

Technical Memorandum

March 18, 2025

Project# 27852

To: Jamie Stasny, Regional Transportation and Land Use Policy Coordinator
Clackamas County
150 Beaver Creek Road
Oregon City, OR 97045

From: Marc Butorac, PE, PTOE, PMP, Krista Purser, PE, Russ Doubleday, and Poppy Yang, Ph.D.

CC: Ana Jovanovic, Jamey Dempster, Scott Richman - Jacobs

RE: Sunrise Gateway Corridor Tech Memo #4.4.2: Proposed Sunrise Gateway 162nd/172nd Preferred
Concept Addendum #1

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Executive Summary

This memorandum summarizes the proposed 162nd to 172nd revision to the Sunrise Gateway Corridor Concept and updates to the 122nd/Sunrise (OR212/OR224) junction based on feedback provided through the ongoing Sunrise Corridor Visioning Project. TM #4.4.1 presented an interim diamond interchange at 162nd that would be forward-compatible to a split-diamond interchange with frontage roads between 162nd and 172nd. After receiving feedback and reviewing the interim solution, the need to preserve right-of-way and adjust the Happy Valley TSP, the split-diamond interchange is recommended by the project team as the preferred concept for implementation by 2045. This memorandum describes the reasoning and benefits, presents the operational analysis for the concept, shows the need for westbound access at 162nd, and compares the split-diamond operations to the FEIS and other previous concepts.

More information on the background is available in TM #4.4.1.

Proposed 122nd/Sunrise (New OR212/OR224 Junction) Revisions

The Sunrise Gateway Corridor Concept envisioned a value-engineered solution with forward compatibility at the 122nd/Sunrise Junction. The concept proposed developing a couplet via the future interchange ramps and signaling the terminals with 122nd. This solution provided adequate capacity under the year

2045 conditions; however, it would introduce stops along the Sunrise mainline. Based on further feedback and the desire to facilitate freight movement without the need to stop along the Sunrise between I-205 and 172nd in keeping with the planned for limited access facility and the incremental cost difference of installing the mainline bridge over 122nd, the project team updated the plan to include a full interchange at this location (see Exhibit 1). Updated operational analyses indicated that the project lane geometry of the 122nd interchange can continue to meet the Purpose and Need of the 2010 FEIS.

Proposed 162nd/172nd Split-Diamond Concept Benefits

The proposed 162nd/172nd split-diamond concept, shown in Exhibit 2, provides the following benefits over the interim 162nd interchange concept:

- **East-west connectivity:** Frontage roads provide east-west connectivity in the Rock Creek area, drawing traffic away from Rock Creek Boulevard and the schools along it. Depending on access management preferences, the frontage roads could also serve as a replacement for the Happy Valley TSP's planned east-west collector road that would be roughly halfway between Rock Creek Boulevard and OR 212.
- **Enhanced traffic operations and future compatibility:** Improves traffic operations, in particular at OR 212/SE 172nd Avenue, where additional turn lanes would be needed under an interim 162nd interchange concept and ultimately be removed with the split-diamond concept. The split-diamond also addresses the short- and long-term needs for the Columbia-to-Clackamas (C2C) and Sunrise junction, while not precluding nor specifying potential future alternatives to extend the Sunrise from 172nd to US26.
- **Relatively cost neutral:** Additional costs associated with the split diamond can be negated by the savings of the east-west collector and OR 212/SE 172nd Avenue "throwaway" components. Specifically, the east-west collector street planned in the Happy Valley TSP that extends from SE 172nd Avenue/Armstrong Circle to SE 162nd Avenue would be replaced by the narrower 2-lane, one-way westbound frontage road. In addition, the interim SE 162nd Avenue/Sunrise interchange would require the eastbound on-ramp, westbound off-ramp, and alignment of the Sunrise to SE 172nd Avenue to be removed in the future.
- **Compatible with potential short-term improvements:** The City of Happy Valley is exploring improvements along SE 162nd Avenue, including extending it to a right-in, right-out intersection with OR 212. This improvement could be built near-term and used as the new structures and ramps are constructed to the west, then the SE 162nd Avenue extension can be realigned to the new interchange. Further, the planned two-way east-west collector could potentially be developed in the interim, then converted to the one-way westbound frontage road under the split-diamond concept.
- **Conforms with the 2010 Sunrise FEIS:** The proposed split diamond interchange replaces the previously planned Rock Creek Junction interchange, removes another signal along the corridor, maintains the eastern terminus of 172nd, and meets the original purpose and need.

Given the above benefits, the Four-Lane Gateway 162nd/172nd Split Diamond is proposed as the preferred concept, and referred to as such throughout this memorandum.

Performance Thresholds

The Oregon Highway Plan (OHP – Reference 1) identifies operating standards for I-205, OR 212, OR 224 for the weekday AM and PM peak hours. At unsignalized intersections, the v/c ratio threshold of 0.99 applies to state highway approaches. At signalized intersections other than interchange ramp terminals, the 0.99 v/c threshold applies to the overall intersection. At signalized interchange ramp terminals, a v/c threshold of 0.85 applies to the overall intersection or up to 0.90 if ramp vehicle queues would not extend onto the

mainline per OHP guidelines. The OHP identifies OR 224 as a principal route that should use a v/c of 0.99 as its target for the highest and second highest peak hours.

The ODOT Highway Design Manual (HDM - Table 1200-1, Reference 2) identifies 20-year design mobility standards for statewide National Highway System (NHS) freight routes, interstate highways, and statewide (NHS) expressways within the MPO are 0.75. A design exception should be processed if the volume/capacity ratios in Table 1200-1 cannot be met.

Clackamas County uses level of service (LOS) for its operating standards and sets a threshold of LOS E for unsignalized intersections (i.e., SE 122nd Avenue/SE Jennifer Street).

Concept Operational Analysis

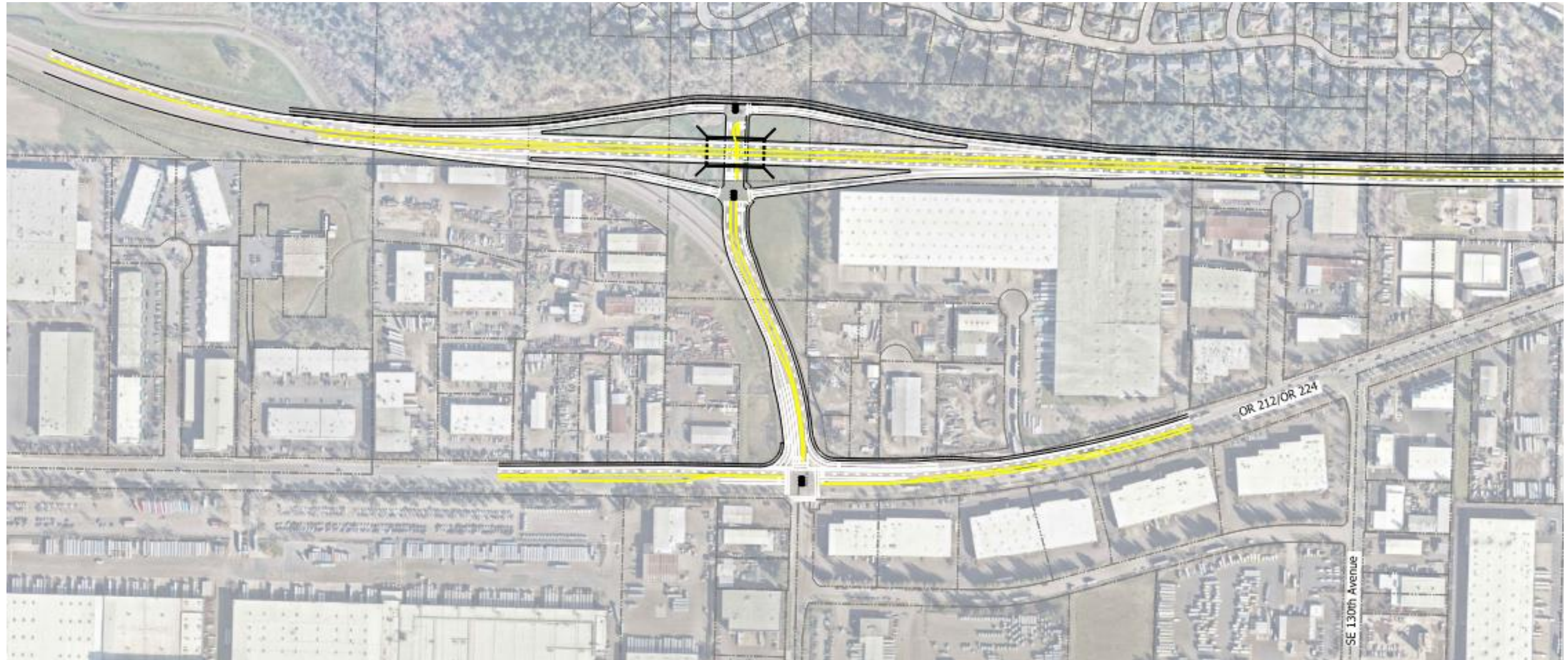
The future year 2045 forecasted volumes were refined using recommended procedures for producing travel forecasts from *NCHRP 765: Analytical Travel Forecasting Approaches for Project-Level Planning and Design* (Reference 1), an update to *NCHRP 255: Highway Traffic Data for Urbanized Area Project Planning and Design* (Reference 2). The inputs into the travel forecasts include the traffic volumes from the existing conditions analysis (see *Sunrise Corridor Community Visioning Tech Memo #4.3: Existing Transportation Conditions in the Study Area*) and the Metro 2045 Regional Transportation Plan (RTP) fiscally-constrained travel demand model results.

Figure 1 through Figure 3 show the proposed lane configurations and traffic control devices and intersection operations on the Four-Lane Gateway 162nd/172nd Split Diamond Preferred Concept in 2045. As shown, intersections operate acceptably with the exception of one of the three I-205 intersection ramp terminal intersections that continue not to meet the 0.85/0.90 v/c ratio threshold under both peak periods in 2045.

Initial analysis of the Sunrise Gateway Concept Plan scenario developed in 2020 showed several intersections not meeting their performance standards due to traffic pattern changes between then and now (2023 traffic counts). The following refinements were made under this scenario to address the congestion:

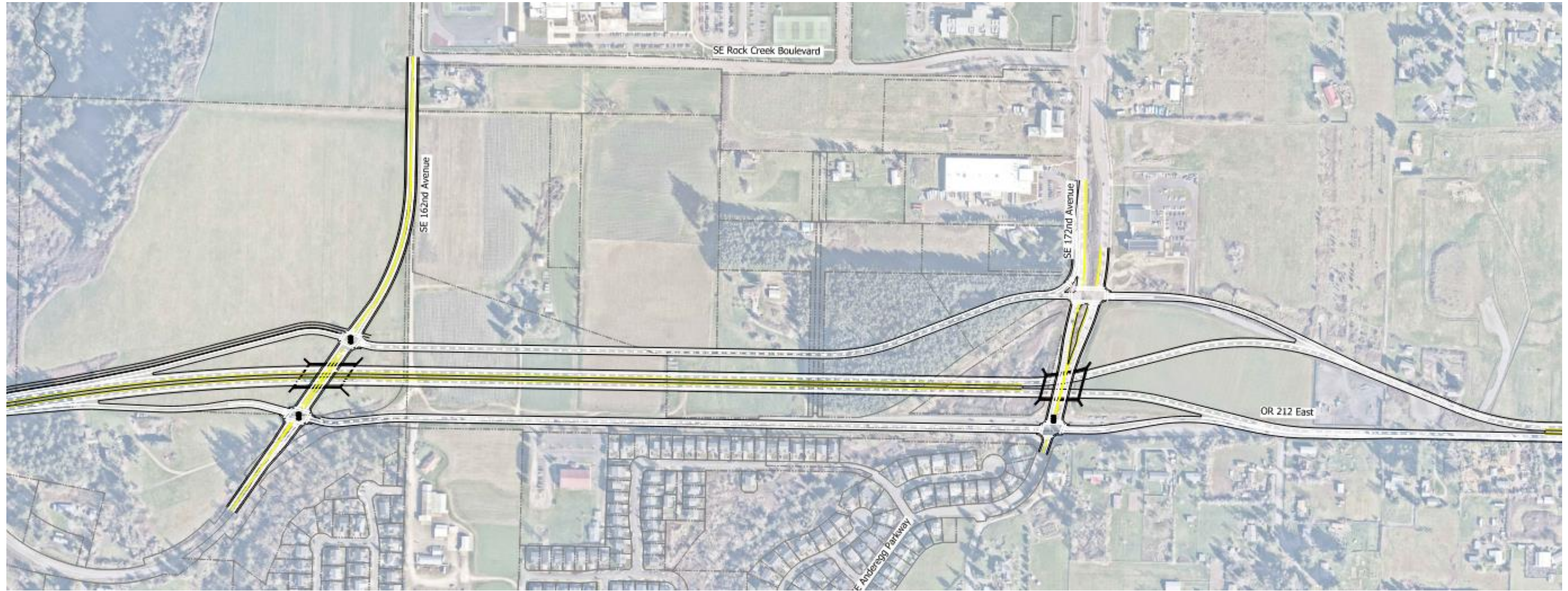
- Assumed three east/west through-lanes near the I-205 interchange to be comparable to the FEIS.
- Changed the SE 122nd Avenue/Sunrise from couplets to a full interchange, per the discussion above.
- Added a second eastbound left-turn, westbound right-turn, and southbound right-turn lanes at the SE 122nd Avenue/Highway 212 intersection.
- Added dual northbound right-turn lanes at the SE 135th Avenue/Highway 212 intersection.
- Channelized the northbound right-turn and southbound right-turn at the reconfigured SE 142nd Avenue/Highway 212 eastbound and westbound terminals as free movements with receiving lanes added on Highway 212.
- Channelized the southbound right-turn at the reconfigured SE 152nd Avenue/Highway 212 westbound terminal as a free movement with a receiving lane added on Highway 212.
- With the new Sunrise access at SE 162nd Avenue, some traffic on the existing Highway 212/224 divert from SE 122nd to SE 162nd, causing Highway 212/Highway 224 (Rock Creek Junction) to operate over capacity during the peak periods in 2045 with the Gateway Concept's roundabout. Instead, the existing signal could remain in-place with an additional eastbound right-turn lane, operating under capacity.

Exhibit 1. Sunrise 122nd (New OR 212/OR 224 Junction) Revision



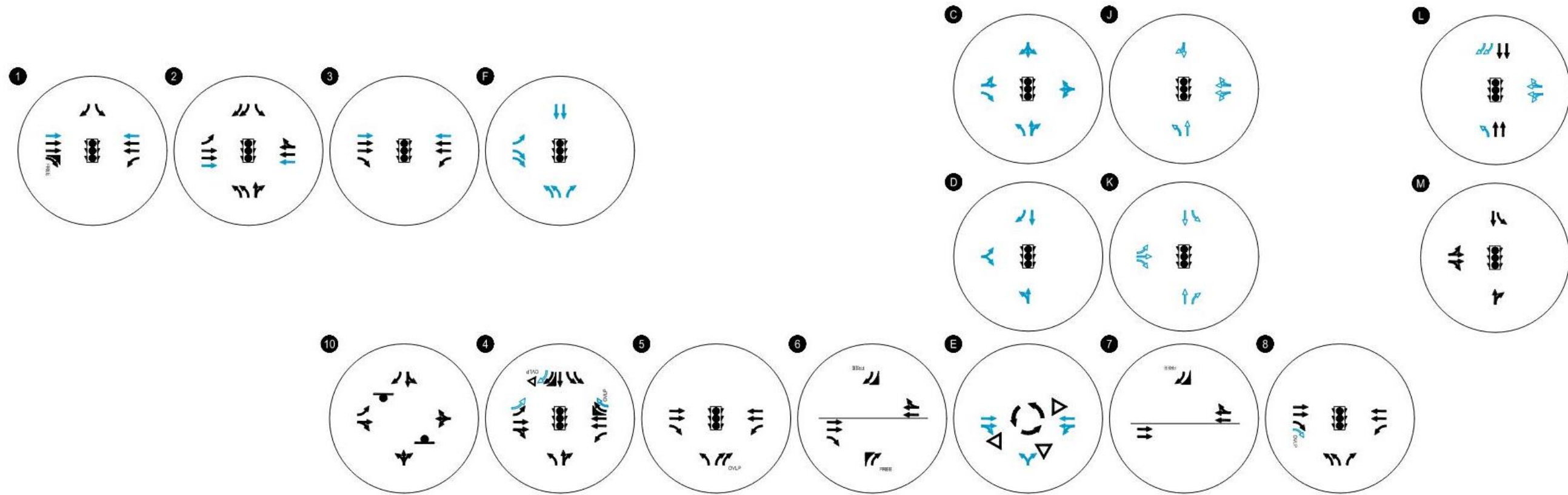
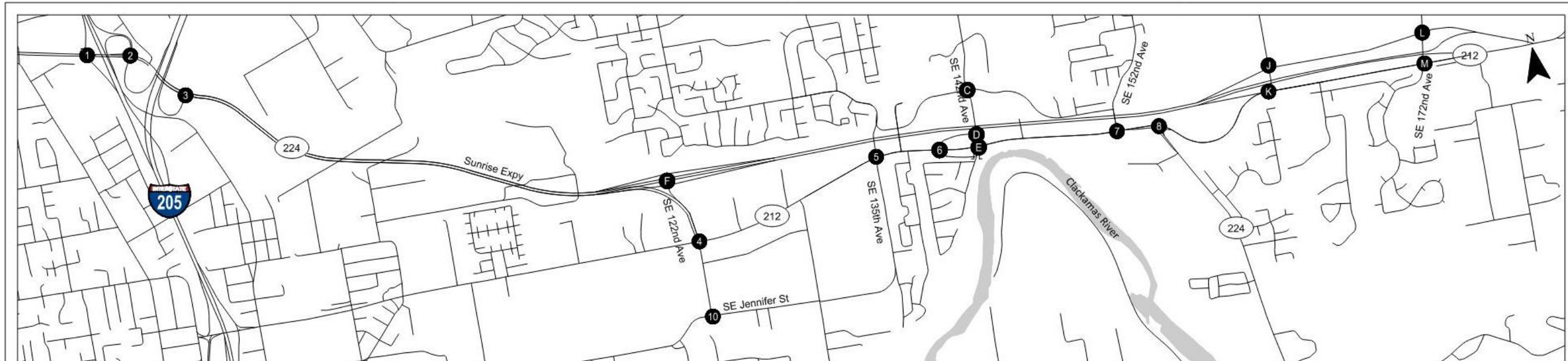
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Exhibit 2. Proposed Sunrise Corridor 162nd/172nd Split-Diamond Preferred Concept



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Figure 1. Proposed Lane Configurations and Traffic Control Devices



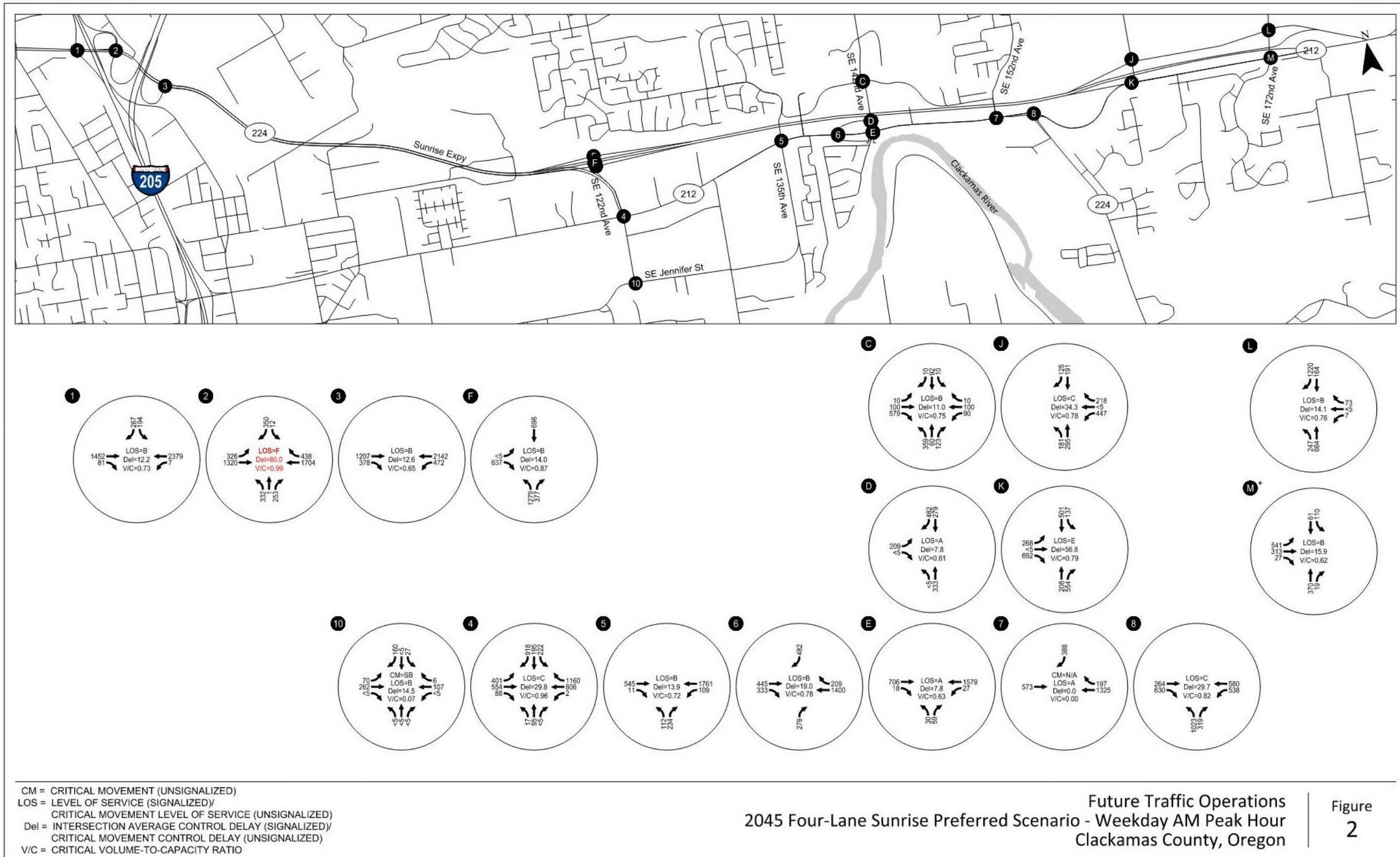
-  - STOP SIGN
-  - TRAFFIC SIGNAL
-  - YIELD SIGN
-  - ROUNDABOUT
-  - NEW LANE
-  - 2020 GATEWAY CONCEPT NEW LANE

Proposed Lane Configurations and Traffic Control Devices
 2045 Four-Lane Sunrise Preferred Scenario
 Clackamas County, Oregon

Figure
 1

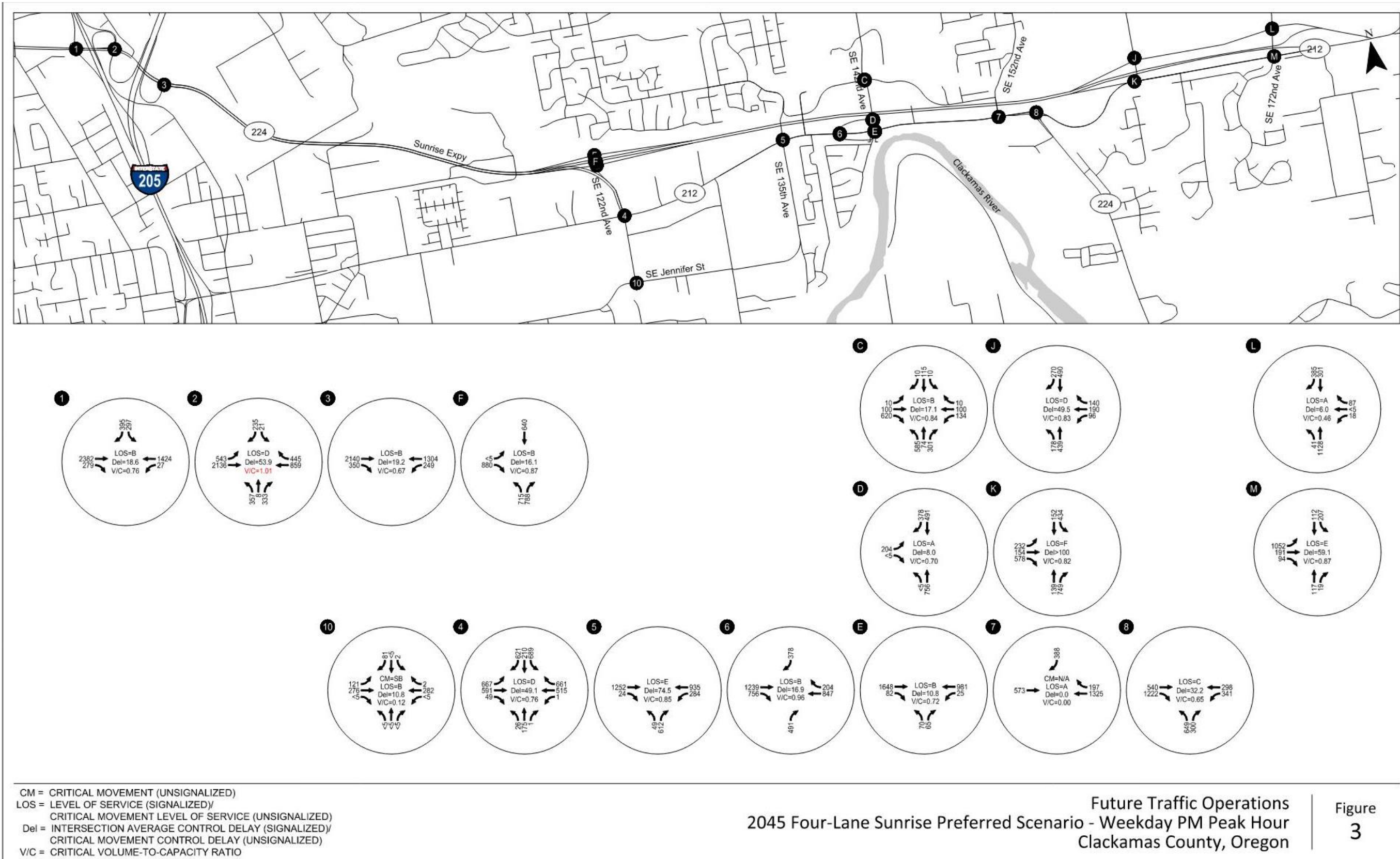
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Figure 2. 2045 Weekday AM Peak Hour Traffic Operations



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Figure 3. 2045 Weekday PM Peak Hour Traffic Operations



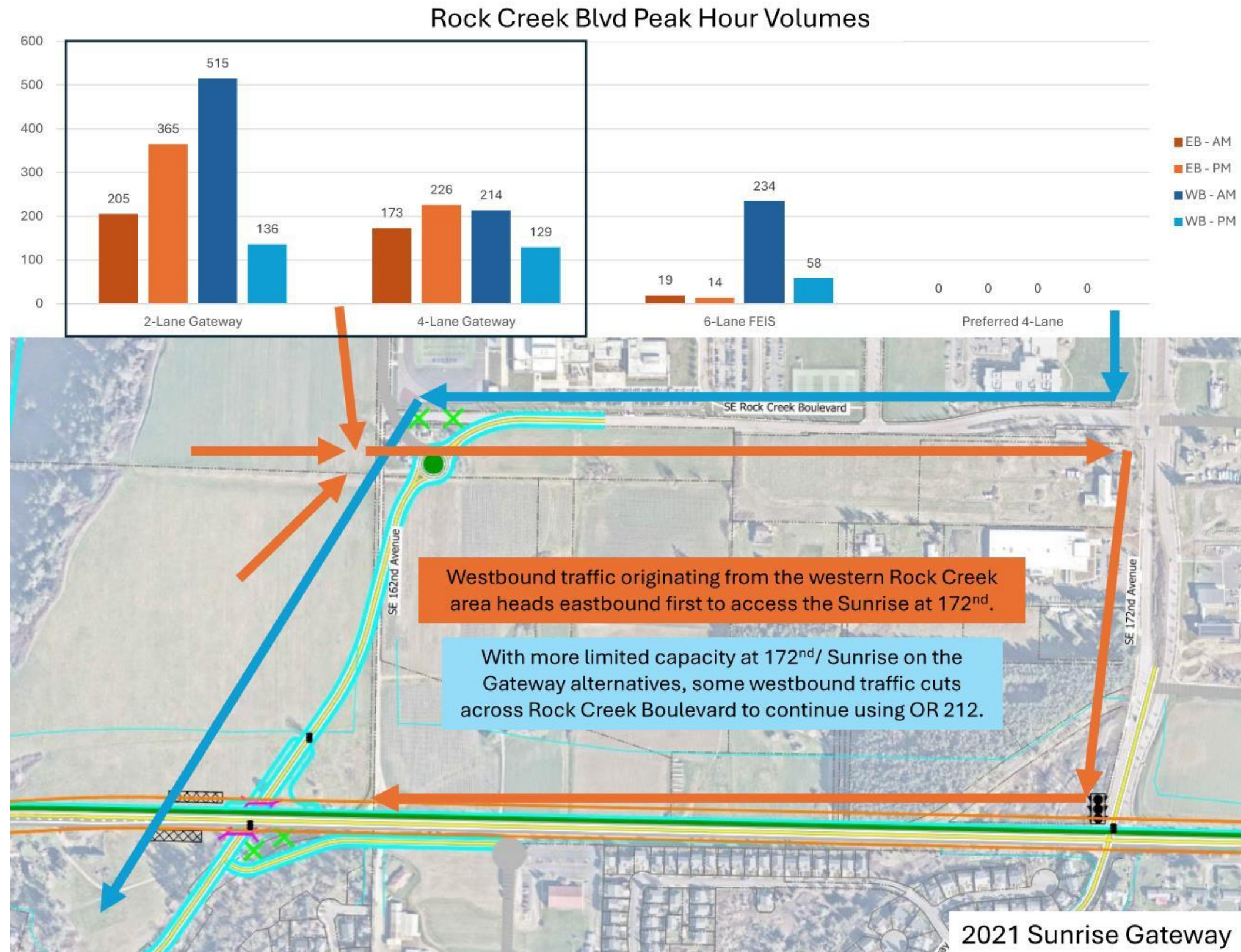
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Need for Westbound SE 162nd Avenue Ramps in the Near and Long-Term

In response to questions on the need for westbound ramps at SE 162nd Avenue under the previous interim concept, the project team developed Figure 4 through Figure 6 that show travel demand model volumes along Rock Creek Boulevard under the various scenarios. As shown, a lack of westbound access at SE 162nd Avenue attracts traffic to use Rock Creek Boulevard.

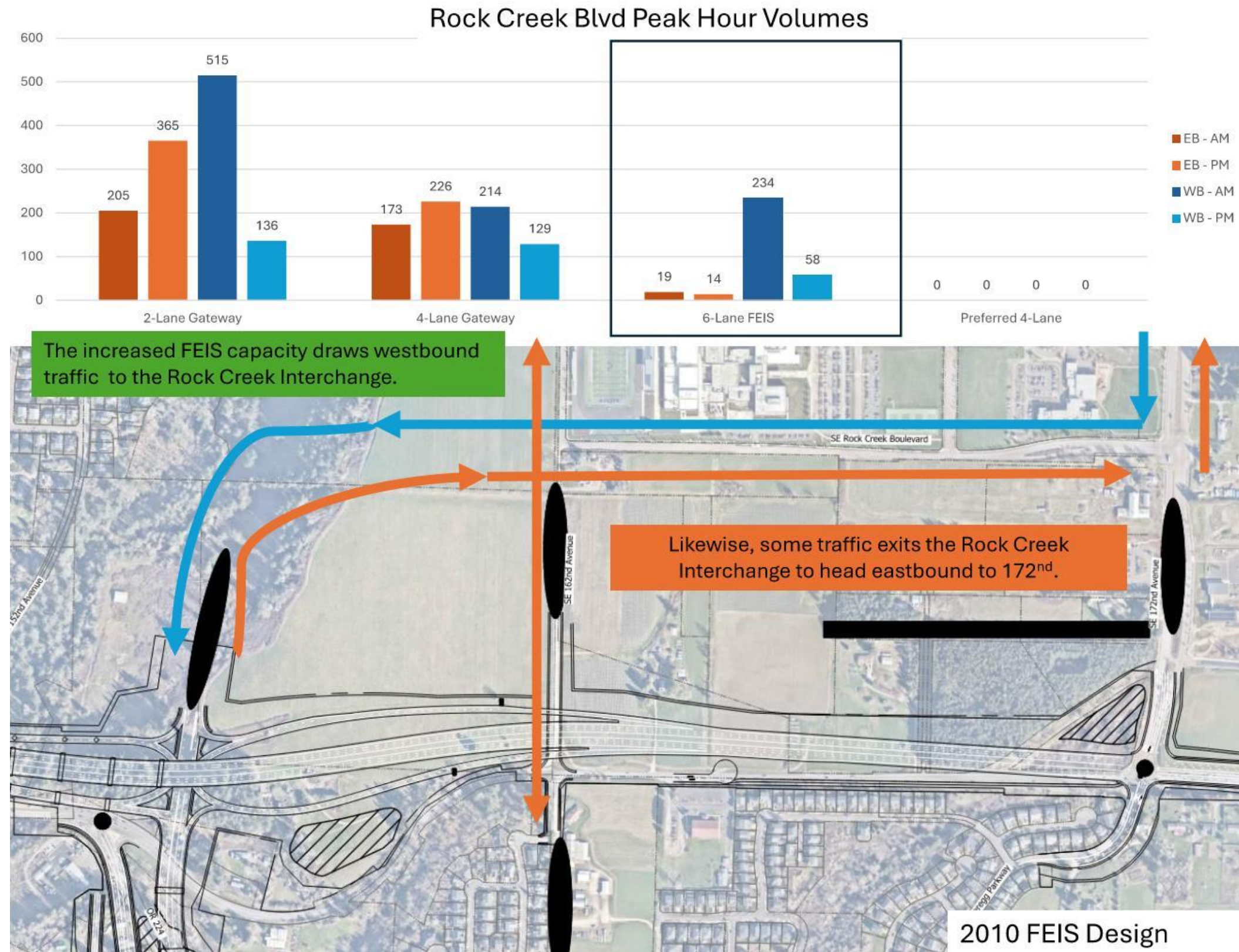
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Figure 4. Rock Creek Boulevard Volumes under the Original Gateway Scenarios



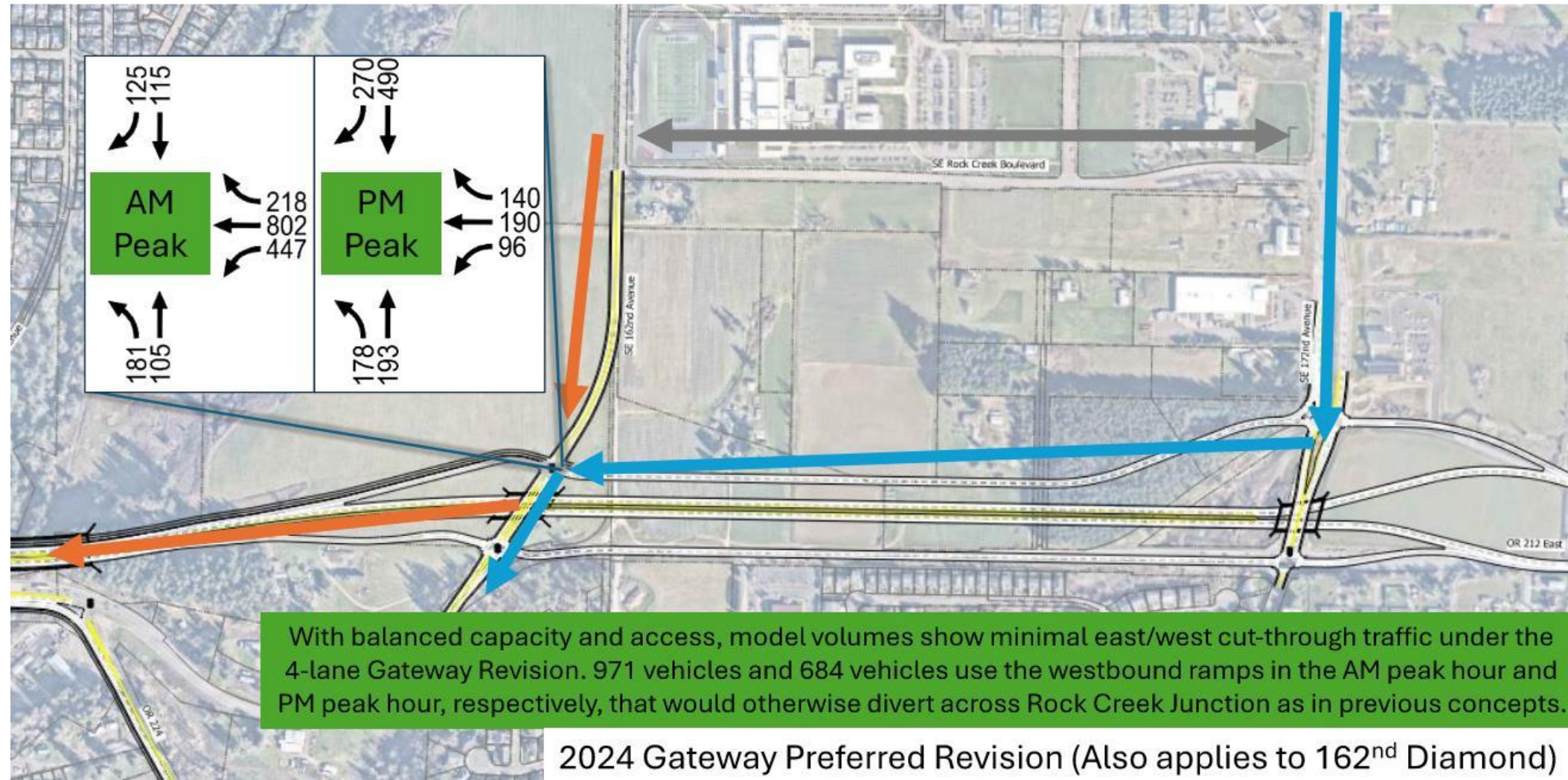
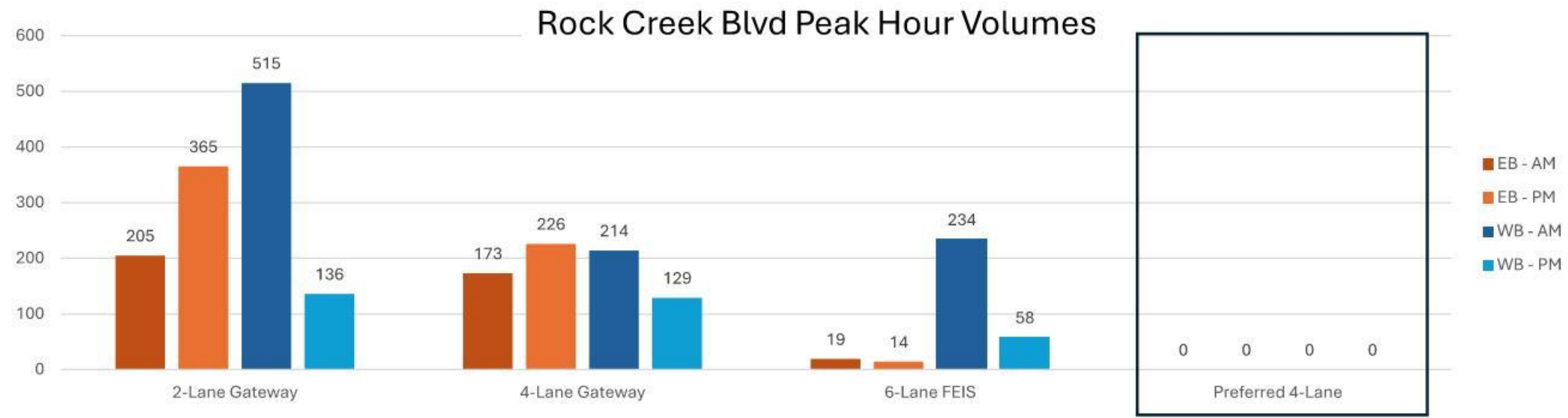
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Figure 5. Rock Creek Boulevard Volumes under the FEIS Scenario



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Figure 6. Rock Creek Boulevard Volumes under 162nd/172nd Split Diamond Preferred Concept



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Sunrise Comparison

Table 1 shows the volume-to-capacity results for the 2045 scenarios. As shown, The Four-Lane Sunrise Gateway with 162nd/172nd Split Diamond Preferred Concept operates similar to or better than the FEIS.

Table 1. Operations Comparison

2045 Scenario		Existing Intersections										Future Intersections												
		1	2	3	4	5	6	7	8	9	10	A	B	C	D	E	F	G	H	I	J	K	L	M
No-Build	AM	0.85	0.90	0.52	0.87	1.13	1.05	>2.0	0.82	0.62	0.31													
	PM	0.89	1.15	0.60	0.69	1.09	0.95	>2.0	0.76	0.89	0.68													
Two-Lane Sunrise Gateway	AM	0.77	1.04	0.59	0.87	0.74	N/A	N/A	0.76	0.84	0.17	0.88	0.77	0.24	0.62	0.68								
	PM	0.73	1.00	0.64	0.74	0.66	N/A	N/A	0.58	0.83	0.17	0.62	0.79	0.98	0.74	0.88								
Four-Lane Sunrise Gateway	AM	0.84	1.08	0.68	0.69	0.56	N/A	N/A	0.69	0.64	0.08	0.98	0.74	0.42	0.58	0.64								
	PM	0.77	1.02	0.67	0.82	0.83	N/A	N/A	0.50	0.83	0.01	0.64	0.81	0.42	0.70	0.63								
Four-Lane Sunrise Gateway with 162nd/172nd Split Diamond Preferred Concept	AM	0.73	0.99	0.65	0.96	0.72	N/A	N/A	0.82	N/A	0.07			0.75	0.61	0.63		0.87			0.78	0.79	0.76	0.62
	PM	0.76	1.01	0.67	0.76	0.85	N/A	N/A	0.65	N/A	0.12			0.84	0.70	0.72		0.87			0.83	0.82	0.46	0.87
FEIS	AM	0.77	1.00	0.68	0.88	0.83	0.56	1.15	0.57	0.86	0.27						0.95	0.81	0.73	0.57			0.77	1.00
	PM	0.81	0.96	0.65	0.68	0.87	0.57	1.46	0.39	0.87	0.13						0.80	0.92	0.83	0.64			0.81	0.96

When does the no-build "break"?

