flow Rate		0.18	0.36	
s, saturation flow rate [veh/h]		2954	3698	
c, Capacity [veh/h]		1228	1791	
d1, Uniform Delay [s]		23.02	22.46	
k, delay calibration		0.50	0.50	
l, Upstream Filtering Factor		1.00	1.00	
d2, Incremental Delay [s]		1.16	2.78	
d3, Initial Queue Delay [s]		0.00	0.00	
Rp, platoon ratio		1.00	1.00	
PF, progression factor		1.00	1.00	

Lane Group Results

X, volume / capacity		0.44	0.74	
d, Delay for Lane Group [s/veh]		24.19	25.24	
Lane Group LOS		C	C	
Critical Lane Group		Yes	Yes	
50th-Percentile Queue Length [veh/ln]		5.19	9.14	
50th-Percentile Queue Length [m/ln]		39.54	69.67	
95th-Percentile Queue Length [veh/ln]		8.92	14.10	
95th-Percentile Queue Length [m/ln]		68.00	107.45	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	24.19	24.19	0.00	0.00	25.24	25.24	0.00	0.00	0.00
Movement LOS				C	C			C	C			
d_A, Approach Delay [s/veh]	0.00			24.19			25.24			0.00		
Approach LOS	A			C			C			A		
d_I, Intersection Delay [s/veh]	24.93											
Intersection LOS	C											
Intersection V/C	0.407											

Emissions

Vehicle Kilometers Traveled [km/h]		97.89	71.32	
Stops [stops/h]		339.60	897.62	
Fuel consumption [L/h]		27.09	52.66	
CO [g/h]		500.17	972.46	
NOx [g/h]		97.31	189.20	
VOC [g/h]		115.92	225.38	

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	34.55	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	19.87	13.31	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	44.55
I_p,int, Pedestrian LOS Score for Intersectio	2.120	2.000	2.628	2.339
Crosswalk LOS	B	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	836	964	0
d_b, Bicycle Delay [s]	55.00	18.68	14.84	55.00
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560	1.560	4.132
Bicycle LOS	D	A	A	D

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 28: 109 Street and 88 Ave SB

Control Type:	Signalized	Delay (sec / veh):	26.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.468

Intersection Setup

Name	109 Street		109 Street		88 Ave	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [m]	3.66	3.66	3.50	3.50	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Curb Present			Yes			
Crosswalk	Yes		Yes		Yes	

Volumes

Name	109 Street		109 Street		88 Ave	
Base Volume Input [veh/h]	0	0	1648	53	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
Proportion of CAVs [%]	0.00					
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	5	0	0
Total Hourly Volume [veh/h]	0	0	1648	48	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]	0	0	412	12	0	0
Total Analysis Volume [veh/h]	0	0	1648	48	0	0
Presence of On-Street Parking			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
v_do, Outbound Pedestrian Volume crossing	46		27		46	
v_di, Inbound Pedestrian Volume crossing m	46		26		46	
v_co, Outbound Pedestrian Volume crossing	26		27		27	
v_ci, Inbound Pedestrian Volume crossing mi	27		27		27	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		3		0	

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	105.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Overlap	Overlap	Permissive	Permissive
Signal Group	0	0	3	3	0	0
Auxiliary Signal Groups			1,3	1,3		
Maximum Green [s]	0	0	7	7	0	0
Amber [s]	0.0	0.0	3.0	3.0	0.0	0.0
All red [s]	0.0	0.0	2.0	2.0	0.0	0.0
Walk [s]	0	0	5	5	0	0
Pedestrian Clearance [s]	0	0	10	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk						
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	3.0	3.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	0	0	12	12	0	0
Lead / Lag	-	-	-	-	-	-
Minimum Green [s]	0	0	7	7	0	0
Vehicle Extension [s]	0.0	0.0	3.0	3.0	0.0	0.0
Minimum Recall			No	No		
Maximum Recall			Yes	Yes		
Pedestrian Recall			No	No		

Exclusive Pedestrian Phase

Pedestrian Signal Group	4
Pedestrian Walk [s]	7
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		C	C	
C, Calculated Cycle Length [s]		110	110	
L, Total Lost Time per Cycle [s]		5.00	5.00	
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	
l2, Clearance Lost Time [s]		0.00	0.00	
g_i, Effective Green Time [s]		66	66	
g / C, Green / Cycle		0.60	0.60	
(v / s)_i Volume / Saturation Flow Rate		0.50	0.51	
s, saturation flow rate [veh/h]		1683	1664	
c, Capacity [veh/h]		1013	1002	
d1, Uniform Delay [s]		17.55	17.75	
k, delay calibration		0.50	0.50	
l, Upstream Filtering Factor		1.00	1.00	
d2, Incremental Delay [s]		8.19	8.78	
d3, Initial Queue Delay [s]		0.00	0.00	
Rp, platoon ratio		1.00	1.00	
PF, progression factor		1.00	1.00	

Lane Group Results

X, volume / capacity		0.84	0.85	
d, Delay for Lane Group [s/veh]		25.74	26.54	
Lane Group LOS		C	C	
Critical Lane Group		No	Yes	
50th-Percentile Queue Length [veh/ln]		18.05	18.38	
50th-Percentile Queue Length [m/ln]		137.57	140.03	
95th-Percentile Queue Length [veh/ln]		25.02	25.41	
95th-Percentile Queue Length [m/ln]		190.66	193.61	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	26.13	26.54	0.00	0.00
Movement LOS			C	C		
d_A, Approach Delay [s/veh]	0.00		26.14		0.00	
Approach LOS	A		C		A	
d_I, Intersection Delay [s/veh]	26.14					
Intersection LOS	C					
Intersection V/C	0.468					

Emissions

Vehicle Kilometers Traveled [km/h]		293.40	293.40	
Stops [stops/h]		590.84	601.44	
Fuel consumption [L/h]		57.98	58.74	
CO [g/h]		1070.70	1084.70	
NOx [g/h]		208.32	211.04	
VOC [g/h]		248.14	251.39	

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	22.44
M_CW, Crosswalk Circulation Area [m²/ped]	12.78	19.87	8.11
d_p, Pedestrian Delay [s]	44.55	44.55	44.55
I_p,int, Pedestrian LOS Score for Intersectio	2.504	2.590	1.486
Crosswalk LOS	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1200	0
d_b, Bicycle Delay [s]	55.00	8.81	55.00
I_b,int, Bicycle LOS Score for Intersection	4.132	2.963	4.132
Bicycle LOS	D	C	D

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 29: 114 Street and 82 Ave

Control Type: Signalized
Analysis Method: HCM 7th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 82.7
Level Of Service: F
Volume to Capacity (v/c): 0.551

Intersection Setup

Name	114 Street			114 Street			University Ave			82 Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.50	3.70	3.60	3.66	3.60	3.60	4.00	3.60	3.60	3.66	3.66	3.66
No. of Lanes in Entry Pocket	2	0	1	0	0	1	1	0	1	2	0	0
Entry Pocket Length [m]	170.00	30.48	2.00	30.48	30.48	105.00	95.00	30.48	95.00	100.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	114 Street			114 Street			University Ave			82 Ave		
Base Volume Input [veh/h]	425	398	228	0	878	30	17	252	672	234	253	15
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
Proportion of CAVs [%]	0.00											
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	23	0	0	3	0	0	0	0	0	2
Total Hourly Volume [veh/h]	425	398	205	0	878	27	17	252	672	234	253	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]	106	100	51	0	220	7	4	63	168	59	63	3
Total Analysis Volume [veh/h]	425	398	205	0	878	27	17	252	672	234	253	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
v_do, Outbound Pedestrian Volume crossing	4			2			3			2		
v_di, Inbound Pedestrian Volume crossing m	3			2			4			2		
v_co, Outbound Pedestrian Volume crossing	13			0			0			13		
v_ci, Inbound Pedestrian Volume crossing mi	13			0			0			13		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	142
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Overlap	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	2	1	0	0	1	2	3	6	2	5	4	0
Auxiliary Signal Groups		1,2				1,2			2,6			
Maximum Green [s]	44	27	0	0	27	44	10	38	44	16	38	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	3.0	3.0	0.0	0.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0	0.0
Walk [s]	0	9	0	0	9	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	22	0	0	22	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	4.0	0.0	0.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	50	33	0	0	33	50	17	36	50	23	36	0
Lead / Lag	Lag	-	-	-	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	10	27	0	0	27	10	7	29	10	7	29	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Minimum Recall	No	Yes			Yes	No	No	No	No	No	No	
Maximum Recall	No	No			No	No	No	Yes	No	No	Yes	
Pedestrian Recall	No	No			No	No	No	No	No	No	No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	R	C	R	L	C	R	L	C	C
C, Calculated Cycle Length [s]	133	133	133	133	133	133	133	133	133	133	133
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	7.00	7.00	7.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	0.00	4.00	4.00	0.00	5.00	5.00	0.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	30	63	27	27	63	3	38	74	12	47	47
g / C, Green / Cycle	0.23	0.47	0.20	0.20	0.47	0.02	0.28	0.56	0.09	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.18	0.12	0.14	0.27	0.02	0.01	0.09	0.29	0.08	0.09	0.09
s, saturation flow rate [veh/h]	2417	3204	1431	3204	1318	1535	2951	2324	3113	1550	1523
c, Capacity [veh/h]	561	1520	290	649	625	38	842	1294	282	544	535
d1, Uniform Delay [s]	50.48	21.03	49.45	53.13	18.80	64.11	37.22	18.39	59.59	30.70	30.71
k, delay calibration	0.11	0.11	0.20	0.18	0.11	0.11	0.50	0.11	0.11	0.50	0.50
l, 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
d2, Incremental Delay [s]	2.12	0.09	5.72	162.21	0.03	8.23	0.91	0.32	6.25	1.08	1.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	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	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	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.26	0.71	1.35	0.04	0.45	0.30	0.52	0.83	0.25	0.25
d, Delay for Lane Group [s/veh]	52.60	21.12	55.17	215.34	18.83	72.34	38.13	18.71	65.84	31.78	31.81
Lane Group LOS	D	C	E	F	B	E	D	B	E	C	C
Critical Lane Group	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.95	3.78	6.83	25.46	0.46	0.66	3.35	6.42	4.14	3.26	3.22
50th-Percentile Queue Length [m/ln]	52.97	28.77	52.03	194.02	3.51	5.01	25.54	48.92	31.51	24.81	24.52
95th-Percentile Queue Length [veh/ln]	11.28	6.80	11.11	38.87	0.83	1.18	6.03	10.58	7.44	5.86	5.79
95th-Percentile Queue Length [m/ln]	85.92	51.79	84.69	296.21	6.32	9.01	45.97	80.58	56.72	44.65	44.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.60	21.12	55.17	0.00	215.34	18.83	72.34	38.13	18.71	65.84	31.79	31.81
Movement LOS	D	C	E		F	B	E	D	B	E	C	C
d_A, Approach Delay [s/veh]	40.92			209.48			24.88			47.73		
Approach LOS	D			F			C			D		
d_I, Intersection Delay [s/veh]	82.67											
Intersection LOS	F											
Intersection V/C	0.551											