- SE 122nd Avenue/OR212 (Intersection 4) is projected to reach its capacity limit by **2038** during AM peak hours.
- SE 135th Avenue/OR212 (Intersection 5) by **2026** during PM peak hours.

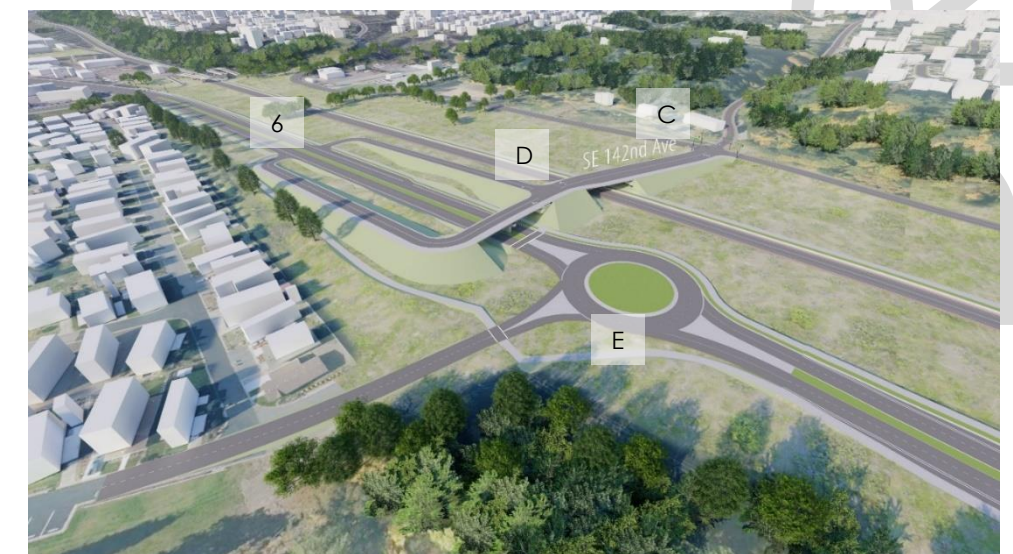
SE 172nd Avenue/OR212 (Intersection 9) by **2039** during both AM and PM peak hours.

Note: Intersections A and B operate as at-grade intersections under the original two-lane and four-lane Gateway scenarios. In the FEIS and Preferred Concept, intersections F and G are ramp terminals, hence the better performance during some time periods.

Gateway Concept Intersections



Depiction of Intersections 6, C, D, and E



References

1. Transportation Research Board. *National Cooperative Highway Research Plan 765: Analytical Travel Forecasting Approaches for Project-Level Planning and Design*. 2014.
2. Transportation Research Board. *National Cooperative Highway Research Plan 255: Highway Traffic Data for Urbanized Area Project Planning and Design*. 1982.

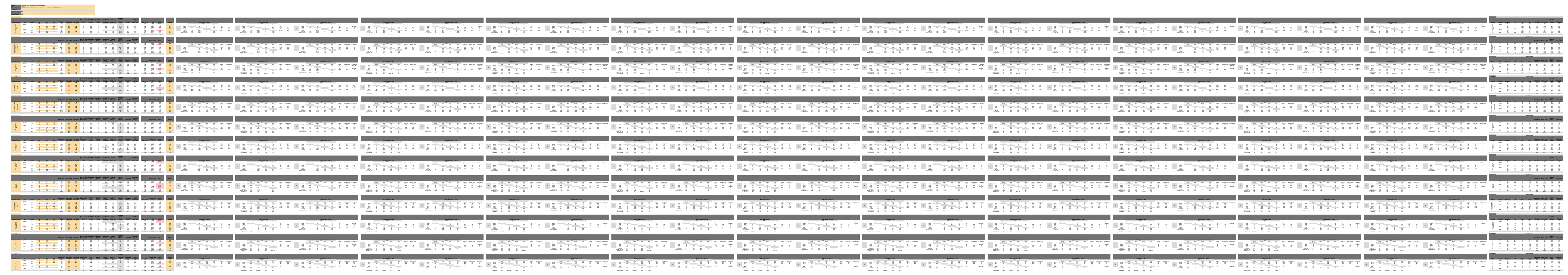
Appendices

- A. NCHRP 255 Model Volume Worksheets
- B. 2045 No-Build Operations Worksheets
- C. 2045 Two-Lane Operations Worksheets
- D. 2045 Four-Lane Operations Worksheets
- E. 2045 Four-Lane Preferred Operations Worksheets
- F. FEIS Preferred Alternative Figures and Operations Worksheets

D
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F
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255 Methodology Sheets

Model Outputs and NCHRP 255/765 Methodology for Post-Processing. Model applies to 162nd Diamond Concept. Preferred 162nd/172nd Split Diamond used the same model results with manual reassignment where configurations changed between concepts.



Model Outputs and NCHRP 255/765 Methodology for Post-Processing. Model applies to 162nd Diamond Concept. Preferred 162nd/172nd Split Diamond used the same model results with manual reassignment where configurations changed between concepts.

Scenario	Phase	Direction	Mode	Vehicle Type	Volume	Delay	Queue	Stoppage	Time	Cost	Other
162nd Diamond Concept	162nd	Northbound	General	Passenger	1000	1.5	10	5	100	1000	0.5
				Truck	100	2.0	15	10	100	1000	0.5
		Southbound	General	Passenger	1000	1.5	10	5	100	1000	0.5
				Truck	100	2.0	15	10	100	1000	0.5
		Eastbound	General	Passenger	1000	1.5	10	5	100	1000	0.5
				Truck	100	2.0	15	10	100	1000	0.5
		Westbound	General	Passenger	1000	1.5	10	5	100	1000	0.5
				Truck	100	2.0	15	10	100	1000	0.5
		Northbound	General	Passenger	1000	1.5	10	5	100	1000	0.5
				Truck	100	2.0	15	10	100	1000	0.5
		Southbound	General	Passenger	1000	1.5	10	5	100	1000	0.5
				Truck	100	2.0	15	10	100	1000	0.5
Eastbound	General	Passenger	1000	1.5	10	5	100	1000	0.5		
		Truck	100	2.0	15	10	100	1000	0.5		
Westbound	General	Passenger	1000	1.5	10	5	100	1000	0.5		
		Truck	100	2.0	15	10	100	1000	0.5		

2045 No-Build Results

Sunrise Refinement Plan

Vistro File: H:\...\Sunrise_AM_NoBuild.vistro

Scenario 1 2045 AM No-Build

Report File: H:\...\2045_NoBuildAM.pdf

3/17/2025

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	OR 213 SB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.851	15.9	B
2	OR 213 NE Ramps/I-205 SB Ramps/OR 224	Signalized	HCM 7th Edition	WB Right	0.895	244.9	F
3	I-205 NB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.519	8.6	A
4	122nd Avenue/OR 224/OR 212	Signalized	HCM 7th Edition	NB Left	0.872	31.4	C
5	135th Avenue/OR 212	Signalized	HCM 7th Edition	EB Left	1.125	105.1	F
6	142nd Avenue/OR 212	Signalized	HCM 7th Edition	WB Thru	1.052	68.5	E
7	152nd Avenue/OR 212	Two-way stop	HCM 7th Edition	SB Left	11.419	6,533.3	F
8	OR 212/OR 224 (Rock Creek Junction)	Signalized	HCM 7th Edition	WB Left	0.816	33.0	C
9	172nd Avenue/OR 212	Signalized	HCM 7th Edition	EB Left	0.622	94.9	F
10	122nd Avenue/Jennifer Street	Two-way stop	HCM 7th Edition	SB Left	0.320	26.6	D

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: OR 213 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	15.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.851

Intersection Setup

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1000.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	0.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	0	0	0	171	0	366	0	1179	134	8	1982	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 [%]	0.00	0.00	0.00	7.00	0.00	7.00	0.00	8.00	16.00	47.00	8.00	0.00
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	183	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	171	0	183	0	1179	134	8	1982	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9200	1.0000	0.9200	1.0000	0.9200	0.9200	0.9200	0.9200	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	46	0	50	0	320	36	2	539	0
Total Analysis Volume [veh/h]	0	0	0	186	0	199	0	1282	146	9	2154	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Fully actuated
Offset [s]	14.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	4	0	4	0	2	2	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	0	0	29	0	29	0	72	72	4	80	0
Amber [s]	0.0	0.0	0.0	4.0	0.0	4.0	0.0	5.0	5.0	3.5	5.0	0.0
All red [s]	0.0	0.0	0.0	1.5	0.0	1.5	0.0	1.0	1.0	0.5	1.0	0.0
Walk [s]	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
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]	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	3.5	0.0	3.5	0.0	4.0	4.0	2.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	0.0	20.0	0.0	6.0	6.0	20.0	6.0	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	34	0	34	0	78	78	8	86	0
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	6	0	10	10	4	10	0
Vehicle Extension [s]	0.0	0.0	0.0	2.3	0.0	2.3	0.0	0.5	0.5	2.3	0.5	0.0
Minimum Recall				No				Yes		No	Yes	
Maximum Recall				No				No		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		L	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		5.50	5.50	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		3.50	3.50	4.00	4.00	2.00	4.00
g_i, Effective Green Time [s]		18	18	85	85	1	91
g / C, Green / Cycle		0.15	0.15	0.71	0.71	0.01	0.75
(v / s)_i Volume / Saturation Flow Rate		0.11	0.13	0.38	0.10	0.01	0.64
s, saturation flow rate [veh/h]		1709	1526	3389	1411	1138	3389
c, Capacity [veh/h]		257	229	2412	1004	10	2555
d1, Uniform Delay [s]		48.63	49.84	8.02	5.56	59.40	9.96
k, delay calibration		0.07	0.07	0.50	0.50	0.07	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.39	6.20	0.84	0.30	71.65	3.60
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		0.72	0.87	0.53	0.15	0.88	0.84
d, Delay for Lane Group [s/veh]		51.02	56.04	8.87	5.87	131.05	13.56
Lane Group LOS		D	E	A	A	F	B
Critical Lane Group		No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		5.48	6.22	7.20	1.18	0.48	16.96
50th-Percentile Queue Length [ft/ln]		137.08	155.51	180.03	29.45	11.95	423.88
95th-Percentile Queue Length [veh/ln]		9.32	10.31	11.60	2.12	0.86	23.71
95th-Percentile Queue Length [ft/ln]		233.08	257.76	290.05	53.00	21.51	592.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	51.02	0.00	56.04	0.00	8.87	5.87	131.05	13.56	0.00
Movement LOS				D		E		A	A	F	B	
d_A, Approach Delay [s/veh]	0.00			53.61			8.56			14.05		
Approach LOS	A			D			A			B		
d_I, Intersection Delay [s/veh]	15.91											
Intersection LOS	B											
Intersection V/C	0.851											

Emissions

Vehicle Miles Traveled [mph]		35.99	38.51	406.11	46.25	1.42	339.63
Stops [stops/h]		164.49	186.60	432.05	35.33	14.34	1017.27
Fuel consumption [US gal/h]		4.32	4.89	21.42	2.27	0.38	25.55
CO [g/h]		302.06	341.49	1497.18	158.92	26.40	1785.72
NOx [g/h]		58.77	66.44	291.30	30.92	5.14	347.44
VOC [g/h]		70.00	79.14	346.99	36.83	6.12	413.86

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	475	1200	1333
d_b, Bicycle Delay [s]	60.00	34.89	9.60	6.67
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.738	3.344
Bicycle LOS	D	A	B	C

Sequence

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



Intersection Level Of Service Report
Intersection 2: OR 213 NE Ramps/I-205 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	244.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.895

Intersection Setup

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	415.00	100.00	100.00	160.00	100.00	405.00	365.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	392	2	235	14	0	503	322	1028	0	0	1095	281
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 [%]	8.00	2.00	18.00	23.00	0.00	9.00	6.00	8.00	0.00	0.00	8.00	4.00
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	0	0	0	0	0	0	117
Total Hourly Volume [veh/h]	392	2	234	14	0	503	322	1028	0	0	1095	164
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200
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]	107	1	64	4	0	137	88	279	0	0	298	45
Total Analysis Volume [veh/h]	426	2	254	15	0	547	350	1117	0	0	1190	178
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			1			0		
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	Fully actuated
Offset [s]	81.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	8	7	0	4	5	2	0	0	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	22	31	31	18	0	27	30	54	0	0	20	20
Amber [s]	4.0	4.0	4.0	4.0	0.0	4.0	3.5	5.0	0.0	0.0	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	0.0	1.5	0.5	1.0	0.0	0.0	1.0	1.0
Walk [s]	7	7	7	0	0	0	0	7	0	0	7	7
Pedestrian Clearance [s]	12	24	24	0	0	0	0	20	0	0	12	12
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	0.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	0.0	3.5	2.0	4.0	0.0	0.0	4.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	0.0	0.0	20.0	20.0	0.0	0.0	6.0	6.0
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	37	37	24	0	33	34	60	0	0	26	26
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	4	4	4	0	4	4	6	0	0	6	6
Vehicle Extension [s]	2.3	2.3	2.3	2.3	0.0	2.3	2.3	4.6	0.0	0.0	4.6	4.6
Minimum Recall	No	No		No		No	Yes	Yes			No	
Maximum Recall	No	No		No		No	No	No			No	
Pedestrian Recall	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	L	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	4.00	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
l2, Clearance Lost Time [s]	3.50	3.50	3.50	0.00	2.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	18	21	14	65	44	68	20	20
g / C, Green / Cycle	0.15	0.18	0.12	0.54	0.36	0.56	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.13	0.16	0.01	0.21	0.20	0.33	0.38	0.40
s, saturation flow rate [veh/h]	3292	1591	1481	2655	1724	3389	1780	1702
c, Capacity [veh/h]	496	282	176	1437	624	1905	297	284
d1, Uniform Delay [s]	49.72	48.38	47.06	15.92	30.64	17.16	50.00	50.00
k, delay calibration	0.07	0.11	0.07	0.07	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]	2.80	10.91	0.13	0.10	3.62	1.33	598.10	645.89
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	0.86	0.91	0.09	0.38	0.56	0.59	2.31	2.41
d, Delay for Lane Group [s/veh]	52.53	59.29	47.19	16.02	34.26	18.50	648.10	695.89
Lane Group LOS	D	E	D	B	C	B	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.41	8.34	0.41	4.30	8.69	10.10	58.15	59.36
50th-Percentile Queue Length [ft/ln]	160.36	208.54	10.19	107.40	217.32	252.45	1453.69	1483.98
95th-Percentile Queue Length [veh/ln]	10.57	13.08	0.73	7.70	13.53	15.31	90.81	92.88
95th-Percentile Queue Length [ft/ln]	264.20	326.95	18.35	192.38	338.20	382.74	2270.15	2321.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.53	59.29	59.29	47.19	0.00	16.02	34.26	18.50	0.00	0.00	668.42	695.89
Movement LOS	D	E	E	D		B	C	B			F	F
d_A, Approach Delay [s/veh]	55.06			16.85			22.26			671.99		
Approach LOS	E			B			C			F		
d_I, Intersection Delay [s/veh]	244.90											
Intersection LOS	F											
Intersection V/C	0.895											

Emissions

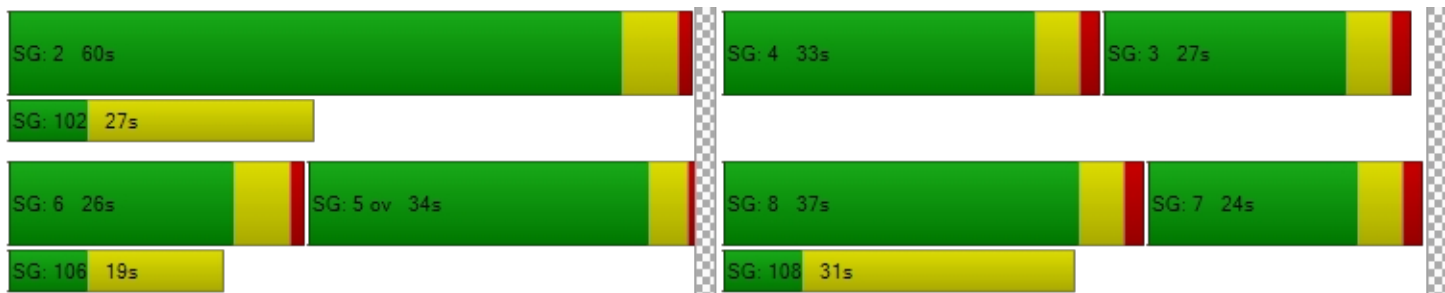
Vehicle Miles Traveled [mph]	89.24	53.63	2.14	78.05	55.19	176.12	181.01	181.01
Stops [stops/h]	384.87	250.24	12.23	257.76	260.78	605.89	1744.42	1780.78
Fuel consumption [US gal/h]	10.35	6.68	0.30	6.42	6.15	14.80	107.28	114.13
CO [g/h]	723.67	466.83	20.95	448.78	430.04	1034.66	7498.78	7977.64
NOx [g/h]	140.80	90.83	4.08	87.32	83.67	201.31	1458.99	1552.16
VOC [g/h]	167.72	108.19	4.86	104.01	99.67	239.79	1737.92	1848.90

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	49.50
l_p,int, Pedestrian LOS Score for Intersectio	2.177	2.440	0.000	3.054
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	525	308	900	333
d_b, Bicycle Delay [s]	32.63	42.93	18.15	41.67
l_b,int, Bicycle LOS Score for Intersection	2.687	1.560	2.770	2.785
Bicycle LOS	B	A	C	C

Sequence

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



Intersection Level Of Service Report
Intersection 3: I-205 NB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	8.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.519

Intersection Setup

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Approach	Eastbound		Westbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	0	2
Entry Pocket Length [ft]	100.00	100.00	630.00	100.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	0.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present			No		No	
Crosswalk	No		No		No	

Volumes

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Base Volume Input [veh/h]	0	0	227	1376	849	428
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	19.00	3.00	12.00	7.00
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	0	0	0
Total Hourly Volume [veh/h]	0	0	227	1376	849	428
Peak Hour Factor	1.0000	1.0000	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	58	351	217	109
Total Analysis Volume [veh/h]	0	0	232	1404	866	437
Presence of On-Street Parking			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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	101
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	32.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	0	0	1	6	2	2
Auxiliary Signal Groups						
Maximum Green [s]	0	0	24	60	32	32
Amber [s]	0.0	0.0	3.5	5.0	5.0	5.0
All red [s]	0.0	0.0	0.5	2.0	2.0	2.0
Walk [s]	0	0	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	17	17
Delayed Vehicle Green [s]	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	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	5.0	5.0	5.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	30	30	30	30
Lead / Lag	-	-	Lag	-	-	-
Minimum Green [s]	0	0	4	10	10	10
Vehicle Extension [s]	0.0	0.0	2.3	4.7	4.7	4.7
Minimum Recall			No	Yes	Yes	
Maximum Recall			No	No	No	
Pedestrian Recall			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	R
C, Cycle Length [s]	51	51	51	51
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	10	37	23	23
g / C, Green / Cycle	0.20	0.72	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.15	0.40	0.26	0.29
s, saturation flow rate [veh/h]	1538	3532	3275	1526
c, Capacity [veh/h]	303	2559	1469	685
d1, Uniform Delay [s]	19.32	3.21	10.52	10.85
k, delay calibration	0.07	0.20	0.20	0.20
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.48	0.34	0.71	1.85
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	0.76	0.55	0.59	0.64
d, Delay for Lane Group [s/veh]	21.80	3.55	11.23	12.69
Lane Group LOS	C	A	B	B
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.52	1.30	3.03	3.36
50th-Percentile Queue Length [ft/ln]	62.93	32.43	75.83	83.93
95th-Percentile Queue Length [veh/ln]	4.53	2.34	5.46	6.04
95th-Percentile Queue Length [ft/ln]	113.28	58.38	136.50	151.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	21.80	3.55	11.23	12.69
Movement LOS			C	A	B	B
d_A, Approach Delay [s/veh]	0.00		6.14		11.72	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	8.61					
Intersection LOS	A					
Intersection V/C	0.519					

Emissions

Vehicle Miles Traveled [mph]		327.79	1983.67	229.17	115.64
Stops [stops/h]		178.27	183.74	429.63	237.77
Fuel consumption [US gal/h]		15.51	83.69	13.79	7.20
CO [g/h]		1084.02	5849.93	963.69	503.52
NOx [g/h]		210.91	1138.18	187.50	97.97
VOC [g/h]		251.23	1355.78	223.35	116.70

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	2361	1259
d_b, Bicycle Delay [s]	25.42	0.83	3.49
I_b,int, Bicycle LOS Score for Intersection	4.132	2.909	2.635
Bicycle LOS	D	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 4: 122nd Avenue/OR 224/OR 212

Control Type:	Signalized	Delay (sec / veh):	31.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.872

Intersection Setup

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐⇐⇐			⇐⇐⇐			⇐⇐⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	135.00	100.00	100.00	525.00	100.00	350.00	220.00	100.00	100.00	255.00	100.00	410.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Base Volume Input [veh/h]	20	113	8	500	204	145	37	691	51	15	957	1453
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 [%]	50.00	48.00	20.00	8.00	19.00	14.00	30.00	14.00	27.00	17.00	8.00	3.00
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	0	0	0	51	0	0	727
Total Hourly Volume [veh/h]	20	113	0	500	204	145	37	691	0	15	957	726
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	30	0	133	54	39	10	184	0	4	255	193
Total Analysis Volume [veh/h]	21	120	0	532	217	154	39	735	0	16	1018	772
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	18.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	8	35	35	4	31	31	4	67	67	6	69	69
Amber [s]	3.5	4.3	4.3	3.5	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	9	9	0	7	7	0	8	8	0	7	7
Pedestrian Clearance [s]	0	26	26	0	21	21	0	23	23	0	18	18
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.8	2.8	2.0	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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	40	40	8	36	36	8	72	72	10	74	74
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	4.6	2.0	4.6	4.6
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.80	4.40	4.80	4.80	4.00	5.40	5.40	4.00	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	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]	2.00	2.80	0.00	2.80	2.80	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	2	15	31	31	31	4	77	77	2	75	75
g / C, Green / Cycle	0.02	0.12	0.24	0.23	0.23	0.03	0.59	0.59	0.01	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.02	0.10	0.17	0.13	0.11	0.03	0.22	0.22	0.01	0.30	0.49
s, saturation flow rate [veh/h]	1095	1180	3092	1615	1436	1381	1690	1690	1567	3389	1577
c, Capacity [veh/h]	20	136	629	379	337	42	1003	1003	21	1954	909
d1, Uniform Delay [s]	63.82	56.63	47.22	44.01	42.67	62.84	13.70	13.70	63.90	16.65	22.83
k, delay calibration	0.07	0.07	0.07	0.07	0.07	0.14	0.50	0.50	0.04	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]	88.66	10.85	2.01	0.84	0.59	54.71	1.03	1.03	17.84	1.00	9.74
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	1.06	0.88	0.85	0.57	0.46	0.92	0.37	0.37	0.75	0.52	0.85
d, Delay for Lane Group [s/veh]	152.48	67.48	49.23	44.85	43.27	117.55	14.74	14.74	81.74	17.65	32.57
Lane Group LOS	F	E	D	D	D	F	B	B	F	B	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.15	4.29	7.95	6.29	4.32	1.93	5.83	5.83	0.63	9.31	21.24
50th-Percentile Queue Length [ft/ln]	28.77	107.31	198.87	157.27	108.08	48.36	145.69	145.69	15.86	232.64	531.11
95th-Percentile Queue Length [veh/ln]	2.07	7.69	12.58	10.40	7.73	3.48	9.79	9.79	1.14	14.31	28.80
95th-Percentile Queue Length [ft/ln]	51.78	192.26	314.51	260.10	193.33	87.06	244.67	244.67	28.55	357.71	720.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	152.48	67.48	67.48	49.23	44.85	43.27	117.55	14.74	14.74	81.74	17.65	32.57
Movement LOS	F	E	E	D	D	D	F	B	B	F	B	C
d_A, Approach Delay [s/veh]	80.14			47.16			19.92			24.60		
Approach LOS	F			D			B			C		
d_I, Intersection Delay [s/veh]	31.38											
Intersection LOS	C											
Intersection V/C	0.872											

Emissions

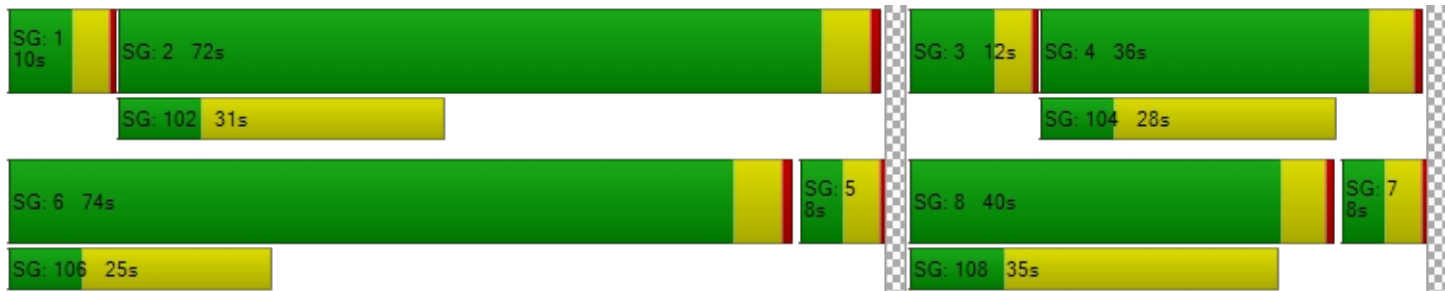
Vehicle Miles Traveled [mph]	4.73	27.04	122.83	50.10	35.56	35.05	330.32	330.32	10.55	671.18	508.99
Stops [stops/h]	31.86	118.87	440.58	174.20	119.72	53.57	161.38	161.38	17.57	515.38	588.31
Fuel consumption [US gal/h]	1.02	3.42	12.82	5.01	3.48	2.67	15.59	15.59	0.80	34.13	29.32
CO [g/h]	71.46	238.89	896.13	349.88	243.32	186.76	1089.86	1089.86	55.74	2385.98	2049.50
NOx [g/h]	13.90	46.48	174.36	68.07	47.34	36.34	212.05	212.05	10.85	464.22	398.76
VOC [g/h]	16.56	55.36	207.69	81.09	56.39	43.28	252.59	252.59	12.92	552.97	474.99

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	11.0	13.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.55	54.47	54.47	52.65
I_p,int, Pedestrian LOS Score for Intersectio	2.109	2.887	2.784	4.201
Crosswalk LOS	B	C	C	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	542	480	1025	1055
d_b, Bicycle Delay [s]	34.57	37.54	15.46	14.50
I_b,int, Bicycle LOS Score for Intersection	1.805	3.050	2.240	3.649
Bicycle LOS	A	C	B	D

Sequence

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



**Intersection Level Of Service Report
Intersection 5: 135th Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	105.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.125

Intersection Setup

Name	135th Ave			135th Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	300.00	100.00	60.00	320.00	100.00	100.00	415.00	100.00	60.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	135th Ave			135th Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	91	59	205	96	159	141	72	880	71	382	2241	174
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 [%]	8.00	10.00	14.00	4.00	4.00	5.00	11.00	14.00	17.00	8.00	8.00	6.00
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	103	0	0	51	0	0	36	0	0	0
Total Hourly Volume [veh/h]	91	59	102	96	159	90	72	880	35	382	2241	174
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
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	16	27	25	42	24	19	232	9	101	590	46
Total Analysis Volume [veh/h]	96	62	107	101	167	95	76	926	37	402	2359	183
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	1			1			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			1			1		
v_co, Outbound Pedestrian Volume crossing	1			0			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			0			1		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	5	32	32	8	35	35	4	42	42	30	68	68
Amber [s]	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	8	8	0	10	10	0	8	8	0	7	7
Pedestrian Clearance [s]	0	22	22	0	25	25	0	18	18	0	14	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	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.5	2.5	2.0	2.5	2.5	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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]	9	37	37	12	40	40	8	48	48	34	74	74
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	3.0	3.0	2.3	3.0	3.0	2.3	4.5	4.5	2.3	4.5	4.5
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	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	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.50	4.50	4.00	4.50	4.00	5.40	5.40	4.00	5.40	5.40
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]	2.00	2.50	2.50	2.00	2.50	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	9	13	13	19	22	4	51	51	30	77	77
g / C, Green / Cycle	0.07	0.10	0.10	0.14	0.17	0.03	0.39	0.39	0.23	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.06	0.04	0.07	0.06	0.15	0.05	0.29	0.03	0.24	0.71	0.73
s, saturation flow rate [veh/h]	1695	1750	1436	1752	1728	1652	3217	1395	1695	1780	1736
c, Capacity [veh/h]	117	169	139	249	294	51	1263	548	391	1055	1029
d1, Uniform Delay [s]	59.75	54.98	57.30	50.76	52.77	63.00	33.66	24.63	50.00	26.48	26.48
k, delay calibration	0.07	0.11	0.11	0.07	0.12	0.50	0.50	0.50	0.47	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]	8.58	1.32	8.66	0.65	10.20	301.29	3.79	0.24	51.28	101.31	114.53
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	0.82	0.37	0.77	0.41	0.89	1.49	0.73	0.07	1.03	1.20	1.24
d, Delay for Lane Group [s/veh]	68.33	56.30	65.96	51.41	62.96	364.29	37.45	24.86	101.28	127.79	141.01
Lane Group LOS	E	E	E	D	E	F	D	C	F	F	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.40	1.97	3.77	3.05	9.20	5.94	13.06	0.76	18.23	60.34	62.62
50th-Percentile Queue Length [ft/ln]	85.12	49.36	94.33	76.33	229.95	148.49	326.39	19.01	455.81	1508.59	1565.42
95th-Percentile Queue Length [veh/ln]	6.13	3.55	6.79	5.50	14.17	10.69	18.98	1.37	25.64	84.61	88.97
95th-Percentile Queue Length [ft/ln]	153.21	88.84	169.79	137.39	354.30	267.27	474.53	34.23	641.08	2115.32	2224.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.33	56.30	65.96	51.41	62.96	62.96	364.29	37.45	24.86	101.28	133.88	141.01
Movement LOS	E	E	E	D	E	E	F	D	C	F	F	F
d_A, Approach Delay [s/veh]	64.56			59.75			60.91			129.87		
Approach LOS	E			E			E			F		
d_I, Intersection Delay [s/veh]	105.06											
Intersection LOS	F											
Intersection V/C	1.125											

Emissions

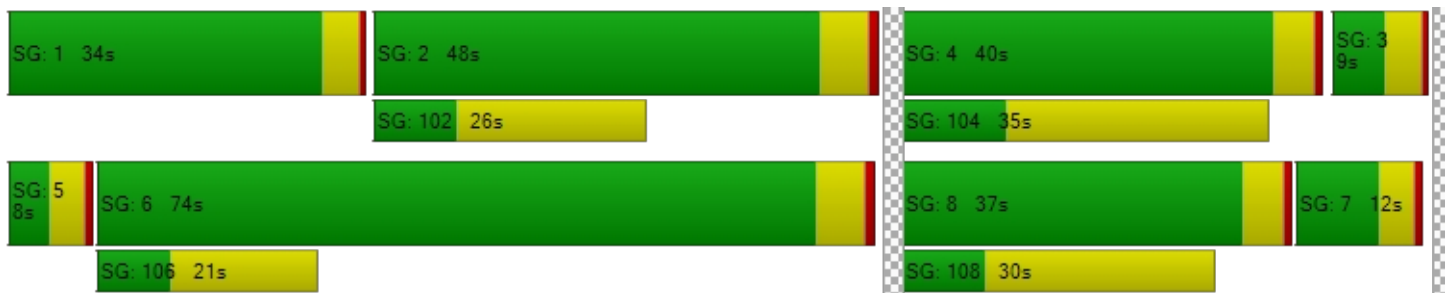
Vehicle Miles Traveled [mph]	18.78	12.13	20.94	5.05	13.11	50.11	610.53	24.39	119.73	378.56	378.56
Stops [stops/h]	94.29	54.67	104.49	84.55	254.72	164.48	723.08	21.06	504.90	1671.06	1734.01
Fuel consumption [US gal/h]	2.63	1.51	2.88	1.73	5.30	8.60	36.19	1.31	16.00	57.86	61.63
CO [g/h]	183.77	105.67	200.98	121.05	370.73	601.44	2529.36	91.42	1118.60	4044.57	4307.79
NOx [g/h]	35.75	20.56	39.10	23.55	72.13	117.02	492.12	17.79	217.64	786.93	838.14
VOC [g/h]	42.59	24.49	46.58	28.05	85.92	139.39	586.20	21.19	259.25	937.37	998.37

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			11.0			14.0			12.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	53.55			54.47			51.75			53.55		
I_p,int, Pedestrian LOS Score for Intersectio	2.541			2.269			3.117			3.132		
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]	500			546			655			1055		
d_b, Bicycle Delay [s]	36.56			34.35			29.38			14.50		
I_b,int, Bicycle LOS Score for Intersection	2.167			2.243			2.446			3.988		
Bicycle LOS	B			B			B			D		

Sequence

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



**Intersection Level Of Service Report
Intersection 6: 142nd Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	68.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.052

Intersection Setup

Name	142nd Ave			142nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	20.00	100.00	100.00	100.00	225.00	100.00	165.00	220.00	100.00	70.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	142nd Ave			142nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	53	10	25	67	0	207	58	1105	9	3	2495	98
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	18.00	5.00	0.00	3.00	13.00	13.00	13.00	2.00	8.00	3.00
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	13	0	0	8	0	0	5	0	0	49
Total Hourly Volume [veh/h]	53	10	12	67	0	199	58	1105	4	3	2495	49
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
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]	14	3	3	17	0	52	15	288	1	1	650	13
Total Analysis Volume [veh/h]	55	10	13	70	0	207	60	1151	4	3	2599	51
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			0			0			2		
v_di, Inbound Pedestrian Volume crossing m	2			0			0			2		
v_co, Outbound Pedestrian Volume crossing	1			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			1			0		
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]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Protecte	ProtPer	Permiss	Permiss
Signal Group	8	8	8	4	4	4	5	2	4	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	33	33	33	33	33	33	7	60	33	5	58	58
Amber [s]	4.3	4.3	4.3	4.3	4.3	4.3	3.5	4.7	4.3	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.5	0.5	0.7	0.7
Walk [s]	7	7	7	0	0	0	0	8	0	0	7	7
Pedestrian Clearance [s]	26	26	26	0	0	0	0	26	0	0	18	18
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.8	2.8	2.8	2.8	2.8	2.8	2.0	3.4	2.8	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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]	38	38	38	38	38	38	11	66	38	9	64	64
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	4	10	6	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	2.3	2.0	4.6	4.6
Minimum Recall		No			No		No	Yes	No	No	Yes	
Maximum Recall		No			No		No	No	No	No	No	
Pedestrian Recall		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	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	112	112	112	112	112	112	112	112	112
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.70	5.40	4.80	5.40	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	2.80	2.80	0.00	3.40	2.80	0.00	3.40	3.40
g_i, Effective Green Time [s]	21	21	21	78	77	21	74	74	74
g / C, Green / Cycle	0.19	0.19	0.19	0.70	0.68	0.19	0.66	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.09	0.01	0.17	0.27	0.35	0.00	0.01	0.77	0.03
s, saturation flow rate [veh/h]	708	1376	1645	225	3246	1449	530	3389	1577
c, Capacity [veh/h]	191	255	345	192	2221	269	356	2228	1037
d1, Uniform Delay [s]	40.63	37.51	44.43	45.71	8.65	37.26	8.45	19.19	6.79
k, delay calibration	0.07	0.07	0.09	0.50	0.50	0.07	0.04	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]	0.64	0.05	3.53	4.20	0.87	0.01	0.00	80.26	0.09
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	0.34	0.05	0.80	0.31	0.52	0.01	0.01	1.17	0.05
d, Delay for Lane Group [s/veh]	41.28	37.56	47.96	49.92	9.51	37.28	8.46	99.44	6.88
Lane Group LOS	D	D	D	D	A	D	A	F	A
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.64	0.30	7.80	0.63	6.44	0.09	0.02	50.07	0.43
50th-Percentile Queue Length [ft/ln]	41.00	7.46	195.01	15.78	161.00	2.28	0.59	1251.66	10.87
95th-Percentile Queue Length [veh/ln]	2.95	0.54	12.38	1.14	10.60	0.16	0.04	70.02	0.78
95th-Percentile Queue Length [ft/ln]	73.80	13.43	309.52	28.41	265.05	4.10	1.06	1750.47	19.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.28	41.28	37.56	47.96	47.96	47.96	49.92	9.51	37.28	8.46	99.44	6.88
Movement LOS	D	D	D	D	D	D	D	A	D	A	F	A
d_A, Approach Delay [s/veh]	40.66			47.96			11.60			97.56		
Approach LOS	D			D			B			F		
d_I, Intersection Delay [s/veh]	68.52											
Intersection LOS	E											
Intersection V/C	1.052											

Emissions

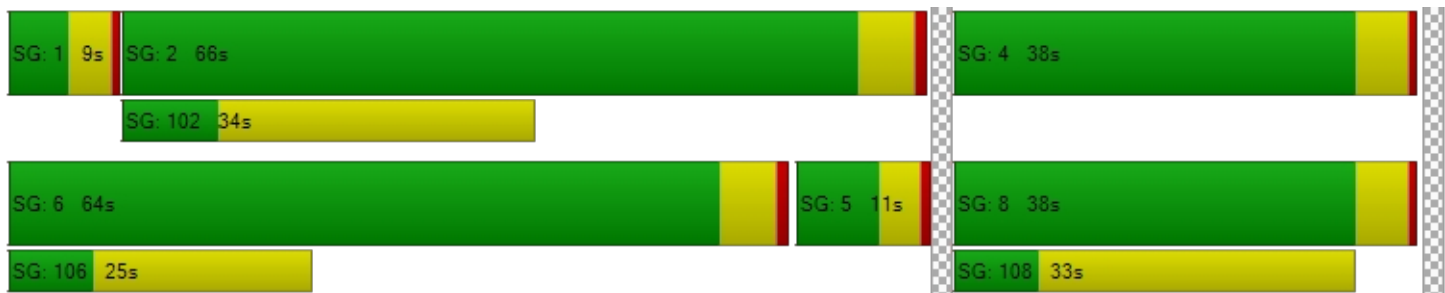
Vehicle Miles Traveled [mph]	6.76	1.35	27.03	9.45	181.34	0.63	0.45	388.73	7.63
Stops [stops/h]	52.71	9.59	250.73	20.29	414.00	2.93	0.76	3218.52	13.98
Fuel consumption [US gal/h]	1.12	0.21	5.20	1.11	11.98	0.07	0.03	86.37	0.46
CO [g/h]	77.98	14.54	363.56	77.63	837.50	5.07	1.95	6037.33	32.34
NOx [g/h]	15.17	2.83	70.74	15.10	162.95	0.99	0.38	1174.65	6.29
VOC [g/h]	18.07	3.37	84.26	17.99	194.10	1.17	0.45	1399.21	7.50

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.64	45.54	0.00	45.54
I_p,int, Pedestrian LOS Score for Intersectio	2.005	2.036	0.000	3.274
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	593	593	1082	1046
d_b, Bicycle Delay [s]	27.72	27.72	11.79	12.73
I_b,int, Bicycle LOS Score for Intersection	1.710	2.030	2.566	3.789
Bicycle LOS	A	B	B	D

Sequence

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



Intersection Level Of Service Report
Intersection 7: 152nd Avenue/OR 212

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

Delay (sec / veh): 6,533.3
 Level Of Service: F
 Volume to Capacity (v/c): 11.419

Intersection Setup

Name	152nd Ave		Highway 212		Highway 212	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	220.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	152nd Ave		Highway 212		Highway 212	
Base Volume Input [veh/h]	56	362	63	1109	2272	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	7.00	11.00	5.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	362	63	1109	2272	68
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	95	17	292	598	18
Total Analysis Volume [veh/h]	59	381	66	1167	2392	72
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	11.42	2.28	0.38	0.01	0.02	0.00
d_M, Delay for Movement [s/veh]	6533.35	5858.09	38.53	0.00	0.00	0.00
Movement LOS	F	F	E	A	A	A
95th-Percentile Queue Length [veh/ln]	54.04	54.04	1.67	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1350.94	1350.94	41.63	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	5948.63		2.06		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	633.30					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 8: OR 212/OR 224 (Rock Creek Junction)

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.816

Intersection Setup

Name	Highway 224		Highway 212		Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	1	0	1	1	0
Entry Pocket Length [ft]	155.00	70.00	100.00	125.00	230.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Highway 224		Highway 212		Highway 212	
Base Volume Input [veh/h]	980	309	721	444	329	1360
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	8.00	12.00	15.00	3.00	8.00
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	0	0	0
Total Hourly Volume [veh/h]	980	309	721	444	329	1360
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	258	81	190	117	87	358
Total Analysis Volume [veh/h]	1032	325	759	467	346	1432
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	148
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	42.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Overlap	Protected	Permissive
Signal Group	8	0	2	2	1	6
Auxiliary Signal Groups				2,8		
Maximum Green [s]	54	0	41	41	38	83
Amber [s]	4.7	0.0	5.0	5.0	3.5	5.0
All red [s]	0.7	0.0	1.0	1.0	0.5	1.0
Walk [s]	8	0	7	7	7	0
Pedestrian Clearance [s]	16	0	14	14	10	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]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	0.0	4.0	4.0	2.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	6.0	6.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	0	30	30	30	30
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	8	0	10	10	4	10
Vehicle Extension [s]	2.5	0.0	4.8	4.8	3.5	4.8
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	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	L	R	C	R	L	C
C, Cycle Length [s]	127	127	127	127	127	127
L, Total Lost Time per Cycle [s]	5.40	5.40	6.00	5.40	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	4.00	0.00	2.00	4.00
g_i, Effective Green Time [s]	46	46	38	90	27	70
g / C, Green / Cycle	0.36	0.36	0.30	0.71	0.22	0.55
(v / s)_i Volume / Saturation Flow Rate	0.31	0.21	0.23	0.33	0.20	0.42
s, saturation flow rate [veh/h]	3320	1513	3275	1424	1767	3389
c, Capacity [veh/h]	1199	546	987	1010	382	1861
d1, Uniform Delay [s]	37.56	32.96	40.30	7.95	48.44	22.33
k, delay calibration	0.08	0.08	0.21	0.46	0.22	0.21
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.46	0.77	2.50	1.39	14.78	1.34
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	0.86	0.59	0.77	0.46	0.91	0.77
d, Delay for Lane Group [s/veh]	39.01	33.74	42.80	9.34	63.22	23.68
Lane Group LOS	D	C	D	A	E	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	14.92	8.23	11.06	5.48	12.20	16.44
50th-Percentile Queue Length [ft/ln]	372.95	205.75	276.48	137.04	304.90	411.12
95th-Percentile Queue Length [veh/ln]	21.25	12.93	16.51	9.32	17.92	23.10
95th-Percentile Queue Length [ft/ln]	531.31	323.36	412.83	233.03	448.08	577.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.01	33.74	42.80	9.34	63.22	23.68
Movement LOS	D	C	D	A	E	C
d_A, Approach Delay [s/veh]	37.75		30.06		31.37	
Approach LOS	D		C		C	
d_I, Intersection Delay [s/veh]	32.99					
Intersection LOS	C					
Intersection V/C	0.816					

Emissions

Vehicle Miles Traveled [mph]	337.55	106.30	110.20	67.80	21.94	90.79
Stops [stops/h]	848.00	233.91	628.67	155.80	346.64	934.79
Fuel consumption [US gal/h]	26.77	7.90	14.62	4.54	7.27	15.80
CO [g/h]	1871.48	552.17	1021.97	317.34	508.13	1104.61
NOx [g/h]	364.12	107.43	198.84	61.74	98.86	214.92
VOC [g/h]	433.73	127.97	236.85	73.55	117.76	256.00

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	12.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	52.81	0.00	51.90
I_p,int, Pedestrian LOS Score for Intersectio	2.676	0.000	2.874
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]	853	647	1311
d_b, Bicycle Delay [s]	20.84	28.97	7.53
I_b,int, Bicycle LOS Score for Intersection	1.560	2.571	3.026
Bicycle LOS	A	B	C

Sequence

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



**Intersection Level Of Service Report
Intersection 9: 172nd Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	94.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.622

Intersection Setup

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	110.00	100.00	100.00	235.00	100.00	290.00	550.00	100.00	100.00	395.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	79	144	22	173	65	582	388	446	15	14	848	179
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	6.00	6.00	4.00	5.00	9.00	14.00	12.00	11.00	8.00	13.00
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	22	0	0	291	0	0	15	0	0	90
Total Hourly Volume [veh/h]	79	144	0	173	65	291	388	446	0	14	848	89
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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	40	0	48	18	81	108	124	0	4	236	25
Total Analysis Volume [veh/h]	88	160	0	192	72	323	431	496	0	16	942	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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			2			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			2			0		
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]	132
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	8.5
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	8	8	8	4	4	4	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	35	35	35	34	34	34	22	77	77	4	60	60
Amber [s]	3.5	3.5	3.5	4.7	4.7	4.7	3.5	5.0	5.0	3.5	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.0	1.5	1.5
Walk [s]	9	9	9	9	9	9	0	7	7	0	8	8
Pedestrian Clearance [s]	22	22	22	21	21	21	0	11	11	0	20	20
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	4.2	4.2	4.2	2.5	4.5	4.5	2.5	4.5	4.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.3	5.4	5.4	2.3	5.4	5.4
Minimum Recall		No			No	No		No		No	No	
Maximum Recall		No			No	No		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	R
C, Cycle Length [s]	132	132	132	132	132	132	132	132	132	132	132
L, Total Lost Time per Cycle [s]	5.00	5.00	6.20	6.20	4.50	6.50	6.50	6.50	6.50	6.50	6.50
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	0.00
l2, Clearance Lost Time [s]	3.00	3.00	4.20	4.20	0.00	0.00	4.50	4.50	0.00	4.50	4.50
g_i, Effective Green Time [s]	35	35	34	34	61	79	79	79	85	60	60
g / C, Green / Cycle	0.27	0.27	0.26	0.26	0.46	0.60	0.60	0.60	0.65	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.07	0.09	0.16	0.04	0.21	0.54	0.15	0.15	0.02	0.53	0.07
s, saturation flow rate [veh/h]	1322	1870	1187	1840	1548	802	1690	1690	659	1780	1449
c, Capacity [veh/h]	347	498	260	474	716	304	1010	1010	466	809	658
d1, Uniform Delay [s]	42.94	38.86	53.85	37.90	24.10	50.77	12.52	12.52	9.32	36.04	21.11
k, delay calibration	0.08	0.08	0.13	0.08	0.27	0.44	0.28	0.28	0.07	0.50	0.28
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]	0.28	0.27	4.87	0.11	1.10	204.79	0.33	0.33	0.02	87.59	0.27
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	0.25	0.32	0.74	0.15	0.45	1.42	0.25	0.25	0.03	1.17	0.15
d, Delay for Lane Group [s/veh]	43.23	39.13	58.73	38.01	25.20	255.56	12.85	12.85	9.34	123.63	21.38
Lane Group LOS	D	D	E	D	C	F	B	B	A	F	C
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.45	4.24	6.64	1.84	7.09	21.68	3.54	3.54	0.17	45.05	1.87
50th-Percentile Queue Length [ft/ln]	61.23	106.00	165.93	45.97	177.17	541.93	88.41	88.41	4.13	1126.25	46.75
95th-Percentile Queue Length [veh/ln]	4.41	7.62	10.86	3.31	11.45	36.32	6.37	6.37	0.30	62.65	3.37
95th-Percentile Queue Length [ft/ln]	110.21	190.43	271.55	82.75	286.32	908.09	159.14	159.14	7.44	1566.34	84.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.23	39.13	39.13	58.73	38.01	25.20	255.56	12.85	12.85	9.34	123.63	21.38
Movement LOS	D	D	D	E	D	C	F	B	B	A	F	C
d_A, Approach Delay [s/veh]	40.58			37.74			125.69			112.33		
Approach LOS	D			D			F			F		
d_I, Intersection Delay [s/veh]	94.88											
Intersection LOS	F											
Intersection V/C	0.622											

Emissions

Vehicle Miles Traveled [mph]	10.35	18.82	24.97	9.37	42.01	50.77	29.21	29.21	7.49	441.12	46.36
Stops [stops/h]	66.77	115.60	180.95	50.14	193.21	591.00	96.42	96.42	4.51	1228.23	50.98
Fuel consumption [US gal/h]	1.57	2.69	4.32	1.22	4.45	27.76	2.38	2.38	0.36	48.64	2.62
CO [g/h]	109.68	187.85	302.11	85.24	311.28	1940.74	166.62	166.62	25.43	3400.01	183.20
NOx [g/h]	21.34	36.55	58.78	16.58	60.56	377.60	32.42	32.42	4.95	661.52	35.64
VOC [g/h]	25.42	43.54	70.02	19.75	72.14	449.79	38.61	38.61	5.89	787.98	42.46

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			12.0			13.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	55.48			54.57			53.66			0.00		
I_p,int, Pedestrian LOS Score for Intersectio	2.125			3.343			2.968			0.000		
Crosswalk LOS	B			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	530			515			1166			909		
d_b, Bicycle Delay [s]	35.66			36.40			11.47			19.65		
I_b,int, Bicycle LOS Score for Intersection	2.005			3.008			2.337			3.452		
Bicycle LOS	B			C			B			C		

Sequence

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



Intersection Level Of Service Report
Intersection 10: 122nd Avenue/Jennifer Street

Control Type:	Two-way stop	Delay (sec / veh):	26.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.320

Intersection Setup

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⊕			⊕			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	75.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Base Volume Input [veh/h]	0	0	0	72	0	117	58	268	0	0	383	59
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 [%]	0.00	0.00	0.00	12.00	0.00	32.00	61.00	12.00	0.00	0.00	14.00	12.00
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	0	0	72	0	117	58	268	0	0	383	59
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	20	0	32	16	73	0	0	104	16
Total Analysis Volume [veh/h]	0	0	0	78	0	127	63	291	0	0	416	64
Pedestrian Volume [ped/h]	0			0			0			0		

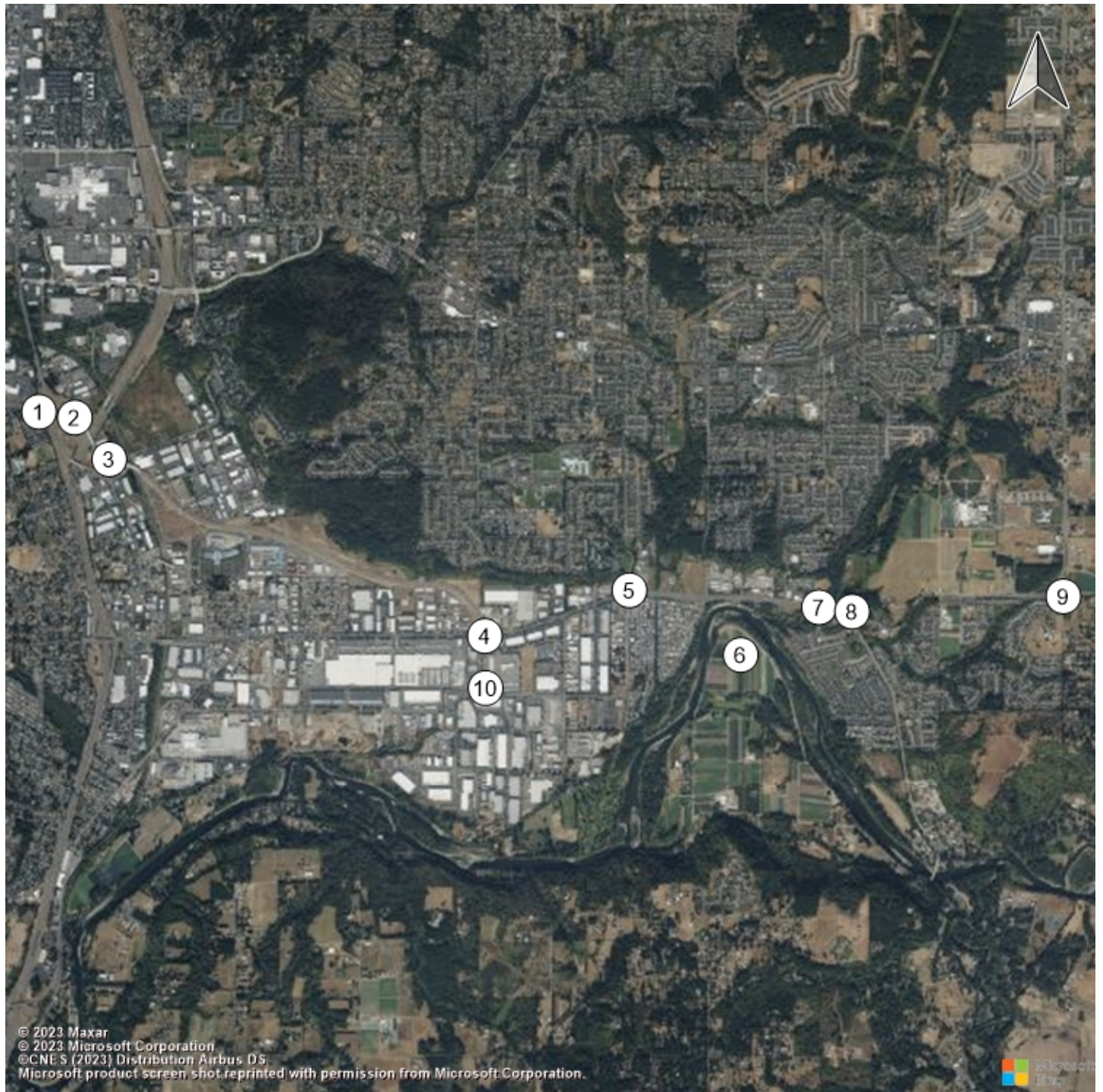
Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.32	0.00	0.23	0.08	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	25.21	18.83	9.78	26.62	25.08	13.45	9.66	0.00	0.00	7.81	0.00	0.00
Movement LOS	D	C	A	D	D	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	1.33	1.33	0.88	0.24	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	33.24	33.24	22.01	6.11	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	17.94			18.46			1.72			0.00		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	4.23											
Intersection LOS	D											

Study Intersections



Sunrise Refinement Plan

Vistro File: H:\...\Sunrise_PM_NoBuild.vistro

Scenario 1 VistroScenario

Report File: H:\...\2045_NoBuildPM.pdf

3/17/2025

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	OR 213 SB Ramps/OR 224	Signalized	HCM 7th Edition	SB Right	0.885	29.5	C
2	OR 213 NB Ramps/I-205 SB Ramps/OR 224	Signalized	HCM 7th Edition	EB Thru	1.153	108.6	F
3	I-205 NB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.595	13.4	B
4	122nd Avenue/OR 224/OR 212	Signalized	HCM 7th Edition	EB Left	0.686	35.5	D
5	135th Avneue/OR 212	Signalized	HCM 7th Edition	EB Left	1.090	89.0	F
6	142nd Avenue/OR 212	Signalized	HCM 7th Edition	WB Left	0.953	31.1	C
7	152nd Avenue/OR 212	Two-way stop	HCM 7th Edition	SB Left	8.428	4,557.4	F
8	OR 212/OR 224 (Rock Creek Junction)	Signalized	HCM 7th Edition	WB Left	0.760	28.0	C
9	172nd Avenue/OR 212	Signalized	HCM 7th Edition	WB Thru	0.894	51.3	D
10	122nd Avenue/Jennifer Street	Two-way stop	HCM 7th Edition	SB Left	0.697	86.1	F

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: OR 213 SB Ramps/OR 224

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):	0.885

Intersection Setup

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1000.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	0.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	0	0	0	117	1	404	0	1775	492	23	1264	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 [%]	0.00	0.00	0.00	4.00	2.00	2.00	0.00	5.00	5.00	13.00	4.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	117	1	404	0	1775	492	23	1264	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9700	1.0000	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	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	30	0	104	0	457	127	6	326	0
Total Analysis Volume [veh/h]	0	0	0	121	1	416	0	1830	507	24	1303	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	128.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	4	0	4	0	2	2	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	0	0	32	0	32	0	74	74	9	87	0
Amber [s]	0.0	0.0	0.0	4.0	0.0	4.0	0.0	5.0	5.0	3.5	5.0	0.0
All red [s]	0.0	0.0	0.0	1.5	0.0	1.5	0.0	1.0	1.0	0.5	1.0	0.0
Walk [s]	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
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]	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	3.5	0.0	3.5	0.0	4.0	4.0	2.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	0.0	20.0	0.0	6.0	6.0	20.0	6.0	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	37	0	37	0	80	80	13	93	0
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	6	0	10	10	4	10	0
Vehicle Extension [s]	0.0	0.0	0.0	2.3	0.0	2.3	0.0	0.5	0.5	2.3	0.5	0.0
Minimum Recall				No				Yes		No	Yes	
Maximum Recall				No				No		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		L	R	C	R	L	C
C, Cycle Length [s]		130	130	130	130	130	130
L, Total Lost Time per Cycle [s]		5.50	5.50	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		3.50	3.50	4.00	4.00	2.00	4.00
g_i, Effective Green Time [s]		32	32	81	81	2	87
g / C, Green / Cycle		0.24	0.24	0.62	0.62	0.02	0.67
(v / s)_i Volume / Saturation Flow Rate		0.07	0.26	0.53	0.33	0.01	0.37
s, saturation flow rate [veh/h]		1752	1589	3475	1551	1624	3503
c, Capacity [veh/h]		425	385	2154	961	30	2344
d1, Uniform Delay [s]		40.08	49.25	19.85	13.96	63.54	11.33
k, delay calibration		0.07	0.46	0.50	0.50	0.07	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.22	67.28	4.44	2.07	23.92	0.96
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		0.28	1.08	0.85	0.53	0.79	0.56
d, Delay for Lane Group [s/veh]		40.30	116.53	24.29	16.03	87.46	12.28
Lane Group LOS		D	F	C	B	F	B
Critical Lane Group		No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		3.21	19.64	22.26	8.71	0.99	9.71
50th-Percentile Queue Length [ft/ln]		80.19	491.10	556.61	217.75	24.86	242.77
95th-Percentile Queue Length [veh/ln]		5.77	28.14	30.00	13.55	1.79	14.82
95th-Percentile Queue Length [ft/ln]		144.34	703.52	750.07	338.76	44.75	370.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	40.30	0.00	116.53	0.00	24.29	16.03	87.46	12.28	0.00
Movement LOS				D		F		C	B	F	B	
d_A, Approach Delay [s/veh]	0.00			99.35			22.50			13.64		
Approach LOS	A			F			C			B		
d_I, Intersection Delay [s/veh]	29.52											
Intersection LOS	C											
Intersection V/C	0.885											

Emissions

Vehicle Miles Traveled [mph]		23.42	80.50	579.70	160.61	3.78	205.45
Stops [stops/h]		88.82	543.97	1233.06	241.20	27.54	537.81
Fuel consumption [US gal/h]		2.45	16.18	39.72	9.60	0.74	14.69
CO [g/h]		171.05	1131.16	2776.59	670.90	51.38	1026.55
NOx [g/h]		33.28	220.08	540.22	130.53	10.00	199.73
VOC [g/h]		39.64	262.16	643.50	155.49	11.91	237.91

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	485	1138	1338
d_b, Bicycle Delay [s]	65.00	37.32	12.06	7.11
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560	3.488	2.654
Bicycle LOS	D	A	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 2: OR 213 NB Ramps/I-205 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	108.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.153

Intersection Setup

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	415.00	100.00	100.00	160.00	100.00	405.00	365.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	423	8	236	18	0	340	509	1383	0	0	525	241
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 [%]	5.00	12.00	17.00	10.00	0.00	5.00	2.00	6.00	0.00	0.00	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	1	0	0	0	0	0	0	0	0	55
Total Hourly Volume [veh/h]	423	8	235	18	0	340	509	1383	0	0	525	186
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	1.0000	1.0000	0.9300	0.9300
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]	114	2	63	5	0	91	137	372	0	0	141	50
Total Analysis Volume [veh/h]	455	9	253	19	0	366	547	1487	0	0	565	200
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Split	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	8	7	0	4	5	2	0	0	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	21	31	31	8	0	18	44	75	0	0	27	27
Amber [s]	4.0	4.0	4.0	4.0	0.0	4.0	3.5	5.0	0.0	0.0	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	0.0	1.5	0.5	1.0	0.0	0.0	1.0	1.0
Walk [s]	7	7	7	0	0	0	0	7	0	0	7	7
Pedestrian Clearance [s]	12	24	24	0	0	0	0	20	0	0	12	12
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	0.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	0.0	3.5	2.0	4.0	0.0	0.0	4.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	0.0	0.0	20.0	6.0	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	37	37	13	0	23	48	81	0	0	33	33
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	4	4	4	0	4	4	6	0	0	6	6
Vehicle Extension [s]	2.3	2.3	2.3	2.3	0.0	2.3	2.3	4.6	0.0	0.0	4.6	4.6
Minimum Recall	No	No		No		No	Yes	Yes			No	
Maximum Recall	No	No		No		No	No	No			No	
Pedestrian Recall	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	L	R	L	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	4.00	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
l2, Clearance Lost Time [s]	3.50	3.50	3.50	0.00	2.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	20	25	7	66	50	81	27	27
g / C, Green / Cycle	0.15	0.19	0.05	0.51	0.38	0.62	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.13	0.18	0.01	0.13	0.31	0.82	0.21	0.23
s, saturation flow rate [veh/h]	3375	1469	1667	2746	1781	1810	1840	1685
c, Capacity [veh/h]	515	284	92	1398	681	1124	382	350
d1, Uniform Delay [s]	53.97	51.49	58.72	18.08	35.78	24.64	51.52	51.52
k, delay calibration	0.07	0.21	0.07	0.07	0.50	0.50	0.42	0.47
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.29	19.89	0.67	0.06	9.70	151.68	42.56	74.22
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	0.88	0.92	0.21	0.26	0.80	1.32	1.00	1.09
d, Delay for Lane Group [s/veh]	57.26	71.39	59.40	18.14	45.48	176.33	94.08	125.74
Lane Group LOS	E	E	E	B	D	F	F	F
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.52	9.94	0.62	3.15	17.15	79.32	16.92	18.57
50th-Percentile Queue Length [ft/ln]	188.10	248.57	15.45	78.68	428.67	1983.06	423.09	464.26
95th-Percentile Queue Length [veh/ln]	12.02	15.11	1.11	5.67	23.94	115.73	23.69	26.91
95th-Percentile Queue Length [ft/ln]	300.57	377.86	27.81	141.63	598.45	2893.34	592.16	672.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.26	71.39	71.39	59.40	0.00	18.14	45.48	176.33	0.00	0.00	104.30	125.74
Movement LOS	E	E	E	E		B	D	F			F	F
d_A, Approach Delay [s/veh]	62.42			20.18			141.14			109.91		
Approach LOS	E			C			F			F		
d_I, Intersection Delay [s/veh]	108.61											
Intersection LOS	F											
Intersection V/C	1.153											

Emissions

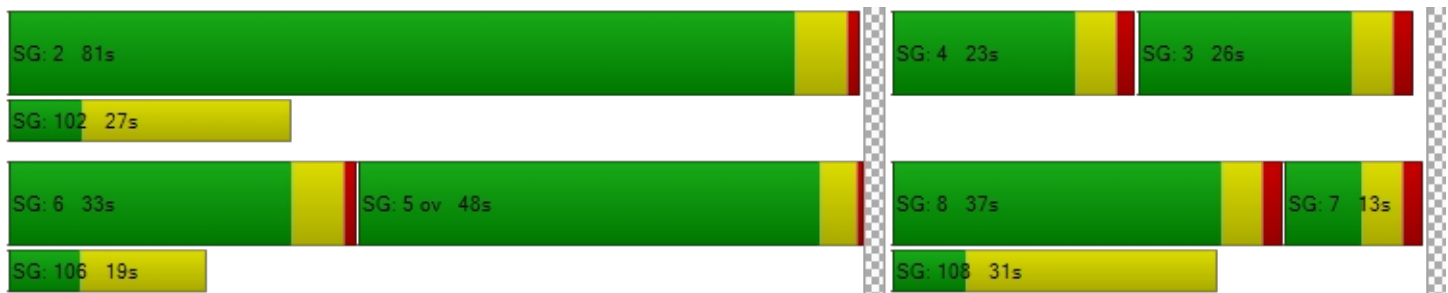
Vehicle Miles Traveled [mph]	95.31	54.88	3.51	67.68	86.25	234.46	95.83	95.83
Stops [stops/h]	416.67	275.31	17.11	174.29	474.78	2196.36	468.60	514.20
Fuel consumption [US gal/h]	11.53	7.59	0.47	5.10	11.24	75.13	13.86	16.57
CO [g/h]	805.72	530.26	32.77	356.50	785.36	5251.85	968.50	1158.34
NOx [g/h]	156.76	103.17	6.38	69.36	152.80	1021.82	188.44	225.37
VOC [g/h]	186.73	122.89	7.59	82.62	182.01	1217.17	224.46	268.46

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	54.47	0.00	54.47
I_p,int, Pedestrian LOS Score for Intersectio	2.193	2.440	0.000	2.875
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	485	115	1154	415
d_b, Bicycle Delay [s]	37.32	57.72	11.64	40.81
I_b,int, Bicycle LOS Score for Intersection	2.744	1.560	4.916	2.236
Bicycle LOS	B	A	E	B

Sequence

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



**Intersection Level Of Service Report
Intersection 3: I-205 NB Ramps/OR 224**

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):	0.595

Intersection Setup

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Approach	Eastbound		Westbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	0	2
Entry Pocket Length [ft]	100.00	100.00	630.00	100.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	0.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present			No		No	
Crosswalk	No		No		No	

Volumes

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Base Volume Input [veh/h]	0	0	225	766	1327	425
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	6.00	1.00	7.00	4.00
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	0	0	0
Total Hourly Volume [veh/h]	0	0	225	766	1327	425
Peak Hour Factor	1.0000	1.0000	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	60	206	357	114
Total Analysis Volume [veh/h]	0	0	242	824	1427	457
Presence of On-Street Parking			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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	50.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	0	0	1	6	2	2
Auxiliary Signal Groups						
Maximum Green [s]	0	0	22	89	63	63
Amber [s]	0.0	0.0	3.5	5.0	5.0	5.0
All red [s]	0.0	0.0	0.5	2.0	2.0	2.0
Walk [s]	0	0	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	17	17
Delayed Vehicle Green [s]	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	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	5.0	5.0	5.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	26	96	70	70
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	0	4	10	10	10
Vehicle Extension [s]	0.0	0.0	2.3	4.7	4.7	4.7
Minimum Recall			No	Yes	Yes	
Maximum Recall			No	No	No	
Pedestrian Recall			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	R
C, Cycle Length [s]	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	20	116	92	92
g / C, Green / Cycle	0.15	0.89	0.71	0.71
(v / s)_i Volume / Saturation Flow Rate	0.14	0.23	0.42	0.29
s, saturation flow rate [veh/h]	1724	3589	3418	1564
c, Capacity [veh/h]	266	3200	2414	1105
d1, Uniform Delay [s]	54.08	0.99	9.62	7.91
k, delay calibration	0.29	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.79	0.20	1.07	1.14
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	0.91	0.26	0.59	0.41
d, Delay for Lane Group [s/veh]	78.88	1.19	10.69	9.06
Lane Group LOS	E	A	B	A
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.62	0.63	9.79	5.32
50th-Percentile Queue Length [ft/ln]	240.43	15.79	244.83	133.09
95th-Percentile Queue Length [veh/ln]	14.70	1.14	14.93	9.11
95th-Percentile Queue Length [ft/ln]	367.58	28.43	373.14	227.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	78.88	1.19	10.69	9.06
Movement LOS			E	A	B	A
d_A, Approach Delay [s/veh]	0.00		18.82		10.29	
Approach LOS	A		B		B	
d_I, Intersection Delay [s/veh]	13.38					
Intersection LOS	B					
Intersection V/C	0.595					

Emissions

Vehicle Miles Traveled [mph]		335.38	1141.95	357.51	114.49
Stops [stops/h]		266.33	34.99	542.40	147.42
Fuel consumption [US gal/h]		19.16	47.40	20.82	6.37
CO [g/h]		1339.40	3313.43	1455.17	445.27
NOx [g/h]		260.60	644.67	283.12	86.63
VOC [g/h]		310.42	767.92	337.25	103.20

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1369	969
d_b, Bicycle Delay [s]	65.00	6.47	17.27
I_b,int, Bicycle LOS Score for Intersection	4.132	2.439	3.114
Bicycle LOS	D	B	C

Sequence

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



Intersection Level Of Service Report
Intersection 4: 122nd Avenue/OR 224/OR 212

Control Type:	Signalized	Delay (sec / veh):	35.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.686

Intersection Setup

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐⇐⇐			⇐⇐⇐			⇐⇐⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	135.00	100.00	100.00	525.00	100.00	350.00	220.00	100.00	100.00	255.00	100.00	410.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Base Volume Input [veh/h]	27	148	17	814	237	59	52	700	55	18	741	791
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 [%]	7.00	5.00	5.00	4.00	13.00	2.00	6.00	5.00	16.00	5.00	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	17	0	0	59	0	0	55	0	0	396
Total Hourly Volume [veh/h]	27	148	0	814	237	0	52	700	0	18	741	395
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
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	38	0	210	61	0	13	180	0	5	191	102
Total Analysis Volume [veh/h]	28	153	0	839	244	0	54	722	0	19	764	407
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	0			1			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			1		
v_co, Outbound Pedestrian Volume crossing	1			4			4			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			4			4			1		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	34.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	6	35	35	26	55	55	5	46	46	5	46	46
Amber [s]	3.5	4.3	4.3	3.5	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	9	9	0	7	7	0	8	8	0	7	7
Pedestrian Clearance [s]	0	26	26	0	21	21	0	23	23	0	18	18
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.8	2.8	2.0	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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	40	40	30	60	60	9	51	51	9	51	51
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	4.6	2.0	4.6	4.6
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.80	4.80	4.00	5.40	5.40	4.00	5.40	5.40
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]	2.00	2.80	0.00	2.80	2.80	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	7	14	33	33	33	5	70	70	2	67	67
g / C, Green / Cycle	0.05	0.10	0.25	0.25	0.25	0.04	0.54	0.54	0.02	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.02	0.08	0.26	0.14	0.00	0.03	0.20	0.20	0.01	0.23	0.26
s, saturation flow rate [veh/h]	1709	1825	3252	1705	1589	1724	1825	1825	1738	3389	1589
c, Capacity [veh/h]	91	192	844	429	400	66	984	984	27	1750	821
d1, Uniform Delay [s]	59.20	56.80	48.64	42.47	0.00	62.04	17.20	17.20	63.70	19.63	20.44
k, delay calibration	0.07	0.07	0.07	0.07	0.07	0.12	0.50	0.50	0.04	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]	1.14	4.62	9.95	0.73	0.00	21.81	1.06	1.06	11.91	0.79	2.14
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	0.80	0.99	0.57	0.00	0.81	0.37	0.37	0.71	0.44	0.50
d, Delay for Lane Group [s/veh]	60.35	61.42	58.59	43.20	0.00	83.85	18.25	18.25	75.61	20.43	22.58
Lane Group LOS	E	E	E	D	A	F	B	B	E	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.92	5.16	14.62	6.97	0.00	2.18	6.47	6.47	0.72	7.38	8.46
50th-Percentile Queue Length [ft/ln]	22.99	129.08	365.40	174.14	0.00	54.41	161.73	161.73	17.91	184.45	211.44
95th-Percentile Queue Length [veh/ln]	1.66	8.89	20.89	11.29	0.00	3.92	10.64	10.64	1.29	11.83	13.23
95th-Percentile Queue Length [ft/ln]	41.39	222.24	522.15	282.35	0.00	97.94	266.02	266.02	32.24	295.82	330.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.35	61.42	61.42	58.59	43.20	0.00	83.85	18.25	18.25	75.61	20.43	22.58
Movement LOS	E	E	E	E	D	A	F	B	B	E	C	C
d_A, Approach Delay [s/veh]	61.26			55.12			22.82			22.04		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	35.52											
Intersection LOS	D											
Intersection V/C	0.686											

Emissions

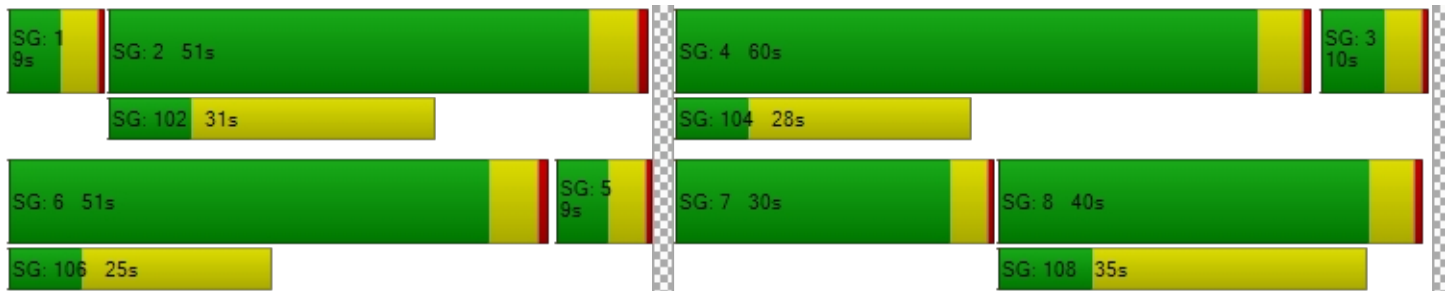
Vehicle Miles Traveled [mph]	6.31	34.48	193.72	56.34	0.00	48.54	324.48	324.48	12.53	503.72	268.34
Stops [stops/h]	25.47	142.98	809.50	192.89	0.00	60.27	179.15	179.15	19.84	408.63	234.21
Fuel consumption [US gal/h]	0.74	4.12	22.45	5.53	0.00	3.25	15.69	15.69	0.92	26.17	14.21
CO [g/h]	52.02	288.09	1569.18	386.53	0.00	227.34	1096.60	1096.60	64.14	1829.25	993.31
NOx [g/h]	10.12	56.05	305.31	75.20	0.00	44.23	213.36	213.36	12.48	355.91	193.26
VOC [g/h]	12.06	66.77	363.67	89.58	0.00	52.69	254.15	254.15	14.87	423.95	230.21

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0		11.0		11.0		13.0	
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	53.55		54.47		54.47		52.65	
I_p,int, Pedestrian LOS Score for Intersectio	2.149		2.904		2.724		3.623	
Crosswalk LOS	B		C		B		D	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	542		849		702		702	
d_b, Bicycle Delay [s]	34.57		21.52		27.40		27.40	
I_b,int, Bicycle LOS Score for Intersection	1.886		3.444		2.245		2.868	
Bicycle LOS	A		C		B		C	

Sequence

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



**Intersection Level Of Service Report
Intersection 5: 135th Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	89.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.090

Intersection Setup

Name	135th Ave			135th Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	300.00	100.00	60.00	320.00	100.00	100.00	415.00	100.00	60.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	135th Ave			135th Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	67	139	754	286	210	157	109	1437	22	186	1210	141
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 [%]	8.00	1.00	5.00	3.00	3.00	4.00	1.00	6.00	4.00	3.00	7.00	3.00
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	377	0	0	52	0	0	11	0	0	141
Total Hourly Volume [veh/h]	67	139	377	286	210	105	109	1437	11	186	1210	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	36	97	74	54	27	28	370	3	48	312	0
Total Analysis Volume [veh/h]	69	143	389	295	216	108	112	1481	11	192	1247	0
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	1			1			2			2		
v_ci, Inbound Pedestrian Volume crossing mi	2			2			1			1		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	98.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	8	45	45	14	51	51	6	45	45	9	48	48
Amber [s]	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	8	8	0	10	10	0	8	8	0	7	7
Pedestrian Clearance [s]	0	22	22	0	25	25	0	18	18	0	14	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	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.5	2.5	2.0	2.5	2.5	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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	35	24	49	49	11	54	54	17	60	60
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	3.0	3.0	2.3	3.0	3.0	2.3	4.5	4.5	2.3	4.5	4.5
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	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	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.50	4.50	4.00	4.50	4.00	5.40	5.40	4.00	5.40	5.40
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]	2.00	2.50	2.50	2.00	2.50	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	6	31	31	20	44	7	49	49	13	55	55
g / C, Green / Cycle	0.05	0.23	0.23	0.15	0.34	0.05	0.37	0.37	0.10	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.04	0.08	0.25	0.17	0.19	0.06	0.43	0.01	0.11	0.35	0.35
s, saturation flow rate [veh/h]	1695	1885	1551	1767	1750	1795	3446	1556	1767	1795	1795
c, Capacity [veh/h]	78	442	364	269	597	97	1293	584	177	756	756
d1, Uniform Delay [s]	61.65	41.20	49.75	55.09	34.64	61.50	40.62	25.56	58.50	33.36	33.36
k, delay calibration	0.09	0.11	0.25	0.49	0.11	0.41	0.50	0.50	0.45	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]	22.13	0.42	53.48	81.92	0.77	132.23	75.10	0.06	89.29	9.94	9.94
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	0.88	0.32	1.07	1.09	0.54	1.16	1.15	0.02	1.09	0.82	0.82
d, Delay for Lane Group [s/veh]	83.78	41.62	103.23	137.01	35.41	193.73	115.72	25.62	147.79	43.30	43.30
Lane Group LOS	F	D	F	F	D	F	F	C	F	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.75	3.88	17.18	14.94	8.43	6.75	33.86	0.23	10.19	19.32	19.32
50th-Percentile Queue Length [ft/ln]	68.78	97.05	429.54	373.46	210.84	168.66	846.61	5.70	254.86	482.97	482.97
95th-Percentile Queue Length [veh/ln]	4.95	6.99	24.90	22.22	13.20	11.48	47.59	0.41	15.94	26.53	26.53
95th-Percentile Queue Length [ft/ln]	123.80	174.69	622.56	555.38	329.91	286.97	1189.73	10.25	398.61	663.18	663.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	83.78	41.62	103.23	137.01	35.41	35.41	193.73	115.72	25.62	147.79	43.30	43.30
Movement LOS	F	D	F	F	D	D	F	F	C	F	D	D
d_A, Approach Delay [s/veh]	86.34			83.83			120.55			57.24		
Approach LOS	F			F			F			E		
d_I, Intersection Delay [s/veh]	89.02											
Intersection LOS	F											
Intersection V/C	1.090											

Emissions

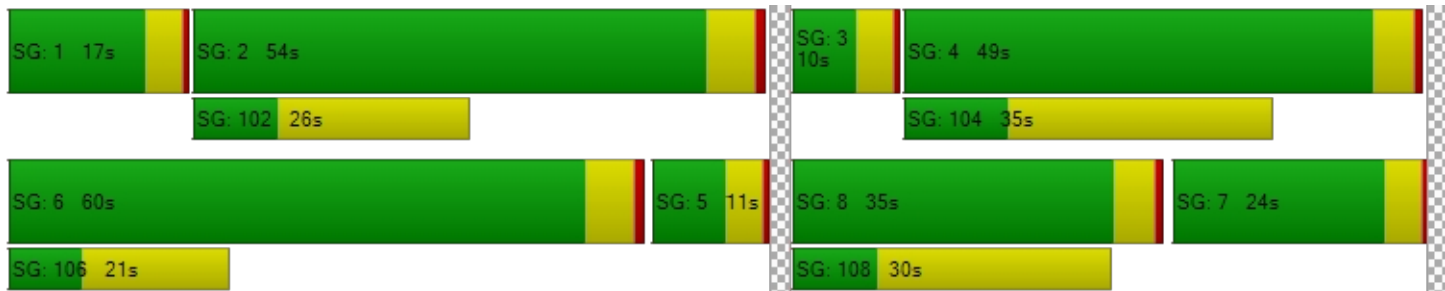
Vehicle Miles Traveled [mph]	13.50	27.98	76.12	36.54	40.14	73.84	976.44	7.25	67.79	220.14	220.14
Stops [stops/h]	76.18	107.50	475.80	413.68	233.55	186.82	1875.56	6.31	282.30	534.98	534.98
Fuel consumption [US gal/h]	2.15	2.96	13.93	12.01	5.28	8.49	85.43	0.39	10.12	17.51	17.51
CO [g/h]	150.49	206.68	973.90	839.74	368.86	593.21	5971.45	27.31	707.65	1224.03	1224.03
NOx [g/h]	29.28	40.21	189.48	163.38	71.77	115.42	1161.83	5.31	137.68	238.15	238.15
VOC [g/h]	34.88	47.90	225.71	194.62	85.49	137.48	1383.94	6.33	164.00	283.68	283.68

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			11.0			14.0			12.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	53.55			54.47			51.75			53.55		
I_p,int, Pedestrian LOS Score for Intersectio	3.028			2.379			2.986			3.321		
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]	469			685			748			840		
d_b, Bicycle Delay [s]	38.08			28.12			25.48			21.87		
I_b,int, Bicycle LOS Score for Intersection	3.173			2.667			2.892			2.863		
Bicycle LOS	C			B			C			C		

Sequence

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



Intersection Level Of Service Report
Intersection 6: 142nd Avenue/OR 212

Control Type:	Signalized	Delay (sec / veh):	31.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.953

Intersection Setup

Name	142nd Ave			142nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	20.00	100.00	100.00	100.00	225.00	100.00	165.00	220.00	100.00	70.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	142nd Ave			142nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	37	3	15	123	11	129	152	2278	65	10	1366	44
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	20.00	3.00	9.00	2.00	1.00	6.00	2.00	2.00	7.00	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	2	0	0	33	0	0	22
Total Hourly Volume [veh/h]	37	3	7	123	11	127	152	2278	32	10	1366	22
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
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]	10	1	2	32	3	33	39	587	8	3	352	6
Total Analysis Volume [veh/h]	38	3	7	127	11	131	157	2348	33	10	1408	23
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	1			0			0			1		
v_di, Inbound Pedestrian Volume crossing m	1			0			0			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	121.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	8	8	8	4	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	33	33	33	32	32	32	11	78	78	6	72	72
Amber [s]	3.5	3.5	3.5	4.3	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	7	7	7	0	0	0	0	8	8	0	7	7
Pedestrian Clearance [s]	26	26	26	0	0	0	0	26	26	0	18	18
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.8	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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]	37	37	37	37	37	37	15	84	84	10	78	78
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	6	6	6	6	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.3	4.5	4.5	2.3	4.5	4.5
Minimum Recall		No			No		No	Yes		No	No	
Maximum Recall		No			No		No	No		No	Yes	
Pedestrian Recall		No			No		No	No		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.80	4.70	5.40	5.40	4.70	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.80	0.00	3.40	3.40	0.00	3.40	3.40
g_i, Effective Green Time [s]	26	26	26	96	89	89	96	86	86
g / C, Green / Cycle	0.20	0.20	0.20	0.73	0.68	0.68	0.73	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.18	0.29	0.68	0.02	0.03	0.41	0.01
s, saturation flow rate [veh/h]	1030	1356	1470	547	3446	1589	296	3418	1589
c, Capacity [veh/h]	236	277	332	332	2354	1086	146	2261	1052
d1, Uniform Delay [s]	42.14	41.39	50.82	30.69	20.47	6.66	56.64	12.65	7.55
k, delay calibration	0.08	0.08	0.13	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]	0.26	0.03	5.51	4.78	17.91	0.05	0.90	1.30	0.04
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	0.17	0.03	0.81	0.47	1.00	0.03	0.07	0.62	0.02
d, Delay for Lane Group [s/veh]	42.40	41.42	56.33	35.47	38.38	6.71	57.54	13.96	7.59
Lane Group LOS	D	D	E	D	D	A	E	B	A
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.10	0.18	9.08	1.59	37.32	0.30	0.10	11.56	0.23
50th-Percentile Queue Length [ft/ln]	27.56	4.60	227.10	39.82	932.99	7.59	2.60	289.00	5.71
95th-Percentile Queue Length [veh/ln]	1.98	0.33	14.03	2.87	47.34	0.55	0.19	17.14	0.41
95th-Percentile Queue Length [ft/ln]	49.60	8.28	350.68	71.67	1183.46	13.66	4.68	428.40	10.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.40	42.40	41.42	56.33	56.33	56.33	35.47	38.38	6.71	57.54	13.96	7.59
Movement LOS	D	D	D	E	E	E	D	D	A	E	B	A
d_A, Approach Delay [s/veh]	42.25			56.33			37.79			14.16		
Approach LOS	D			E			D			B		
d_I, Intersection Delay [s/veh]	31.07											
Intersection LOS	C											
Intersection V/C	0.953											