Emissions

Vehicle Kilometers Traveled [km/h]	120.30	112.66	58.03	202.95	6.24	5.59	82.86	220.95	38.82	22.21	21.92
Stops [stops/h]	375.34	203.87	184.33	1374.74	12.43	17.73	180.95	346.62	223.29	87.88	86.85
Fuel consumption [L/h]	37.08	21.77	18.37	195.76	1.26	1.88	19.34	38.48	20.57	7.36	7.27
CO [g/h]	684.78	401.95	339.16	3614.85	23.35	34.66	357.21	710.63	379.83	135.93	134.27
NOx [g/h]	133.23	78.21	65.99	703.32	4.54	6.74	69.50	138.26	73.90	26.45	26.12
VOC [g/h]	158.71	93.16	78.60	837.78	5.41	8.03	82.79	164.70	88.03	31.50	31.12

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			13.0		
M_corner, Corner Circulation Area [m²/ped]	25.63			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	0.00			280.60			0.00			35.27		
d_p, Pedestrian Delay [s]	56.13			56.13			0.00			54.31		
I_p,int, Pedestrian LOS Score for Intersectio	2.976			2.593			0.000			2.638		
Crosswalk LOS	C			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1155			405			435			435		
d_b, Bicycle Delay [s]	11.91			42.41			40.83			40.83		
I_b,int, Bicycle LOS Score for Intersection	2.427			2.309			2.336			1.974		
Bicycle LOS	B			B			B			A		

Sequence

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



Intersection Level Of Service Report
Intersection 30: 114 Street and 87 Ave

Control Type:	Signalized	Delay (sec / veh):	51.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.652

Intersection Setup												
Name	114 Street			114 Street			87 Ave			87 Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	4.00	3.70	4.00	4.00	4.00	4.00	3.70	3.70	3.70	3.70	3.70	3.80
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	1	0	0
Entry Pocket Length [m]	80.00	30.48	30.48	30.48	30.48	40.00	35.00	30.48	30.48	85.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	114 Street			114 Street			87 Ave			87 Ave		
Base Volume Input [veh/h]	350	85	151	69	77	77	49	589	409	83	334	43
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
Proportion of CAVs [%]	0.00											
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	15	0	0	8	0	0	41	0	0	4
Total Hourly Volume [veh/h]	350	85	136	69	77	69	49	589	368	83	334	39
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]	88	21	34	17	19	17	12	147	92	21	84	10
Total Analysis Volume [veh/h]	350	85	136	69	77	69	49	589	368	83	334	39
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
v_do, Outbound Pedestrian Volume crossing	83			85			84			82		
v_di, Inbound Pedestrian Volume crossing m	82			84			85			83		
v_co, Outbound Pedestrian Volume crossing	62			192			62			192		
v_ci, Inbound Pedestrian Volume crossing mi	62			192			62			192		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	44.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	ProtPer	Overlap	Overlap	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	3	3	0	3	0	4	1	0	5	6	0
Auxiliary Signal Groups		2,3	2,3									
Maximum Green [s]	25	24	24	0	24	0	10	43	0	10	43	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	17	0	17	0	0	17	0	0	17	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	0.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	23	29	29	0	29	0	10	48	0	10	48	0
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	24	24	0	24	0	7	24	0	7	24	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No	No		No		No	Yes		No	Yes	
Maximum Recall	Yes	Yes	Yes		Yes		No	No		Yes	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	C
C, Calculated Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	0.00	0.00	3.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	20	47	47	24	24	24	53	44	44	53	43	43
g / C, Green / Cycle	0.18	0.43	0.43	0.22	0.22	0.22	0.48	0.40	0.40	0.48	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.21	0.05	0.11	0.07	0.04	0.06	0.05	0.35	0.28	0.13	0.11	0.12
s, saturation flow rate [veh/h]	1667	1683	1265	938	1750	1151	1013	1683	1299	662	1683	1534
c, Capacity [veh/h]	303	719	540	191	382	251	508	679	524	241	658	600
d1, Uniform Delay [s]	45.00	19.00	20.21	44.50	35.13	35.81	15.62	30.12	26.36	22.54	22.99	23.19
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.50	0.50	0.50	0.50	0.50
l, 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
d2, Incremental Delay [s]	100.40	0.34	1.12	5.21	1.16	2.78	0.08	14.06	7.68	3.86	1.10	1.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	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	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	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.15	0.12	0.25	0.36	0.20	0.28	0.10	0.87	0.70	0.34	0.29	0.31
d, Delay for Lane Group [s/veh]	145.40	19.34	21.33	49.71	36.29	38.59	15.70	44.18	34.03	26.41	24.08	24.51
Lane Group LOS	F	B	C	D	D	D	B	D	C	C	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	16.63	1.37	2.39	2.03	1.77	1.77	0.66	16.49	8.68	1.39	3.54	3.50
50th-Percentile Queue Length [m/ln]	126.70	10.45	18.19	15.46	13.52	13.49	5.06	125.64	66.16	10.58	26.96	26.66
95th-Percentile Queue Length [veh/ln]	25.02	2.47	4.30	3.65	3.19	3.19	1.19	23.15	13.52	2.50	6.37	6.30
95th-Percentile Queue Length [m/ln]	190.64	18.81	32.75	27.83	24.33	24.28	9.10	176.39	102.99	19.04	48.53	47.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	145.40	19.34	21.33	49.71	36.34	38.59	15.70	44.18	34.03	26.41	24.27	24.51
Movement LOS	F	B	C	D	D	D	B	D	C	C	C	C
d_A, Approach Delay [s/veh]	97.08			41.35			39.08			24.68		
Approach LOS	F			D			D			C		
d_I, Intersection Delay [s/veh]	51.11											
Intersection LOS	D											
Intersection V/C	0.652											

Emissions

Vehicle Kilometers Traveled [km/h]	165.96	40.30	64.49	13.74	15.01	14.06	13.20	158.66	99.13	38.27	87.13	84.85
Stops [stops/h]	544.16	44.87	78.13	66.40	58.05	57.93	21.72	539.62	284.16	45.43	115.80	114.51
Fuel consumption [L/h]	67.19	6.11	10.12	5.44	4.84	4.74	2.34	47.24	25.45	6.35	14.39	14.12
CO [g/h]	1240.74	112.78	186.93	100.43	89.33	87.45	43.13	872.40	470.02	117.23	265.78	260.67
NOx [g/h]	241.40	21.94	36.37	19.54	17.38	17.01	8.39	169.74	91.45	22.81	51.71	50.72
VOC [g/h]	287.55	26.14	43.32	23.28	20.70	20.27	10.00	202.19	108.93	27.17	61.60	60.41

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [m²/ped]	0.00			66.58			0.00			0.00		
M_CW, Crosswalk Circulation Area [m²/ped]	3.09			2.98			6.75			5.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersectio	2.614			2.430			2.733			2.670		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	855			436			782			782		
d_b, Bicycle Delay [s]	18.04			33.62			20.40			20.40		
I_b,int, Bicycle LOS Score for Intersection	2.043			1.744			3.287			1.939		
Bicycle LOS	B			A			C			A		

Sequence

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



Intersection Level Of Service Report

Intersection 31: 112 Street and 82 Ave

Control Type:	Signalized	Delay (sec / veh):	37.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.603

Intersection Setup												
Name	112 Street			112 Street			82 Ave			82 Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	4.50	4.50	3.50	3.66	3.50	3.50	3.50	3.66	3.66	3.50	3.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	65.00	30.48	30.48	85.00	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			50.00			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	112 Street			112 Street			82 Ave			82 Ave		
Base Volume Input [veh/h]	0	9	18	717	0	147	89	381	0	0	339	291
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
Proportion of CAVs [%]	0.00											
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	2	0	0	15	0	0	0	0	0	29
Total Hourly Volume [veh/h]	0	9	16	717	0	132	89	381	0	0	339	262
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]	0	2	4	179	0	33	22	95	0	0	85	66
Total Analysis Volume [veh/h]	0	9	16	717	0	132	89	381	0	0	339	262
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
v_do, Outbound Pedestrian Volume crossing	56			27			27			56		
v_di, Inbound Pedestrian Volume crossing m	56			27			27			56		
v_co, Outbound Pedestrian Volume crossing	16			36			16			36		
v_ci, Inbound Pedestrian Volume crossing mi	16			36			16			36		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Version 2024 (SP 0-5)