Emissions

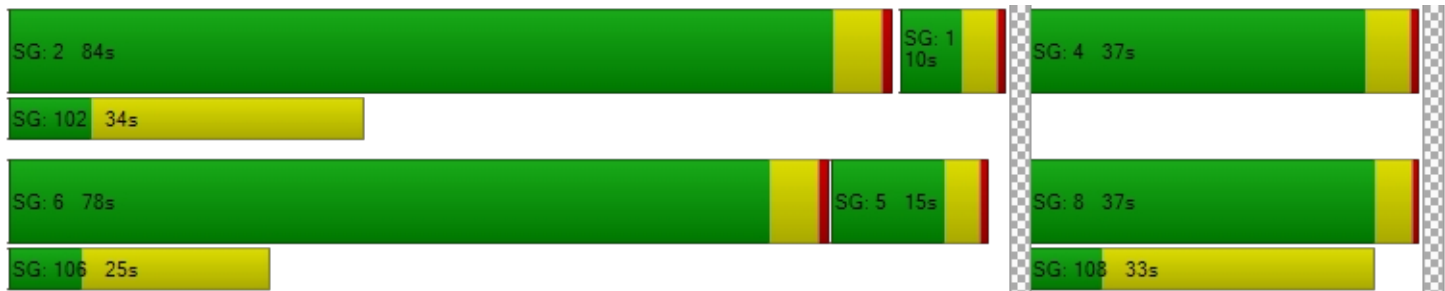
Vehicle Miles Traveled [mph]	5.04	0.86	36.51	52.49	785.05	11.03	4.80	675.89	11.04
Stops [stops/h]	30.53	5.10	251.56	44.10	2066.91	8.40	2.88	640.24	6.33
Fuel consumption [US gal/h]	0.73	0.12	5.98	3.54	62.08	0.55	0.33	35.36	0.52
CO [g/h]	51.01	8.57	417.74	247.27	4339.13	38.15	23.11	2471.66	36.70
NOx [g/h]	9.92	1.67	81.28	48.11	844.24	7.42	4.50	480.89	7.14
VOC [g/h]	11.82	1.99	96.81	57.31	1005.64	8.84	5.36	572.83	8.50

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.55	54.47	0.00	54.47
I_p,int, Pedestrian LOS Score for Intersectio	2.028	2.171	0.000	3.325
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	508	495	1209	1117
d_b, Bicycle Delay [s]	36.19	36.79	10.16	12.67
I_b,int, Bicycle LOS Score for Intersection	1.652	2.007	3.681	2.767
Bicycle LOS	A	B	D	C

Sequence


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



Intersection Level Of Service Report
Intersection 7: 152nd Avenue/OR 212

Control Type:	Two-way stop	Delay (sec / veh):	4,557.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	8.428

Intersection Setup

Name	152nd Ave		Highway 212		Highway 212	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	220.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	152nd Ave		Highway 212		Highway 212	
Base Volume Input [veh/h]	35	118	248	2154	1293	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.00	2.00	5.00	4.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	35	118	248	2154	1293	116
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	31	65	561	337	30
Total Analysis Volume [veh/h]	36	123	258	2244	1347	121
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	8.43	0.35	0.57	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	4557.37	3724.68	22.72	0.00	0.00	0.00
Movement LOS	F	F	C	A	A	A
95th-Percentile Queue Length [veh/ln]	20.52	20.52	3.44	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	512.90	512.90	85.95	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	3913.21		2.34		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	152.11					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 8: OR 212/OR 224 (Rock Creek Junction)

Control Type:	Signalized	Delay (sec / veh):	28.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.760

Intersection Setup

Name	Highway 224		Highway 212		Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	1	0	1	1	0
Entry Pocket Length [ft]	155.00	70.00	100.00	125.00	230.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Highway 224		Highway 212		Highway 212	
Base Volume Input [veh/h]	602	185	1101	1103	273	818
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	5.00	6.00	6.00	5.00	7.00
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	93	0	552	0	0
Total Hourly Volume [veh/h]	602	92	1101	551	273	818
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	158	24	290	145	72	215
Total Analysis Volume [veh/h]	634	97	1159	580	287	861
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	78.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Overlap	Protected	Permissive
Signal Group	8	0	2	2	1	6
Auxiliary Signal Groups				2,8		
Maximum Green [s]	48	0	42	42	25	71
Amber [s]	4.7	0.0	5.0	5.0	3.5	5.0
All red [s]	0.7	0.0	1.0	1.0	0.5	1.0
Walk [s]	8	0	7	7	7	0
Pedestrian Clearance [s]	16	0	14	14	10	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]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	0.0	4.0	4.0	2.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	6.0	6.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	34	0	56	56	40	96
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	8	0	10	10	4	10
Vehicle Extension [s]	2.5	0.0	4.8	4.8	3.5	4.8
Minimum Recall	No		Yes	Yes	No	Yes
Maximum Recall	No		No	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	L	R	C	R	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	5.40	5.40	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	4.00	0.00	2.00	4.00
g_i, Effective Green Time [s]	28	28	63	96	24	91
g / C, Green / Cycle	0.21	0.21	0.49	0.74	0.18	0.70
(v / s)_i Volume / Saturation Flow Rate	0.19	0.06	0.34	0.38	0.17	0.25
s, saturation flow rate [veh/h]	3375	1551	3446	1538	1738	3418
c, Capacity [veh/h]	716	329	1674	1137	319	2393
d1, Uniform Delay [s]	49.69	43.04	25.91	7.09	51.87	7.81
k, delay calibration	0.08	0.08	0.50	0.50	0.18	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.95	0.37	2.38	1.63	13.70	0.42
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	0.89	0.29	0.69	0.51	0.90	0.36
d, Delay for Lane Group [s/veh]	52.64	43.41	28.29	8.72	65.58	8.23
Lane Group LOS	D	D	C	A	E	A
Critical Lane Group	No	No	Yes	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	10.28	2.68	14.24	6.60	10.36	4.70
50th-Percentile Queue Length [ft/ln]	256.96	67.01	356.02	164.89	258.93	117.57
95th-Percentile Queue Length [veh/ln]	15.54	4.82	20.43	10.81	15.63	8.26
95th-Percentile Queue Length [ft/ln]	388.40	120.62	510.74	270.18	390.87	206.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.64	43.41	28.29	8.72	65.58	8.23
Movement LOS	D	D	C	A	E	A
d_A, Approach Delay [s/veh]	51.41		21.76		22.57	
Approach LOS	D		C		C	
d_I, Intersection Delay [s/veh]	28.01					
Intersection LOS	C					
Intersection V/C	0.760					

Emissions

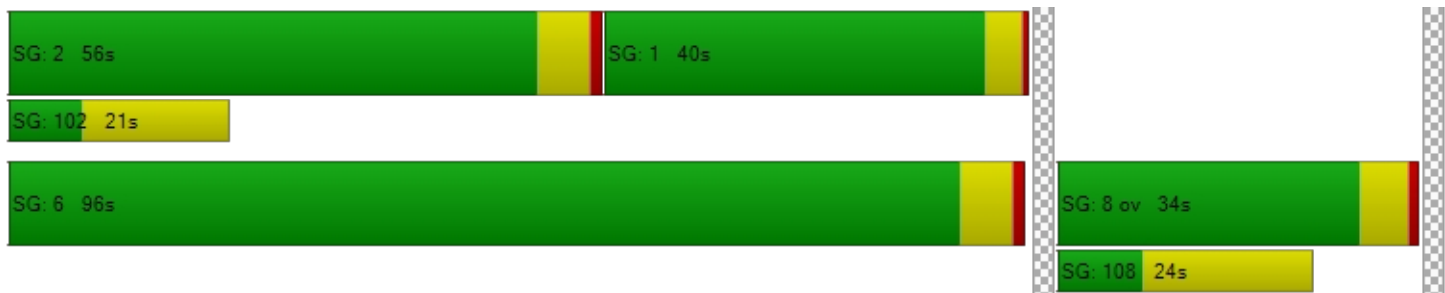
Vehicle Miles Traveled [mph]	207.37	31.73	168.27	84.21	18.27	54.81
Stops [stops/h]	569.26	74.23	788.70	182.64	286.81	260.47
Fuel consumption [US gal/h]	18.47	2.57	17.96	5.51	6.17	5.14
CO [g/h]	1291.21	179.85	1255.14	384.84	431.02	359.12
NOx [g/h]	251.22	34.99	244.20	74.88	83.86	69.87
VOC [g/h]	299.25	41.68	290.89	89.19	99.89	83.23

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	12.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	0.00	53.55
I_p,int, Pedestrian LOS Score for Intersectio	2.828	0.000	2.804
Crosswalk LOS	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	440	769	1385
d_b, Bicycle Delay [s]	39.55	24.62	6.15
I_b,int, Bicycle LOS Score for Intersection	1.560	3.450	2.507
Bicycle LOS	A	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 9: 172nd Avenue/OR 212

Control Type:	Signalized	Delay (sec / veh):	51.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.894

Intersection Setup

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Entry Pocket Length [ft]	110.00	100.00	100.00	235.00	100.00	290.00	550.00	100.00	100.00	395.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	29	58	28	245	93	361	337	786	52	24	697	74
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 [%]	10.00	3.00	4.00	1.00	5.00	5.00	5.00	9.00	2.00	2.00	6.00	9.00
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	181	0	0	52	0	0	37
Total Hourly Volume [veh/h]	29	58	12	245	93	180	337	786	0	24	697	37
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
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	15	3	65	25	48	90	209	0	6	185	10
Total Analysis Volume [veh/h]	31	62	13	261	99	191	359	836	0	26	741	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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			3			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			3			0		
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]	133
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	10.7
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	8	8	4	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	37	37	37	36	36	36	30	74	74	6	51	51
Amber [s]	3.5	3.5	3.5	4.7	4.7	4.7	3.5	5.0	5.0	3.5	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.0	1.5	1.5
Walk [s]	9	9	9	9	9	9	0	7	7	0	8	8
Pedestrian Clearance [s]	22	22	22	21	21	21	0	11	11	0	20	20
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	4.2	4.2	4.2	2.5	4.5	4.5	2.5	4.5	4.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	20.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.3	5.4	5.4	2.3	5.4	5.4
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	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	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	5.00	5.00	6.20	6.20	6.20	4.50	6.50	6.50	4.50	6.50	6.50
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	0.00
l2, Clearance Lost Time [s]	0.00	3.00	4.20	4.20	4.20	2.50	4.50	4.50	2.50	4.50	4.50
g_i, Effective Green Time [s]	35	35	33	33	33	29	77	77	2	51	51
g / C, Green / Cycle	0.27	0.27	0.26	0.26	0.26	0.22	0.59	0.59	0.02	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.02	0.04	0.20	0.05	0.12	0.21	0.24	0.24	0.01	0.41	0.03
s, saturation flow rate [veh/h]	1255	1800	1335	1825	1533	1738	1765	1765	1781	1810	1500
c, Capacity [veh/h]	293	477	335	466	392	383	1046	1046	35	709	588
d1, Uniform Delay [s]	41.88	36.70	50.51	38.13	41.13	49.85	14.15	14.15	63.47	39.58	24.71
k, delay calibration	0.08	0.08	0.19	0.08	0.08	0.35	0.28	0.28	0.07	0.48	0.28
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]	0.12	0.11	6.76	0.17	0.70	25.68	0.65	0.65	17.12	45.50	0.12
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
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	0.11	0.16	0.78	0.21	0.49	0.94	0.40	0.40	0.74	1.04	0.07
d, Delay for Lane Group [s/veh]	41.99	36.82	57.27	38.30	41.82	75.53	14.80	14.80	80.59	85.08	24.84
Lane Group LOS	D	D	E	D	D	E	B	B	F	F	C
Critical Lane Group	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.76	1.87	8.96	2.54	5.31	14.19	6.68	6.68	1.03	31.25	0.79
50th-Percentile Queue Length [ft/ln]	18.94	46.70	223.92	63.38	132.65	354.82	167.01	167.01	25.65	781.25	19.63
95th-Percentile Queue Length [veh/ln]	1.36	3.36	13.86	4.56	9.08	20.37	10.92	10.92	1.85	41.75	1.41
95th-Percentile Queue Length [ft/ln]	34.08	84.06	346.62	114.08	227.10	509.27	272.98	272.98	46.17	1043.69	35.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.99	36.82	36.82	57.27	38.30	41.82	75.53	14.80	14.80	80.59	85.08	24.84
Movement LOS	D	D	D	E	D	D	E	B	B	F	F	C
d_A, Approach Delay [s/veh]	38.33			48.51			33.04			82.02		
Approach LOS	D			D			C			F		
d_I, Intersection Delay [s/veh]	51.31											
Intersection LOS	D											
Intersection V/C	0.894											

Emissions

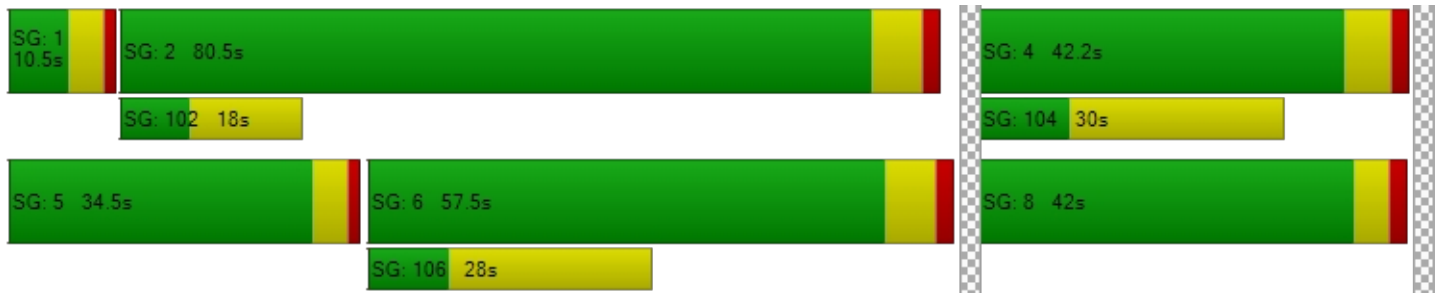
Vehicle Miles Traveled [mph]	3.65	8.82	33.95	12.88	24.84	42.29	49.24	49.24	12.18	346.99	18.26
Stops [stops/h]	20.94	51.66	247.68	70.10	146.73	392.47	184.74	184.74	28.37	864.16	21.72
Fuel consumption [US gal/h]	0.53	1.21	5.81	1.69	3.46	9.43	4.31	4.31	1.08	31.89	1.07
CO [g/h]	37.10	84.61	405.92	118.05	241.78	658.92	301.03	301.03	75.79	2228.89	74.72
NOx [g/h]	7.22	16.46	78.98	22.97	47.04	128.20	58.57	58.57	14.75	433.66	14.54
VOC [g/h]	8.60	19.61	94.08	27.36	56.03	152.71	69.77	69.77	17.57	516.57	17.32

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		12.0		13.0		0.0	
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	54.56		53.65		52.74		0.00	
I_p,int, Pedestrian LOS Score for Intersectio	2.078		2.705		2.847		0.000	
Crosswalk LOS	B		B		C		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	568		553		1137		784	
d_b, Bicycle Delay [s]	33.35		34.07		12.12		24.08	
I_b,int, Bicycle LOS Score for Intersection	1.761		2.767		2.588		2.951	
Bicycle LOS	A		C		B		C	

Sequence

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



**Intersection Level Of Service Report
Intersection 10: 122nd Avenue/Jennifer Street**

Control Type:	Two-way stop	Delay (sec / veh):	86.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.697

Intersection Setup

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⊕			⊕r			r⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	75.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Base Volume Input [veh/h]	1	1	1	78	1	49	87	677	0	0	329	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 [%]	0.00	0.00	0.00	12.00	0.00	13.00	12.00	5.00	0.00	0.00	4.00	5.00
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]	1	1	1	78	1	49	87	677	0	0	329	43
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
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	21	0	13	23	182	0	0	88	12
Total Analysis Volume [veh/h]	1	1	1	84	1	53	94	728	0	0	354	46
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

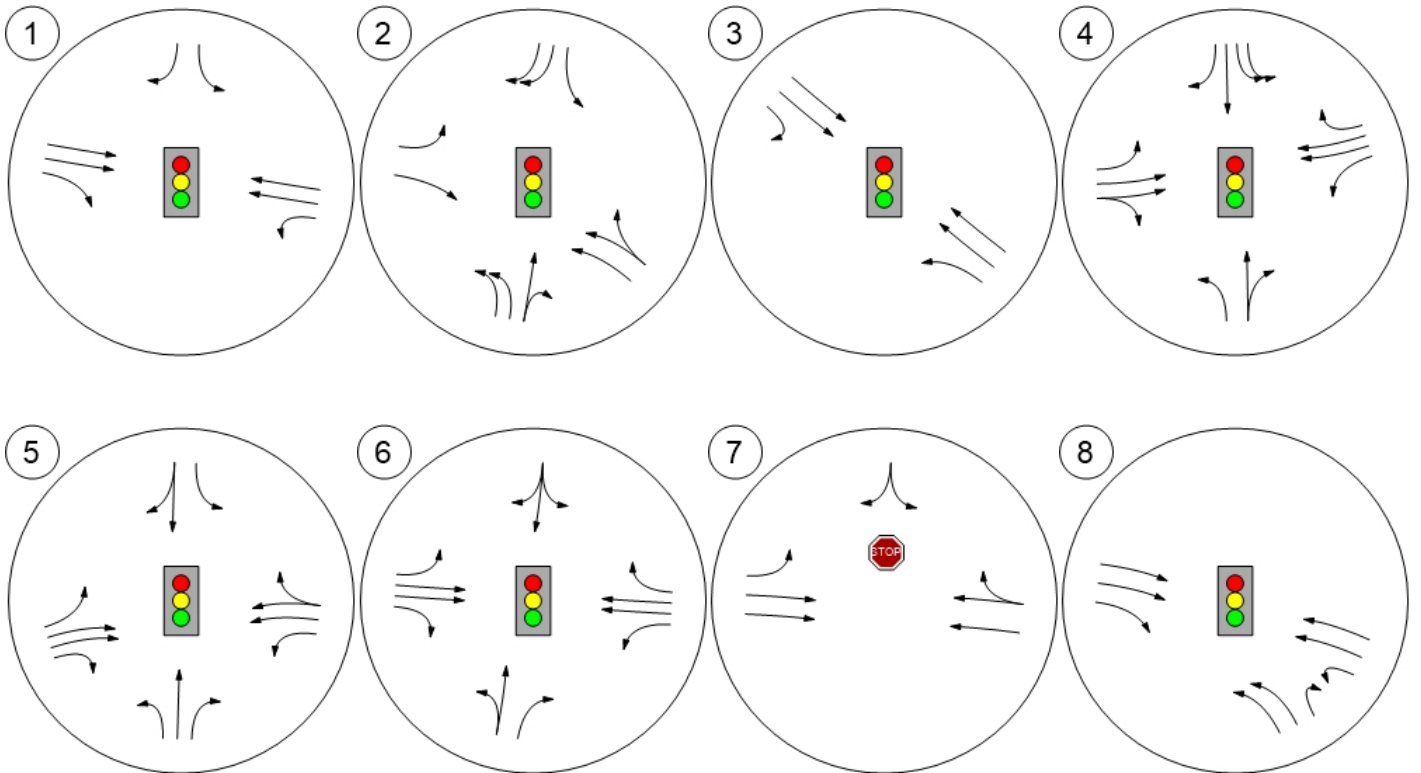
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.70	0.01	0.08	0.08	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	37.32	30.14	13.84	86.08	80.16	11.07	8.56	0.00	0.00	9.07	0.00	0.00
Movement LOS	E	D	B	F	F	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.06	0.06	0.06	3.84	3.84	0.27	0.28	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.38	1.38	1.38	95.93	95.93	6.68	6.95	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	27.10			57.23			0.98			0.00		
Approach LOS	D			F			A			A		
d_I, Intersection Delay [s/veh]	6.44											
Intersection LOS	F											

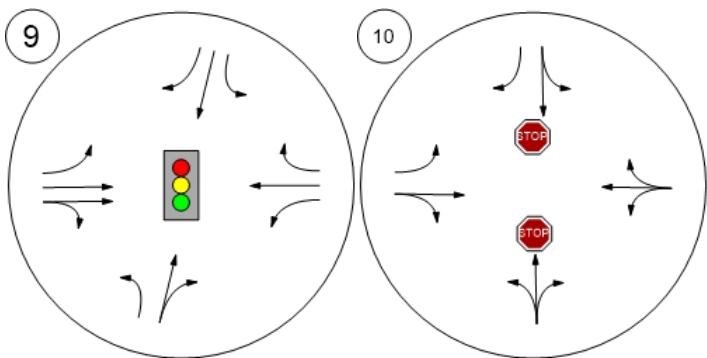
Study Intersections



Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



2045 Two-Lane Results

Sunrise Refinement Plan

Vistro File: H:\...\Sunrise_AM_2LaneGateway.vistro

Scenario: Base Scenario

Report File: H:\...\2045_2LaneAM.pdf

3/17/2025

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	OR 213 SB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.773	13.5	B
2	OR 213 NB Ramps/I-205 SB Ramps/OR 224	Signalized	HCM 7th Edition	WB Right	1.038	427.8	F
3	I-205 NB Ramps/OR 224	Signalized	HCM 7th Edition	NWB Left	0.591	11.3	B
4	122nd Avenue/OR 224/OR 212	Signalized	HCM 7th Edition	WB Left	0.873	32.2	C
5	135th Avenue/OR 212	Signalized	HCM 7th Edition	WB Left	0.736	17.3	B
8	OR 212/OR 224 (Rock Creek Junction)	Signalized	HCM 7th Edition	WB Left	0.759	19.3	B
9	172nd Avenue/OR 212	Signalized	HCM 7th Edition	WB Left	0.839	33.9	C
10	122nd Avenue/Jennifer Street	Two-way stop	HCM 7th Edition	SB Left	0.170	18.9	C
101	122nd Avenue/Sunrise Westbound	Signalized	HCM 7th Edition	WB Thru	0.884	26.0	C
102	122nd Avenue/Sunrise Eastbound	Signalized	HCM 7th Edition	EB Right	0.769	14.6	B
103	142nd Avenue/Backage Road	Signalized	HCM 7th Edition	EB Right	0.243	24.1	C
104	142nd Avenue/Highway 212 Access	Signalized	HCM 7th Edition	EB Left	0.619	7.6	A
105	142nd Avenue/OR 212	Two-way stop	HCM 7th Edition	SB Right	2.030	505.4	F

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: OR 213 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	13.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.773

Intersection Setup

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1000.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	0.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	0	0	0	204	0	272	0	1377	130	14	2523	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 [%]	0.00	0.00	0.00	7.00	0.00	7.00	0.00	8.00	16.00	47.00	8.00	0.00
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	136	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	204	0	136	0	1377	130	14	2523	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9200	1.0000	0.9200	1.0000	0.9200	0.9200	0.9200	0.9200	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	55	0	37	0	374	35	4	686	0
Total Analysis Volume [veh/h]	0	0	0	222	0	148	0	1497	141	15	2742	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Fully actuated
Offset [s]	23.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	4	0	4	0	2	2	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	0	0	17	0	17	0	81	81	7	92	0
Amber [s]	0.0	0.0	0.0	4.0	0.0	4.0	0.0	5.0	5.0	3.5	5.0	0.0
All red [s]	0.0	0.0	0.0	1.5	0.0	1.5	0.0	1.0	1.0	0.5	1.0	0.0
Walk [s]	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
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]	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	3.5	0.0	3.5	0.0	4.0	4.0	2.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	0.0	20.0	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	22	0	22	0	87	87	11	98	0
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	6	0	10	10	4	10	0
Vehicle Extension [s]	0.0	0.0	0.0	2.3	0.0	2.3	0.0	0.5	0.5	2.3	0.5	0.0
Minimum Recall				No				Yes		No	Yes	
Maximum Recall				No				No		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		L	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		5.50	5.50	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		3.50	3.50	4.00	4.00	2.00	4.00
g_i, Effective Green Time [s]		17	17	86	86	2	92
g / C, Green / Cycle		0.14	0.14	0.72	0.72	0.01	0.77
(v / s)_i Volume / Saturation Flow Rate		0.13	0.10	0.31	0.10	0.01	0.57
s, saturation flow rate [veh/h]		1709	1526	4849	1411	1138	4849
c, Capacity [veh/h]		235	210	3485	1014	17	3717
d1, Uniform Delay [s]		51.29	49.42	6.87	5.28	59.06	7.53
k, delay calibration		0.29	0.12	0.50	0.50	0.07	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		32.69	4.93	0.39	0.29	58.52	1.35
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		0.94	0.70	0.43	0.14	0.91	0.74
d, Delay for Lane Group [s/veh]		83.98	54.36	7.26	5.56	117.58	8.87
Lane Group LOS		F	D	A	A	F	A
Critical Lane Group		Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		8.74	4.53	4.79	1.09	0.72	10.76
50th-Percentile Queue Length [ft/ln]		218.39	113.18	119.86	27.35	18.12	269.07
95th-Percentile Queue Length [veh/ln]		13.58	8.02	8.39	1.97	1.30	16.14
95th-Percentile Queue Length [ft/ln]		339.57	200.41	209.63	49.23	32.61	403.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	83.98	0.00	54.36	0.00	7.26	5.56	117.58	8.87	0.00
Movement LOS				F		D		A	A	F	A	
d_A, Approach Delay [s/veh]	0.00			72.13			7.11			9.46		
Approach LOS	A			E			A			A		
d_I, Intersection Delay [s/veh]	13.52											
Intersection LOS	B											
Intersection V/C	0.773											

Emissions

Vehicle Miles Traveled [mph]		42.96	28.64	474.22	44.67	2.37	432.34
Stops [stops/h]		262.05	135.80	431.46	32.81	21.74	968.60
Fuel consumption [US gal/h]		7.01	3.57	24.12	2.18	0.58	28.10
CO [g/h]		489.99	249.28	1685.76	152.36	40.28	1964.28
NOx [g/h]		95.33	48.50	327.99	29.64	7.84	382.18
VOC [g/h]		113.56	57.77	390.69	35.31	9.34	455.24

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	275	1350	1533
d_b, Bicycle Delay [s]	60.00	44.64	6.34	3.27
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.461	3.076
Bicycle LOS	D	A	B	C

Sequence

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



Intersection Level Of Service Report
Intersection 2: OR 213 NB Ramps/I-205 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	427.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.038

Intersection Setup

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	415.00	100.00	100.00	160.00	100.00	405.00	365.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	2
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	357	2	279	15	0	404	317	1264	0	0	1776	477
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 [%]	8.00	2.00	18.00	23.00	0.00	9.00	6.00	8.00	0.00	0.00	8.00	4.00
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	0	0	0	0	0	0	40
Total Hourly Volume [veh/h]	357	2	278	15	0	404	317	1264	0	0	1776	437
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200
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]	97	1	76	4	0	110	86	343	0	0	483	119
Total Analysis Volume [veh/h]	388	2	302	16	0	439	345	1374	0	0	1930	475
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	1			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Fully actuated
Offset [s]	81.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Split	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	8	7	0	4	5	2	0	0	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	20	31	31	18	0	29	30	54	0	0	20	20
Amber [s]	4.0	4.0	4.0	4.0	0.0	4.0	3.5	5.0	0.0	0.0	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	0.0	1.5	0.5	1.0	0.0	0.0	1.0	1.0
Walk [s]	7	7	7	0	0	0	0	7	0	0	7	7
Pedestrian Clearance [s]	12	24	24	0	0	0	0	20	0	0	12	12
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	0.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	0.0	3.5	2.0	4.0	0.0	0.0	4.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	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	37	37	24	0	34	34	60	0	0	26	26
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	4	4	4	0	4	4	6	0	0	6	6
Vehicle Extension [s]	2.3	2.3	2.3	2.3	0.0	2.3	2.3	4.6	0.0	0.0	4.6	4.6
Minimum Recall	No	No		No		No	Yes	Yes			No	
Maximum Recall	No	No		No		No	No	No			No	
Pedestrian Recall	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	L	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	4.00	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
l2, Clearance Lost Time [s]	3.50	3.50	3.50	0.00	2.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	17	25	5	66	49	73	20	20
g / C, Green / Cycle	0.14	0.21	0.05	0.55	0.41	0.61	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.12	0.19	0.01	0.17	0.20	0.28	0.47	0.50
s, saturation flow rate [veh/h]	3292	1591	1481	2655	1724	4849	3389	1611
c, Capacity [veh/h]	458	329	68	1467	698	2934	565	269
d1, Uniform Delay [s]	50.41	46.65	55.18	14.39	26.54	13.05	50.00	50.00
k, delay calibration	0.07	0.20	0.07	0.07	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]	2.76	17.50	1.06	0.07	2.49	0.54	832.27	903.19
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	0.85	0.92	0.23	0.30	0.49	0.47	2.84	2.98
d, Delay for Lane Group [s/veh]	53.17	64.14	56.24	14.46	29.03	13.59	882.27	953.19
Lane Group LOS	D	E	E	B	C	B	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.85	10.45	0.49	3.18	7.78	6.70	73.73	75.40
50th-Percentile Queue Length [ft/ln]	146.31	261.28	12.20	79.44	194.55	167.53	1843.17	1885.08
95th-Percentile Queue Length [veh/ln]	9.82	15.75	0.88	5.72	12.36	10.95	114.69	117.32
95th-Percentile Queue Length [ft/ln]	245.50	393.83	21.96	143.00	308.92	273.67	2867.20	2932.91

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.17	64.14	64.14	56.24	0.00	14.46	29.03	13.59	0.00	0.00	894.27	953.19
Movement LOS	D	E	E	E		B	C	B			F	F
d_A, Approach Delay [s/veh]	57.99			15.93			16.69			905.91		
Approach LOS	E			B			B			F		
d_I, Intersection Delay [s/veh]	427.77											
Intersection LOS	F											
Intersection V/C	1.038											

Emissions

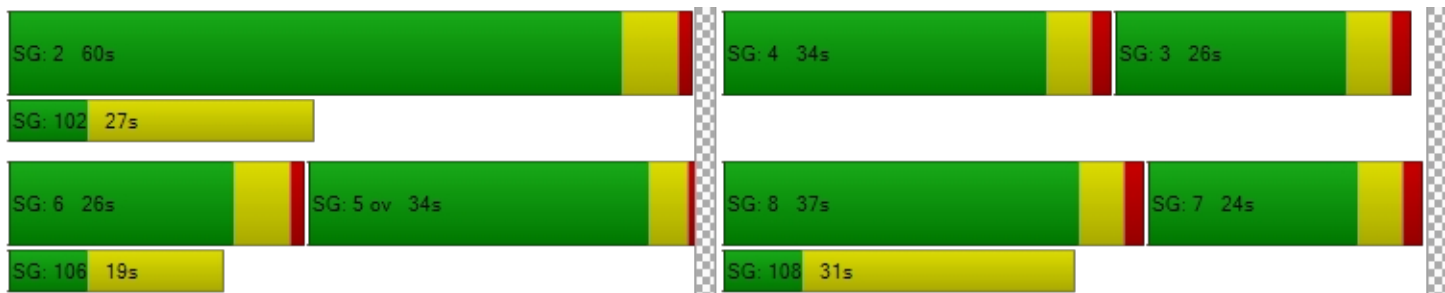
Vehicle Miles Traveled [mph]	81.28	63.68	2.14	58.83	54.40	216.64	401.68	200.84
Stops [stops/h]	351.15	313.54	14.64	190.67	233.46	603.11	4423.60	2262.10
Fuel consumption [US gal/h]	9.48	8.32	0.35	4.77	5.57	16.05	328.77	176.23
CO [g/h]	662.92	581.67	24.62	333.24	389.14	1121.93	22980.92	12318.34
NOx [g/h]	128.98	113.17	4.79	64.84	75.71	218.29	4471.25	2396.70
VOC [g/h]	153.64	134.81	5.71	77.23	90.19	260.02	5326.05	2854.89

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	49.50
l_p,int, Pedestrian LOS Score for Intersectio	2.181	2.466	0.000	3.241
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	525	308	900	333
d_b, Bicycle Delay [s]	32.63	42.93	18.15	41.67
l_b,int, Bicycle LOS Score for Intersection	2.703	1.560	2.505	2.904
Bicycle LOS	B	A	B	C

Sequence

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



**Intersection Level Of Service Report
Intersection 3: I-205 NB Ramps/OR 224**

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):	0.591

Intersection Setup

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Approach	Eastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	0	2
Entry Pocket Length [ft]	100.00	100.00	630.00	100.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	0.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present			No		No	
Crosswalk	No		No		No	

Volumes

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Base Volume Input [veh/h]	0	0	403	2253	1193	365
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	19.00	3.00	12.00	7.00
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	0	0	0
Total Hourly Volume [veh/h]	0	0	403	2253	1193	365
Peak Hour Factor	1.0000	1.0000	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	103	575	304	93
Total Analysis Volume [veh/h]	0	0	411	2299	1217	372
Presence of On-Street Parking			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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	101
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	32.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	0	0	1	6	2	2
Auxiliary Signal Groups						
Maximum Green [s]	0	0	24	60	32	32
Amber [s]	0.0	0.0	3.5	5.0	5.0	5.0
All red [s]	0.0	0.0	0.5	2.0	2.0	2.0
Walk [s]	0	0	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	17	17
Delayed Vehicle Green [s]	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	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	5.0	5.0	5.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	30	30	30	30
Lead / Lag	-	-	Lag	-	-	-
Minimum Green [s]	0	0	4	10	10	10
Vehicle Extension [s]	0.0	0.0	2.3	4.7	4.7	4.7
Minimum Recall			No	Yes	Yes	
Maximum Recall			No	No	No	
Pedestrian Recall			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	R
C, Cycle Length [s]	74	74	74	74
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	28	60	28	28
g / C, Green / Cycle	0.38	0.81	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.27	0.45	0.26	0.24
s, saturation flow rate [veh/h]	1538	5053	4685	1526
c, Capacity [veh/h]	582	4091	1767	576
d1, Uniform Delay [s]	19.54	2.46	19.41	19.00
k, delay calibration	0.29	0.20	0.20	0.20
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.22	0.23	0.90	2.27
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	0.71	0.56	0.69	0.65
d, Delay for Lane Group [s/veh]	23.76	2.69	20.31	21.28
Lane Group LOS	C	A	C	C
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.23	1.52	5.59	5.25
50th-Percentile Queue Length [ft/ln]	155.68	37.98	139.76	131.22
95th-Percentile Queue Length [veh/ln]	10.32	2.73	9.47	9.01
95th-Percentile Queue Length [ft/ln]	258.00	68.37	236.70	225.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	23.76	2.69	20.31	21.28
Movement LOS			C	A	C	C
d_A, Approach Delay [s/veh]	0.00		5.89		20.54	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	11.30					
Intersection LOS	B					
Intersection V/C	0.591					

Emissions

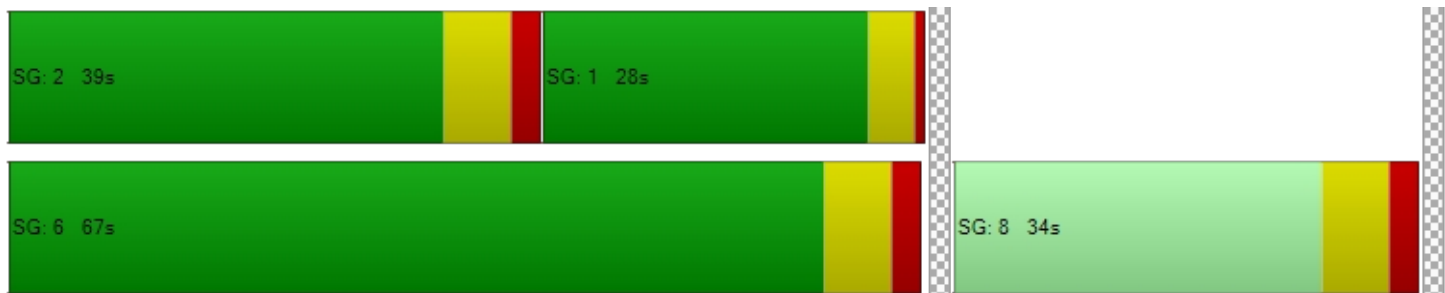
Vehicle Miles Traveled [mph]		569.59	3186.09	304.89	93.20
Stops [stops/h]		302.74	221.59	815.29	255.17
Fuel consumption [US gal/h]		27.11	133.64	22.09	6.86
CO [g/h]		1894.83	9341.63	1543.90	479.31
NOx [g/h]		368.67	1817.54	300.39	93.26
VOC [g/h]		439.15	2165.01	357.81	111.08

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1620	864
d_b, Bicycle Delay [s]	37.03	1.33	11.94
I_b,int, Bicycle LOS Score for Intersection	4.132	3.050	2.434
Bicycle LOS	D	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 4: 122nd Avenue/OR 224/OR 212

Control Type:	Signalized	Delay (sec / veh):	32.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T			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 [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	2	2	0	0	1	0	2
Entry Pocket Length [ft]	135.00	100.00	100.00	525.00	100.00	350.00	220.00	100.00	100.00	255.00	100.00	410.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Base Volume Input [veh/h]	24	147	1	272	232	972	362	526	81	2	809	1276
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 [%]	50.00	48.00	20.00	8.00	19.00	14.00	30.00	14.00	27.00	17.00	8.00	3.00
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	0	0	0	27	0	0	638
Total Hourly Volume [veh/h]	24	147	0	272	232	972	362	526	54	2	809	638
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
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]	6	39	0	72	62	259	96	140	14	1	215	170
Total Analysis Volume [veh/h]	26	156	0	289	247	1034	385	560	57	2	861	679
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	18.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						6,7
Maximum Green [s]	5	35	35	6	36	36	22	67	67	4	49	49
Amber [s]	3.5	4.3	4.3	3.5	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	9	9	0	7	7	0	8	8	0	7	7
Pedestrian Clearance [s]	0	26	26	0	21	21	0	23	23	0	18	18
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.8	2.8	2.0	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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]	9	40	40	10	41	41	26	72	72	8	54	54
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	4.6	2.0	4.6	4.6
Minimum Recall	No	No		No	No	No	No	Yes		No	Yes	Yes
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.80	4.40	4.80	4.80	4.00	5.40	5.40	4.00	5.40	5.40
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	0.00
l2, Clearance Lost Time [s]	2.00	2.80	0.00	2.80	0.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	3	19	29	29	61	21	80	80	0	59	76
g / C, Green / Cycle	0.03	0.15	0.23	0.22	0.47	0.16	0.61	0.61	0.00	0.45	0.58
(v / s)_i Volume / Saturation Flow Rate	0.08	0.13	0.10	0.15	0.41	0.14	0.19	0.19	0.00	0.25	0.24
s, saturation flow rate [veh/h]	335	1180	2956	1615	2542	2681	1690	1636	1567	3389	2791
c, Capacity [veh/h]	59	173	501	353	1192	436	1036	1003	3	1534	1623
d1, Uniform Delay [s]	64.89	54.56	48.25	46.83	30.90	53.23	11.95	11.95	64.80	26.11	15.03
k, delay calibration	0.50	0.07	0.07	0.07	0.20	0.04	0.50	0.50	0.04	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]	21.94	10.31	0.64	1.54	3.68	2.40	0.75	0.78	46.51	1.49	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	0.44	0.90	0.58	0.70	0.87	0.88	0.30	0.30	0.58	0.56	0.42
d, Delay for Lane Group [s/veh]	86.84	64.87	48.89	48.37	34.58	55.63	12.71	12.73	111.31	27.60	15.83
Lane Group LOS	F	E	D	D	C	E	B	B	F	C	B
Critical Lane Group	No	Yes	No	No	Yes	No	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.28	5.52	4.02	7.53	14.80	6.29	4.49	4.35	0.11	10.07	5.66
50th-Percentile Queue Length [ft/ln]	31.89	137.93	100.44	188.24	369.97	157.36	112.24	108.81	2.77	251.66	141.55
95th-Percentile Queue Length [veh/ln]	2.30	9.37	7.23	12.03	21.11	10.41	7.96	7.77	0.20	15.27	9.56
95th-Percentile Queue Length [ft/ln]	57.40	234.23	180.79	300.74	527.70	260.22	199.11	194.35	4.99	381.74	239.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	86.84	64.87	64.87	48.89	48.37	34.58	55.63	12.72	12.73	111.31	27.60	15.83
Movement LOS	F	E	E	D	D	C	E	B	B	F	C	B
d_A, Approach Delay [s/veh]	68.01			39.38			29.20			22.52		
Approach LOS	E			D			C			C		
d_I, Intersection Delay [s/veh]	32.17											
Intersection LOS	C											
Intersection V/C	0.873											