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	37.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	2	0	0	3	1	0	0	1	0
Auxiliary Signal Groups												
Maximum Green [s]	0	60	0	60	0	0	19	46	0	0	46	0
Amber [s]	0.0	3.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Walk [s]	0	8	0	8	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	23	0	23	0	0	0	18	0	0	18	0
Delayed Vehicle Green [s]	0.0	8.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No		No				No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Detector Location [m]	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 [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	0	65	0	65	0	0	15	30	0	0	30	0
Lead / Lag	-	-	-	Lag	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	23	0	23	0	0	7	25	0	0	25	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No		No			No	Yes			Yes	
Maximum Recall		Yes		Yes			No	No			No	
Pedestrian Recall		No		No			No	No			No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	L	R	L	C	C	C
C, Calculated Cycle Length [s]	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	60	60	60	8	27	27	27
g / C, Green / Cycle	0.55	0.55	0.55	0.07	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.02	0.32	0.10	0.06	0.12	0.18	0.22
s, saturation flow rate [veh/h]	1506	2211	1388	1603	3204	1683	1345
c, Capacity [veh/h]	821	1204	757	111	797	419	334
d1, Uniform Delay [s]	11.56	19.14	12.52	50.42	35.23	37.79	39.98
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	2.17	0.50	12.24	2.05	10.14	29.09
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.60	0.17	0.80	0.48	0.72	0.90
d, Delay for Lane Group [s/veh]	11.62	21.31	13.02	62.66	37.29	47.93	69.07
Lane Group LOS	B	C	B	E	D	D	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.29	6.67	1.70	2.78	4.55	8.50	10.44
50th-Percentile Queue Length [m/ln]	2.24	50.82	12.94	21.21	34.69	64.75	79.59
95th-Percentile Queue Length [veh/ln]	0.53	10.90	3.06	5.01	8.05	13.28	15.74
95th-Percentile Queue Length [m/ln]	4.04	83.09	23.30	38.17	61.35	101.17	119.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	11.62	11.62	21.31	0.00	13.02	62.66	37.29	0.00	0.00	50.33	69.07
Movement LOS		B	B	C		B	E	D			D	E
d_A, Approach Delay [s/veh]	11.62			20.02			42.09			58.50		
Approach LOS	B			C			D			E		
d_I, Intersection Delay [s/veh]	37.14											
Intersection LOS	D											
Intersection V/C	0.603											

Emissions

Vehicle Kilometers Traveled [km/h]	2.47	157.20	28.94	25.42	108.83	173.38	173.38
Stops [stops/h]	9.63	436.52	55.59	91.09	297.97	278.08	341.82
Fuel consumption [L/h]	0.67	36.52	5.32	8.76	27.98	33.83	40.15
CO [g/h]	12.45	674.40	98.32	161.71	516.68	624.67	741.42
NOx [g/h]	2.42	131.21	19.13	31.46	100.53	121.54	144.25
VOC [g/h]	2.89	156.30	22.79	37.48	119.75	144.77	171.83

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	12.0	12.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	27.43	9.22	21.29	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	43.65	43.65
I_p,int, Pedestrian LOS Score for Intersectio	1.463	2.584	2.502	3.642
Crosswalk LOS	A	B	B	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	945	945	455	455
d_b, Bicycle Delay [s]	15.29	15.29	32.84	32.84
I_b,int, Bicycle LOS Score for Intersection	1.604	1.560	1.947	2.079
Bicycle LOS	A	A	A	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 32: 110 Street and 87 Ave

Control Type:

Signalized

Delay (sec / veh):

10.6

Analysis Method:

HCM 7th Edition

Level Of Service:

B

Analysis Period:

15 minutes

Volume to Capacity (v/c):

0.263

Intersection Setup

Name	110 Street									
Approach	Northbound					Southbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Thru	Right	Left	Thru	Thru	Right	Right
Lane Width [m]	4.50	3.66	3.66	4.50	4.50	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	30.00					50.00				
Grade [%]	0.00					0.00				
Curb Present	Yes									
Crosswalk	Yes					Yes				

Volumes

Name	110 Street									
Base Volume Input [veh/h]	10	0	0	41	69	0	0	0	0	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	66	0	0	0	0	0
Total Hourly Volume [veh/h]	10	0	0	41	3	0	0	0	0	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	3	0	0	10	1	0	0	0	0	0
Total Analysis Volume [veh/h]	10	0	0	41	3	0	0	0	0	0
Presence of On-Street Parking	No				No					
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	15					15				
v_di, Inbound Pedestrian Volume crossing th	15					15				
v_co, Outbound Pedestrian Volume along th	15					15				
v_ci, Inbound Pedestrian Volume along the l	15					15				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	0	2	0	0	0	0	0	0
Auxiliary Signal Groups										
Maximum Green [s]	0	0	0	22	0	0	0	0	0	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	7	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	15	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk				No						
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	0	0	0	25	0	0	0	0	0	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	22	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall				No						
Maximum Recall				No						
Pedestrian Recall				No						

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	
C, Calculated Cycle Length [s]	110	
L, Total Lost Time per Cycle [s]	3.00	
l1_p, Permitted Start-Up Lost Time [s]	2.00	
l2, Clearance Lost Time [s]	1.00	
g_i, Effective Green Time [s]	21	
g / C, Green / Cycle	0.19	
(v / s)_i Volume / Saturation Flow Rate	0.03	
s, saturation flow rate [veh/h]	1642	
c, Capacity [veh/h]	360	
d1, Uniform Delay [s]	36.76	
k, delay calibration	0.11	
I, Upstream Filtering Factor	1.00	
d2, Incremental Delay [s]	0.19	
d3, Initial Queue Delay [s]	0.00	
Rp, platoon ratio	1.00	
PF, progression factor	1.00	

Lane Group Results

X, volume / capacity	0.15	
d, Delay for Lane Group [s/veh]	36.96	
Lane Group LOS	D	
Critical Lane Group	No	
50th-Percentile Queue Length [veh/ln]	1.26	
50th-Percentile Queue Length [m/ln]	9.59	
95th-Percentile Queue Length [veh/ln]	2.27	
95th-Percentile Queue Length [m/ln]	17.27	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.96	0.00	0.00	36.96	36.96	0.00	0.00	0.00	0.00	0.00
Movement LOS	D			D	D					
d_A, Approach Delay [s/veh]	36.96					0.00				
Approach LOS	D					A				
d_I, Intersection Delay [s/veh]	10.62									
Intersection LOS	B									
Intersection V/C	0.263									

Emissions

Vehicle Kilometers Traveled [km/h]	3.96	
Stops [stops/h]	41.20	
Fuel consumption [L/h]	2.34	
CO [g/h]	43.28	
NOx [g/h]	8.42	
VOC [g/h]	10.03	

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m ² /ped]	0.00	45.81
M_CW, Crosswalk Circulation Area [m ² /ped]	29.29	5.04
d_p, Pedestrian Delay [s]	44.55	44.55
I_p,int, Pedestrian LOS Score for Intersectio	1.600	1.602
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	0
d_b, Bicycle Delay [s]	35.20	55.00
I_b,int, Bicycle LOS Score for Intersection	1.868	4.132
Bicycle LOS	A	D

Intersection Setup										
Name	87 Ave					87 Ave				
Approach	Eastbound					Westbound				
Lane Configuration										
Turning Movement	Left	Left	Thru	Right	Right	Left	Left	Thru	Right	Right
Lane Width [m]	3.50	3.66	3.50	3.66	3.66	3.66	3.66	3.50	3.66	3.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	7.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name	87 Ave					87 Ave				
Base Volume Input [veh/h]	16	0	553	0	0	0	0	265	0	88
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	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	9
Total Hourly Volume [veh/h]	16	0	553	0	0	0	0	265	0	79
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	4	0	138	0	0	0	0	66	0	20
Total Analysis Volume [veh/h]	16	0	553	0	0	0	0	265	0	79
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	15					15				
v_di, Inbound Pedestrian Volume crossing th	15					15				
v_co, Outbound Pedestrian Volume along th	15					15				
v_ci, Inbound Pedestrian Volume along the l	15					15				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	0					0				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	0	1	0	0	0	0	1	0	0
Auxiliary Signal Groups										
Maximum Green [s]	0	0	80	0	0	0	0	80	0	0
Amber [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Walk [s]	0	0	7	0	0	0	0	7	0	0
Pedestrian Clearance [s]	0	0	15	0	0	0	0	15	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk			No					No		
I1, Start-Up Lost Time [s]	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	0	0	85	0	0	0	0	85	0	0
Lead / Lag	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	25	0	0	0	0	25	0	0
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Minimum Recall			No					No		
Maximum Recall			No					No		
Pedestrian Recall			Yes					Yes		

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	C	C	R
C, Calculated Cycle Length [s]	110	110	110	110
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	81	81	81	81
g / C, Green / Cycle	0.73	0.73	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.18	0.18	0.16	0.06
s, saturation flow rate [veh/h]	1640	1532	1683	1345
c, Capacity [veh/h]	1235	1121	1232	985
d1, Uniform Delay [s]	4.79	4.81	4.69	4.19
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.46	0.52	0.40	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.24	0.22	0.08
d, Delay for Lane Group [s/veh]	5.25	5.33	5.09	4.35
Lane Group LOS	A	A	A	A
Critical Lane Group	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	2.03	1.91	1.96	0.53
50th-Percentile Queue Length [m/ln]	15.46	14.53	14.93	4.03
95th-Percentile Queue Length [veh/ln]	3.65	3.43	3.53	0.95
95th-Percentile Queue Length [m/ln]	27.83	26.16	26.87	7.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.25	0.00	5.29	0.00	0.00	0.00	0.00	5.09	0.00	4.35
Movement LOS	A		A					A		A
d_A, Approach Delay [s/veh]	5.29					4.92				
Approach LOS	A					A				
d_I, Intersection Delay [s/veh]	10.62									
Intersection LOS	B									
Intersection V/C	0.263									