Emissions

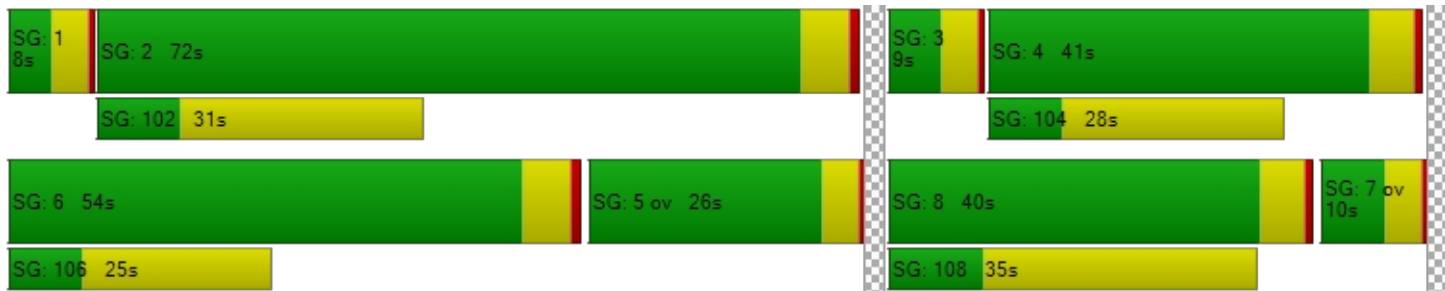
Vehicle Miles Traveled [mph]	5.86	35.16	66.73	57.03	238.74	346.05	281.80	272.77	1.32	567.67	447.67
Stops [stops/h]	35.32	152.78	222.51	208.51	819.63	348.61	124.33	120.53	3.07	557.52	313.60
Fuel consumption [US gal/h]	0.90	4.35	6.85	5.93	21.63	20.53	13.10	12.68	0.12	31.28	22.35
CO [g/h]	62.61	304.09	478.92	414.57	1512.09	1434.99	915.58	886.42	8.15	2186.79	1562.17
NOx [g/h]	12.18	59.16	93.18	80.66	294.20	279.20	178.14	172.46	1.59	425.47	303.94
VOC [g/h]	14.51	70.48	110.99	96.08	350.44	332.57	212.19	205.44	1.89	506.81	362.05

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	11.0	13.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.55	54.47	54.47	52.65
I_p,int, Pedestrian LOS Score for Intersectio	2.126	3.089	3.025	4.019
Crosswalk LOS	B	C	C	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	542	557	1025	748
d_b, Bicycle Delay [s]	34.57	33.84	15.46	25.48
I_b,int, Bicycle LOS Score for Intersection	1.862	4.150	2.409	3.358
Bicycle LOS	A	D	B	C

Sequence

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



Intersection Level Of Service Report
Intersection 5: 135th Avenue/OR 212

Control Type:	Signalized	Delay (sec / veh):	17.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.736

Intersection Setup

Name	135th Ave		Highway 212		Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↔↔↔		↑↑		↔↔	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	300.00	100.00	100.00	60.00	200.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	135th Ave		Highway 212		Highway 212	
Base Volume Input [veh/h]	134	214	492	37	303	1827
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	14.00	14.00	17.00	8.00	8.00
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	0	0	0
Total Hourly Volume [veh/h]	134	214	492	37	303	1827
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	56	129	10	80	481
Total Analysis Volume [veh/h]	141	225	518	39	319	1923
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	1		0		1	
v_di, Inbound Pedestrian Volume crossing m	1		0		1	
v_co, Outbound Pedestrian Volume crossing	1		1		0	
v_ci, Inbound Pedestrian Volume crossing mi	1		1		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Protected	Permissive
Signal Group	3	3	2	2	1	6
Auxiliary Signal Groups						
Maximum Green [s]	17	17	45	45	35	84
Amber [s]	3.5	3.5	4.7	4.7	3.5	4.7
All red [s]	0.5	0.5	0.7	0.7	0.5	0.7
Walk [s]	0	0	8	8	0	7
Pedestrian Clearance [s]	0	0	18	18	0	14
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]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	3.4	3.4	2.0	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	6.0	6.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	21	21	50	50	39	89
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Vehicle Extension [s]	2.3	2.3	4.5	4.5	2.3	4.5
Minimum Recall	No	No	Yes		No	Yes
Maximum Recall	No	No	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	L	R	C	R	L	C
C, Cycle Length [s]	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	5.40	5.40	4.00	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	3.40	3.40	2.00	3.40
g_i, Effective Green Time [s]	12	12	62	62	23	89
g / C, Green / Cycle	0.11	0.11	0.56	0.56	0.21	0.81
(v / s)_i Volume / Saturation Flow Rate	0.08	0.09	0.16	0.03	0.19	0.57
s, saturation flow rate [veh/h]	1695	2542	3217	1396	1695	3389
c, Capacity [veh/h]	184	277	1809	785	351	2731
d1, Uniform Delay [s]	47.64	47.92	12.56	10.84	42.59	4.80
k, delay calibration	0.07	0.07	0.50	0.50	0.12	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.02	3.58	0.40	0.12	9.70	1.55
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	0.76	0.81	0.29	0.05	0.91	0.70
d, Delay for Lane Group [s/veh]	51.67	51.51	12.96	10.96	52.29	6.35
Lane Group LOS	D	D	B	B	D	A
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.95	3.14	3.33	0.45	9.34	7.36
50th-Percentile Queue Length [ft/ln]	98.79	78.59	83.37	11.16	233.38	183.96
95th-Percentile Queue Length [veh/ln]	7.11	5.66	6.00	0.80	14.35	11.81
95th-Percentile Queue Length [ft/ln]	177.81	141.45	150.07	20.09	358.66	295.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.67	51.51	12.96	10.96	52.29	6.35
Movement LOS	D	D	B	B	D	A
d_A, Approach Delay [s/veh]	51.57		12.82		12.89	
Approach LOS	D		B		B	
d_I, Intersection Delay [s/veh]	17.35					
Intersection LOS	B					
Intersection V/C	0.736					

Emissions

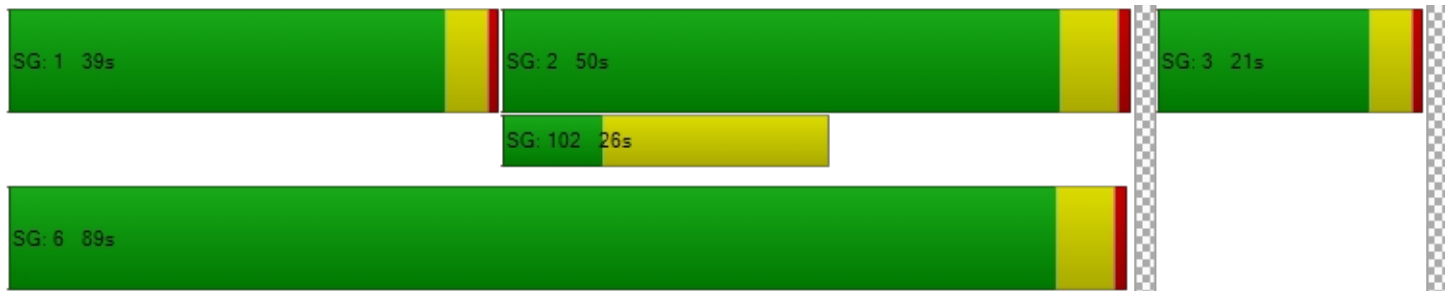
Vehicle Miles Traveled [mph]	27.59	44.03	341.52	25.71	95.01	572.75
Stops [stops/h]	129.32	205.75	218.28	14.61	305.51	481.63
Fuel consumption [US gal/h]	3.33	5.31	16.63	1.23	8.99	28.72
CO [g/h]	232.94	370.97	1162.56	85.72	628.64	2007.86
NOx [g/h]	45.32	72.18	226.19	16.68	122.31	390.66
VOC [g/h]	53.99	85.98	269.43	19.87	145.69	465.34

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	17.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	43.66	0.00	39.32
I_p,int, Pedestrian LOS Score for Intersectio	2.316	0.000	2.886
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]	309	811	1520
d_b, Bicycle Delay [s]	39.32	19.44	3.17
I_b,int, Bicycle LOS Score for Intersection	1.560	2.019	3.409
Bicycle LOS	A	B	C

Sequence

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



MOVEMENT SUMMARY

Site: 106 [Highway 212/Riverbend_2LaneAM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

Two-Lane Sunrise
 Site Category: (None)
 Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue	Dist	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	[Dist]				mph
South: Riverbend															
3	L2	All MCs	39	5.0	39	5.0	0.148	5.6	LOS A	0.4	11.5	0.54	0.47	0.54	18.5
18	R2	All MCs	48	28.0	48	28.0	0.148	10.1	LOS B	0.4	11.5	0.54	0.47	0.54	18.5
Approach			88	17.7	88	17.7	0.148	7.9	LOS A	0.4	11.5	0.54	0.47	0.54	18.5
East: Highway 212															
1	L2	All MCs	25	0.0	25	0.0	0.679	9.8	LOS A	7.3	187.1	0.34	0.11	0.34	33.1
6	T1	All MCs	1762	4.0	1762	4.0	0.679	10.1	LOS B	7.3	187.1	0.34	0.11	0.34	33.3
Approach			1787	3.9	1787	3.9	0.679	10.1	LOS B	7.3	187.1	0.34	0.11	0.34	33.3
West: Highway 212															
2	T1	All MCs	552	20.0	552	20.0	0.247	5.0	LOS A	1.0	30.2	0.12	0.03	0.12	34.0
12	R2	All MCs	21	10.0	21	10.0	0.247	4.4	LOS A	1.0	30.2	0.12	0.03	0.12	34.8
Approach			572	19.6	572	19.6	0.247	5.0	LOS A	1.0	30.2	0.12	0.03	0.12	34.0
All Vehicles			2446	8.1	2446	8.1	0.679	8.8	LOS A	7.3	187.1	0.30	0.10	0.30	32.5

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

Roundabout LOS Method: Same as Sign Control.

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

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

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

Roundabout Capacity Model: US HCM 6.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: H:\27\27852 - Sunrise Corridor Community Visioning\synchro\27852_RoundaboutsAnalysis.sjp9

Intersection Level Of Service Report
Intersection 8: OR 212/OR 224 (Rock Creek Junction)

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.759

Intersection Setup

Name	Highway 224		Highway 212		Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	1	0	2	1	0
Entry Pocket Length [ft]	155.00	70.00	100.00	125.00	230.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Highway 224		Highway 212		Highway 212	
Base Volume Input [veh/h]	1135	159	152	421	323	665
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	8.00	12.00	15.00	3.00	8.00
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	0	0	0
Total Hourly Volume [veh/h]	1135	159	152	421	323	665
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	299	42	40	111	85	175
Total Analysis Volume [veh/h]	1195	167	160	443	340	700
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	148
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	46.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Overlap	Protected	Permissive
Signal Group	8	0	2	2	1	6
Auxiliary Signal Groups				2,8		
Maximum Green [s]	68	0	23	23	42	69
Amber [s]	4.7	0.0	5.0	5.0	3.5	5.0
All red [s]	0.7	0.0	1.0	1.0	0.5	1.0
Walk [s]	8	0	7	7	7	0
Pedestrian Clearance [s]	16	0	14	14	10	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]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	0.0	4.0	4.0	2.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	0	30	30	30	30
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	8	0	10	10	4	10
Vehicle Extension [s]	2.5	0.0	4.8	4.8	3.5	4.8
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	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	L	R	C	R	L	C
C, Cycle Length [s]	79	79	79	79	79	79
L, Total Lost Time per Cycle [s]	5.40	5.40	6.00	5.40	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	4.00	0.00	2.00	4.00
g_i, Effective Green Time [s]	36	36	10	52	18	32
g / C, Green / Cycle	0.45	0.45	0.13	0.66	0.22	0.40
(v / s)_i Volume / Saturation Flow Rate	0.36	0.11	0.05	0.18	0.19	0.21
s, saturation flow rate [veh/h]	3320	1513	3275	2520	1767	3389
c, Capacity [veh/h]	1509	688	413	1654	398	1361
d1, Uniform Delay [s]	18.43	13.26	31.84	5.68	29.48	17.89
k, delay calibration	0.08	0.08	0.21	0.21	0.13	0.21
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.72	0.13	1.16	0.17	6.33	0.59
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	0.79	0.24	0.39	0.27	0.85	0.51
d, Delay for Lane Group [s/veh]	19.15	13.40	32.99	5.85	35.82	18.48
Lane Group LOS	B	B	C	A	D	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	8.66	1.74	1.44	1.29	6.66	4.64
50th-Percentile Queue Length [ft/ln]	216.54	43.42	35.99	32.35	166.56	116.06
95th-Percentile Queue Length [veh/ln]	13.49	3.13	2.59	2.33	10.90	8.18
95th-Percentile Queue Length [ft/ln]	337.21	78.16	64.79	58.23	272.39	204.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.15	13.40	32.99	5.85	35.82	18.48
Movement LOS	B	B	C	A	D	B
d_A, Approach Delay [s/veh]	18.45		13.05		24.15	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	19.34					
Intersection LOS	B					
Intersection V/C	0.759					

Emissions

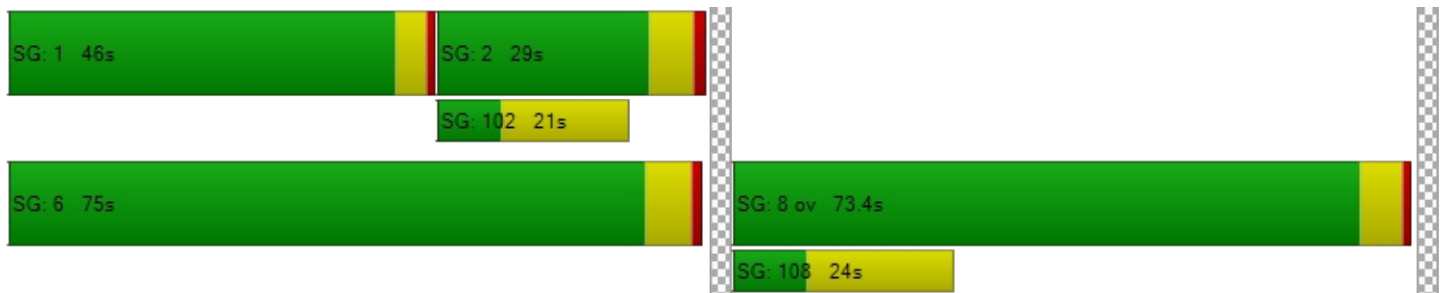
Vehicle Miles Traveled [mph]	390.86	54.62	23.23	64.32	21.64	44.56
Stops [stops/h]	787.77	78.99	130.94	117.69	302.97	422.23
Fuel consumption [US gal/h]	25.10	3.14	2.75	3.83	5.04	6.80
CO [g/h]	1754.56	219.51	192.50	267.40	352.49	475.27
NOx [g/h]	341.37	42.71	37.45	52.03	68.58	92.47
VOC [g/h]	406.64	50.87	44.61	61.97	81.69	110.15

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	12.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.35	0.00	28.49
I_p,int, Pedestrian LOS Score for Intersectio	2.711	0.000	2.558
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]	1718	581	1743
d_b, Bicycle Delay [s]	0.79	19.92	0.65
I_b,int, Bicycle LOS Score for Intersection	1.560	2.057	2.418
Bicycle LOS	A	B	B

Sequence




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



Intersection Level Of Service Report
Intersection 9: 172nd Avenue/OR 212

Control Type:	Signalized	Delay (sec / veh):	33.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.839

Intersection Setup

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	2	2	0	0	1	0	1
Entry Pocket Length [ft]	110.00	100.00	100.00	235.00	100.00	290.00	550.00	100.00	100.00	395.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	179	149	30	142	58	810	375	563	20	12	1123	107
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	6.00	6.00	4.00	5.00	9.00	14.00	12.00	11.00	8.00	13.00
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	0	0	0	0
Total Hourly Volume [veh/h]	179	149	30	142	58	810	375	563	20	12	1123	107
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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]	50	41	8	39	16	225	104	156	6	3	312	30
Total Analysis Volume [veh/h]	199	166	33	158	64	900	417	626	22	13	1248	119
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			2			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			2			0		
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]	133
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	8.5
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	8	8	4	4	5	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	36	36	36	35	35	23	23	77	77	4	59	59
Amber [s]	3.5	3.5	3.5	4.7	4.7	3.5	3.5	5.0	5.0	3.5	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.5	1.5	1.0	1.5	1.5
Walk [s]	9	9	9	9	9	0	0	7	7	0	8	8
Pedestrian Clearance [s]	22	22	22	21	21	0	0	11	11	0	20	20
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	4.2	4.2	2.5	2.5	4.5	4.5	2.5	4.5	4.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	20.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	4	4	10	10	4	10	10
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.3	2.3	5.4	5.4	2.3	5.4	5.4
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	132	132	132	132	132	132	132	132	132	132	132
L, Total Lost Time per Cycle [s]	5.00	5.00	6.20	6.20	4.50	4.50	6.50	6.50	4.50	6.50	6.50
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	0.00
l2, Clearance Lost Time [s]	3.00	3.00	4.20	4.20	0.00	2.50	4.50	4.50	2.50	4.50	4.50
g_i, Effective Green Time [s]	36	36	35	35	64	23	78	78	2	56	56
g / C, Green / Cycle	0.27	0.27	0.27	0.27	0.49	0.17	0.59	0.59	0.01	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.15	0.11	0.14	0.03	0.33	0.13	0.19	0.19	0.01	0.37	0.08
s, saturation flow rate [veh/h]	1332	1817	1145	1840	2737	3264	1690	1670	1652	3389	1449
c, Capacity [veh/h]	365	499	239	489	1334	570	999	987	21	1454	622
d1, Uniform Delay [s]	45.55	38.88	53.75	36.78	25.73	51.43	13.65	13.65	64.70	33.98	23.39
k, delay calibration	0.08	0.08	0.08	0.08	0.12	0.07	0.28	0.28	0.07	0.28	0.28
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]	0.99	0.38	2.31	0.09	0.69	1.12	0.49	0.50	16.72	4.00	0.39
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	0.55	0.40	0.66	0.13	0.67	0.73	0.33	0.33	0.62	0.86	0.19
d, Delay for Lane Group [s/veh]	46.54	39.27	56.07	36.87	26.42	52.55	14.15	14.15	81.42	37.98	23.78
Lane Group LOS	D	D	E	D	C	D	B	B	F	D	C
Critical Lane Group	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.99	5.33	5.25	1.60	10.73	6.61	5.00	4.95	0.53	18.59	2.40
50th-Percentile Queue Length [ft/ln]	149.63	133.28	131.13	40.01	268.32	165.25	125.10	123.67	13.32	464.63	60.01
95th-Percentile Queue Length [veh/ln]	10.00	9.12	9.00	2.88	16.11	10.83	8.67	8.59	0.96	25.66	4.32
95th-Percentile Queue Length [ft/ln]	249.94	227.95	225.03	72.01	402.64	270.66	216.81	214.85	23.98	641.38	108.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.54	39.27	39.27	56.07	36.87	26.42	52.55	14.15	14.15	81.42	37.98	23.78
Movement LOS	D	D	D	E	D	C	D	B	B	F	D	C
d_A, Approach Delay [s/veh]	42.90			31.19			29.19			37.16		
Approach LOS	D			C			C			D		
d_I, Intersection Delay [s/veh]	33.91											
Intersection LOS	C											
Intersection V/C	0.839											

Emissions

Vehicle Miles Traveled [mph]	23.41	23.41	20.55	8.32	117.07	49.12	38.39	37.94	6.09	584.41	55.72
Stops [stops/h]	163.74	145.85	143.50	43.78	587.24	361.66	136.89	135.33	14.58	1016.88	65.67
Fuel consumption [US gal/h]	3.75	3.36	3.44	1.06	12.90	8.48	3.28	3.24	0.55	39.32	3.23
CO [g/h]	262.33	234.83	240.55	74.42	901.93	592.71	228.93	226.27	38.20	2748.55	225.96
NOx [g/h]	51.04	45.69	46.80	14.48	175.48	115.32	44.54	44.02	7.43	534.77	43.96
VOC [g/h]	60.80	54.42	55.75	17.25	209.03	137.37	53.06	52.44	8.85	637.00	52.37

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		12.0		13.0		0.0	
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	55.26		54.34		53.44		0.00	
I_p,int, Pedestrian LOS Score for Intersectio	2.120		2.767		3.307		0.000	
Crosswalk LOS	B		C		C		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	547		532		1170		897	
d_b, Bicycle Delay [s]	34.72		35.45		11.32		20.02	
I_b,int, Bicycle LOS Score for Intersection	2.216		3.411		2.438		2.698	
Bicycle LOS	B		C		B		B	

Sequence

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



Intersection Level Of Service Report
Intersection 10: 122nd Avenue/Jennifer Street

Control Type:	Two-way stop	Delay (sec / veh):	18.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.170

Intersection Setup

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+r			+l			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	75.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Base Volume Input [veh/h]	0	0	0	49	0	127	92	240	0	0	196	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 [%]	0.00	0.00	0.00	12.00	0.00	32.00	61.00	12.00	0.00	0.00	14.00	12.00
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	0	0	49	0	127	92	240	0	0	196	34
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	13	0	35	25	65	0	0	53	9
Total Analysis Volume [veh/h]	0	0	0	53	0	138	100	261	0	0	213	37
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.17	0.00	0.19	0.10	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	20.11	16.05	9.60	18.90	18.13	10.99	8.84	0.00	0.00	7.74	0.00	0.00
Movement LOS	C	C	A	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.60	0.60	0.68	0.32	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	15.08	15.08	17.07	7.98	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	15.25			13.18			2.45			0.00		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	4.24											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 101: 122nd Avenue/Sunrise Westbound

Control Type:	Signalized	Delay (sec / veh):	26.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.884

Intersection Setup

Name	122nd Avenue		Sunrise WB		Sunrise WB	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↵↵				↵↵↵↵	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	300.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		0.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No				No	
Crosswalk	No		No		Yes	

Volumes

Name	122nd Avenue		Sunrise WB		Sunrise WB	
Base Volume Input [veh/h]	1357	0	0	0	813	1299
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	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	0	0	0
Total Hourly Volume [veh/h]	1357	0	0	0	813	1299
Peak Hour Factor	0.9300	1.0000	1.0000	1.0000	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	365	0	0	0	219	349
Total Analysis Volume [veh/h]	1459	0	0	0	874	1397
Presence of On-Street Parking	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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	Protected	Permissive
Signal Group	2	0	0	0	3	8
Auxiliary Signal Groups						
Maximum Green [s]	58	0	0	0	54	54
Amber [s]	3.5	0.0	0.0	0.0	3.5	3.5
All red [s]	1.0	0.0	0.0	0.0	1.0	1.0
Walk [s]	7	0	0	0	0	7
Pedestrian Clearance [s]	11	0	0	0	0	11
Delayed Vehicle Green [s]	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	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	0.0	0.0	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	0.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	0	0	0	30	30
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	5	0	0	0	5	5
Vehicle Extension [s]	3.0	0.0	0.0	0.0	3.0	3.0
Minimum Recall	No				No	No
Maximum Recall	No				No	No
Pedestrian Recall	No				No	No

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	L	C
C, Cycle Length [s]	102	102	102
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50
g_i, Effective Green Time [s]	48	45	45
g / C, Green / Cycle	0.47	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.42	0.25	0.39
s, saturation flow rate [veh/h]	3459	3459	3560
c, Capacity [veh/h]	1623	1530	1575
d1, Uniform Delay [s]	24.82	21.20	26.07
k, delay calibration	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	2.04	0.34	1.87
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	0.90	0.57	0.89
d, Delay for Lane Group [s/veh]	26.86	21.54	27.94
Lane Group LOS	C	C	C
Critical Lane Group	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	15.75	7.60	15.21
50th-Percentile Queue Length [ft/ln]	393.76	190.04	380.26
95th-Percentile Queue Length [veh/ln]	22.26	12.12	21.61
95th-Percentile Queue Length [ft/ln]	556.48	303.08	540.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.86	0.00	0.00	0.00	21.54	27.94
Movement LOS	C				C	C
d_A, Approach Delay [s/veh]	26.86		0.00		25.47	
Approach LOS	C		A		C	
d_I, Intersection Delay [s/veh]	26.02					
Intersection LOS	C					
Intersection V/C	0.884					

Emissions

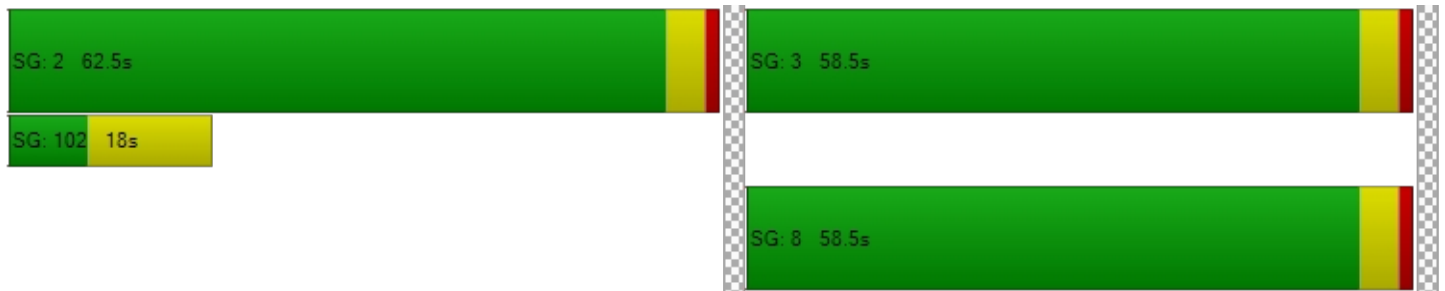
Vehicle Miles Traveled [mph]	121.55		115.83	185.14
Stops [stops/h]	1114.56		537.92	1076.35
Fuel consumption [US gal/h]	19.14		11.57	21.51
CO [g/h]	1337.73		808.79	1503.61
NOx [g/h]	260.27		157.36	292.55
VOC [g/h]	310.03		187.45	348.48

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	40.47
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.690
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1140	0	1061
d_b, Bicycle Delay [s]	9.40	50.87	11.20
I_b,int, Bicycle LOS Score for Intersection	1.560	4.132	3.433
Bicycle LOS	A	D	C

Sequence

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



Intersection Level Of Service Report
Intersection 102: 122nd Avenue/Sunrise Eastbound

Control Type:	Signalized	Delay (sec / veh):	14.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.769

Intersection Setup

Name	122nd Avenue			122nd Avenue			Sunrise EB			Sunrise EB		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	0	0	0	0	2	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	50.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			0.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	Yes			No			Yes			No		

Volumes

Name	122nd Avenue			122nd Avenue			Sunrise EB			Sunrise EB		
Base Volume Input [veh/h]	0	1357	428	0	813	0	0	530	663	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 [%]	0.00	5.00	7.00	0.00	2.00	0.00	0.00	2.00	6.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	1357	428	0	813	0	0	530	663	0	0	0
Peak Hour Factor	1.0000	0.9300	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	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	365	115	0	219	0	0	142	178	0	0	0
Total Analysis Volume [veh/h]	0	1459	460	0	874	0	0	570	713	0	0	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	2	2	6	6	0	4	4	4	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	73	73	73	73	0	39	39	39	0	0	0
Amber [s]	0.0	3.5	3.5	3.5	3.5	0.0	3.5	3.5	3.5	0.0	0.0	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	7	7	7	0	7	7	7	0	0	0
Pedestrian Clearance [s]	0	11	11	11	11	0	11	11	11	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		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	2.5	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	6.0	20.0	20.0	0.0	6.0	6.0	6.0	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: Free Running (No Pattern)

Split [s]	0	30	30	30	30	0	30	30	30	0	0	0
Lead / Lag	-	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	5	5	5	5	0	5	5	5	0	0	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		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	L	C	C	C	R	
C, Cycle Length [s]	70	70	70	70	70	70	70	
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	
g_i, Effective Green Time [s]	38	38	38	38	23	23	23	
g / C, Green / Cycle	0.55	0.55	0.55	0.55	0.33	0.33	0.33	
(v / s)_i Volume / Saturation Flow Rate	0.42	0.17	0.00	0.25	0.15	0.15	0.26	
s, saturation flow rate [veh/h]	3475	2700	237	3560	1870	1870	2723	
c, Capacity [veh/h]	1895	1473	147	1942	611	611	889	
d1, Uniform Delay [s]	12.52	8.75	0.00	9.62	18.81	18.81	21.59	
k, delay calibration	0.11	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	
d2, Incremental Delay [s]	0.68	0.12	0.00	0.16	0.56	0.56	1.74	
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	0.77	0.31	0.00	0.45	0.47	0.47	0.80	
d, Delay for Lane Group [s/veh]	13.20	8.87	0.00	9.79	19.36	19.36	23.33	
Lane Group LOS	B	A	A	A	B	B	C	
Critical Lane Group	Yes	No	No	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	7.69	1.68	0.00	3.50	3.54	3.54	5.16	
50th-Percentile Queue Length [ft/ln]	192.30	42.02	0.00	87.60	88.45	88.45	129.01	
95th-Percentile Queue Length [veh/ln]	12.24	3.03	0.00	6.31	6.37	6.37	8.89	
95th-Percentile Queue Length [ft/ln]	306.01	75.63	0.00	157.68	159.20	159.20	222.15	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	13.20	8.87	0.00	9.79	0.00	19.36	19.36	23.33	0.00	0.00	0.00
Movement LOS		B	A	A	A		B	B	C			
d_A, Approach Delay [s/veh]	12.16			9.79			21.57			0.00		
Approach LOS	B			A			C			A		
d_I, Intersection Delay [s/veh]	14.61											
Intersection LOS	B											
Intersection V/C	0.769											

Emissions

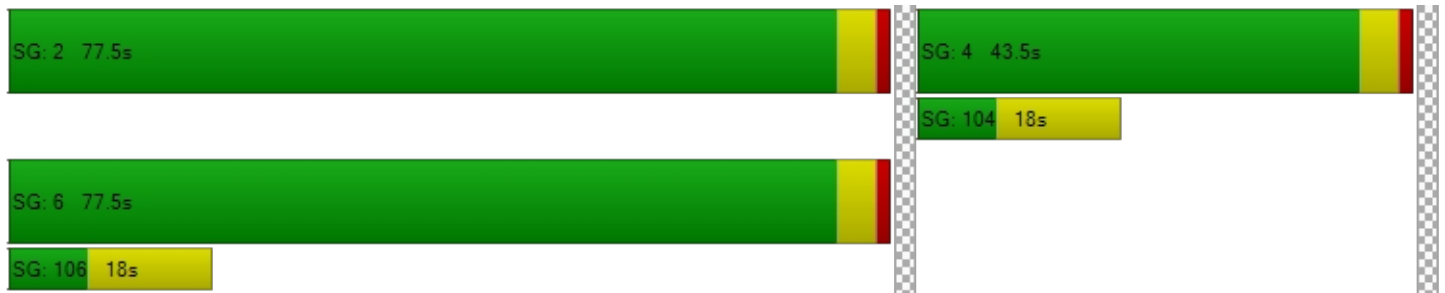
Vehicle Miles Traveled [mph]	336.87	106.21	0.00	72.81	34.11	34.11	85.34
Stops [stops/h]	789.58	172.52	0.00	359.70	181.58	181.58	529.73
Fuel consumption [US gal/h]	22.15	6.16	0.00	6.73	3.53	3.53	9.83
CO [g/h]	1548.25	430.31	0.00	470.12	246.78	246.78	686.77
NOx [g/h]	301.23	83.72	0.00	91.47	48.01	48.01	133.62
VOC [g/h]	358.82	99.73	0.00	108.96	57.19	57.19	159.17

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.93	0.00	24.93	0.00
l_p,int, Pedestrian LOS Score for Intersectio	3.009	0.000	2.430	0.000
Crosswalk LOS	C	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2082	2082	1112	0
d_b, Bicycle Delay [s]	0.06	0.06	6.91	35.07
l_b,int, Bicycle LOS Score for Intersection	3.143	2.281	2.618	4.132
Bicycle LOS	C	B	B	D

Sequence

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



Intersection Level Of Service Report
Intersection 103: 142nd Avenue/Backage Road

Control Type:	Signalized	Delay (sec / veh):	24.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.243

Intersection Setup

Name	142nd Avenue			142nd Avenue			Backage Road			Backage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	142nd Avenue			142nd Avenue			Backage Road			Backage Road		
Base Volume Input [veh/h]	262	61	164	10	58	10	10	100	622	58	100	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 [%]	3.00	2.00	4.00	2.00	7.00	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
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	262	61	164	10	58	10	10	100	622	58	100	10
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	17	45	3	16	3	3	27	169	16	27	3
Total Analysis Volume [veh/h]	285	66	178	11	63	11	11	109	676	63	109	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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	30.7
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	2	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups									1,4			
Maximum Green [s]	32	32	32	26	62	62	18	18	18	18	18	18
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Walk [s]	7	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	11	11	11	0	11	11	11	11	11	11	11	11
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	6.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No		No	No			No	No		No	
Maximum Recall		No		No	No			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	C	R	C
C, Cycle Length [s]	59	59	59	59	59	59	59
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	0.00	2.50
g_i, Effective Green Time [s]	23	23	4	32	18	26	18
g / C, Green / Cycle	0.40	0.40	0.07	0.54	0.31	0.45	0.31
(v / s)_i Volume / Saturation Flow Rate	0.22	0.15	0.01	0.04	0.07	0.43	0.15
s, saturation flow rate [veh/h]	1315	1657	1781	1749	1842	1577	1236
c, Capacity [veh/h]	571	658	121	947	630	710	460
d1, Uniform Delay [s]	16.31	12.55	25.73	6.47	15.15	15.57	15.94
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.41	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	0.35	0.32	0.03	0.15	21.02	0.56
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	0.50	0.37	0.09	0.08	0.19	0.95	0.40
d, Delay for Lane Group [s/veh]	16.99	12.90	26.05	6.50	15.30	36.60	16.49
Lane Group LOS	B	B	C	A	B	D	B
Critical Lane Group	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.97	2.05	0.15	0.37	1.11	11.37	1.79
50th-Percentile Queue Length [ft/ln]	74.26	51.35	3.69	9.15	27.71	284.25	44.66
95th-Percentile Queue Length [veh/ln]	5.35	3.70	0.27	0.66	2.00	16.90	3.22
95th-Percentile Queue Length [ft/ln]	133.67	92.44	6.64	16.46	49.88	422.49	80.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.99	12.90	12.90	26.05	6.50	6.50	15.30	15.30	36.60	16.49	16.49	16.49
Movement LOS	B	B	B	C	A	A	B	B	D	B	B	B
d_A, Approach Delay [s/veh]	15.10			9.03			33.39			16.49		
Approach LOS	B			A			C			B		
d_I, Intersection Delay [s/veh]	24.07											
Intersection LOS	C											
Intersection V/C	0.243											

Emissions

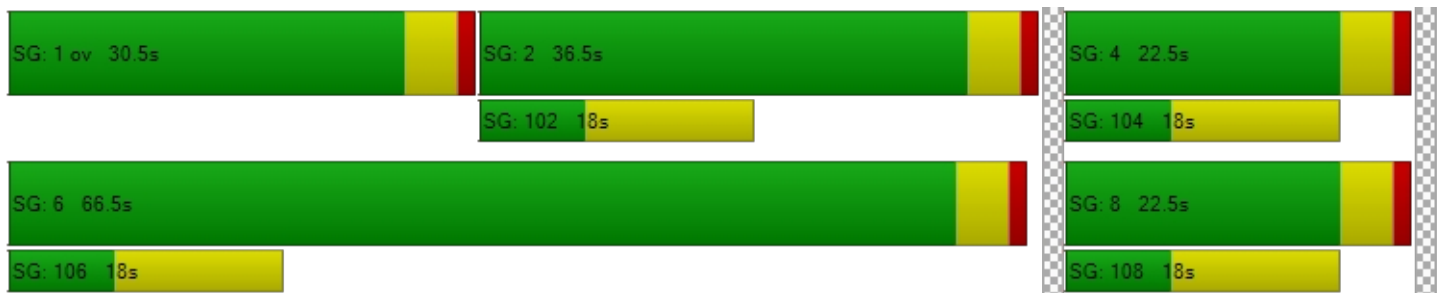
Vehicle Miles Traveled [mph]	53.96	46.20	2.02	13.62	28.90	162.83	44.53
Stops [stops/h]	181.90	125.79	9.04	22.40	67.88	696.24	109.39
Fuel consumption [US gal/h]	4.21	3.24	0.19	0.78	1.94	15.58	3.05
CO [g/h]	294.40	226.29	13.39	54.68	135.50	1089.36	213.33
NOx [g/h]	57.28	44.03	2.61	10.64	26.36	211.95	41.51
VOC [g/h]	68.23	52.45	3.10	12.67	31.40	252.47	49.44

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	19.42	19.42	19.42	19.42
I_p,int, Pedestrian LOS Score for Intersectio	2.521	1.988	2.712	1.926
Crosswalk LOS	B	A	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1089	2109	612	612
d_b, Bicycle Delay [s]	6.10	0.09	14.15	14.15
I_b,int, Bicycle LOS Score for Intersection	2.432	1.700	2.873	1.862
Bicycle LOS	B	A	C	A

Sequence

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



Intersection Level Of Service Report
Intersection 104: 142nd Avenue/Highway 212 Access

Control Type:	Signalized	Delay (sec / veh):	7.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.619

Intersection Setup

Name	142nd Avenue		142nd Avenue		Highway 212 Accesses	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↵		↘↵		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	142nd Avenue		142nd Avenue		Highway 212 Accesses	
Base Volume Input [veh/h]	0	326	188	550	161	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	6.00	3.00	3.00	0.00
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	0	0	0
Total Hourly Volume [veh/h]	0	326	188	550	161	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	84	48	142	41	0
Total Analysis Volume [veh/h]	0	336	194	567	166	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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal Group	2	2	6	6	4	4
Auxiliary Signal Groups						
Maximum Green [s]	49	49	49	49	21	21
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	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]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	8	8	5	5	8	8
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		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	R	C
C, Cycle Length [s]	30	30	30	30
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]	14	14	14	6
g / C, Green / Cycle	0.46	0.46	0.46	0.20
(v / s)_i Volume / Saturation Flow Rate	0.18	0.11	0.36	0.09
s, saturation flow rate [veh/h]	1855	1810	1577	1810
c, Capacity [veh/h]	973	830	723	368
d1, Uniform Delay [s]	5.30	4.86	6.77	10.34
k, delay calibration	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	0.14	1.91	0.86
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	0.35	0.23	0.78	0.45
d, Delay for Lane Group [s/veh]	5.51	5.00	8.68	11.21
Lane Group LOS	A	A	A	B
Critical Lane Group	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.70	0.37	1.76	0.76
50th-Percentile Queue Length [ft/ln]	17.40	9.28	44.08	18.88
95th-Percentile Queue Length [veh/ln]	1.25	0.67	3.17	1.36
95th-Percentile Queue Length [ft/ln]	31.33	16.71	79.35	33.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.51	5.51	5.00	8.68	11.21	11.21
Movement LOS	A	A	A	A	B	B
d_A, Approach Delay [s/veh]	5.51		7.74		11.21	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	7.60					
Intersection LOS	A					
Intersection V/C	0.619					

Emissions

Vehicle Miles Traveled [mph]	78.38	36.73	107.36	38.53
Stops [stops/h]	84.93	45.31	215.14	92.13
Fuel consumption [US gal/h]	4.07	1.96	6.61	2.47
CO [g/h]	284.68	137.00	462.05	172.91
NOx [g/h]	55.39	26.65	89.90	33.64
VOC [g/h]	65.98	31.75	107.08	40.07

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3321	3321	1423
d_b, Bicycle Delay [s]	6.44	6.44	1.23
I_b,int, Bicycle LOS Score for Intersection	2.114	2.815	1.834
Bicycle LOS	B	C	A

Sequence

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



**Intersection Level Of Service Report
Intersection 105: 142nd Avenue/OR 212**

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

Delay (sec / veh): 505.4
 Level Of Service: F
 Volume to Capacity (v/c): 2.030

Intersection Setup

Name	142nd Ave			142nd Ave			EB OR 212			WB OR 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↶			↷			↶↷			↶↷		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	165.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	142nd Ave			142nd Ave			EB OR 212			WB OR 212		
Base Volume Input [veh/h]	0	0	188	0	0	550	0	367	326	0	1586	161
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 [%]	0.00	0.00	6.00	0.00	0.00	3.00	0.00	27.00	3.00	0.00	4.00	3.00
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	0	188	0	0	550	0	367	326	0	1586	161
Peak Hour Factor	1.0000	1.0000	0.9700	1.0000	1.0000	0.9700	1.0000	0.9700	0.9700	1.0000	0.9700	0.9700
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	48	0	0	142	0	95	84	0	409	41
Total Analysis Volume [veh/h]	0	0	194	0	0	567	0	378	336	0	1635	166
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

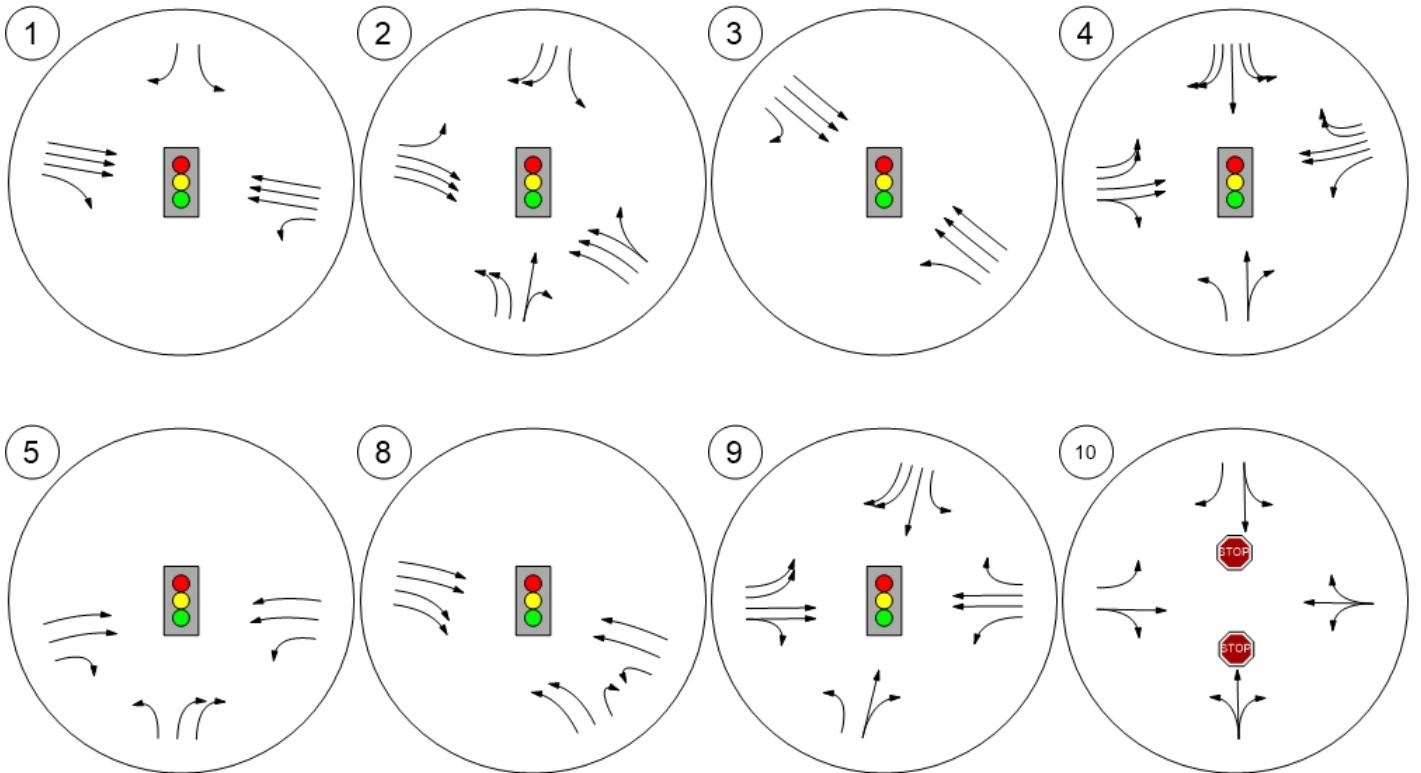
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.24	0.00	0.00	2.03	0.00	0.00	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	10.85	0.00	0.00	505.38	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			B			F		A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.94	0.00	0.00	41.13	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	23.40	0.00	0.00	1028.14	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.85				505.38		0.00		0.00			
Approach LOS	B				F		A		A			
d_I, Intersection Delay [s/veh]	88.11											
Intersection LOS	F											

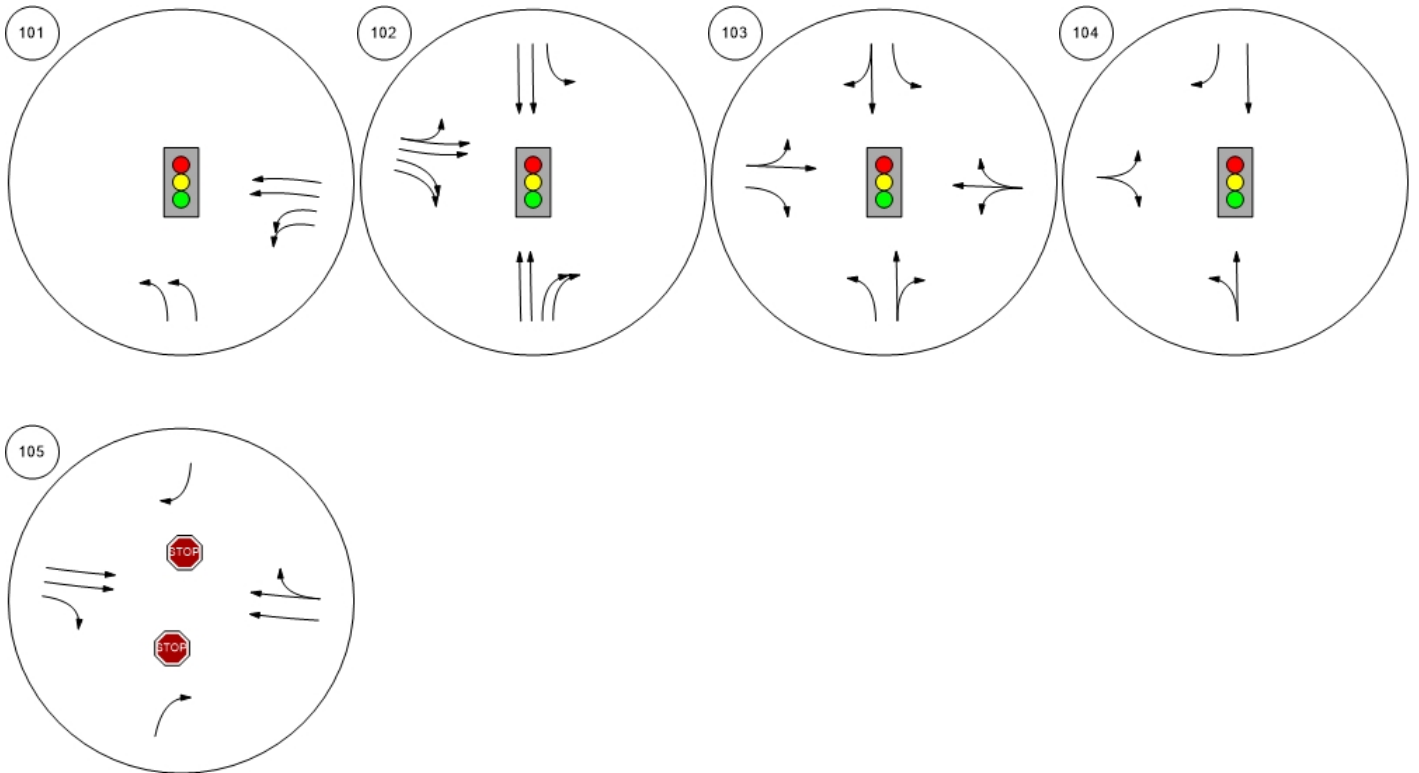
Study Intersections



Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



Sunrise Refinement Plan

Vistro File: H:\...\Sunrise_PM_2LaneGateway.vistro

Scenario: Base Scenario

Report File: H:\...\2045_2LanePM.pdf

3/17/2025

Intersection Analysis Summary




ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	OR 213 SB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.726	17.0	B
2	OR 213 NB Ramps/I-205 SB Ramps/OR 224	Signalized	HCM 7th Edition	EB Left	1.000	50.8	D
3	I-205 NB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.642	17.8	B
4	122nd Avenue/OR 224/OR 212	Signalized	HCM 7th Edition	SB Left	0.743	44.6	D
5	135th Avenue/OR 212	Signalized	HCM 7th Edition	WB Left	0.657	16.3	B
8	OR 212/OR 224 (Rock Creek Junction)	Signalized	HCM 7th Edition	WB Left	0.584	27.4	C
9	172nd Avenue/OR 212	Signalized	HCM 7th Edition	SB Left	0.829	108.1	F
10	122nd Avenue/Jennifer Street	Two-way stop	HCM 7th Edition	SB Left	0.170	24.4	C
101	122nd Avenue/Sunrise Westbound	Signalized	HCM 7th Edition	WB Thru	0.615	9.1	A
102	122nd Avenue/Sunrise Eastbound	Signalized	HCM 7th Edition	NB Right	0.786	18.2	B
103	142nd Avenue/Backage Road	Signalized	HCM 7th Edition	WB Left	0.980	32.9	C
104	142nd Avenue/Highway 212 Access	Signalized	HCM 7th Edition	EB Left	0.742	8.1	A
105	142nd Avenue/OR 212	Two-way stop	HCM 7th Edition	NB Right	1.356	206.2	F

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: OR 213 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	17.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.726

Intersection Setup

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1000.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	0.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	0	0	0	260	1	425	0	2370	295	23	1374	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 [%]	0.00	0.00	0.00	4.00	2.00	2.00	0.00	5.00	5.00	13.00	4.00	0.00
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	213	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	260	1	212	0	2370	295	23	1374	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9700	1.0000	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	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	67	0	55	0	611	76	6	354	0
Total Analysis Volume [veh/h]	0	0	0	268	1	219	0	2443	304	24	1416	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	6.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	4	0	4	0	2	2	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	0	0	24	0	24	0	82	82	9	95	0
Amber [s]	0.0	0.0	0.0	4.0	0.0	4.0	0.0	5.0	5.0	3.5	5.0	0.0
All red [s]	0.0	0.0	0.0	1.5	0.0	1.5	0.0	1.0	1.0	0.5	1.0	0.0
Walk [s]	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
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]	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	3.5	0.0	3.5	0.0	4.0	4.0	2.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	0.0	20.0	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	29	0	29	0	88	88	13	101	0
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	6	0	10	10	4	10	0
Vehicle Extension [s]	0.0	0.0	0.0	2.3	0.0	2.3	0.0	0.5	0.5	2.3	0.5	0.0
Minimum Recall				No				Yes		No	Yes	
Maximum Recall				No				No		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		L	R	C	R	L	C
C, Cycle Length [s]		130	130	130	130	130	130
L, Total Lost Time per Cycle [s]		5.50	5.50	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		3.50	3.50	4.00	4.00	2.00	4.00
g_i, Effective Green Time [s]		22	22	90	90	2	97
g / C, Green / Cycle		0.17	0.17	0.69	0.69	0.02	0.74
(v / s)_i Volume / Saturation Flow Rate		0.15	0.14	0.49	0.20	0.01	0.28
s, saturation flow rate [veh/h]		1752	1589	4971	1551	1624	5012
c, Capacity [veh/h]		294	267	3451	1077	30	3727
d1, Uniform Delay [s]		53.14	52.21	11.95	7.56	63.54	5.95
k, delay calibration		0.26	0.20	0.50	0.50	0.07	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		21.27	10.77	1.25	0.66	23.92	0.30
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		0.91	0.82	0.71	0.28	0.79	0.38
d, Delay for Lane Group [s/veh]		74.41	62.97	13.20	8.21	87.46	6.25
Lane Group LOS		E	E	B	A	F	A
Critical Lane Group		Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		10.33	7.70	13.43	3.27	0.99	4.29
50th-Percentile Queue Length [ft/ln]		258.34	192.47	335.81	81.84	24.86	107.30
95th-Percentile Queue Length [veh/ln]		15.61	12.25	19.44	5.89	1.79	7.69
95th-Percentile Queue Length [ft/ln]		390.14	306.23	486.08	147.31	44.75	192.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	74.41	0.00	62.97	0.00	13.20	8.21	87.46	6.25	0.00
Movement LOS				E		E		B	A	F	A	
d_A, Approach Delay [s/veh]	0.00			69.27			12.65			7.60		
Approach LOS	A			E			B			A		
d_I, Intersection Delay [s/veh]	16.99											
Intersection LOS	B											
Intersection V/C	0.726											

Emissions

Vehicle Miles Traveled [mph]		51.86	42.38	773.89	96.30	3.78	223.27
Stops [stops/h]		286.15	213.19	1115.89	90.65	27.54	356.56
Fuel consumption [US gal/h]		7.77	5.73	44.58	4.97	0.74	12.96
CO [g/h]		543.37	400.42	3116.49	347.63	51.38	906.01
NOx [g/h]		105.72	77.91	606.36	67.64	10.00	176.28
VOC [g/h]		125.93	92.80	722.28	80.57	11.91	209.98

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	362	1262	1461
d_b, Bicycle Delay [s]	65.00	43.63	8.86	4.71
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560	3.070	2.352
Bicycle LOS	D	A	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 2: OR 213 NB Ramps/I-205 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	50.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.000

Intersection Setup

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	415.00	100.00	100.00	160.00	100.00	405.00	365.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	2
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	349	8	322	20	0	238	551	2079	0	0	810	434
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 [%]	5.00	12.00	17.00	10.00	0.00	5.00	2.00	6.00	0.00	0.00	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	1	0	0	0	0	0	0	0	0	12
Total Hourly Volume [veh/h]	349	8	321	20	0	238	551	2079	0	0	810	422
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	1.0000	1.0000	0.9300	0.9300
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]	94	2	86	5	0	64	148	559	0	0	218	113
Total Analysis Volume [veh/h]	375	9	345	22	0	256	592	2235	0	0	871	454
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	1			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	11.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	8	7	0	4	5	2	0	0	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	21	31	31	8	0	18	35	75	0	0	36	36
Amber [s]	4.0	4.0	4.0	4.0	0.0	4.0	3.5	5.0	0.0	0.0	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	0.0	1.5	0.5	1.0	0.0	0.0	1.0	1.0
Walk [s]	7	7	7	0	0	0	0	7	0	0	7	7
Pedestrian Clearance [s]	12	24	24	0	0	0	0	20	0	0	12	12
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	0.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	0.0	3.5	2.0	4.0	0.0	0.0	4.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	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	37	37	13	0	24	39	81	0	0	42	42
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	4	4	4	0	4	4	6	0	0	6	6
Vehicle Extension [s]	2.3	2.3	2.3	2.3	0.0	2.3	2.3	4.6	0.0	0.0	4.6	4.6
Minimum Recall	No	No		No		No	Yes	Yes			No	
Maximum Recall	No	No		No		No	No	No			No	
Pedestrian Recall	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	L	R	L	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	4.00	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
l2, Clearance Lost Time [s]	3.50	3.50	3.50	0.00	2.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	23	31	2	54	39	79	36	36
g / C, Green / Cycle	0.18	0.24	0.02	0.41	0.30	0.61	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.11	0.24	0.01	0.09	0.33	0.45	0.25	0.29
s, saturation flow rate [veh/h]	3375	1467	1667	2746	1781	4930	3503	1564
c, Capacity [veh/h]	609	355	29	1131	537	3005	970	433
d1, Uniform Delay [s]	49.12	49.20	63.58	24.80	45.39	18.14	45.24	47.01
k, delay calibration	0.07	0.41	0.07	0.07	0.50	0.50	0.19	0.47
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.62	42.22	20.68	0.06	69.52	1.71	5.62	54.97
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	0.62	1.00	0.75	0.23	1.10	0.74	0.90	1.05
d, Delay for Lane Group [s/veh]	49.74	91.42	84.26	24.86	114.90	19.85	50.86	101.98
Lane Group LOS	D	F	F	C	F	B	D	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.69	15.59	0.90	2.60	27.56	15.75	14.22	20.52
50th-Percentile Queue Length [ft/ln]	142.16	389.74	22.38	65.03	689.03	393.80	355.51	513.10
95th-Percentile Queue Length [veh/ln]	9.60	22.06	1.61	4.68	38.47	22.26	20.41	28.79
95th-Percentile Queue Length [ft/ln]	239.93	551.62	40.28	117.05	961.85	556.52	510.13	719.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.74	91.42	91.42	84.26	0.00	24.86	114.90	19.85	0.00	0.00	50.86	101.98
Movement LOS	D	F	F	F		C	F	B			D	F
d_A, Approach Delay [s/veh]	69.98			29.56			39.76			68.37		
Approach LOS	E			C			D			E		
d_I, Intersection Delay [s/veh]	50.83											
Intersection LOS	D											
Intersection V/C	1.000											

Emissions

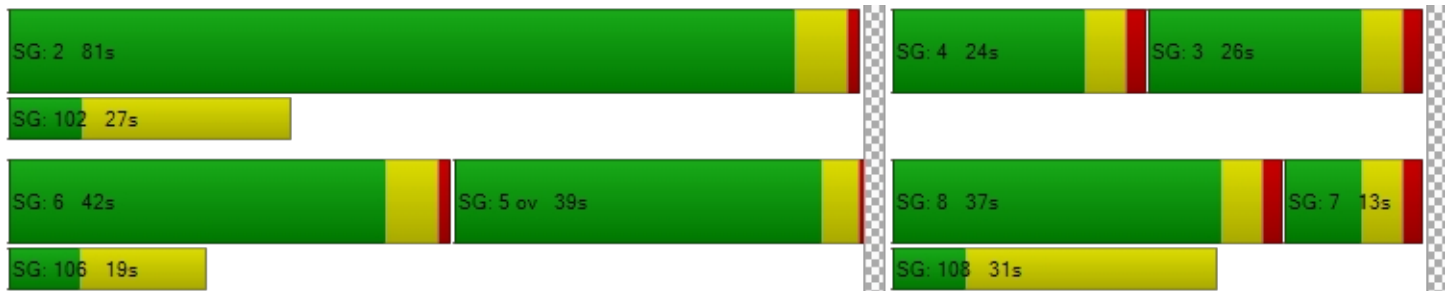
Vehicle Miles Traveled [mph]	78.55	74.15	2.76	32.11	93.34	352.40	218.21	113.74
Stops [stops/h]	314.93	431.68	24.79	144.05	763.19	1308.54	787.55	568.32
Fuel consumption [US gal/h]	8.77	12.02	0.63	3.41	21.90	30.77	22.35	17.24
CO [g/h]	612.97	840.35	43.88	238.54	1530.77	2150.51	1562.10	1205.26
NOx [g/h]	119.26	163.50	8.54	46.41	297.83	418.41	303.93	234.50
VOC [g/h]	142.06	194.76	10.17	55.28	354.77	498.40	362.03	279.33

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	54.47	0.00	54.47
I_p,int, Pedestrian LOS Score for Intersectio	2.196	2.477	0.000	3.128
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	485	115	1154	554
d_b, Bicycle Delay [s]	37.32	57.72	11.64	33.99
I_b,int, Bicycle LOS Score for Intersection	2.764	1.560	3.114	2.295
Bicycle LOS	C	A	C	B

Sequence



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



**Intersection Level Of Service Report
Intersection 3: I-205 NB Ramps/OR 224**

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.642

Intersection Setup

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Approach	Eastbound		Westbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	1	2
Entry Pocket Length [ft]	100.00	100.00	630.00	100.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	0.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present			No		No	
Crosswalk	No		No		No	

Volumes

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Base Volume Input [veh/h]	0	0	251	1244	2048	373
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	6.00	1.00	12.00	7.00
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	0	0	0
Total Hourly Volume [veh/h]	0	0	251	1244	2048	373
Peak Hour Factor	1.0000	1.0000	0.9300	0.9300	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	67	334	522	95
Total Analysis Volume [veh/h]	0	0	270	1338	2090	381
Presence of On-Street Parking			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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

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]	50.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	0	0	1	6	2	2
Auxiliary Signal Groups						
Maximum Green [s]	0	0	17	89	68	68
Amber [s]	0.0	0.0	3.5	5.0	5.0	5.0
All red [s]	0.0	0.0	0.5	2.0	2.0	2.0
Walk [s]	0	0	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	17	17
Delayed Vehicle Green [s]	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	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	5.0	5.0	5.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	21	96	75	75
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	0	4	10	10	10
Vehicle Extension [s]	0.0	0.0	2.3	4.7	4.7	4.7
Minimum Recall			No	Yes	Yes	
Maximum Recall			No	No	No	
Pedestrian Recall			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	R
C, Cycle Length [s]	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	17	116	95	95
g / C, Green / Cycle	0.13	0.89	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.16	0.26	0.45	0.25
s, saturation flow rate [veh/h]	1724	5135	4685	1526
c, Capacity [veh/h]	225	4578	3420	1114
d1, Uniform Delay [s]	56.50	1.03	8.56	6.32
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]	123.78	0.16	0.82	0.84
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	1.20	0.29	0.61	0.34
d, Delay for Lane Group [s/veh]	180.28	1.20	9.38	7.16
Lane Group LOS	F	A	A	A
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	15.14	0.68	8.88	3.74
50th-Percentile Queue Length [ft/ln]	378.56	17.09	221.99	93.48
95th-Percentile Queue Length [veh/ln]	23.23	1.23	13.77	6.73
95th-Percentile Queue Length [ft/ln]	580.81	30.76	344.17	168.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	180.28	1.20	9.38	7.16
Movement LOS			F	A	A	A
d_A, Approach Delay [s/veh]	0.00		31.27		9.04	
Approach LOS	A		C		A	
d_I, Intersection Delay [s/veh]	17.80					
Intersection LOS	B					
Intersection V/C	0.642					

Emissions

Vehicle Miles Traveled [mph]		374.18	1854.28	523.61	95.45
Stops [stops/h]		419.33	56.80	737.71	103.55
Fuel consumption [US gal/h]		27.62	76.97	29.62	5.06
CO [g/h]		1930.92	5380.47	2070.51	353.44
NOx [g/h]		375.69	1046.84	402.85	68.77
VOC [g/h]		447.51	1246.98	479.86	81.91

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1369	1046
d_b, Bicycle Delay [s]	65.00	6.47	14.78
I_b,int, Bicycle LOS Score for Intersection	4.132	2.444	2.919
Bicycle LOS	D	B	C

Sequence

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



Intersection Level Of Service Report
Intersection 4: 122nd Avenue/OR 224/OR 212

Control Type:	Signalized	Delay (sec / veh):	44.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.743

Intersection Setup

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T			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 [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	2	2	0	0	1	0	2
Entry Pocket Length [ft]	135.00	100.00	100.00	525.00	100.00	350.00	220.00	100.00	100.00	255.00	100.00	410.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Base Volume Input [veh/h]	20	152	10	775	300	579	644	600	62	10	530	778
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 [%]	7.00	5.00	5.00	4.00	13.00	2.00	6.00	5.00	16.00	5.00	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	0	0	0	290	0	0	0	0	0	389
Total Hourly Volume [veh/h]	20	152	10	775	300	289	644	600	62	10	530	389
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	39	3	200	77	74	166	155	16	3	137	100
Total Analysis Volume [veh/h]	21	157	10	799	309	298	664	619	64	10	546	401
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

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	Fully actuated
Offset [s]	41.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						6,7
Maximum Green [s]	6	35	35	20	49	49	30	53	53	4	27	27
Amber [s]	3.5	4.3	4.3	3.5	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	9	9	0	7	7	0	8	8	0	7	7
Pedestrian Clearance [s]	0	26	26	0	21	21	0	23	23	0	18	18
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.8	2.8	2.0	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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	40	40	24	54	54	34	58	58	8	32	32
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	4.6	2.0	4.6	4.6
Minimum Recall	No	No		No	No	No	No	Yes		No	Yes	Yes
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.80	4.80	4.80	4.80	4.00	5.40	5.40	4.00	5.40	5.40
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]	2.00	2.80	0.00	2.80	0.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	7	14	29	29	61	28	75	75	1	48	93
g / C, Green / Cycle	0.05	0.11	0.22	0.22	0.47	0.22	0.57	0.57	0.01	0.37	0.71
(v / s)_i Volume / Saturation Flow Rate	0.01	0.09	0.25	0.18	0.11	0.20	0.19	0.19	0.01	0.16	0.14
s, saturation flow rate [veh/h]	1709	1806	3217	1705	2813	3348	1825	1766	1738	3389	2782
c, Capacity [veh/h]	92	195	736	380	1320	721	1047	1013	16	1247	1983
d1, Uniform Delay [s]	58.92	57.02	50.51	47.94	20.50	49.92	14.56	14.58	64.16	30.96	6.27
k, delay calibration	0.07	0.07	0.07	0.07	0.07	0.04	0.50	0.50	0.04	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]	0.76	6.68	42.37	2.64	0.05	2.20	0.85	0.88	13.13	1.12	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
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	0.23	0.86	1.09	0.81	0.23	0.92	0.33	0.33	0.61	0.44	0.20
d, Delay for Lane Group [s/veh]	59.68	63.70	92.88	50.58	20.55	52.12	15.41	15.46	77.28	32.07	6.50
Lane Group LOS	E	E	F	D	C	D	B	B	E	C	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.68	5.76	16.14	9.77	2.72	10.76	5.59	5.45	0.39	6.68	1.82
50th-Percentile Queue Length [ft/ln]	17.12	144.00	403.48	244.33	68.03	269.00	139.76	136.24	9.75	167.10	45.45
95th-Percentile Queue Length [veh/ln]	1.23	9.70	23.78	14.90	4.90	16.14	9.47	9.28	0.70	10.92	3.27
95th-Percentile Queue Length [ft/ln]	30.82	242.40	594.43	372.51	122.45	403.49	236.71	231.95	17.56	273.10	81.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.68	63.70	63.70	92.88	50.58	20.55	52.12	15.43	15.46	77.28	32.07	6.50
Movement LOS	E	E	E	F	D	C	D	B	B	E	C	A
d_A, Approach Delay [s/veh]	63.25			68.25			33.52			21.83		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	44.61											
Intersection LOS	D											
Intersection V/C	0.743											

Emissions

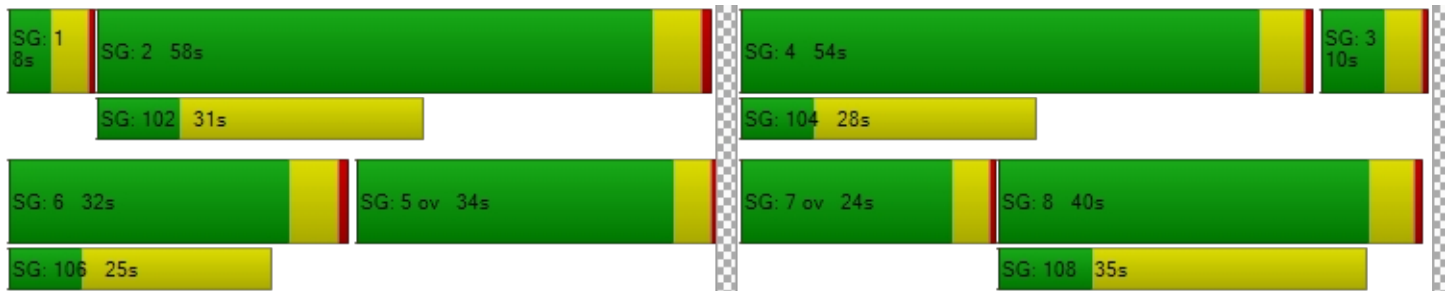
Vehicle Miles Traveled [mph]	4.73	37.63	184.48	71.35	68.81	596.82	311.27	302.62	6.59	359.99	264.39
Stops [stops/h]	18.97	159.51	893.87	270.64	150.71	595.94	154.82	150.91	10.80	370.19	100.69
Fuel consumption [US gal/h]	0.55	4.60	27.63	7.61	4.91	34.90	14.76	14.35	0.49	20.43	11.97
CO [g/h]	38.77	321.20	1931.53	532.11	343.29	2439.71	1031.40	1003.13	34.14	1427.93	836.76
NOx [g/h]	7.54	62.49	375.80	103.53	66.79	474.68	200.67	195.17	6.64	277.82	162.80
VOC [g/h]	8.99	74.44	447.65	123.32	79.56	565.43	239.04	232.49	7.91	330.94	193.93

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	11.0	13.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.55	54.47	54.47	52.65
I_p,int, Pedestrian LOS Score for Intersectio	2.143	3.485	2.877	3.720
Crosswalk LOS	B	C	C	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	542	757	809	409
d_b, Bicycle Delay [s]	34.57	25.11	23.04	41.14
I_b,int, Bicycle LOS Score for Intersection	1.870	4.358	2.671	2.670
Bicycle LOS	A	E	B	B

Sequence

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



Intersection Level Of Service Report
Intersection 5: 135th Avenue/OR 212

Control Type:	Signalized	Delay (sec / veh):	16.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.657

Intersection Setup

Name	135th Ave		Highway 212		OR 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↔↔↔		↑↑		↔↔	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	300.00	100.00	100.00	60.00	200.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	135th Ave		Highway 212		OR 212	
Base Volume Input [veh/h]	63	716	1310	26	284	1001
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	5.00	6.00	4.00	3.00	7.00
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	358	0	13	0	0
Total Hourly Volume [veh/h]	63	358	1310	13	284	1001
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	92	338	3	73	258
Total Analysis Volume [veh/h]	65	369	1351	13	293	1032
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	1		0		1	
v_di, Inbound Pedestrian Volume crossing m	1		0		1	
v_co, Outbound Pedestrian Volume crossing	1		1		0	
v_ci, Inbound Pedestrian Volume crossing mi	1		1		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		3	

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	Fully actuated
Offset [s]	75.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Protected	Permissive	Permissive	Protected	Permissive
Signal Group	3	8	2	2	1	6
Auxiliary Signal Groups						
Maximum Green [s]	25	5	70	70	22	96
Amber [s]	3.5	3.0	4.7	4.7	3.5	4.7
All red [s]	0.5	1.0	0.7	0.7	0.5	0.7
Walk [s]	0	0	8	8	0	7
Pedestrian Clearance [s]	0	0	18	18	0	14
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]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	3.4	3.4	2.0	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	6.0	6.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	29	9	75	75	26	101
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	5	10	10	4	10
Vehicle Extension [s]	2.3	3.0	4.5	4.5	2.3	4.5
Minimum Recall	No	No	Yes		No	Yes
Maximum Recall	No	No	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	L	R	C	R	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	0.00	5.40	5.40	4.00	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	3.40	3.40	2.00	3.40
g_i, Effective Green Time [s]	6	0	88	88	22	114
g / C, Green / Cycle	0.05	0.00	0.68	0.68	0.17	0.88
(v / s)_i Volume / Saturation Flow Rate	0.04	0.13	0.39	0.01	0.17	0.30
s, saturation flow rate [veh/h]	1695	2746	3446	1562	1767	3418
c, Capacity [veh/h]	84	0	2337	1059	299	3001
d1, Uniform Delay [s]	61.05	0.00	11.08	6.79	53.78	1.38
k, delay calibration	0.07	0.50	0.50	0.50	0.41	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.85	0.00	1.05	0.02	42.49	0.31
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	0.77	10000.00	0.58	0.01	0.98	0.34
d, Delay for Lane Group [s/veh]	69.90	0.00	12.13	6.81	96.27	1.70
Lane Group LOS	E	F	B	A	F	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.33	0.00	10.03	0.12	13.05	1.24
50th-Percentile Queue Length [ft/ln]	58.32	0.00	250.85	3.01	326.34	31.03
95th-Percentile Queue Length [veh/ln]	4.20	0.00	15.23	0.22	18.98	2.23
95th-Percentile Queue Length [ft/ln]	104.97	0.00	380.73	5.43	474.47	55.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	69.90	0.00	12.13	6.81	96.27	1.70
Movement LOS	E	A	B	A	F	A
d_A, Approach Delay [s/veh]	10.47		12.08		22.61	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	16.32					
Intersection LOS	B					
Intersection V/C	0.657					

Emissions

Vehicle Miles Traveled [mph]	12.72	72.20	890.73	8.57	87.27	307.37
Stops [stops/h]	64.59	0.00	555.73	3.34	361.48	68.74
Fuel consumption [US gal/h]	1.80	2.97	43.07	0.39	11.33	13.39
CO [g/h]	126.17	207.77	3010.84	27.21	791.91	935.95
NOx [g/h]	24.55	40.42	585.80	5.29	154.08	182.10
VOC [g/h]	29.24	48.15	697.79	6.31	183.53	216.92

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	25.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.55	0.00	42.40
I_p,int, Pedestrian LOS Score for Intersectio	2.928	0.000	2.971
Crosswalk LOS	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	385	1071	1471
d_b, Bicycle Delay [s]	42.47	14.03	4.56
I_b,int, Bicycle LOS Score for Intersection	1.560	2.696	2.653
Bicycle LOS	A	B	B

Sequence

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



MOVEMENT SUMMARY

Site: 106 [Highway 212/Riverbend_2LanePM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Two-Lane Sunrise
 Site Category: (None)
 Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	[Dist]			mph	
			veh/h		veh/h					veh	ft				
South: Riverbend															
3	L2	All MCs	71	3.0	71	3.0	0.881	84.1	LOS F	3.1	84.3	0.97	1.64	2.48	10.7
18	R2	All MCs	68	20.0	68	20.0	0.881	115.8	LOS F	3.1	84.3	0.97	1.64	2.48	10.7
Approach			139	11.3	139	11.3	0.881	97.4	LOS F	3.1	84.3	0.97	1.64	2.48	10.7
East: Highway 212															
1	L2	All MCs	25	0.0	25	0.0	0.437	6.5	LOS A	2.6	69.6	0.28	0.11	0.28	34.6
6	T1	All MCs	1059	7.0	1059	7.0	0.437	7.1	LOS A	2.6	69.6	0.28	0.11	0.28	34.4
Approach			1084	6.8	1084	6.8	0.437	7.1	LOS A	2.6	69.6	0.28	0.11	0.28	34.5
West: Highway 212															
2	T1	All MCs	1835	6.0	1835	6.0	0.731	10.2	LOS B	9.3	243.3	0.31	0.08	0.31	33.1
12	R2	All MCs	81	3.0	81	3.0	0.731	9.9	LOS A	9.3	243.3	0.31	0.08	0.31	33.1
Approach			1916	5.9	1916	5.9	0.731	10.2	LOS B	9.3	243.3	0.31	0.08	0.31	33.1
All Vehicles			3139	6.4	3139	6.4	0.881	13.1	LOS B	9.3	243.3	0.33	0.16	0.40	30.7

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

Roundabout LOS Method: Same as Sign Control.

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

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

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

Roundabout Capacity Model: US HCM 6.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: H:\27\27852 - Sunrise Corridor Community Visioning\synchro\27852_RoundaboutsAnalysis.sjp9

Intersection Level Of Service Report
Intersection 8: OR 212/OR 224 (Rock Creek Junction)

Control Type:	Signalized	Delay (sec / veh):	27.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.584

Intersection Setup

Name	Highway 224		Highway 212		Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	1	0	2	1	0
Entry Pocket Length [ft]	155.00	70.00	100.00	125.00	230.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Highway 224		Highway 212		Highway 212	
Base Volume Input [veh/h]	867	205	504	1394	174	242
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	5.00	6.00	6.00	5.00	7.00
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	103	0	697	0	0
Total Hourly Volume [veh/h]	867	102	504	697	174	242
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	228	27	133	183	46	64
Total Analysis Volume [veh/h]	913	107	531	734	183	255
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		4		0	

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	Fully actuated
Offset [s]	82.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Overlap	Protected	Permissive
Signal Group	8	0	2	2	1	6
Auxiliary Signal Groups				2,8		
Maximum Green [s]	46	0	46	46	23	73
Amber [s]	4.7	0.0	5.0	5.0	3.5	5.0
All red [s]	0.7	0.0	1.0	1.0	0.5	1.0
Walk [s]	8	0	7	7	7	0
Pedestrian Clearance [s]	16	0	14	14	10	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]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	0.0	4.0	4.0	2.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	6.0	6.0	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]	51	0	52	52	27	79
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	8	0	10	10	4	10
Vehicle Extension [s]	2.5	0.0	4.8	4.8	3.5	4.8
Minimum Recall	No		Yes	Yes	No	Yes
Maximum Recall	No		No	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	L	R	C	R	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	5.40	5.40	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	4.00	0.00	2.00	4.00
g_i, Effective Green Time [s]	41	41	57	104	16	77
g / C, Green / Cycle	0.32	0.32	0.44	0.80	0.12	0.59
(v / s)_i Volume / Saturation Flow Rate	0.27	0.07	0.15	0.27	0.11	0.07
s, saturation flow rate [veh/h]	3375	1529	3446	2689	1738	3418
c, Capacity [veh/h]	1074	487	1521	2155	212	2030
d1, Uniform Delay [s]	41.41	32.45	23.99	3.52	56.01	11.58
k, delay calibration	0.08	0.08	0.50	0.50	0.17	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.49	0.17	0.63	0.43	14.39	0.13
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	0.85	0.22	0.35	0.34	0.86	0.13
d, Delay for Lane Group [s/veh]	42.89	32.61	24.62	3.95	70.41	11.71
Lane Group LOS	D	C	C	A	E	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	13.83	2.52	5.55	2.28	6.75	1.66
50th-Percentile Queue Length [ft/ln]	345.67	63.03	138.83	56.96	168.67	41.44
95th-Percentile Queue Length [veh/ln]	19.92	4.54	9.42	4.10	11.01	2.98
95th-Percentile Queue Length [ft/ln]	498.12	113.45	235.44	102.54	275.17	74.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.89	32.61	24.62	3.95	70.41	11.71
Movement LOS	D	C	C	A	E	B
d_A, Approach Delay [s/veh]	41.82		12.63		36.23	
Approach LOS	D		B		D	
d_I, Intersection Delay [s/veh]	27.36					
Intersection LOS	C					
Intersection V/C	0.584					

Emissions

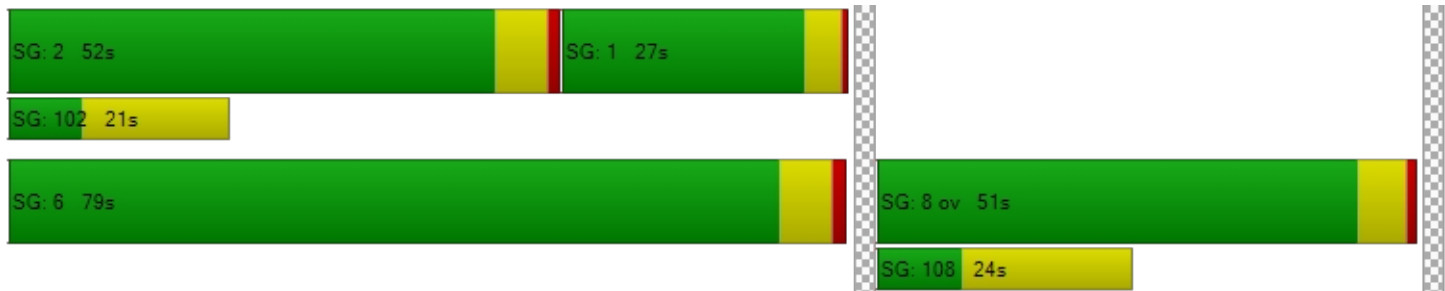
Vehicle Miles Traveled [mph]	298.62	35.00	77.09	106.57	11.65	16.23
Stops [stops/h]	765.75	69.81	307.54	126.19	186.83	91.80
Fuel consumption [US gal/h]	24.49	2.54	7.53	5.67	4.13	1.78
CO [g/h]	1712.05	177.30	526.60	396.64	288.92	124.63
NOx [g/h]	333.10	34.50	102.46	77.17	56.21	24.25
VOC [g/h]	396.79	41.09	122.04	91.93	66.96	28.88

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	12.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	0.00	53.56
I_p,int, Pedestrian LOS Score for Intersectio	2.998	0.000	2.547
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]	702	708	1123
d_b, Bicycle Delay [s]	27.44	27.20	12.50
I_b,int, Bicycle LOS Score for Intersection	1.560	3.178	1.921
Bicycle LOS	A	C	A

Sequence

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



**Intersection Level Of Service Report
Intersection 9: 172nd Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	108.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.829

Intersection Setup

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	2	2	0	0	1	0	1
Entry Pocket Length [ft]	110.00	100.00	100.00	235.00	100.00	290.00	550.00	100.00	100.00	395.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	32	84	27	266	102	488	736	1044	69	24	856	112
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 [%]	10.00	3.00	4.00	1.00	5.00	5.00	5.00	9.00	2.00	0.00	6.00	9.00
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	0	0	0	0
Total Hourly Volume [veh/h]	32	84	27	266	102	488	736	1044	69	24	856	112
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
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	22	7	71	27	130	196	278	18	6	228	30
Total Analysis Volume [veh/h]	34	89	29	283	109	519	783	1111	73	26	911	119
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			2			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			2			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	104
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	9.7
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	5	35	35	5	34	34	17	47	47	5	36	36
Amber [s]	3.0	3.5	3.5	3.0	4.7	4.7	3.5	5.0	5.0	3.5	5.0	5.0
All red [s]	1.0	1.5	1.5	1.0	1.5	1.5	1.0	1.5	1.5	1.0	1.5	1.5
Walk [s]	0	9	9	0	9	9	0	7	7	0	8	8
Pedestrian Clearance [s]	0	22	22	0	21	21	0	11	11	0	20	20
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	3.0	3.0	2.0	4.2	4.2	2.5	4.5	4.5	2.5	4.5	4.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	20.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	9	30	30	9	30	30	30	30	30	30	30	30
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	6	6	5	6	6	4	10	10	4	10	10
Vehicle Extension [s]	3.0	2.5	2.5	3.0	2.5	2.5	2.3	5.4	5.4	2.3	5.4	5.4
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	76	76	76	76	76	76	76	76	76	76	76
L, Total Lost Time per Cycle [s]	0.00	5.00	0.00	6.20	4.50	4.50	6.50	6.50	4.50	6.50	6.50
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	4.20	0.00	2.50	4.50	4.50	2.50	4.50	4.50
g_i, Effective Green Time [s]	0	15	0	14	37	17	43	43	2	28	28
g / C, Green / Cycle	0.00	0.20	0.00	0.18	0.49	0.22	0.57	0.57	0.02	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.35	0.07	1.61	0.06	0.19	0.29	0.34	0.34	0.02	0.26	0.08
s, saturation flow rate [veh/h]	98	1767	176	1825	2739	2686	1765	1727	1440	3446	1500
c, Capacity [veh/h]	94	348	94	330	1329	623	1007	986	95	1276	555
d1, Uniform Delay [s]	38.11	26.35	38.11	27.18	12.44	30.03	10.57	10.68	37.12	20.55	16.42
k, delay calibration	0.50	0.08	0.50	0.08	0.08	0.13	0.28	0.29	0.07	0.28	0.28
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]	10.35	0.43	925.99	0.43	0.14	119.07	1.43	1.56	0.95	1.96	0.50
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	0.36	0.34	3.00	0.33	0.39	1.26	0.59	0.60	0.27	0.71	0.21
d, Delay for Lane Group [s/veh]	48.46	26.77	964.10	27.61	12.58	149.09	12.00	12.24	38.07	22.51	16.92
Lane Group LOS	D	C	F	C	B	F	B	B	D	C	B
Critical Lane Group	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.99	1.82	26.29	1.71	2.58	15.80	5.91	5.99	0.50	6.81	1.43
50th-Percentile Queue Length [ft/ln]	24.75	45.61	657.30	42.82	64.57	394.98	147.65	149.83	12.40	170.14	35.63
95th-Percentile Queue Length [veh/ln]	1.78	3.28	34.70	3.08	4.65	24.93	9.89	10.01	0.89	11.08	2.57
95th-Percentile Queue Length [ft/ln]	44.55	82.09	867.54	77.08	116.23	623.33	247.29	250.21	22.32	277.10	64.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.46	26.77	26.77	964.10	27.61	12.58	149.09	12.11	12.24	38.07	22.51	16.92
Movement LOS	D	C	C	F	C	B	F	B	B	D	C	B
d_A, Approach Delay [s/veh]	31.62			309.97			66.64			22.26		
Approach LOS	C			F			E			C		
d_I, Intersection Delay [s/veh]	108.12											
Intersection LOS	F											
Intersection V/C	0.829											