Emissions

Vehicle Kilometers Traveled [km/h]	70.47	65.43	52.30	15.59
Stops [stops/h]	66.41	62.42	64.12	17.32
Fuel consumption [L/h]	9.39	8.75	7.82	2.27
CO [g/h]	173.35	161.58	144.35	41.94
NOx [g/h]	33.73	31.44	28.09	8.16
VOC [g/h]	40.18	37.45	33.46	9.72

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m ² /ped]	0.00	0.00
M_CW, Crosswalk Circulation Area [m ² /ped]	38.90	42.29
d_p, Pedestrian Delay [s]	44.55	44.55
I_p,int, Pedestrian LOS Score for Intersectio	2.248	2.301
Crosswalk LOS	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1455	1455
d_b, Bicycle Delay [s]	4.09	4.09
I_b,int, Bicycle LOS Score for Intersection	2.029	2.142
Bicycle LOS	B	B

Intersection Setup										
Name	NB Bike Lane					SB Bike Lane				
Approach	Northeastbound					Southeastbound				
Lane Configuration	↶					↷				
Turning Movement	Left2	Left	Thru	Right	Right	Left2	Left	Thru	Thru	Right
Lane Width [m]	3.66	1.50	3.66	3.66	3.66	3.66	3.66	3.66	1.50	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	30.00					30.00				
Grade [%]	0.00					0.00				
Curb Present	Yes					Yes				
Crosswalk	Yes					Yes				

Volumes

Name	NB Bike Lane					SB Bike Lane				
Base Volume Input [veh/h]	0	98	0	0	0	0	0	0	25	0
Base Volume Adjustment Factor	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
Proportion of CAVs [%]	0.00									
Growth Factor	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
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	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
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	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
Total Hourly Volume [veh/h]	0	98	0	0	0	0	0	0	25	0
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	0	25	0	0	0	0	0	0	6	0
Total Analysis Volume [veh/h]	0	98	0	0	0	0	0	0	25	0
Presence of On-Street Parking	No				No	No				No
On-Street Parking Maneuver Rate [/h]	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
v_do, Outbound Pedestrian Volume crossing	15					15				
v_di, Inbound Pedestrian Volume crossing th	15					15				
v_co, Outbound Pedestrian Volume along th	15					15				
v_ci, Inbound Pedestrian Volume along the l	15					15				
v_ab, Corner Pedestrian Volume [ped/h]	0					0				
Bicycle Volume [bicycles/h]	98					25				

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 2
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv	Permissiv
Signal Group	0	2	0	0	0	0	0	0	2	0
Auxiliary Signal Groups										
Maximum Green [s]	0	22	0	0	0	0	0	0	22	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No							No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [m]	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

Phasing & Timing: Pattern 2

Split [s]	0	25	0	0	0	0	0	0	25	0
Lead / Lag	-	Lag	-	-	-	-	-	-	-	-
Minimum Green [s]	0	22	0	0	0	0	0	0	22	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Minimum Recall		No							No	
Maximum Recall		No							No	
Pedestrian Recall		No							No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C
C, Calculated Cycle Length [s]	110	110
L, Total Lost Time per Cycle [s]	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00
l2, Clearance Lost Time [s]	1.00	1.00
g_i, Effective Green Time [s]	21	21
g / C, Green / Cycle	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.08	0.02
s, saturation flow rate [veh/h]	1177	1616
c, Capacity [veh/h]	246	316
d1, Uniform Delay [s]	39.48	36.18
k, delay calibration	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	1.04	0.11
d3, Initial Queue Delay [s]	0.00	0.00
Rp, platoon ratio	1.00	1.00
PF, progression factor	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.08
d, Delay for Lane Group [s/veh]	40.52	36.28
Lane Group LOS	D	D
Critical Lane Group	Yes	No
50th-Percentile Queue Length [veh/ln]	2.48	0.57
50th-Percentile Queue Length [m/ln]	18.87	4.37
95th-Percentile Queue Length [veh/ln]	4.46	1.03
95th-Percentile Queue Length [m/ln]	33.97	7.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	40.52	0.00	0.00	0.00	0.00	0.00	0.00	36.28	0.00
Movement LOS		D							D	
d_A, Approach Delay [s/veh]	40.52					36.28				
Approach LOS	D					D				
d_I, Intersection Delay [s/veh]	10.62									
Intersection LOS	B									
Intersection V/C	0.263									

Emissions

Vehicle Kilometers Traveled [km/h]	7.23	0.96
Stops [stops/h]	81.04	18.79
Fuel consumption [L/h]	4.58	0.97
CO [g/h]	84.55	17.83
NOx [g/h]	16.45	3.47
VOC [g/h]	19.59	4.13

Other Modes

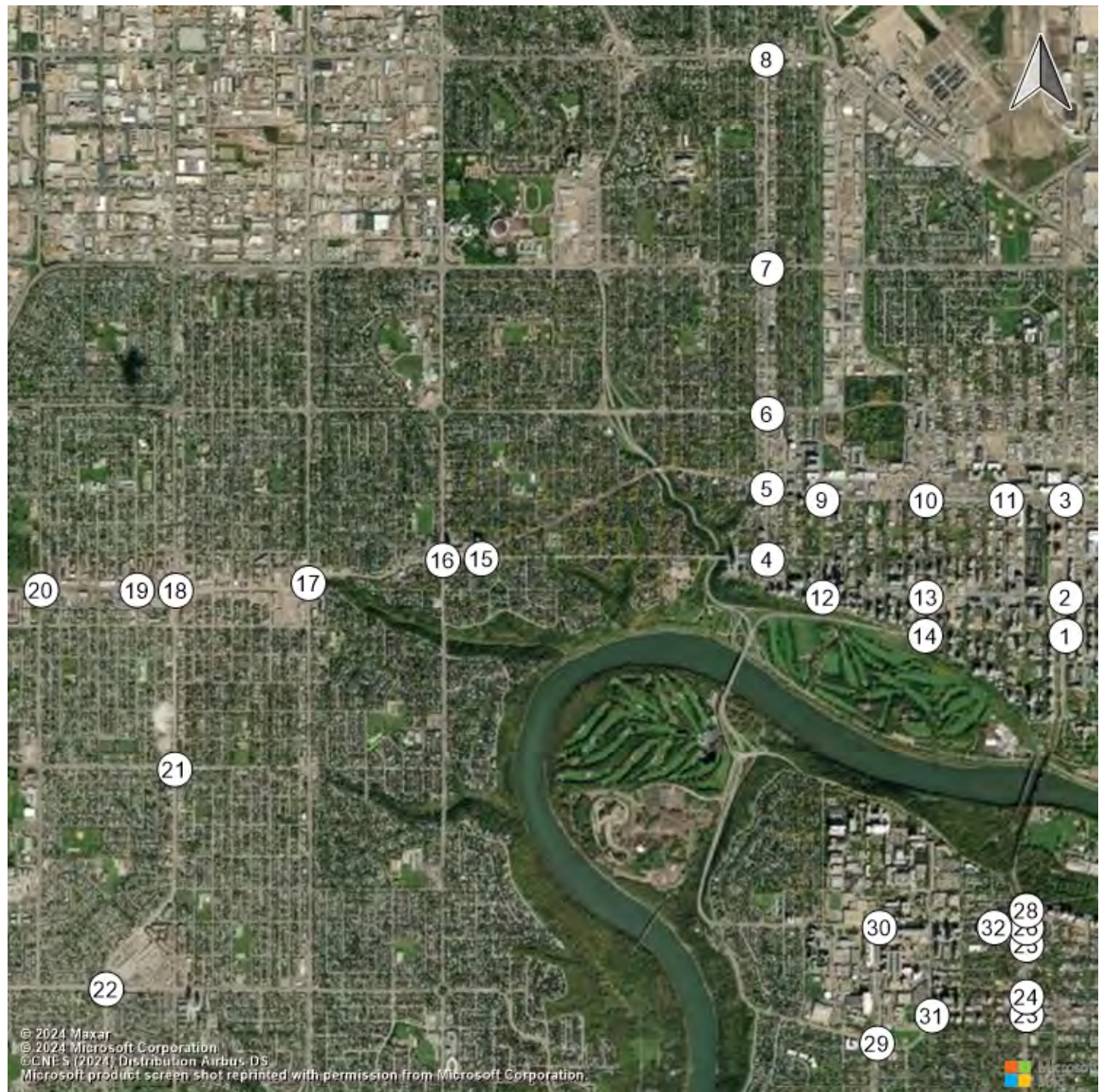
g_Walk,mi, Effective Walk Time [s]	11.0	11.0
M_corner, Corner Circulation Area [m²/ped]	45.21	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	23.95	0.00
d_p, Pedestrian Delay [s]	44.55	44.55
I_p,int, Pedestrian LOS Score for Intersectio	1.762	1.901
Crosswalk LOS	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	400
d_b, Bicycle Delay [s]	37.01	35.65
I_b,int, Bicycle LOS Score for Intersection	1.560	1.601
Bicycle LOS	A	A