Emissions

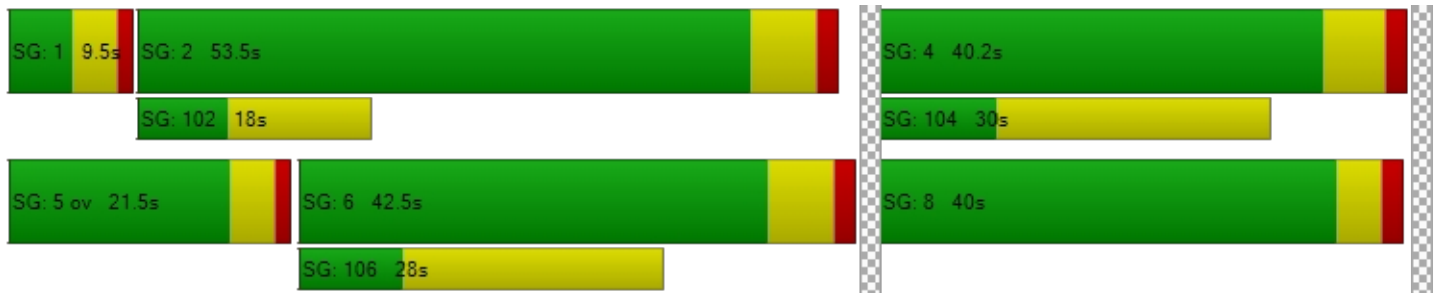
Vehicle Miles Traveled [mph]	4.00	13.88	36.81	14.18	67.51	92.23	69.73	69.73	12.18	426.60	55.72
Stops [stops/h]	46.84	86.32	1244.07	81.05	244.42	1495.14	279.46	283.59	23.47	644.05	67.43
Fuel consumption [US gal/h]	0.76	1.69	63.90	1.64	5.46	35.81	5.86	5.91	0.83	25.29	3.08
CO [g/h]	53.04	118.21	4466.50	114.91	381.55	2503.14	409.62	413.27	58.18	1767.98	215.03
NOx [g/h]	10.32	23.00	869.02	22.36	74.24	487.02	79.70	80.41	11.32	343.98	41.84
VOC [g/h]	12.29	27.40	1035.15	26.63	88.43	580.13	94.93	95.78	13.48	409.75	49.83

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		12.0		13.0		0.0	
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	27.84		26.99		26.15		0.00	
I_p,int, Pedestrian LOS Score for Intersectio	2.085		3.865		3.047		0.000	
Crosswalk LOS	B		D		C		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	920		894		1235		946	
d_b, Bicycle Delay [s]	11.10		11.64		5.56		10.56	
I_b,int, Bicycle LOS Score for Intersection	1.810		3.063		3.182		2.431	
Bicycle LOS	A		C		C		B	

Sequence

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



Intersection Level Of Service Report
Intersection 10: 122nd Avenue/Jennifer Street

Control Type:	Two-way stop	Delay (sec / veh):	24.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.170

Intersection Setup

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+r			r+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	75.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Base Volume Input [veh/h]	0	0	0	35	0	98	82	420	0	0	266	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 [%]	0.00	50.00	0.00	12.00	0.00	13.00	12.00	5.00	0.00	0.00	4.00	5.00
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	0	0	35	0	98	82	420	0	0	266	12
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
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	9	0	26	22	113	0	0	72	3
Total Analysis Volume [veh/h]	0	0	0	38	0	105	88	452	0	0	286	13
Pedestrian Volume [ped/h]	1			0			1			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.17	0.00	0.15	0.07	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	24.57	22.37	10.90	24.37	22.54	10.85	8.22	0.00	0.00	8.22	0.00	0.00
Movement LOS	C	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.60	0.60	0.51	0.24	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	14.97	14.97	12.72	5.89	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	19.28			14.45			1.34			0.00		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	2.84											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 101: 122nd Avenue/Sunrise Westbound

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):	0.615

Intersection Setup

Name	122nd Avenue		Sunrise WB		Sunrise WB	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↵↵				↵↵	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	300.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		0.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No				No	
Crosswalk	No		No		Yes	

Volumes

Name	122nd Avenue		Sunrise WB		Sunrise WB	
Base Volume Input [veh/h]	784	0	0	0	665	711
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	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	0	0	0
Total Hourly Volume [veh/h]	784	0	0	0	665	711
Peak Hour Factor	0.9300	1.0000	1.0000	1.0000	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	211	0	0	0	179	191
Total Analysis Volume [veh/h]	843	0	0	0	715	765
Presence of On-Street Parking	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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	Protected	Permissive
Signal Group	2	0	0	0	3	8
Auxiliary Signal Groups						
Maximum Green [s]	60	0	0	0	52	52
Amber [s]	3.5	0.0	0.0	0.0	3.5	3.5
All red [s]	1.0	0.0	0.0	0.0	1.0	1.0
Walk [s]	7	0	0	0	0	7
Pedestrian Clearance [s]	11	0	0	0	0	11
Delayed Vehicle Green [s]	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	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	0.0	0.0	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	0.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	0	0	0	30	30
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	5	0	0	0	5	5
Vehicle Extension [s]	3.0	0.0	0.0	0.0	3.0	3.0
Minimum Recall	No				No	No
Maximum Recall	No				No	No
Pedestrian Recall	No				No	No

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	L	C
C, Cycle Length [s]	31	31	31
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50
g_i, Effective Green Time [s]	12	10	10
g / C, Green / Cycle	0.38	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.24	0.21	0.21
s, saturation flow rate [veh/h]	3459	3459	3560
c, Capacity [veh/h]	1319	1154	1188
d1, Uniform Delay [s]	7.99	8.83	8.93
k, delay calibration	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	0.55	0.59
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	0.64	0.62	0.64
d, Delay for Lane Group [s/veh]	8.51	9.38	9.52
Lane Group LOS	A	A	A
Critical Lane Group	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.50	1.41	1.53
50th-Percentile Queue Length [ft/ln]	37.46	35.24	38.16
95th-Percentile Queue Length [veh/ln]	2.70	2.54	2.75
95th-Percentile Queue Length [ft/ln]	67.43	63.44	68.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.51	0.00	0.00	0.00	9.38	9.52
Movement LOS	A				A	A
d_A, Approach Delay [s/veh]	8.51		0.00		9.45	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	9.11					
Intersection LOS	A					
Intersection V/C	0.615					

Emissions

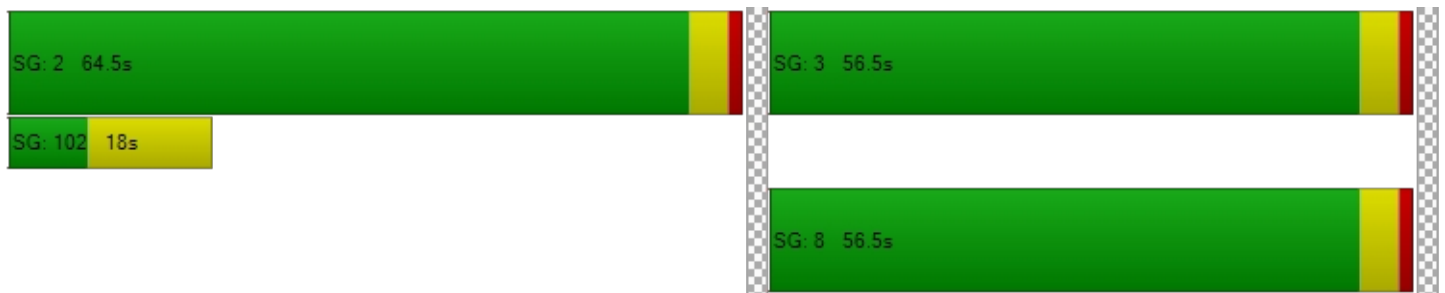
Vehicle Miles Traveled [mph]	70.23		94.76	101.39
Stops [stops/h]	343.72		323.37	350.15
Fuel consumption [US gal/h]	6.25		7.05	7.59
CO [g/h]	436.88		493.00	530.55
NOx [g/h]	85.00		95.92	103.23
VOC [g/h]	101.25		114.26	122.96

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	6.62
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.425
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3823	0	3313
d_b, Bicycle Delay [s]	13.04	15.69	6.77
I_b,int, Bicycle LOS Score for Intersection	1.560	4.132	2.781
Bicycle LOS	A	D	C

Sequence

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



Intersection Level Of Service Report
Intersection 102: 122nd Avenue/Sunrise Eastbound

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.786

Intersection Setup

Name	122nd Avenue			122nd Avenue			Sunrise EB			Sunrise EB		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	0	0	0	0	2	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	50.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			0.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	Yes			No			Yes			No		

Volumes

Name	122nd Avenue			122nd Avenue			Sunrise EB			Sunrise EB		
Base Volume Input [veh/h]	0	784	790	0	665	0	0	1059	989	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 [%]	0.00	5.00	7.00	0.00	2.00	0.00	0.00	2.00	6.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	784	790	0	665	0	0	1059	989	0	0	0
Peak Hour Factor	1.0000	0.9300	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	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	211	212	0	179	0	0	285	266	0	0	0
Total Analysis Volume [veh/h]	0	843	849	0	715	0	0	1139	1063	0	0	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	2	2	6	6	0	4	4	4	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	52	52	52	52	0	60	60	60	0	0	0
Amber [s]	0.0	3.5	3.5	3.5	3.5	0.0	3.5	3.5	3.5	0.0	0.0	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	7	7	7	0	7	7	7	0	0	0
Pedestrian Clearance [s]	0	11	11	11	11	0	11	11	11	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		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	2.5	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	6.0	20.0	20.0	0.0	6.0	6.0	6.0	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: Free Running (No Pattern)

Split [s]	0	30	30	30	30	0	30	30	30	0	0	0
Lead / Lag	-	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	5	5	5	5	0	5	5	5	0	0	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		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	L	C	C	C	R
C, Cycle Length [s]	77	77	77	77	77	77	77
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	30	30	30	30	38	38	38
g / C, Green / Cycle	0.39	0.39	0.39	0.39	0.49	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.24	0.31	0.00	0.20	0.30	0.30	0.39
s, saturation flow rate [veh/h]	3475	2700	295	3560	1870	1870	2723
c, Capacity [veh/h]	1369	1064	145	1403	915	915	1333
d1, Uniform Delay [s]	18.72	20.68	0.00	17.74	14.47	14.47	16.51
k, delay calibration	0.11	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
d2, Incremental Delay [s]	0.45	1.42	0.00	0.29	0.70	0.70	1.14
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	0.62	0.80	0.00	0.51	0.62	0.62	0.80
d, Delay for Lane Group [s/veh]	19.18	22.10	0.00	18.03	15.17	15.17	17.64
Lane Group LOS	B	C	A	B	B	B	B
Critical Lane Group	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.70	6.46	0.00	4.57	6.77	6.77	7.22
50th-Percentile Queue Length [ft/ln]	142.56	161.46	0.00	114.26	169.15	169.15	180.62
95th-Percentile Queue Length [veh/ln]	9.62	10.63	0.00	8.08	11.03	11.03	11.63
95th-Percentile Queue Length [ft/ln]	240.47	265.66	0.00	201.91	275.79	275.79	290.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	19.18	22.10	0.00	18.03	0.00	15.17	15.17	17.64	0.00	0.00	0.00
Movement LOS		B	C	A	B		B	B	B			
d_A, Approach Delay [s/veh]	20.65			18.03			16.36			0.00		
Approach LOS	C			B			B			A		
d_I, Intersection Delay [s/veh]	18.19											
Intersection LOS	B											
Intersection V/C	0.786											

Emissions

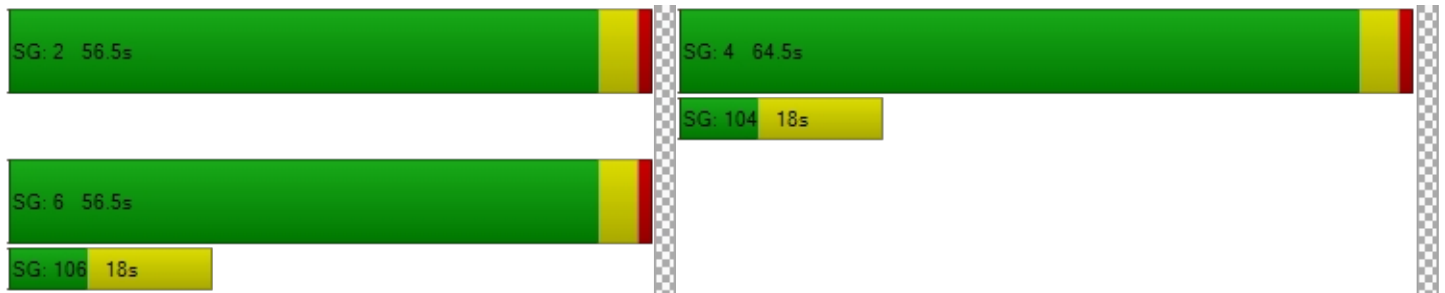
Vehicle Miles Traveled [mph]	194.64	196.03	0.00	59.57	68.16	68.16	127.23
Stops [stops/h]	532.80	603.43	0.00	427.03	316.07	316.07	675.03
Fuel consumption [US gal/h]	14.25	15.22	0.00	7.44	6.31	6.31	12.78
CO [g/h]	995.82	1064.08	0.00	519.71	441.07	441.07	893.55
NOx [g/h]	193.75	207.03	0.00	101.12	85.82	85.82	173.85
VOC [g/h]	230.79	246.61	0.00	120.45	102.22	102.22	207.09

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.32	0.00	28.32	0.00
I_p,int, Pedestrian LOS Score for Intersectio	3.008	0.000	2.659	0.000
Crosswalk LOS	C	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1350	1350	1557	0
d_b, Bicycle Delay [s]	4.08	4.08	1.89	38.53
I_b,int, Bicycle LOS Score for Intersection	2.956	2.149	3.376	4.132
Bicycle LOS	C	B	C	D

Sequence

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



Intersection Level Of Service Report
Intersection 103: 142nd Avenue/Backage Road

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.980

Intersection Setup

Name	142nd Avenue			142nd Avenue			Backage Road			Backage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	142nd Avenue			142nd Avenue			Backage Road			Backage Road		
Base Volume Input [veh/h]	635	54	313	10	115	10	10	100	609	141	100	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 [%]	3.00	2.00	3.00	2.00	7.00	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
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	10	0	0	6	0	0	10
Total Hourly Volume [veh/h]	635	54	310	10	115	0	10	100	603	141	100	0
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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]	173	15	84	3	31	0	3	27	164	38	27	0
Total Analysis Volume [veh/h]	690	59	337	11	125	0	11	109	655	153	109	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	48.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	5	2	2	1	6	6	4	4	1	8	8	8
Auxiliary Signal Groups									1,4			
Maximum Green [s]	44	36	36	27	20	20	23	23	27	23	23	23
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Walk [s]	0	7	7	0	7	7	7	7	0	7	7	7
Pedestrian Clearance [s]	0	11	11	0	11	11	11	11	0	11	11	11
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	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	L	C	C	R	C
C, Cycle Length [s]	75	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	0.00	2.50
g_i, Effective Green Time [s]	32	33	6	7	23	33	23
g / C, Green / Cycle	0.43	0.44	0.08	0.09	0.30	0.44	0.30
(v / s)_i Volume / Saturation Flow Rate	0.39	0.24	0.01	0.07	0.07	0.42	0.31
s, saturation flow rate [veh/h]	1767	1626	1781	1795	1832	1577	832
c, Capacity [veh/h]	752	717	135	163	610	694	329
d1, Uniform Delay [s]	20.42	15.61	32.44	33.55	19.51	20.25	27.53
k, delay calibration	0.21	0.11	0.11	0.11	0.11	0.50	0.45
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.08	0.67	0.25	7.35	0.16	22.89	16.27
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	0.92	0.55	0.08	0.77	0.20	0.94	0.80
d, Delay for Lane Group [s/veh]	29.51	16.28	32.70	40.90	19.67	43.14	43.80
Lane Group LOS	C	B	C	D	B	D	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	12.26	4.76	0.19	2.50	1.52	14.32	6.00
50th-Percentile Queue Length [ft/ln]	306.48	118.99	4.80	62.62	38.09	357.96	149.92
95th-Percentile Queue Length [veh/ln]	18.00	8.34	0.35	4.51	2.74	20.52	10.01
95th-Percentile Queue Length [ft/ln]	450.03	208.44	8.64	112.71	68.55	513.11	250.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.51	16.28	16.28	32.70	40.90	40.90	19.67	19.67	43.14	43.80	43.80	43.80
Movement LOS	C	B	B	C	D	D	B	B	D	D	D	D
d_A, Approach Delay [s/veh]	24.68			40.23			39.50			43.80		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	32.92											
Intersection LOS	C											
Intersection V/C	0.980											

Emissions

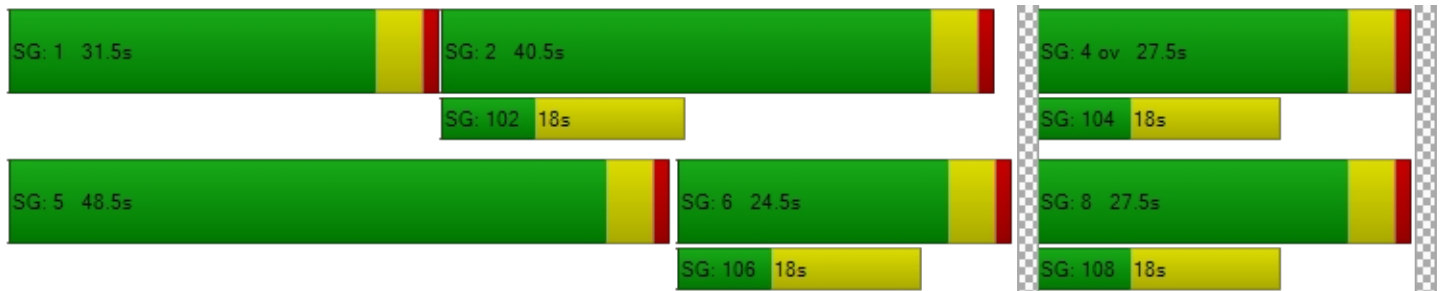
Vehicle Miles Traveled [mph]	130.65	74.98	2.02	23.00	28.90	157.77	63.76
Stops [stops/h]	585.24	227.22	9.16	119.57	72.73	683.55	286.28
Fuel consumption [US gal/h]	12.76	5.65	0.21	2.65	2.07	16.02	6.54
CO [g/h]	891.58	395.23	14.48	185.09	144.83	1119.88	457.25
NOx [g/h]	173.47	76.90	2.82	36.01	28.18	217.89	88.96
VOC [g/h]	206.63	91.60	3.36	42.90	33.57	259.54	105.97

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.51	27.51	27.51	27.51
I_p,int, Pedestrian LOS Score for Intersectio	2.838	2.034	2.456	2.076
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]	955	530	610	610
d_b, Bicycle Delay [s]	10.30	20.36	18.21	18.21
I_b,int, Bicycle LOS Score for Intersection	3.356	1.801	2.848	2.008
Bicycle LOS	C	A	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 104: 142nd Avenue/Highway 212 Access

Control Type:	Signalized	Delay (sec / veh):	8.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.742

Intersection Setup

Name	142nd Avenue		142nd Avenue		Highway 212 Accesses	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↵		↱↲		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	142nd Avenue		142nd Avenue		Highway 212 Accesses	
Base Volume Input [veh/h]	0	807	483	382	195	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	0.00	0.00	0.00	0.00	6.00
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	0	0	0
Total Hourly Volume [veh/h]	0	807	483	382	195	0
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	217	130	103	52	0
Total Analysis Volume [veh/h]	0	868	519	411	210	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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal Group	2	2	6	6	4	4
Auxiliary Signal Groups						
Maximum Green [s]	56	56	56	56	24	24
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	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]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	8	8	5	5	8	8
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		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	R	C
C, Cycle Length [s]	36	36	36	36
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]	19	19	19	7
g / C, Green / Cycle	0.53	0.53	0.53	0.19
(v / s)_i Volume / Saturation Flow Rate	0.46	0.27	0.25	0.12
s, saturation flow rate [veh/h]	1900	1900	1615	1724
c, Capacity [veh/h]	1108	1009	857	335
d1, Uniform Delay [s]	7.38	5.51	5.37	13.45
k, delay calibration	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.26	0.41	0.42	1.92
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	0.78	0.51	0.48	0.63
d, Delay for Lane Group [s/veh]	8.63	5.92	5.79	15.37
Lane Group LOS	A	A	A	B
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.35	1.44	1.12	1.43
50th-Percentile Queue Length [ft/ln]	83.79	35.98	28.05	35.83
95th-Percentile Queue Length [veh/ln]	6.03	2.59	2.02	2.58
95th-Percentile Queue Length [ft/ln]	150.82	64.76	50.50	64.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.63	8.63	5.92	5.79	15.37	15.37
Movement LOS	A	A	A	A	B	B
d_A, Approach Delay [s/veh]	8.63		5.86		15.37	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	8.06					
Intersection LOS	A					
Intersection V/C	0.742					

Emissions

Vehicle Miles Traveled [mph]	202.49	98.27	77.82	48.74
Stops [stops/h]	332.13	142.62	111.21	142.04
Fuel consumption [US gal/h]	11.70	5.46	4.30	3.45
CO [g/h]	817.55	381.57	300.74	241.04
NOx [g/h]	159.07	74.24	58.51	46.90
VOC [g/h]	189.48	88.43	69.70	55.86

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3083	3083	1321
d_b, Bicycle Delay [s]	5.33	5.33	2.09
I_b,int, Bicycle LOS Score for Intersection	2.992	3.094	1.906
Bicycle LOS	C	C	A

Sequence

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



**Intersection Level Of Service Report
Intersection 105: 142nd Avenue/OR 212**

Control Type:	Two-way stop	Delay (sec / veh):	206.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.356

Intersection Setup

Name	142nd Ave			142nd Ave			EB OR212			WB OR212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↶			↷			↶			↷		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	165.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	142nd Ave			142nd Ave			EB OR212			WB OR212		
Base Volume Input [veh/h]	0	0	483	0	0	382	0	1376	807	0	901	195
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 [%]	0.00	0.00	6.00	0.00	0.00	2.00	0.00	18.00	2.00	0.00	4.00	3.00
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	0	483	0	0	382	0	1376	807	0	901	195
Peak Hour Factor	1.0000	1.0000	0.9700	1.0000	1.0000	0.9700	1.0000	0.9700	0.9700	1.0000	0.9700	0.9700
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	124	0	0	98	0	355	208	0	232	50
Total Analysis Volume [veh/h]	0	0	498	0	0	394	0	1419	832	0	929	201
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

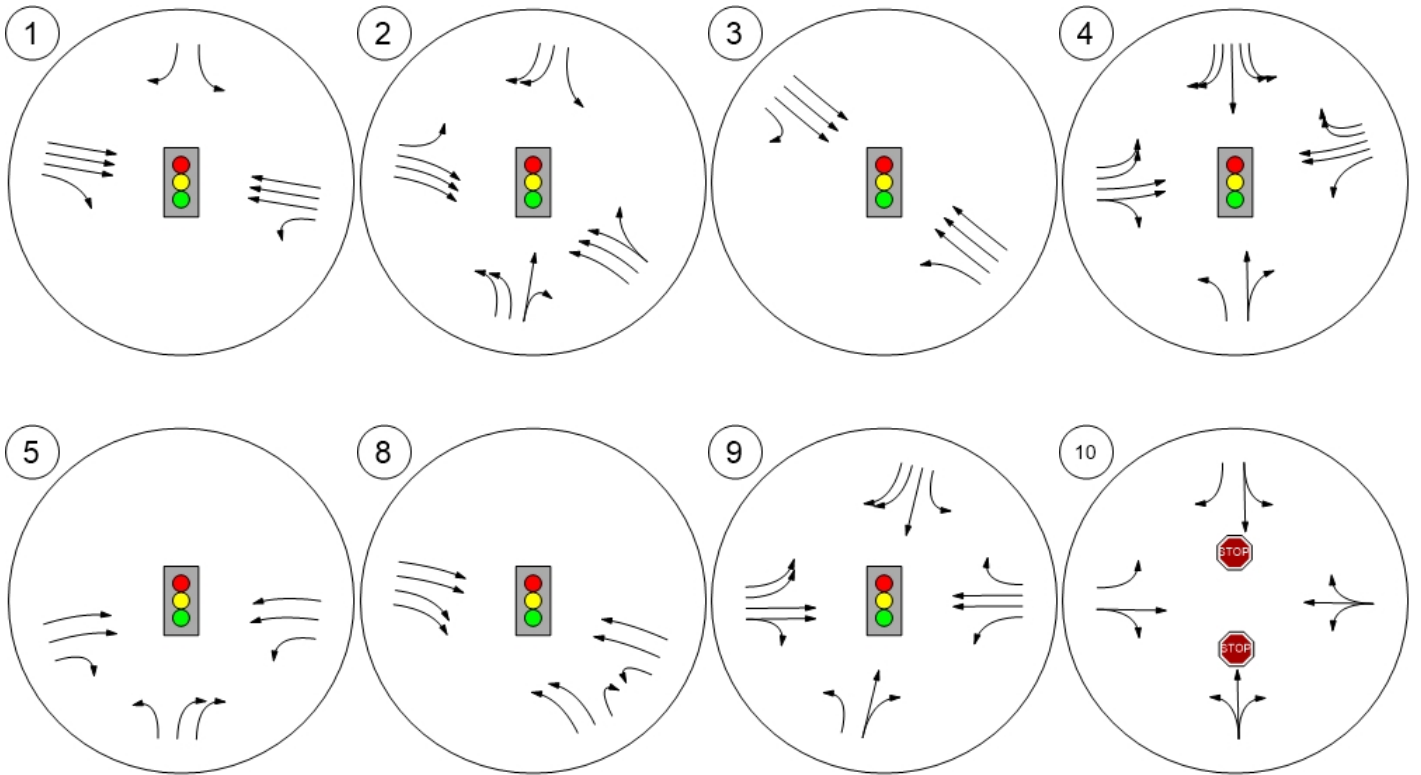
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	1.36	0.00	0.00	0.84	0.00	0.01	0.01	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	206.21	0.00	0.00	41.73	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			F			E		A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	24.09	0.00	0.00	8.37	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	602.30	0.00	0.00	209.37	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	206.21			41.73			0.00			0.00		
Approach LOS	F			E			A			A		
d_I, Intersection Delay [s/veh]	27.88											
Intersection LOS	F											

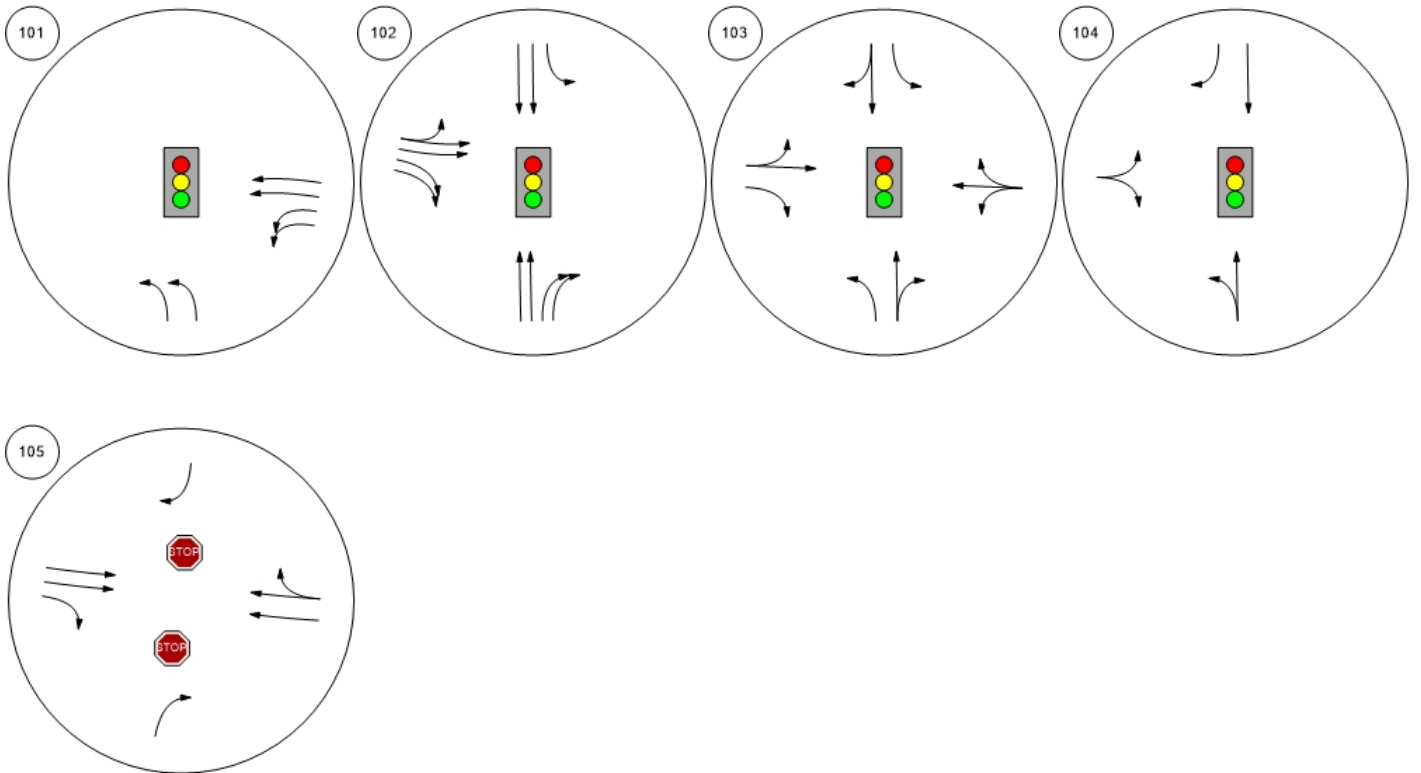
Study Intersections



Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



2045 Four-Lane Results

Sunrise Refinement Plan

Vistro File: H:\...\Sunrise_PM_4LaneGateway.vistro

Scenario: Base Scenario

Report File: H:\...\2045_4LanePM.pdf

3/17/2025

Intersection Analysis Summary




ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	OR 213 SB Ramps/OR 224	Signalized	HCM 7th Edition	SB Left	0.772	19.6	B
2	OR 213 NB Ramps/I-205 SB Ramps/OR 224	Signalized	HCM 7th Edition	EB Left	1.016	53.7	D
3	I-205 NB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.667	20.2	C
4	122nd Avenue/OR 224/OR 212	Signalized	HCM 7th Edition	SB Left	0.826	60.0	E
5	135th Avenue/OR 212	Signalized	HCM 7th Edition	NB Right	0.832	54.4	D
8	OR 212/OR 224 (Rock Creek Junction)	Signalized	HCM 7th Edition	WB Left	0.497	27.8	C
9	172nd Avenue/OR 212	Signalized	HCM 7th Edition	WB Left	0.825	39.0	D
10	122nd Avenue/Jennifer Street	Two-way stop	HCM 7th Edition	SB Left	0.005	21.9	C
101	122nd Avenue/Sunrise Westbound	Signalized	HCM 7th Edition	WB Thru	0.635	9.1	A
102	122nd Avenue/Sunrise Eastbound	Signalized	HCM 7th Edition	NB Right	0.810	21.0	C
103	142nd Avenue/Backage Road	Signalized	HCM 7th Edition	NB Left	0.421	416.5	F
104	142nd Avenue/Highway 212 Access	Signalized	HCM 7th Edition	EB Left	0.701	7.7	A
105	142nd Avenue/OR 212	Two-way stop	HCM 7th Edition	NB Right	1.065	90.9	F

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: OR 213 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.772

Intersection Setup

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1000.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	0.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	0	0	0	305	1	408	0	2431	285	27	1410	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 [%]	0.00	0.00	0.00	4.00	2.00	2.00	0.00	5.00	5.00	13.00	4.00	0.00
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	204	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	305	1	204	0	2431	285	27	1410	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9700	1.0000	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	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	79	0	53	0	627	73	7	363	0
Total Analysis Volume [veh/h]	0	0	0	314	1	210	0	2506	294	28	1454	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	11.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	4	0	4	0	2	2	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	0	0	24	0	24	0	87	87	4	95	0
Amber [s]	0.0	0.0	0.0	4.0	0.0	4.0	0.0	5.0	5.0	3.5	5.0	0.0
All red [s]	0.0	0.0	0.0	1.5	0.0	1.5	0.0	1.0	1.0	0.5	1.0	0.0
Walk [s]	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
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]	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	3.5	0.0	3.5	0.0	4.0	4.0	2.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	0.0	20.0	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	29	0	29	0	93	93	8	101	0
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	6	0	10	10	4	10	0
Vehicle Extension [s]	0.0	0.0	0.0	2.3	0.0	2.3	0.0	0.5	0.5	2.3	0.5	0.0
Minimum Recall				No				Yes		No	Yes	
Maximum Recall				No				No		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		L	R	C	R	L	C
C, Cycle Length [s]		130	130	130	130	130	130
L, Total Lost Time per Cycle [s]		5.50	5.50	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		3.50	3.50	4.00	4.00	2.00	4.00
g_i, Effective Green Time [s]		24	24	88	88	3	95
g / C, Green / Cycle		0.18	0.18	0.68	0.68	0.02	0.73
(v / s)_i Volume / Saturation Flow Rate		0.18	0.13	0.50	0.19	0.02	0.29
s, saturation flow rate [veh/h]		1752	1589	4971	1551	1624	5012
c, Capacity [veh/h]		317	288	3369	1051	36	3661
d1, Uniform Delay [s]		53.12	50.24	13.62	8.33	63.30	6.66
k, delay calibration		0.37	0.17	0.50	0.50	0.07	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		40.69	5.61	1.53	0.66	20.21	0.32
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		0.99	0.73	0.74	0.28	0.79	0.40
d, Delay for Lane Group [s/veh]		93.81	55.85	15.15	9.00	83.51	6.98
Lane Group LOS		F	E	B	A	F	A
Critical Lane Group		Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		13.80	6.91	15.18	3.36	1.13	4.78
50th-Percentile Queue Length [ft/ln]		345.05	172.73	379.51	84.00	28.13	119.60
95th-Percentile Queue Length [veh/ln]		19.89	11.22	21.57	6.05	2.03	8.37
95th-Percentile Queue Length [ft/ln]		497.37	280.51	539.26	151.20	50.63	209.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	93.81	0.00	55.85	0.00	15.15	9.00	83.51	6.98	0.00
Movement LOS				F		E		B	A	F	A	
d_A, Approach Delay [s/veh]	0.00			78.60			14.51			8.43		
Approach LOS	A			E			B			A		
d_I, Intersection Delay [s/veh]	19.62											
Intersection LOS	B											
Intersection V/C	0.772											

Emissions

Vehicle Miles Traveled [mph]		60.76	40.64	793.84	93.13	4.41	229.26
Stops [stops/h]		382.12	191.29	1260.84	93.02	31.15	397.35
Fuel consumption [US gal/h]		10.61	5.12	47.37	4.89	0.83	13.70
CO [g/h]		741.38	357.64	3311.39	341.55	57.99	957.56
NOx [g/h]		144.25	69.58	644.28	66.45	11.28	186.31
VOC [g/h]		171.82	82.89	767.45	79.16	13.44	221.92

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	361	1338	1461
d_b, Bicycle Delay [s]	65.02	43.64	7.12	4.72
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560	3.100	2.375
Bicycle LOS	D	A	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 2: OR 213 NB Ramps/I-205 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	53.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.016

Intersection Setup

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	415.00	100.00	100.00	160.00	100.00	405.00	365.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	2
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	359	8	354	22	0	237	544	2192	0	0	841	450
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 [%]	5.00	12.00	17.00	10.00	0.00	5.00	2.00	6.00	0.00	0.00	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	0	0	0	0	0	0	0	0	0	53
Total Hourly Volume [veh/h]	359	8	354	22	0	237	544	2192	0	0	841	397
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	1.0000	1.0000	0.9300	0.9300
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]	97	2	95	6	0	64	146	589	0	0	226	107
Total Analysis Volume [veh/h]	386	9	381	24	0	255	585	2357	0	0	904	427
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	1			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	12.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Split	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	8	7	0	4	5	2	0	0	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	17	31	31	3	0	17	36	80	0	0	40	40
Amber [s]	4.0	4.0	4.0	4.0	0.0	4.0	3.5	5.0	0.0	0.0	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	0.0	1.5	0.5	1.0	0.0	0.0	1.0	1.0
Walk [s]	7	7	7	0	0	0	0	7	0	0	7	7
Pedestrian Clearance [s]	12	24	24	0	0	0	0	20	0	0	12	12
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	0.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	0.0	3.5	2.0	4.0	0.0	0.0	4.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	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]	22	37	37	8	0	23	40	86	0	0	46	46
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	3	4	4	3	0	4	4	6	0	0	6	6
Vehicle Extension [s]	2.3	2.3	2.3	2.3	0.0	2.3	2.3	4.6	0.0	0.0	4.6	4.6
Minimum Recall	No	No		No		No	Yes	Yes			No	
Maximum Recall	No	No		No		No	No	No			No	
Pedestrian Recall	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	L	R	L	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	4.00	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
l2, Clearance Lost Time [s]	3.50	3.50	3.50	0.00	2.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	23	31	2	50	36	79	39	39
g / C, Green / Cycle	0.18	0.24	0.02	0.39	0.28	0.61	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.11	0.27	0.01	0.09	0.33	0.48	0.25	0.28
s, saturation flow rate [veh/h]	3375	1467	1667	2746	1781	4930	3503	1573
c, Capacity [veh/h]	601	355	29	1066	491	3006	1061	477
d1, Uniform Delay [s]	49.60	49.27	63.68	26.82	47.07	18.98	42.30	44.00
k, delay calibration	0.07	0.49	0.07	0.07	0.50	0.50	0.19	0.40
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	76.23	28.43	0.07	104.43	2.13	3.20	23.22
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	0.64	1.10	0.83	0.24	1.19	0.78	0.84	0.93
d, Delay for Lane Group [s/veh]	50.31	125.51	92.11	26.89	151.50	21.10	45.50	67.22
Lane Group LOS	D	F	F	C	F	C	D	E
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.90	19.00	1.02	2.71	30.05	17.47	13.72	16.85
50th-Percentile Queue Length [ft/ln]	147.39	474.91	25.59	67.82	751.17	436.75	342.92	421.23
95th-Percentile Queue Length [veh/ln]	9.88	27.57	1.84	4.88	43.24	24.32	19.79	23.58
95th-Percentile Queue Length [ft/ln]	246.94	689.37	46.06	122.07	1080.97	608.12	494.76	589.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.31	125.51	125.51	92.11	0.00	26.89	151.50	21.10	0.00	0.00	45.90	67.22
Movement LOS	D	F	F	F		C	F	C			D	E
d_A, Approach Delay [s/veh]	88.10			32.50			47.03			52.74		
Approach LOS	F			C			D			D		
d_I, Intersection Delay [s/veh]	53.68											
Intersection LOS	D											
Intersection V/C	1.016											

Emissions

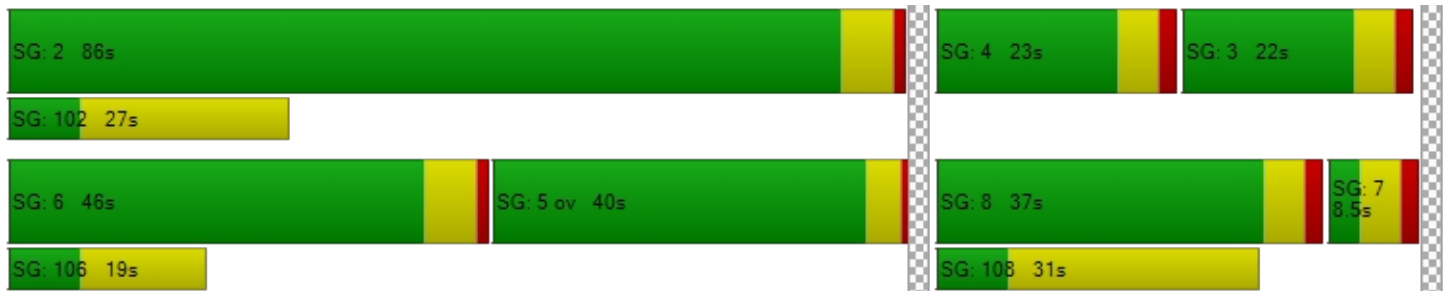
Vehicle Miles Traveled [mph]	80.86	81.70	3.77	40.06	92.24	371.64	222.30	111.15
Stops [stops/h]	326.48	525.99	28.34	150.23	831.97	1451.18	759.60	466.54
Fuel consumption [US gal/h]	9.08	16.23	0.76	3.87	26.43	33.44	21.56	13.22
CO [g/h]	634.94	1134.36	53.24	270.83	1847.21	2337.43	1507.32	924.16
NOx [g/h]	123.54	220.70	10.36	52.69	359.40	454.78	293.27	179.81
VOC [g/h]	147.15	262.90	12.34	62.77	428.11	541.72	349.34	214.18

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	54.47	0.00	54.47
l_p,int, Pedestrian LOS Score for Intersectio	2.210	2.478	0.000	3.220
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	485	46	1231	615
d_b, Bicycle Delay [s]	37.32	62.04	9.62	31.16
l_b,int, Bicycle LOS Score for Intersection	2.840	1.560	3.178	2.321
Bicycle LOS	C	A	C	B

Sequence



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



**Intersection Level Of Service Report
Intersection 3: I-205 NB Ramps/OR 224**

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.667

Intersection Setup

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Approach	Eastbound		Westbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	1	2
Entry Pocket Length [ft]	100.00	100.00	630.00	100.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	0.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present			No		No	
Crosswalk	No		No		No	

Volumes

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Base Volume Input [veh/h]	0	0	256	1291	2140	350
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	6.00	1.00	12.00	7.00
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	0	0	0
Total Hourly Volume [veh/h]	0	0	256	1291	2140	350
Peak Hour Factor	1.0000	1.0000	0.9300	0.9300	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	69	347	546	89
Total Analysis Volume [veh/h]	0	0	275	1388	2184	357
Presence of On-Street Parking			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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