Sequence

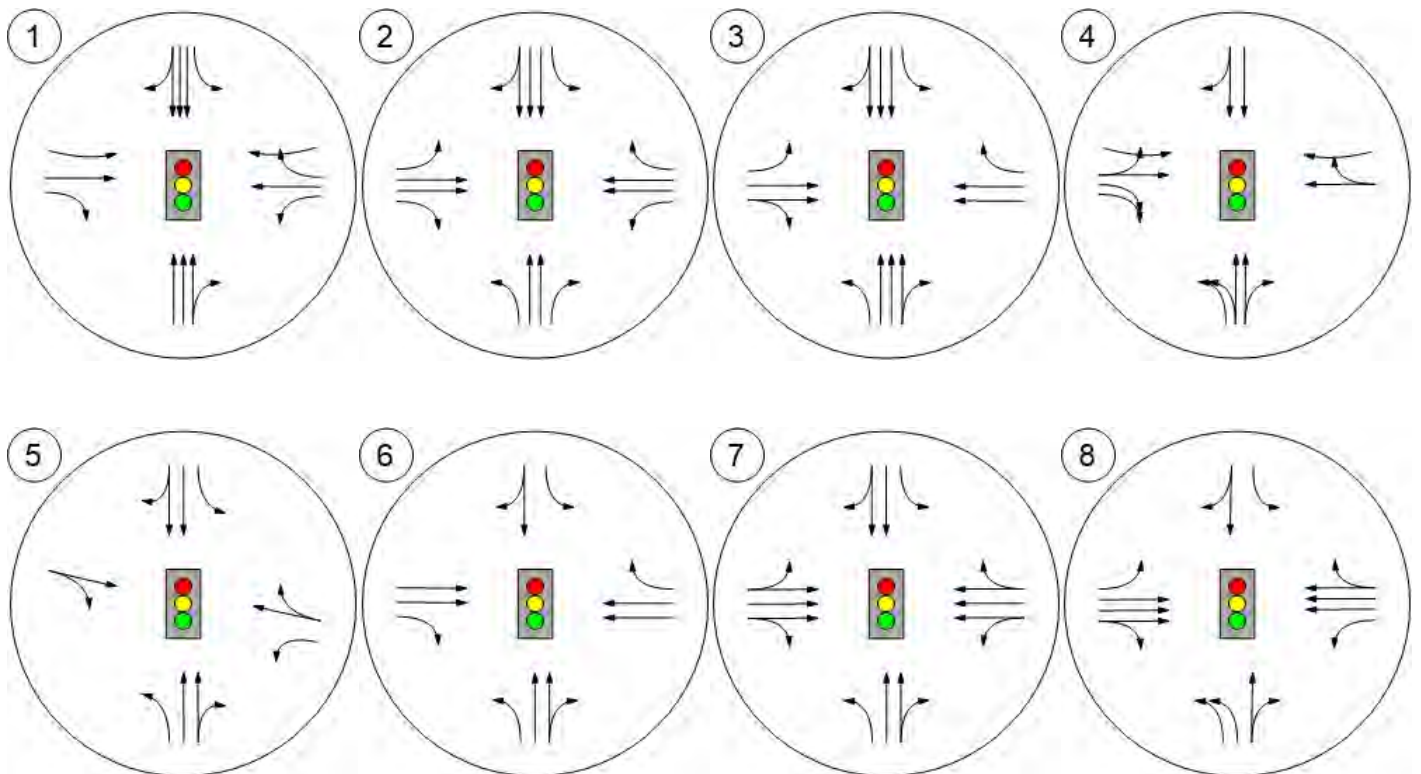
Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



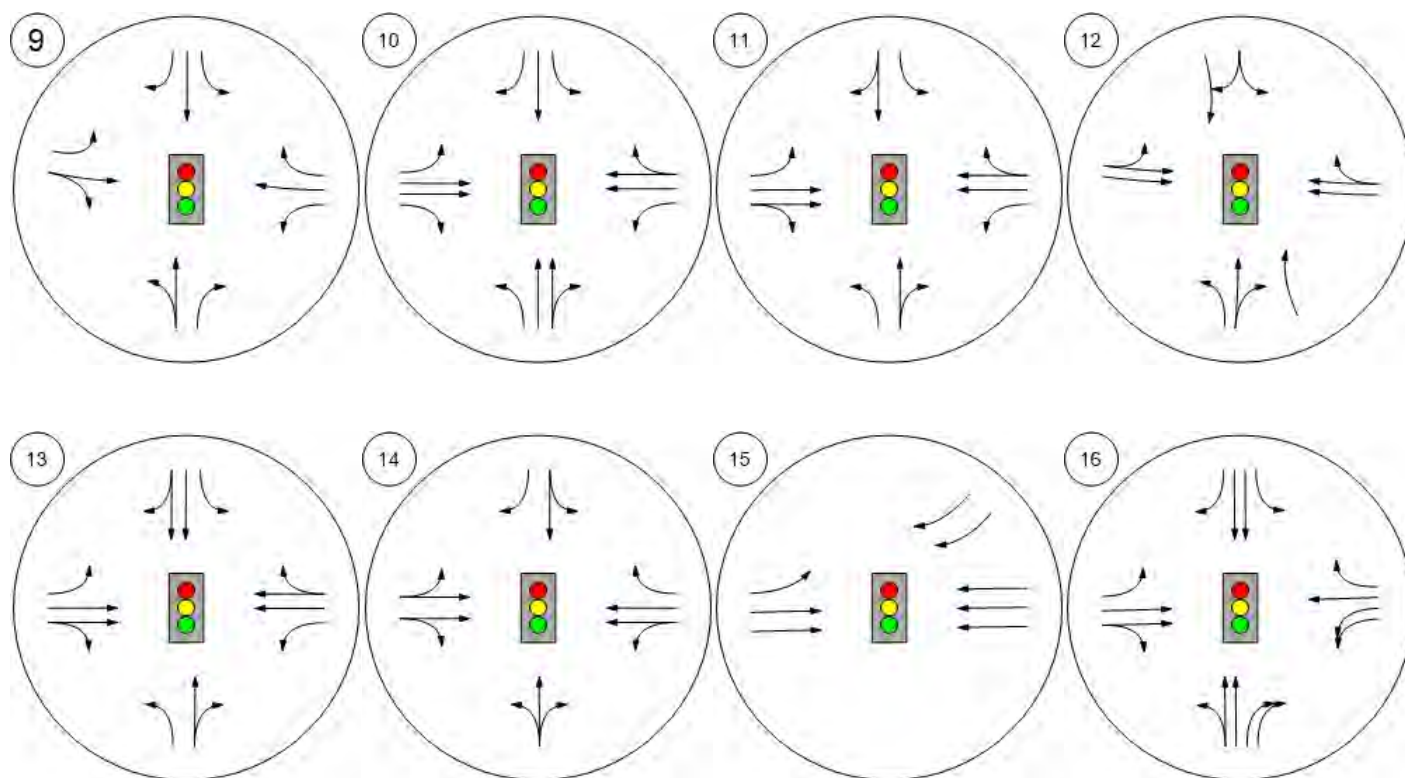
Study Intersections



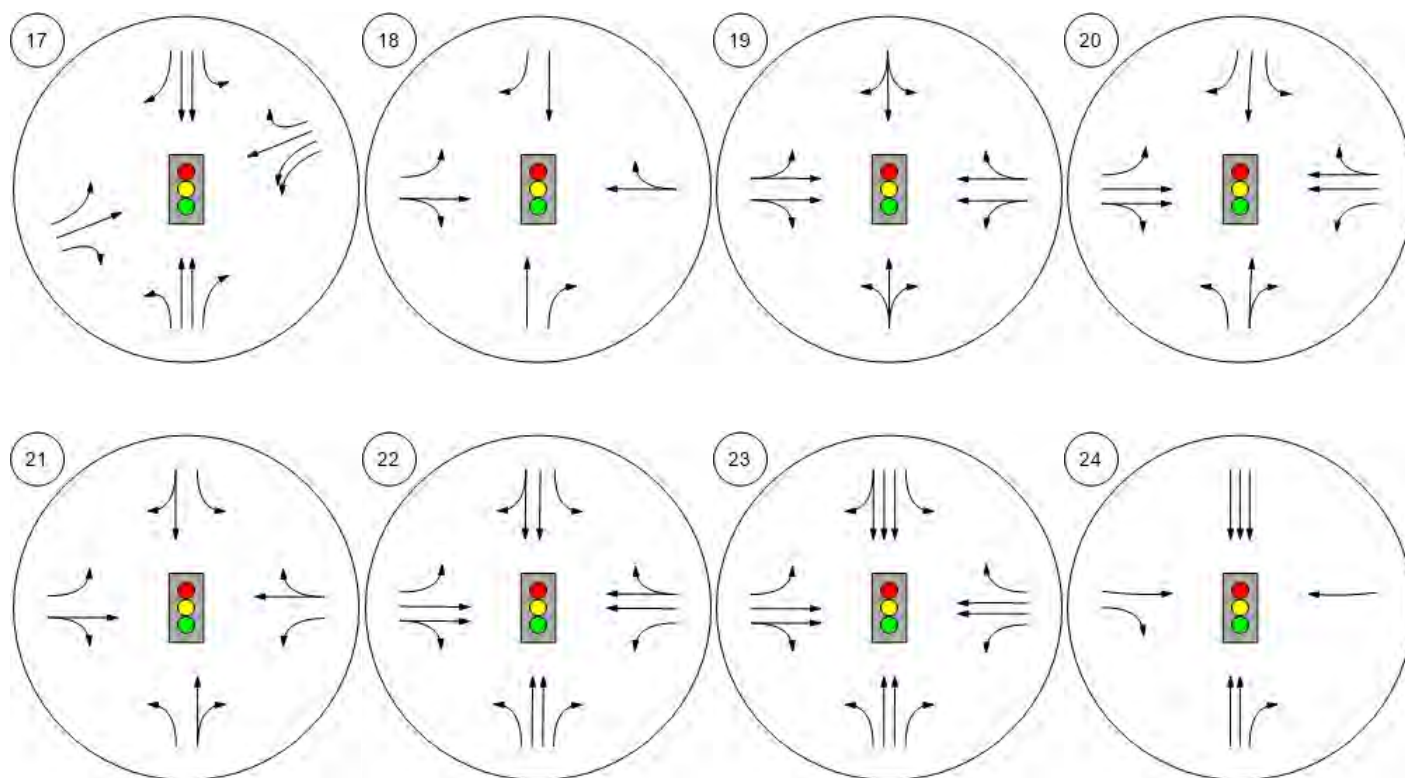
Lane Configuration and Traffic Control



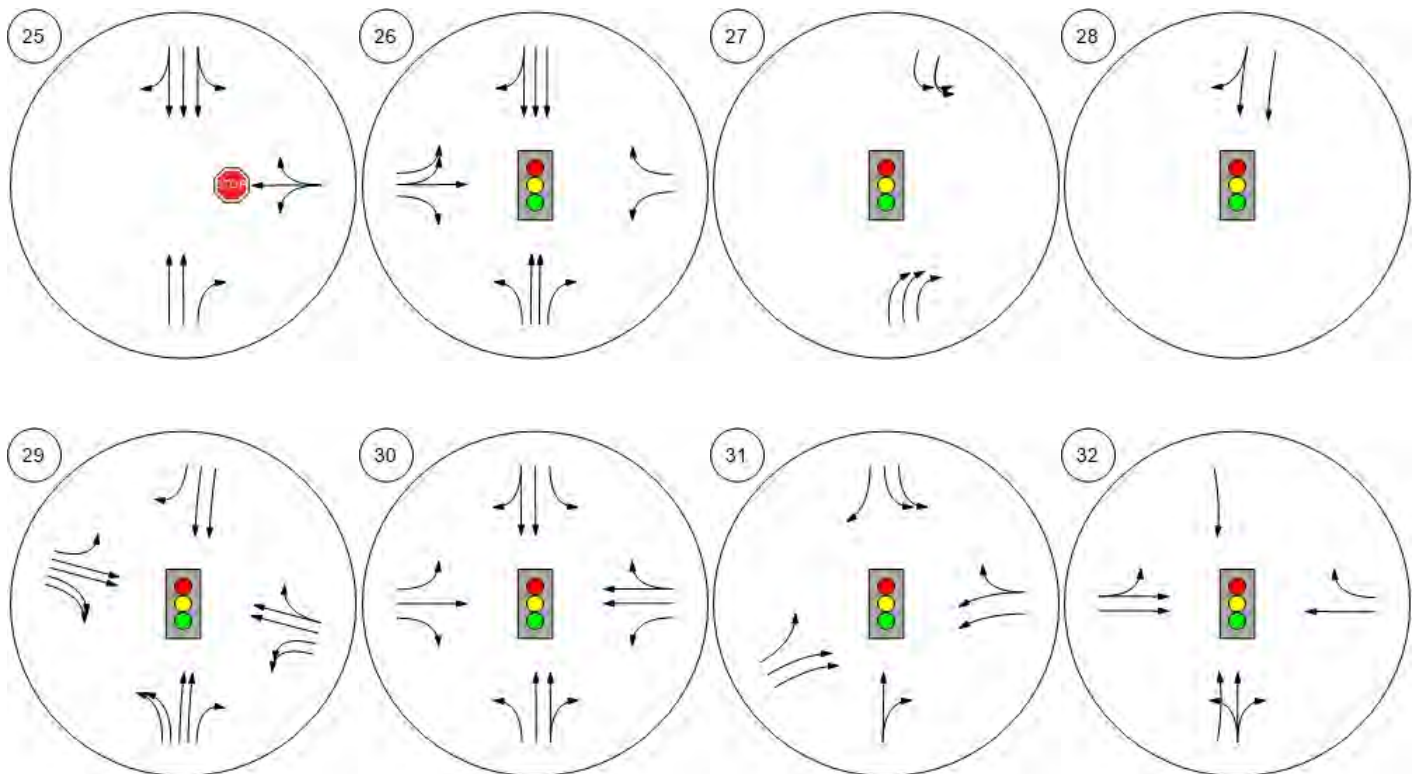
Lane Configuration and Traffic Control



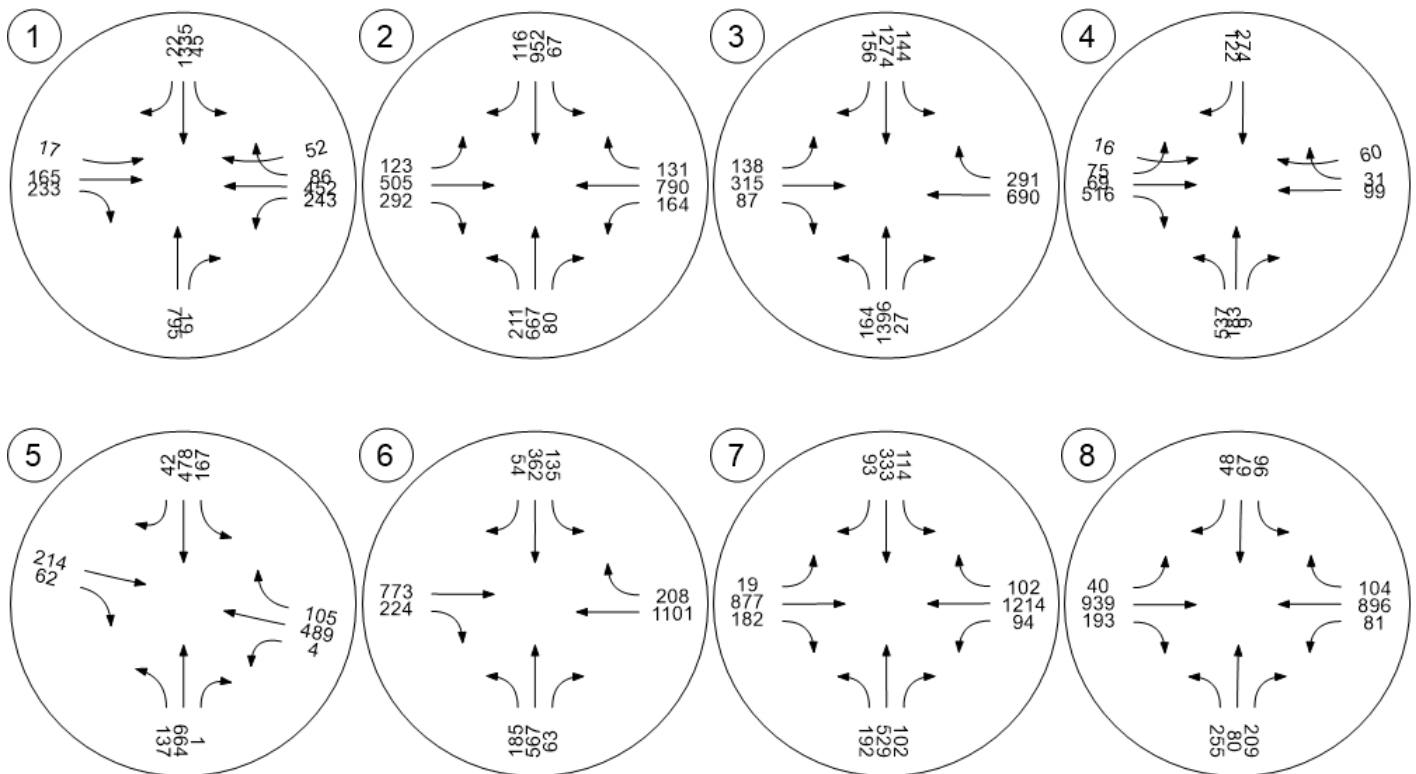
Lane Configuration and Traffic Control



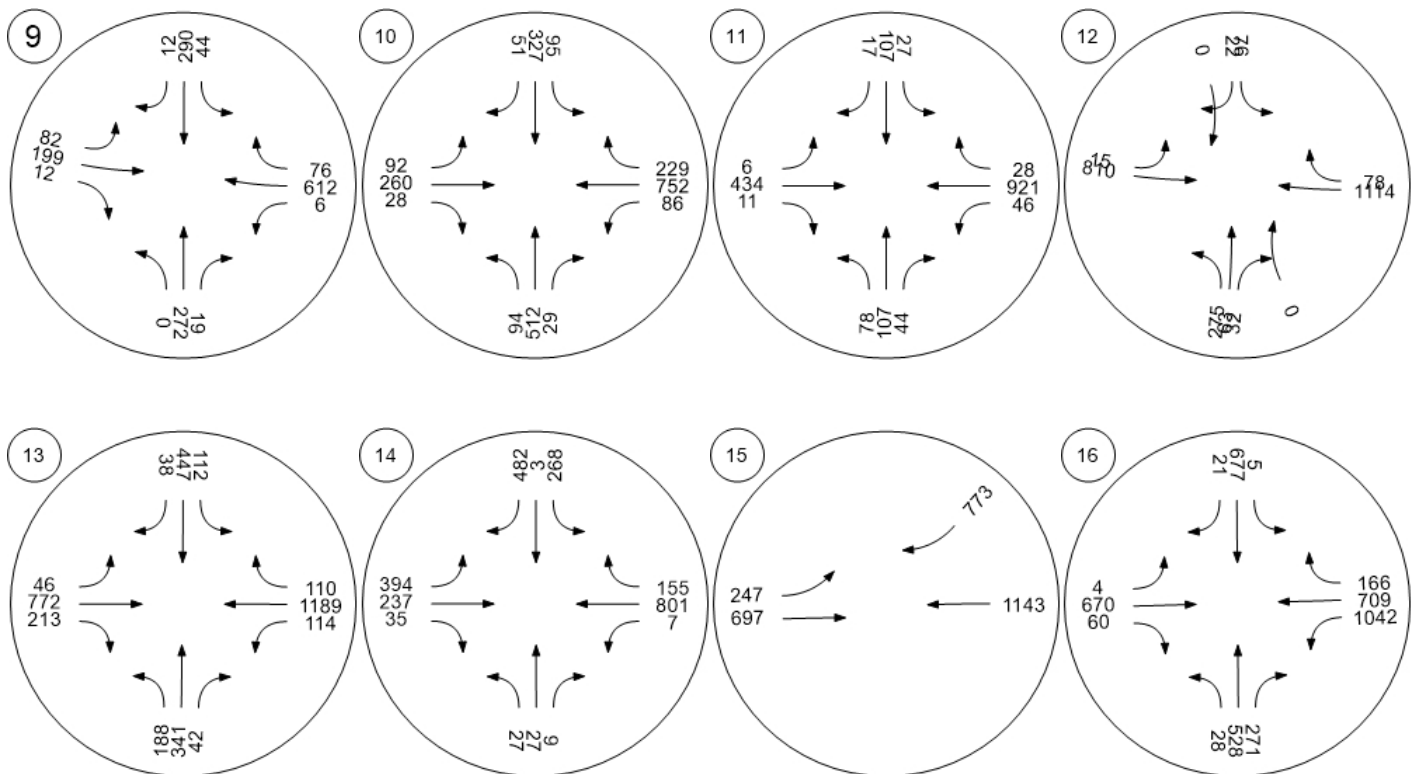
Lane Configuration and Traffic Control



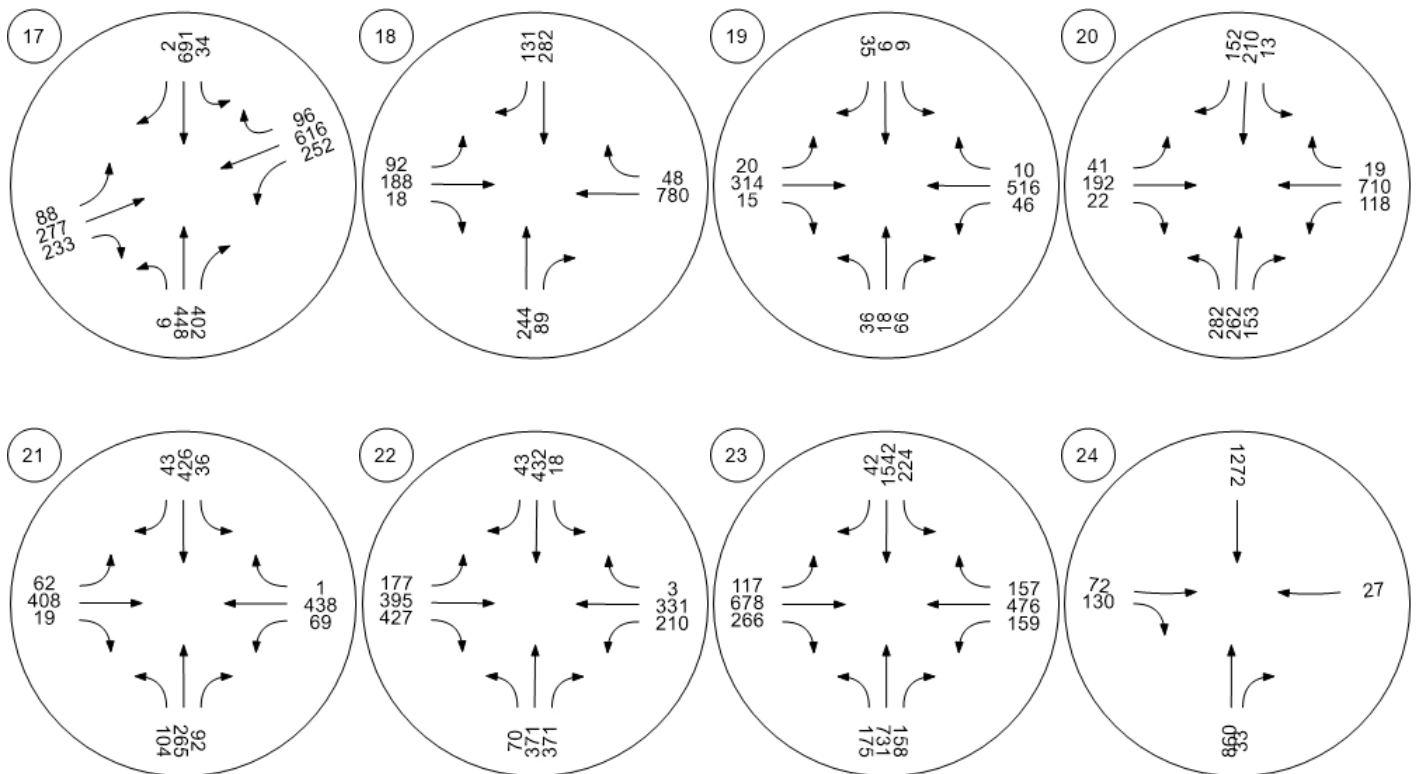
Traffic Volume - Base Volume



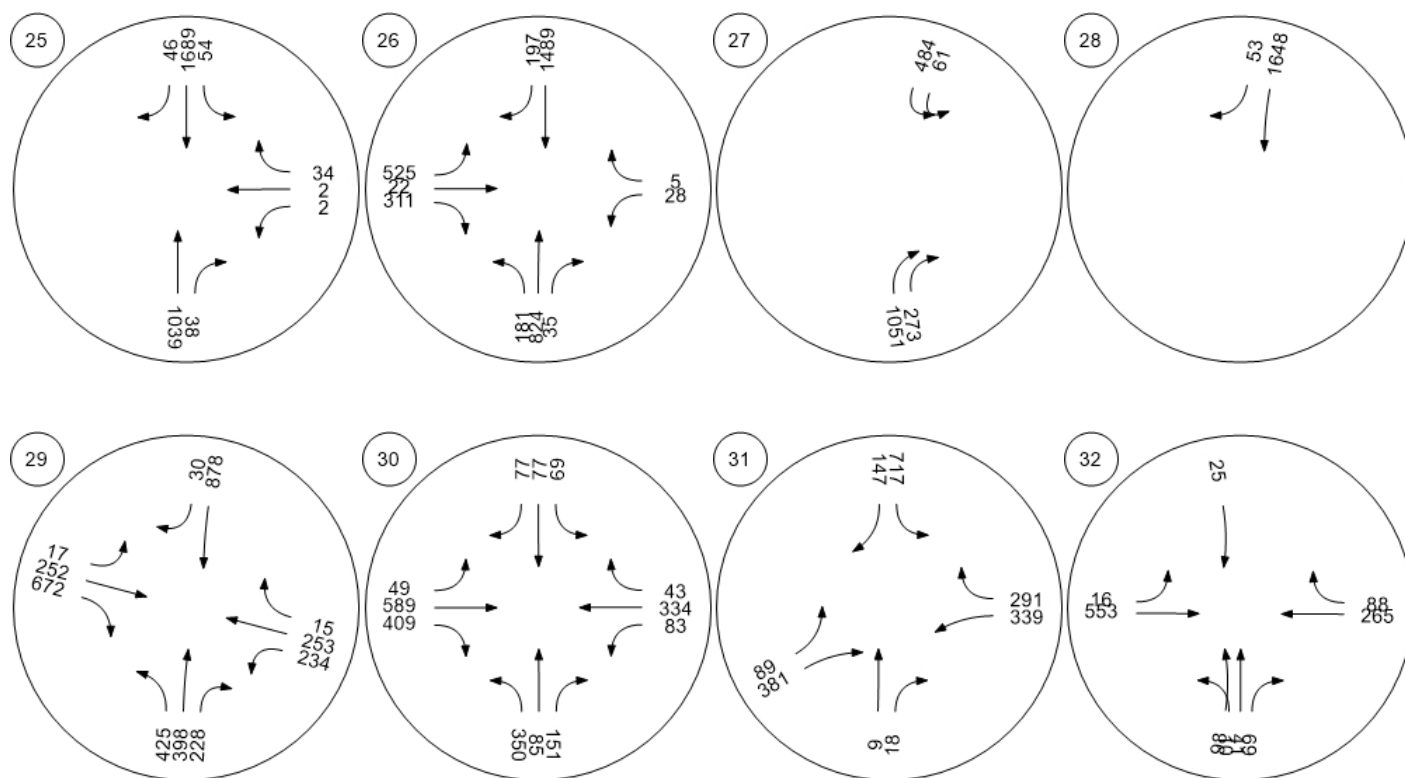
Traffic Volume - Base Volume



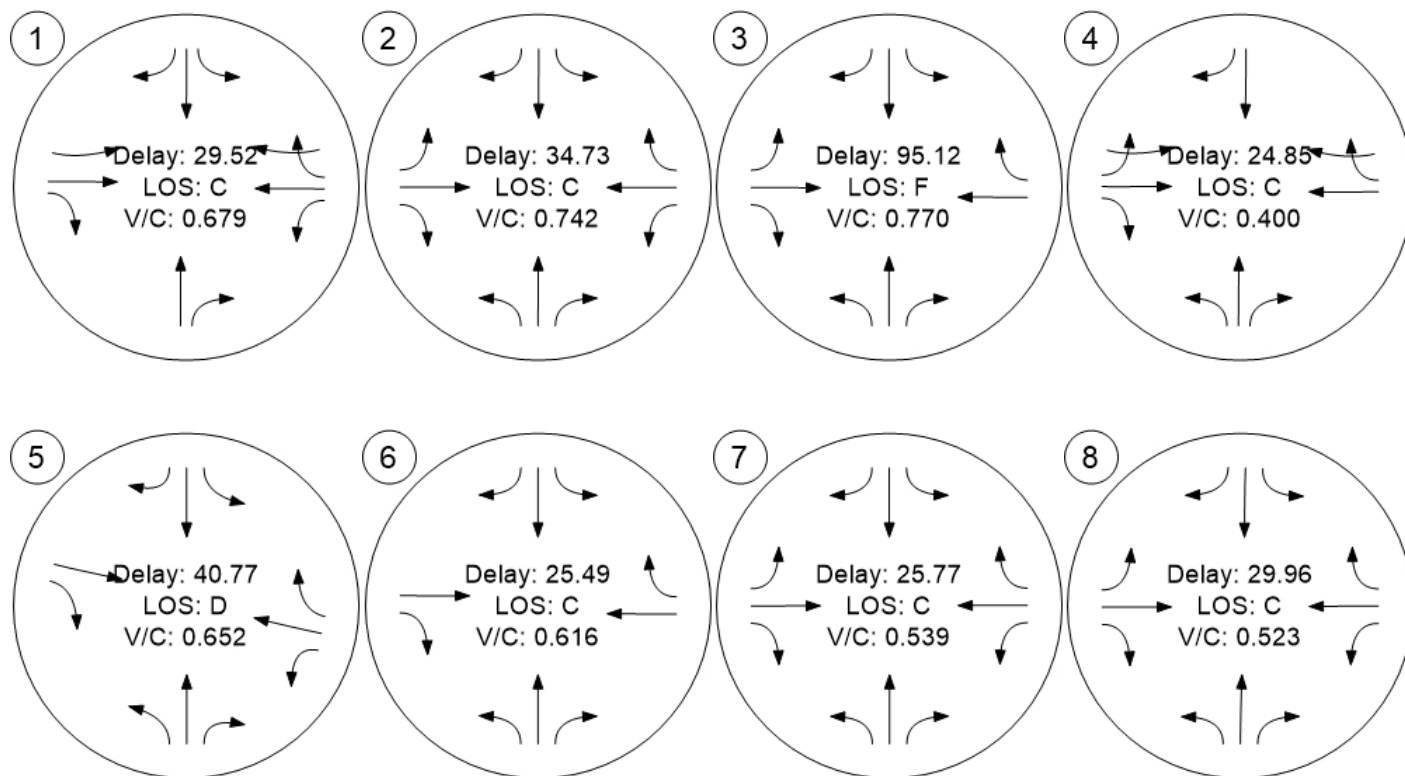
Traffic Volume - Base Volume



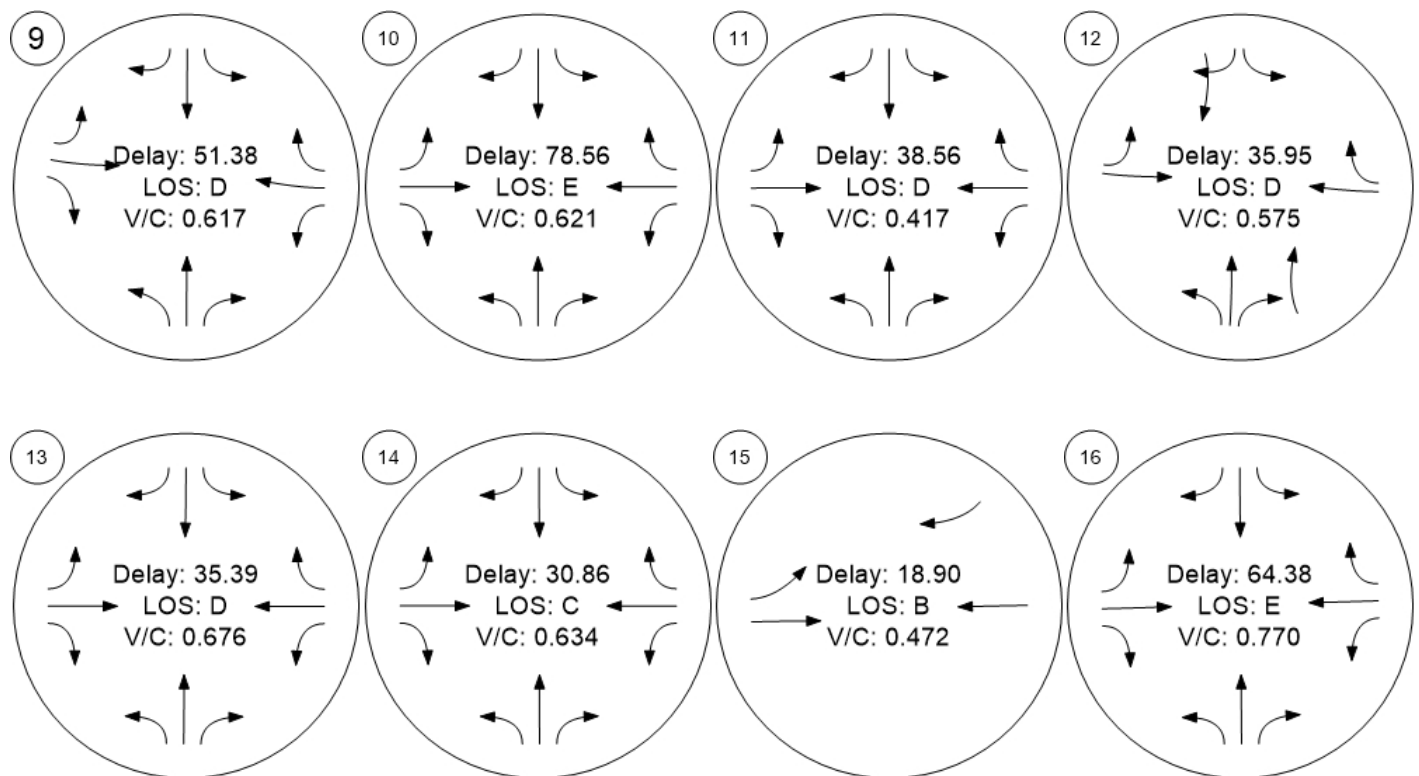
Traffic Volume - Base Volume



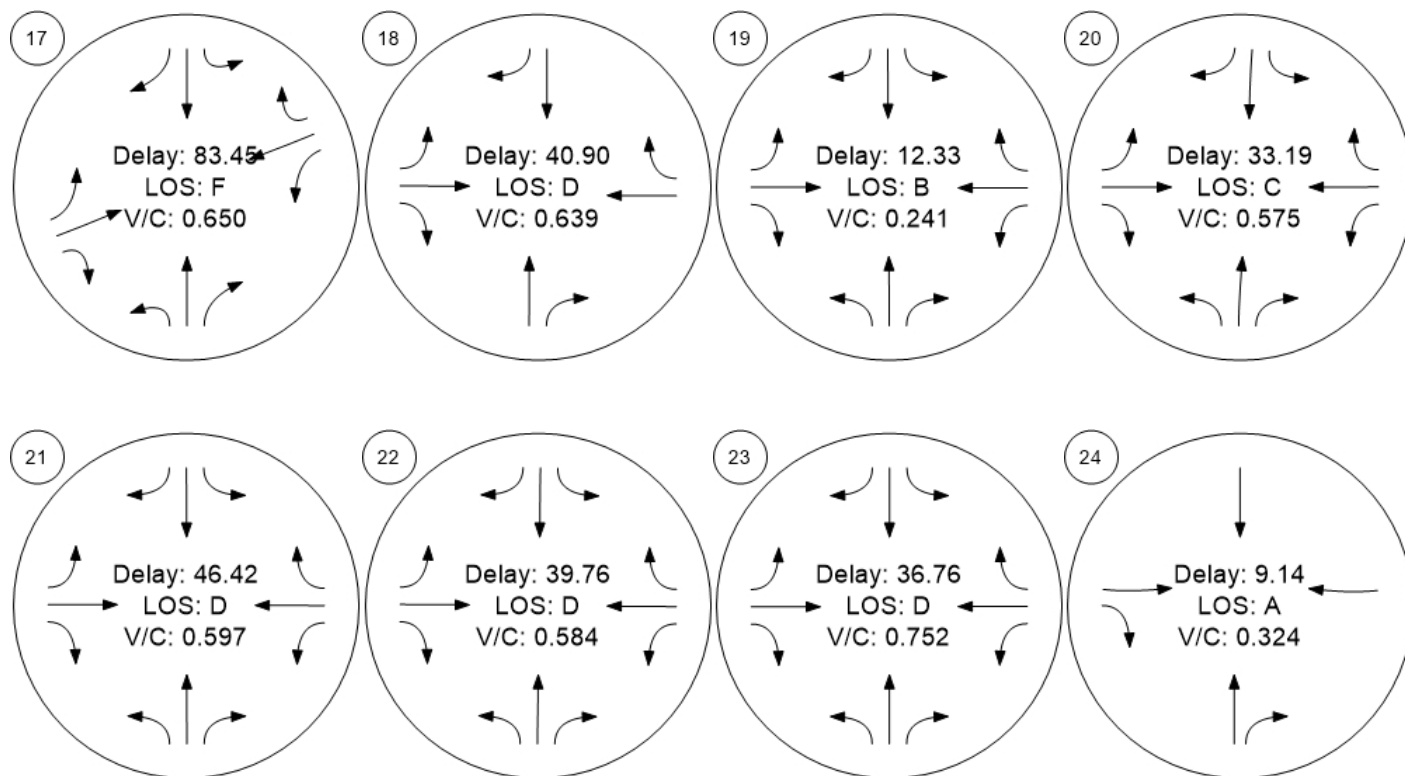
Traffic Conditions



Traffic Conditions



Traffic Conditions



Traffic Conditions