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]	50.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	0	0	1	6	2	2
Auxiliary Signal Groups						
Maximum Green [s]	0	0	16	89	69	69
Amber [s]	0.0	0.0	3.5	5.0	5.0	5.0
All red [s]	0.0	0.0	0.5	2.0	2.0	2.0
Walk [s]	0	0	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	17	17
Delayed Vehicle Green [s]	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	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	5.0	5.0	5.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	20	96	76	76
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	0	4	10	10	10
Vehicle Extension [s]	0.0	0.0	2.3	4.7	4.7	4.7
Minimum Recall			No	Yes	Yes	
Maximum Recall			No	No	No	
Pedestrian Recall			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	R
C, Cycle Length [s]	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	16	116	96	96
g / C, Green / Cycle	0.12	0.89	0.74	0.74
(v / s)_i Volume / Saturation Flow Rate	0.16	0.27	0.47	0.23
s, saturation flow rate [veh/h]	1724	5135	4685	1526
c, Capacity [veh/h]	212	4578	3456	1125
d1, Uniform Delay [s]	57.00	1.05	8.38	5.84
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]	163.56	0.17	0.89	0.74
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	1.30	0.30	0.63	0.32
d, Delay for Lane Group [s/veh]	220.56	1.22	9.27	6.58
Lane Group LOS	F	A	A	A
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	16.60	0.72	9.25	3.30
50th-Percentile Queue Length [ft/ln]	415.06	17.97	231.28	82.40
95th-Percentile Queue Length [veh/ln]	25.80	1.29	14.24	5.93
95th-Percentile Queue Length [ft/ln]	644.91	32.35	355.98	148.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	220.56	1.22	9.27	6.58
Movement LOS			F	A	A	A
d_A, Approach Delay [s/veh]	0.00		37.49		8.89	
Approach LOS	A		D		A	
d_I, Intersection Delay [s/veh]	20.21					
Intersection LOS	C					
Intersection V/C	0.667					

Emissions

Vehicle Miles Traveled [mph]		381.11	1923.57	547.16	89.44
Stops [stops/h]		459.75	59.72	768.55	91.27
Fuel consumption [US gal/h]		30.57	79.86	30.89	4.66
CO [g/h]		2136.81	5582.28	2159.29	326.04
NOx [g/h]		415.75	1086.11	420.12	63.44
VOC [g/h]		495.23	1293.75	500.44	75.56

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1369	1062
d_b, Bicycle Delay [s]	65.00	6.47	14.31
I_b,int, Bicycle LOS Score for Intersection	4.132	2.474	2.957
Bicycle LOS	D	B	C

Sequence

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



Intersection Level Of Service Report
Intersection 4: 122nd Avenue/OR 224/OR 212

Control Type:	Signalized	Delay (sec / veh):	60.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.826

Intersection Setup

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T			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 [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	2	2	0	0	1	0	2
Entry Pocket Length [ft]	135.00	100.00	100.00	525.00	100.00	350.00	220.00	100.00	100.00	255.00	100.00	410.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Base Volume Input [veh/h]	28	213	10	733	217	684	752	556	44	10	471	699
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 [%]	7.00	5.00	5.00	4.00	13.00	2.00	6.00	5.00	16.00	5.00	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	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	213	10	733	217	684	752	556	44	10	471	699
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
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	55	3	189	56	176	194	143	11	3	121	180
Total Analysis Volume [veh/h]	29	220	10	756	224	705	775	573	45	10	486	721
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

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	Fully actuated
Offset [s]	36.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						6,7
Maximum Green [s]	6	35	35	25	54	54	26	48	48	4	26	26
Amber [s]	3.5	4.3	4.3	3.5	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	9	9	0	7	7	0	8	8	0	7	7
Pedestrian Clearance [s]	0	26	26	0	21	21	0	23	23	0	18	18
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.8	2.8	2.0	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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	40	40	29	59	59	30	53	53	8	31	31
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	4.6	2.0	4.6	4.6
Minimum Recall	No	No		No	No	No	No	Yes		No	Yes	Yes
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.80	4.00	4.80	4.80	4.00	5.40	5.40	4.00	5.40	5.40
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]	2.00	2.80	2.00	2.80	0.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	16	19	25	28	58	26	67	67	1	42	95
g / C, Green / Cycle	0.12	0.14	0.19	0.21	0.45	0.20	0.52	0.52	0.01	0.33	0.73
(v / s)_i Volume / Saturation Flow Rate	0.02	0.13	0.22	0.13	0.25	0.23	0.17	0.17	0.01	0.14	0.26
s, saturation flow rate [veh/h]	1709	1811	3403	1705	2813	3348	1825	1779	1738	3389	2786
c, Capacity [veh/h]	206	259	654	366	1254	669	940	916	17	1100	2029
d1, Uniform Delay [s]	51.14	54.68	52.50	46.14	26.66	52.00	18.45	18.47	64.12	34.61	6.48
k, delay calibration	0.07	0.07	0.10	0.07	0.07	0.07	0.50	0.50	0.04	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]	0.19	6.42	73.59	1.02	0.24	73.75	0.95	0.98	11.89	1.29	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	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	0.14	0.89	1.16	0.61	0.56	1.16	0.33	0.33	0.60	0.44	0.36
d, Delay for Lane Group [s/veh]	51.33	61.10	126.09	47.15	26.90	125.75	19.40	19.45	76.01	35.90	6.97
Lane Group LOS	D	E	F	D	C	F	B	B	E	D	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.86	7.86	17.34	6.67	8.11	17.74	5.75	5.64	0.39	6.29	3.51
50th-Percentile Queue Length [ft/ln]	21.57	196.49	433.41	166.83	202.65	443.48	143.77	141.10	9.65	157.32	87.65
95th-Percentile Queue Length [veh/ln]	1.55	12.46	25.98	10.91	12.78	26.55	9.68	9.54	0.70	10.41	6.31
95th-Percentile Queue Length [ft/ln]	38.83	311.43	649.48	272.75	319.39	663.79	242.10	238.51	17.38	260.17	157.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.33	61.10	61.10	126.09	47.15	26.90	125.75	19.42	19.45	76.01	35.90	6.97
Movement LOS	D	E	E	F	D	C	F	B	B	E	D	A
d_A, Approach Delay [s/veh]	60.01			74.10			78.58			19.09		
Approach LOS	E			E			E			B		
d_I, Intersection Delay [s/veh]	59.97											
Intersection LOS	E											
Intersection V/C	0.826											

Emissions

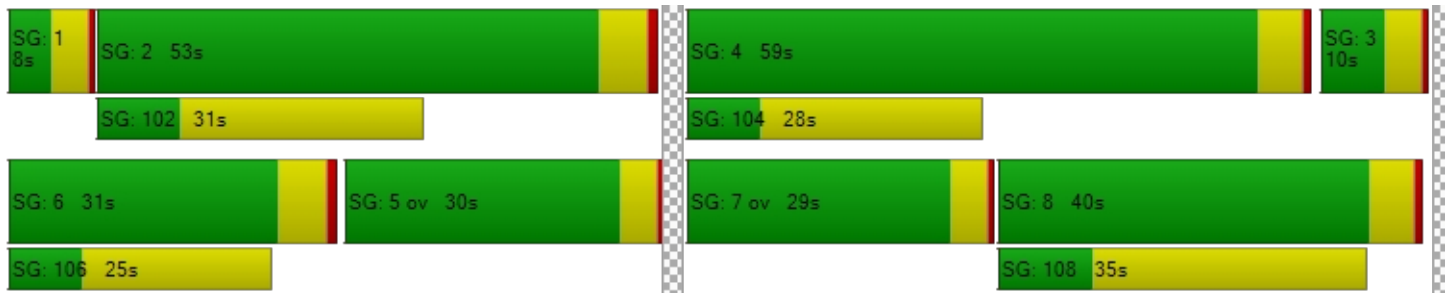
Vehicle Miles Traveled [mph]	6.54	51.83	174.55	51.72	162.78	696.59	280.64	274.83	6.59	320.43	475.37
Stops [stops/h]	23.89	217.64	960.15	184.80	448.95	982.46	159.25	156.30	10.69	348.52	194.18
Fuel consumption [US gal/h]	0.70	6.20	31.89	5.30	13.04	53.93	13.67	13.39	0.49	18.67	21.66
CO [g/h]	49.20	433.07	2228.82	370.42	911.59	3769.94	955.21	935.79	33.91	1304.80	1514.35
NOx [g/h]	9.57	84.26	433.65	72.07	177.36	733.49	185.85	182.07	6.60	253.87	294.64
VOC [g/h]	11.40	100.37	516.55	85.85	211.27	873.72	221.38	216.88	7.86	302.40	350.97

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	11.0	13.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.55	54.47	54.47	52.65
I_p,int, Pedestrian LOS Score for Intersectio	2.132	3.085	2.895	2.966
Crosswalk LOS	B	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]	542	834	732	394
d_b, Bicycle Delay [s]	34.57	22.10	26.12	41.94
I_b,int, Bicycle LOS Score for Intersection	1.987	4.340	2.709	2.564
Bicycle LOS	A	E	B	B

Sequence

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



Intersection Level Of Service Report
Intersection 5: 135th Avenue/OR 212

Control Type:	Signalized	Delay (sec / veh):	54.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.832

Intersection Setup

Name	135th Ave		Highway 212		OR 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↔↔↔		↑↑		↔↔	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	300.00	100.00	100.00	60.00	200.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	135th Ave		Highway 212		OR 212	
Base Volume Input [veh/h]	50	607	1204	24	284	879
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	4.00	5.00	4.00	3.00	6.00
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	0	0	0
Total Hourly Volume [veh/h]	50	607	1204	24	284	879
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	156	310	6	73	227
Total Analysis Volume [veh/h]	52	626	1241	25	293	906
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		1		0	
v_ci, Inbound Pedestrian Volume crossing mi	1		1		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		3	

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	Fully actuated
Offset [s]	75.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	Protected	Permissive
Signal Group	3	3	2	2	1	6
Auxiliary Signal Groups						
Maximum Green [s]	24	24	70	70	23	97
Amber [s]	3.5	3.5	4.7	4.7	3.5	4.7
All red [s]	0.5	0.5	0.7	0.7	0.5	0.5
Walk [s]	0	0	8	8	0	7
Pedestrian Clearance [s]	0	0	18	18	0	14
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]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	3.4	3.4	2.0	3.2
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	6.0	6.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	28	28	75	75	27	102
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Vehicle Extension [s]	2.3	2.3	4.5	4.5	2.3	4.5
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		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	L	R	C	R	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	5.40	5.40	4.00	5.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	3.40	3.40	2.00	3.20
g_i, Effective Green Time [s]	24	24	70	70	23	97
g / C, Green / Cycle	0.18	0.18	0.54	0.54	0.18	0.74
(v / s)_i Volume / Saturation Flow Rate	0.03	0.23	0.36	0.02	0.17	0.26
s, saturation flow rate [veh/h]	1695	2696	3475	1561	1767	3446
c, Capacity [veh/h]	313	497	1862	836	312	2567
d1, Uniform Delay [s]	44.63	52.74	21.81	14.25	52.85	5.75
k, delay calibration	0.07	0.14	0.50	0.50	0.38	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	120.99	1.91	0.07	31.34	0.38
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	1.26	0.67	0.03	0.94	0.35
d, Delay for Lane Group [s/veh]	44.78	173.73	23.72	14.31	84.19	6.13
Lane Group LOS	D	F	C	B	F	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.44	16.41	13.90	0.37	12.15	4.03
50th-Percentile Queue Length [ft/ln]	35.97	410.35	347.61	9.21	303.78	100.78
95th-Percentile Queue Length [veh/ln]	2.59	25.62	20.02	0.66	17.87	7.26
95th-Percentile Queue Length [ft/ln]	64.74	640.56	500.49	16.58	446.69	181.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.78	173.73	23.72	14.31	84.19	6.13
Movement LOS	D	F	C	B	F	A
d_A, Approach Delay [s/veh]	163.84		23.53		25.20	
Approach LOS	F		C		C	
d_I, Intersection Delay [s/veh]	54.44					
Intersection LOS	D					
Intersection V/C	0.832					

Emissions

Vehicle Miles Traveled [mph]	10.18	122.49	818.21	16.48	87.27	269.84
Stops [stops/h]	39.83	908.73	769.79	10.20	336.36	223.19
Fuel consumption [US gal/h]	1.11	32.19	43.93	0.81	10.47	13.47
CO [g/h]	77.78	2250.10	3070.42	56.46	731.85	941.68
NOx [g/h]	15.13	437.79	597.39	10.98	142.39	183.22
VOC [g/h]	18.03	521.48	711.60	13.08	169.61	218.24

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.58	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.391	0.000	0.000
Crosswalk LOS	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	369	1070	1489
d_b, Bicycle Delay [s]	43.30	14.05	4.26
I_b,int, Bicycle LOS Score for Intersection	1.560	2.604	2.549
Bicycle LOS	A	B	B

Sequence

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



MOVEMENT SUMMARY

Site: 106 [Highway 212/Riverbend_4LaneAM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Four-Lane Sunrise
 Site Category: (None)
 Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue	Dist	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	ft				mph
South: Riverbend															
3	L2	All MCs	30	2.0	30	2.0	0.129	4.8	LOS A	0.4	10.7	0.50	0.41	0.50	18.8
18	R2	All MCs	63	18.0	63	18.0	0.129	7.2	LOS A	0.4	10.7	0.50	0.41	0.50	18.8
Approach			93	12.8	93	12.8	0.129	6.4	LOS A	0.4	10.7	0.50	0.41	0.50	18.8
East: Highway 212															
1	L2	All MCs	32	0.0	32	0.0	0.642	8.6	LOS A	6.1	161.5	0.27	0.07	0.27	33.5
6	T1	All MCs	1610	8.0	1610	8.0	0.642	9.2	LOS A	6.1	161.5	0.27	0.07	0.27	33.3
Approach			1642	7.8	1642	7.8	0.642	9.2	LOS A	6.1	161.5	0.27	0.07	0.27	33.3
West: Highway 212															
2	T1	All MCs	487	13.0	487	13.0	0.206	4.5	LOS A	0.9	24.1	0.13	0.04	0.13	35.1
12	R2	All MCs	14	13.0	14	13.0	0.206	4.5	LOS A	0.9	24.1	0.13	0.04	0.13	34.6
Approach			501	13.0	501	13.0	0.206	4.5	LOS A	0.9	24.1	0.13	0.04	0.13	35.1
All Vehicles			2236	9.2	2236	9.2	0.642	8.0	LOS A	6.1	161.5	0.24	0.08	0.24	32.6

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

Roundabout LOS Method: Same as Sign Control.

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

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

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

Roundabout Capacity Model: US HCM 6.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: H:\27\27852 - Sunrise Corridor Community Visioning\synchro\27852_RoundaboutsAnalysis.sjp9

Intersection Level Of Service Report
Intersection 8: OR 212/OR 224 (Rock Creek Junction)

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):	0.497

Intersection Setup

Name	Highway 224		Highway 212		Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	1	0	2	1	0
Entry Pocket Length [ft]	155.00	70.00	100.00	125.00	230.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Highway 224		Highway 212		Highway 212	
Base Volume Input [veh/h]	660	194	369	1258	197	180
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	5.00	6.00	6.00	5.00	7.00
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	97	0	629	0	0
Total Hourly Volume [veh/h]	660	97	369	629	197	180
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	174	26	97	166	52	47
Total Analysis Volume [veh/h]	695	102	388	662	207	189
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		4		0	

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	Fully actuated
Offset [s]	83.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Overlap	Protected	Permissive
Signal Group	8	0	2	2	1	6
Auxiliary Signal Groups				2,8		
Maximum Green [s]	40	0	47	47	28	79
Amber [s]	4.7	0.0	5.0	5.0	3.5	5.0
All red [s]	0.7	0.0	1.0	1.0	0.5	1.0
Walk [s]	8	0	7	7	7	0
Pedestrian Clearance [s]	16	0	14	14	10	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]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	0.0	4.0	4.0	2.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	6.0	6.0	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]	45	0	53	53	32	85
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	8	0	10	10	4	10
Vehicle Extension [s]	2.5	0.0	4.8	4.8	3.5	4.8
Minimum Recall	No		Yes	Yes	No	Yes
Maximum Recall	No		No	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	L	R	C	R	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	5.40	5.40	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	4.00	0.00	2.00	4.00
g_i, Effective Green Time [s]	33	33	64	102	18	85
g / C, Green / Cycle	0.26	0.26	0.49	0.79	0.14	0.66
(v / s)_i Volume / Saturation Flow Rate	0.21	0.07	0.11	0.25	0.12	0.06
s, saturation flow rate [veh/h]	3375	1529	3446	2685	1738	3418
c, Capacity [veh/h]	862	391	1688	2114	237	2245
d1, Uniform Delay [s]	45.37	38.57	19.06	3.90	55.06	8.10
k, delay calibration	0.08	0.08	0.50	0.50	0.14	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.37	0.26	0.32	0.39	12.39	0.07
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	0.81	0.26	0.23	0.31	0.87	0.08
d, Delay for Lane Group [s/veh]	46.74	38.83	19.38	4.29	67.46	8.18
Lane Group LOS	D	D	B	A	E	A
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	10.67	2.65	3.47	2.21	7.47	0.97
50th-Percentile Queue Length [ft/ln]	266.74	66.24	86.68	55.32	186.75	24.34
95th-Percentile Queue Length [veh/ln]	16.03	4.77	6.24	3.98	11.95	1.75
95th-Percentile Queue Length [ft/ln]	400.67	119.22	156.03	99.57	298.80	43.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.74	38.83	19.38	4.29	67.46	8.18
Movement LOS	D	D	B	A	E	A
d_A, Approach Delay [s/veh]	45.73		9.86		39.16	
Approach LOS	D		A		D	
d_I, Intersection Delay [s/veh]	27.78					
Intersection LOS	C					
Intersection V/C	0.497					

Emissions

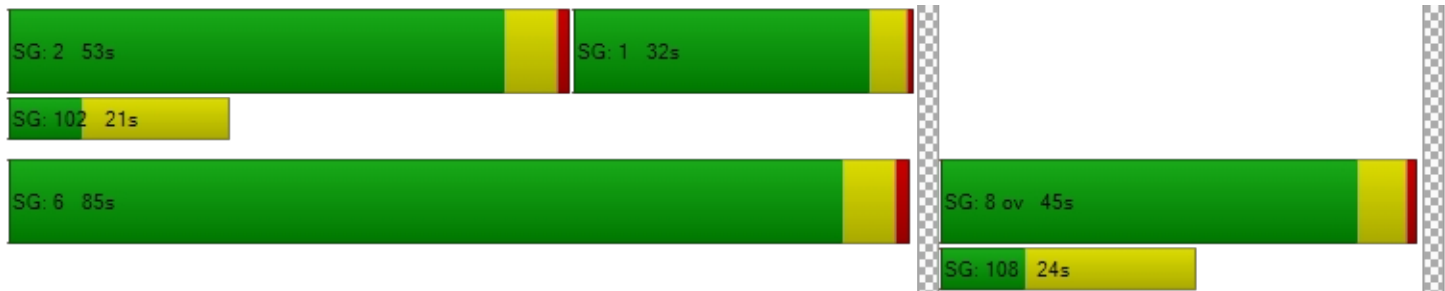
Vehicle Miles Traveled [mph]	227.32	33.36	56.33	96.11	13.18	12.03
Stops [stops/h]	590.92	73.37	192.03	122.55	206.85	53.92
Fuel consumption [US gal/h]	19.23	2.58	4.91	5.21	4.53	1.11
CO [g/h]	1344.40	180.67	343.21	364.28	316.40	77.43
NOx [g/h]	261.57	35.15	66.78	70.87	61.56	15.06
VOC [g/h]	311.58	41.87	79.54	84.42	73.33	17.94

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	12.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	0.00	53.56
I_p,int, Pedestrian LOS Score for Intersectio	2.922	0.000	2.508
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]	609	723	1215
d_b, Bicycle Delay [s]	31.48	26.55	10.00
I_b,int, Bicycle LOS Score for Intersection	1.560	2.945	1.886
Bicycle LOS	A	C	A

Sequence

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



**Intersection Level Of Service Report
Intersection 9: 172nd Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	39.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

Intersection Setup

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	2	2	0	0	1	0	1
Entry Pocket Length [ft]	110.00	100.00	100.00	235.00	100.00	290.00	550.00	100.00	100.00	395.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	62	109	31	189	130	574	936	1182	141	28	921	82
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 [%]	10.00	3.00	4.00	1.00	5.00	5.00	5.00	9.00	2.00	0.00	6.00	9.00
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	0	0	0	0
Total Hourly Volume [veh/h]	62	109	31	189	130	574	936	1182	141	28	921	82
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	29	8	50	35	153	249	314	38	7	245	22
Total Analysis Volume [veh/h]	66	116	33	201	138	611	996	1257	150	30	980	87
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			2			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			2			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	10.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	8	8	4	4	4	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	35	35	35	34	34	34	33	63	63	6	36	36
Amber [s]	3.5	3.5	3.5	4.7	4.7	4.7	3.5	5.0	5.0	3.5	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.0	1.5	1.5
Walk [s]	9	9	9	9	9	9	0	7	7	0	8	8
Pedestrian Clearance [s]	22	22	22	21	21	21	0	11	11	0	20	20
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	4.2	4.2	4.2	2.5	4.5	4.5	2.5	4.5	4.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	20.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.3	5.4	5.4	2.3	5.4	5.4
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	117	117	117	117	117	117	117	117	117	117	117
L, Total Lost Time per Cycle [s]	5.00	5.00	6.20	6.20	4.50	4.50	6.50	6.50	4.50	6.50	6.50
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	0.00
l2, Clearance Lost Time [s]	3.00	3.00	4.20	4.20	0.00	2.50	4.50	4.50	2.50	4.50	4.50
g_i, Effective Green Time [s]	33	33	31	31	71	33	66	66	2	36	36
g / C, Green / Cycle	0.28	0.28	0.27	0.27	0.60	0.28	0.56	0.56	0.02	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.06	0.08	0.16	0.08	0.22	0.30	0.40	0.41	0.02	0.28	0.06
s, saturation flow rate [veh/h]	1166	1775	1248	1825	2740	3375	1765	1701	1810	3446	1500
c, Capacity [veh/h]	294	492	290	487	1649	951	997	960	39	1048	456
d1, Uniform Delay [s]	39.78	33.37	46.59	34.02	11.93	42.03	18.45	18.92	57.00	39.61	30.09
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.07	0.37	0.38	0.07	0.28	0.28
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]	0.28	0.25	2.22	0.23	0.10	25.65	3.10	3.76	18.00	10.34	0.53
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	0.22	0.30	0.69	0.28	0.37	1.05	0.71	0.73	0.78	0.94	0.19
d, Delay for Lane Group [s/veh]	40.07	33.63	48.81	34.25	12.03	67.69	21.55	22.68	75.00	49.94	30.61
Lane Group LOS	D	C	D	C	B	F	C	C	E	D	C
Critical Lane Group	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.64	3.39	5.86	3.16	3.98	16.96	14.07	14.55	1.08	15.04	1.89
50th-Percentile Queue Length [ft/ln]	41.08	84.72	146.38	78.99	99.46	424.11	351.66	363.69	26.92	375.93	47.30
95th-Percentile Queue Length [veh/ln]	2.96	6.10	9.82	5.69	7.16	24.39	20.22	20.80	1.94	21.40	3.41
95th-Percentile Queue Length [ft/ln]	73.95	152.49	245.59	142.19	179.03	609.84	505.43	520.07	48.46	534.92	85.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.07	33.63	33.63	48.81	34.25	12.03	67.69	22.05	22.68	75.00	49.94	30.61
Movement LOS	D	C	C	D	C	B	F	C	C	E	D	C
d_A, Approach Delay [s/veh]	35.60			23.04			41.00			49.10		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	39.00											
Intersection LOS	D											
Intersection V/C	0.825											

Emissions

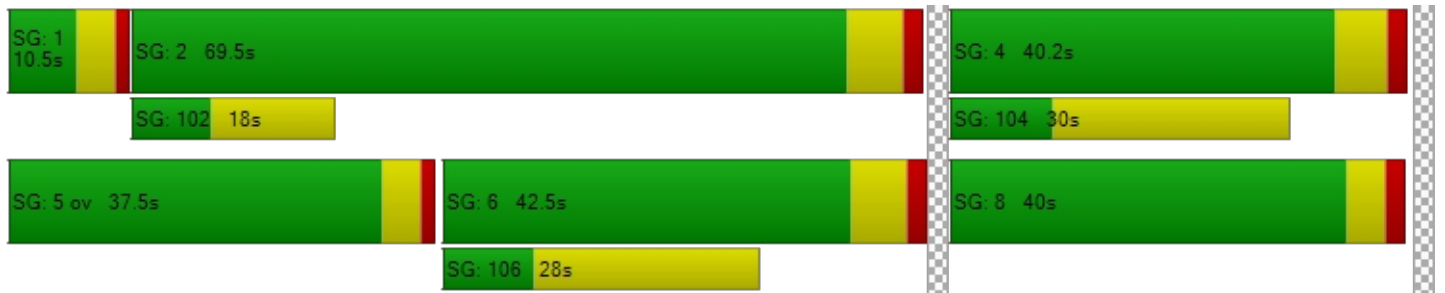
Vehicle Miles Traveled [mph]	7.76	17.53	26.14	17.95	79.47	117.32	82.87	82.87	14.05	458.91	40.74
Stops [stops/h]	50.50	104.13	179.93	97.10	244.51	1042.63	432.26	447.05	33.09	924.19	58.14
Fuel consumption [US gal/h]	1.14	2.32	4.07	2.24	6.12	24.31	8.88	9.13	1.22	33.96	2.54
CO [g/h]	79.46	161.91	284.27	156.38	427.72	1699.11	621.04	638.02	85.21	2373.59	177.57
NOx [g/h]	15.46	31.50	55.31	30.43	83.22	330.59	120.83	124.13	16.58	461.81	34.55
VOC [g/h]	18.41	37.53	65.88	36.24	99.13	393.79	143.93	147.87	19.75	550.10	41.15

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		12.0		13.0		0.0	
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	48.09		47.19		46.30		0.00	
I_p,int, Pedestrian LOS Score for Intersectio	2.126		2.814		3.218		0.000	
Crosswalk LOS	B		C		C		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	598		580		1076		615	
d_b, Bicycle Delay [s]	28.82		29.51		12.51		28.11	
I_b,int, Bicycle LOS Score for Intersection	1.914		3.127		3.542		2.465	
Bicycle LOS	A		C		D		B	

Sequence

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



Intersection Level Of Service Report
Intersection 10: 122nd Avenue/Jennifer Street

Control Type:	Two-way stop	Delay (sec / veh):	21.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⊕			⊕			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	75.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Base Volume Input [veh/h]	0	0	0	1	0	81	143	278	0	0	282	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 [%]	0.00	50.00	0.00	12.00	0.00	13.00	12.00	5.00	0.00	0.00	4.00	5.00
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	0	0	1	0	81	143	278	0	0	282	1
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
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	0	0	22	38	75	0	0	76	0
Total Analysis Volume [veh/h]	0	0	0	1	0	87	154	299	0	0	303	1
Pedestrian Volume [ped/h]	1			0			1			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.12	0.13	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	24.67	23.05	9.84	21.93	20.05	10.78	8.43	0.00	0.00	7.83	0.00	0.00
Movement LOS	C	C	A	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.01	0.01	0.42	0.44	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.35	0.35	10.43	10.98	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	19.19			10.91			2.87			0.00		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	2.67											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 101: 122nd Avenue/Sunrise Westbound

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):	0.635

Intersection Setup

Name	122nd Avenue		Sunrise WB		Sunrise WB	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↵↵				↵↵	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	300.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		0.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No				No	
Crosswalk	No		No		Yes	

Volumes

Name	122nd Avenue		Sunrise WB		Sunrise WB	
Base Volume Input [veh/h]	722	0	0	0	732	825
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	0.00	0.00	0.00	0.00	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	0	0	0
Total Hourly Volume [veh/h]	722	0	0	0	732	825
Peak Hour Factor	0.9300	1.0000	1.0000	1.0000	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	194	0	0	0	197	222
Total Analysis Volume [veh/h]	776	0	0	0	787	887
Presence of On-Street Parking	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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	Protected	Permissive
Signal Group	2	0	0	0	3	8
Auxiliary Signal Groups						
Maximum Green [s]	54	0	0	0	58	58
Amber [s]	3.5	0.0	0.0	0.0	3.5	3.5
All red [s]	1.0	0.0	0.0	0.0	1.0	1.0
Walk [s]	7	0	0	0	0	7
Pedestrian Clearance [s]	11	0	0	0	0	11
Delayed Vehicle Green [s]	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	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	0.0	0.0	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	0.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	0	0	0	30	30
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	5	0	0	0	5	5
Vehicle Extension [s]	3.0	0.0	0.0	0.0	3.0	3.0
Minimum Recall	No				No	No
Maximum Recall	No				No	No
Pedestrian Recall	No				No	No

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	L	C
C, Cycle Length [s]	32	32	32
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50
g_i, Effective Green Time [s]	11	12	12
g / C, Green / Cycle	0.36	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.23	0.22	0.25
s, saturation flow rate [veh/h]	3403	3514	3560
c, Capacity [veh/h]	1211	1283	1300
d1, Uniform Delay [s]	8.67	8.38	8.66
k, delay calibration	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	0.57	0.48	0.64
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	0.64	0.61	0.68
d, Delay for Lane Group [s/veh]	9.24	8.86	9.30
Lane Group LOS	A	A	A
Critical Lane Group	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.54	1.50	1.76
50th-Percentile Queue Length [ft/ln]	38.47	37.47	44.04
95th-Percentile Queue Length [veh/ln]	2.77	2.70	3.17
95th-Percentile Queue Length [ft/ln]	69.25	67.45	79.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.24	0.00	0.00	0.00	8.86	9.30
Movement LOS	A				A	A
d_A, Approach Delay [s/veh]	9.24		0.00		9.09	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	9.14					
Intersection LOS	A					
Intersection V/C	0.635					

Emissions

Vehicle Miles Traveled [mph]	64.65		104.30	117.55
Stops [stops/h]	344.79		335.80	394.73
Fuel consumption [US gal/h]	6.03		7.57	8.70
CO [g/h]	421.23		528.97	608.02
NOx [g/h]	81.96		102.92	118.30
VOC [g/h]	97.62		122.59	140.91

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	6.95
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.474
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3361	0	3610
d_b, Bicycle Delay [s]	7.44	16.07	10.41
I_b,int, Bicycle LOS Score for Intersection	1.560	4.132	2.941
Bicycle LOS	A	D	C

Sequence

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



Intersection Level Of Service Report
Intersection 102: 122nd Avenue/Sunrise Eastbound

Control Type:	Signalized	Delay (sec / veh):	21.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.810

Intersection Setup

Name	122nd Avenue			122nd Avenue			Sunrise EB			Sunrise EB		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	0	0	0	0	2	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	50.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			0.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	Yes			No			Yes			No		

Volumes

Name	122nd Avenue			122nd Avenue			Sunrise EB			Sunrise EB		
Base Volume Input [veh/h]	0	722	942	0	732	0	0	1317	902	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 [%]	0.00	5.00	3.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	722	942	0	732	0	0	1317	902	0	0	0
Peak Hour Factor	1.0000	0.9300	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	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	194	253	0	197	0	0	354	242	0	0	0
Total Analysis Volume [veh/h]	0	776	1013	0	787	0	0	1416	970	0	0	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	2	2	6	6	0	4	4	4	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	56	56	56	56	0	56	56	56	0	0	0
Amber [s]	0.0	3.5	3.5	3.5	3.5	0.0	3.5	3.5	3.5	0.0	0.0	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	7	7	7	0	7	7	7	0	0	0
Pedestrian Clearance [s]	0	11	11	11	11	0	11	11	11	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		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	2.5	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	6.0	20.0	20.0	0.0	6.0	6.0	6.0	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: Free Running (No Pattern)

Split [s]	0	30	30	30	30	0	30	30	30	0	0	0
Lead / Lag	-	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	5	5	5	5	0	5	5	5	0	0	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		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	L	C	C	C	R	
C, Cycle Length [s]	87	87	87	87	87	87	87	
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	
g_i, Effective Green Time [s]	38	38	38	38	40	40	40	
g / C, Green / Cycle	0.43	0.43	0.43	0.43	0.46	0.46	0.46	
(v / s)_i Volume / Saturation Flow Rate	0.22	0.36	0.00	0.22	0.37	0.37	0.36	
s, saturation flow rate [veh/h]	3475	2791	269	3618	1900	1900	2723	
c, Capacity [veh/h]	1511	1214	150	1573	878	878	1259	
d1, Uniform Delay [s]	17.98	21.92	0.00	17.85	20.15	20.15	19.64	
k, delay calibration	0.11	0.11	0.11	0.11	0.15	0.15	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.27	1.58	0.00	0.25	2.53	2.53	1.03	
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	0.51	0.83	0.00	0.50	0.81	0.81	0.77	
d, Delay for Lane Group [s/veh]	18.25	23.51	0.00	18.09	22.68	22.68	20.67	
Lane Group LOS	B	C	A	B	C	C	C	
Critical Lane Group	No	Yes	No	No	Yes	No	No	
50th-Percentile Queue Length [veh/ln]	5.46	8.87	0.00	5.50	12.08	12.08	7.83	
50th-Percentile Queue Length [ft/ln]	136.57	221.77	0.00	137.40	301.93	301.93	195.75	
95th-Percentile Queue Length [veh/ln]	9.30	13.76	0.00	9.34	17.78	17.78	12.42	
95th-Percentile Queue Length [ft/ln]	232.39	343.88	0.00	233.51	444.42	444.42	310.48	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	18.25	23.51	0.00	18.09	0.00	22.68	22.68	20.67	0.00	0.00	0.00
Movement LOS		B	C	A	B		C	C	C			
d_A, Approach Delay [s/veh]	21.23			18.09			21.86			0.00		
Approach LOS	C			B			C			A		
d_I, Intersection Delay [s/veh]	21.04											
Intersection LOS	C											
Intersection V/C	0.810											

Emissions

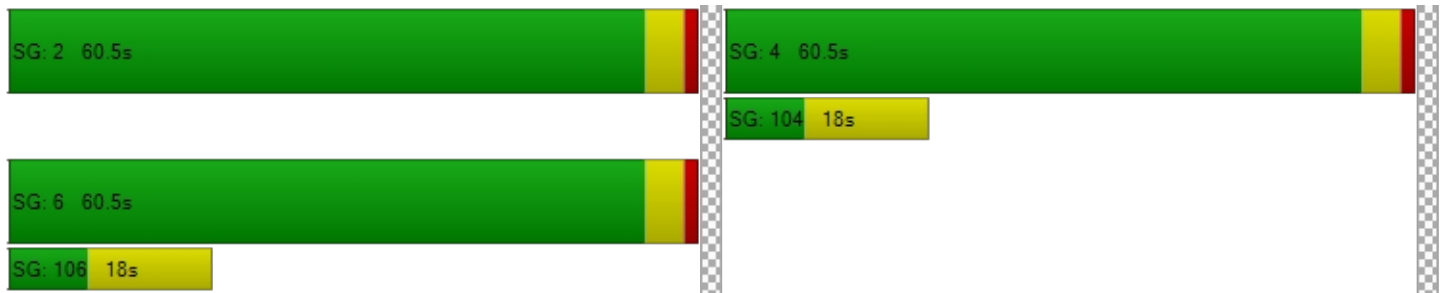
Vehicle Miles Traveled [mph]	179.17	233.89	0.00	65.56	84.74	84.74	116.10
Stops [stops/h]	450.64	731.79	0.00	453.37	498.15	498.15	645.94
Fuel consumption [US gal/h]	12.75	18.52	0.00	8.10	9.51	9.51	12.43
CO [g/h]	891.08	1294.38	0.00	566.32	664.67	664.67	868.71
NOx [g/h]	173.37	251.84	0.00	110.19	129.32	129.32	169.02
VOC [g/h]	206.52	299.98	0.00	131.25	154.04	154.04	201.33

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.33	0.00	33.33	0.00
I_p,int, Pedestrian LOS Score for Intersectio	3.027	0.000	2.711	0.000
Crosswalk LOS	C	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1283	1283	1283	0
d_b, Bicycle Delay [s]	5.60	5.60	5.60	43.64
I_b,int, Bicycle LOS Score for Intersection	3.036	2.209	3.528	4.132
Bicycle LOS	C	B	D	D

Sequence

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



Intersection Level Of Service Report
Intersection 103: 142nd Avenue/Backage Road

Control Type:	Signalized	Delay (sec / veh):	416.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.421

Intersection Setup

Name	142nd Avenue			142nd Avenue			Backage Road			Backage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	142nd Avenue			142nd Avenue			Backage Road			Backage Road		
Base Volume Input [veh/h]	546	77	349	10	115	10	10	100	618	119	100	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 [%]	2.00	1.00	2.00	0.00	3.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	546	77	349	10	115	10	10	100	618	119	100	10
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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]	148	21	95	3	31	3	3	27	168	32	27	3
Total Analysis Volume [veh/h]	593	84	379	11	125	11	11	109	672	129	109	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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	80
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	13.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	5	2	2	1	6	6	4	4	1	8	8	8
Auxiliary Signal Groups									1,4			
Maximum Green [s]	5	40	40	9	53	53	18	18	9	18	18	18
Amber [s]	3.0	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Walk [s]	0	7	7	0	7	7	7	7	0	7	7	7
Pedestrian Clearance [s]	0	11	11	0	11	11	11	11	0	11	11	11
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	9	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	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	L	C	C	R	C
C, Cycle Length [s]	52	52	52	52	52	52	52
L, Total Lost Time per Cycle [s]	0.00	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	2.50	2.50	2.50	2.50	0.00	2.50
g_i, Effective Green Time [s]	0	17	3	25	18	26	18
g / C, Green / Cycle	0.00	0.33	0.06	0.48	0.35	0.49	0.35
(v / s)_i Volume / Saturation Flow Rate	0.58	0.28	0.01	0.07	0.06	0.43	0.26
s, saturation flow rate [veh/h]	1017	1647	1810	1829	1884	1577	958
c, Capacity [veh/h]	138	548	112	880	727	780	436
d1, Uniform Delay [s]	26.02	16.12	23.03	7.57	11.89	11.59	15.10
k, delay calibration	0.50	0.11	0.11	0.11	0.11	0.50	0.23
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1495.64	3.68	0.38	0.08	0.11	12.08	2.53
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	4.29	0.85	0.10	0.15	0.17	0.86	0.57
d, Delay for Lane Group [s/veh]	1521.66	19.80	23.41	7.65	11.99	23.67	17.63
Lane Group LOS	F	B	C	A	B	C	B
Critical Lane Group	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	59.33	4.91	0.13	0.70	0.86	7.78	2.55
50th-Percentile Queue Length [ft/ln]	1483.16	122.75	3.24	17.45	21.51	194.56	63.81
95th-Percentile Queue Length [veh/ln]	71.96	8.54	0.23	1.26	1.55	12.36	4.59
95th-Percentile Queue Length [ft/ln]	1798.95	213.59	5.84	31.41	38.72	308.93	114.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	1521.66	19.80	19.80	23.41	7.65	7.65	11.99	11.99	23.67	17.63	17.63	17.63
Movement LOS	F	B	B	C	A	A	B	B	C	B	B	B
d_A, Approach Delay [s/veh]	863.17			8.83			21.90			17.63		
Approach LOS	F			A			C			B		
d_I, Intersection Delay [s/veh]	416.46											
Intersection LOS	F											
Intersection V/C	0.421											

Emissions

Vehicle Miles Traveled [mph]	112.28	87.67	2.02	25.03	28.90	161.87	60.59
Stops [stops/h]	4109.92	340.14	8.99	48.35	59.61	539.13	176.84
Fuel consumption [US gal/h]	210.91	7.35	0.19	1.51	1.81	12.88	4.36
CO [g/h]	14742.79	514.02	12.96	105.49	126.67	900.25	305.09
NOx [g/h]	2868.41	100.01	2.52	20.52	24.64	175.16	59.36
VOC [g/h]	3416.78	119.13	3.00	24.45	29.36	208.64	70.71

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	16.15	16.15	16.15	16.15
I_p,int, Pedestrian LOS Score for Intersectio	2.767	2.007	3.242	2.048
Crosswalk LOS	C	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]	1539	2040	693	693
d_b, Bicycle Delay [s]	1.38	0.01	11.10	11.10
I_b,int, Bicycle LOS Score for Intersection	3.302	1.802	2.866	1.970
Bicycle LOS	C	A	C	A

Sequence

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



Intersection Level Of Service Report
Intersection 104: 142nd Avenue/Highway 212 Access

Control Type:	Signalized	Delay (sec / veh):	7.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.701

Intersection Setup

Name	142nd Avenue		142nd Avenue		Highway 212 Accesses	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	142nd Avenue		142nd Avenue		Highway 212 Accesses	
Base Volume Input [veh/h]	0	790	467	385	182	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	2.00	4.00	3.00	0.00
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	0	0	0
Total Hourly Volume [veh/h]	0	790	467	385	182	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	204	120	99	47	0
Total Analysis Volume [veh/h]	0	814	481	397	188	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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal Group	2	2	6	6	4	4
Auxiliary Signal Groups						
Maximum Green [s]	43	43	43	43	17	17
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	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]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	8	8	5	5	8	8
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		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	R	C
C, Cycle Length [s]	34	34	34	34
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]	17	17	17	7
g / C, Green / Cycle	0.51	0.51	0.51	0.20
(v / s)_i Volume / Saturation Flow Rate	0.43	0.26	0.25	0.10
s, saturation flow rate [veh/h]	1885	1870	1564	1810
c, Capacity [veh/h]	1067	954	798	356
d1, Uniform Delay [s]	7.21	5.51	5.49	12.28
k, delay calibration	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.16	0.41	0.48	1.21
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	0.76	0.50	0.50	0.53
d, Delay for Lane Group [s/veh]	8.36	5.93	5.97	13.50
Lane Group LOS	A	A	A	B
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.85	1.24	1.04	1.11
50th-Percentile Queue Length [ft/ln]	71.29	31.08	25.95	27.68
95th-Percentile Queue Length [veh/ln]	5.13	2.24	1.87	1.99
95th-Percentile Queue Length [ft/ln]	128.32	55.95	46.72	49.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.36	8.36	5.93	5.97	13.50	13.50
Movement LOS	A	A	A	A	B	B
d_A, Approach Delay [s/veh]	8.36		5.94		13.50	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	7.75					
Intersection LOS	A					
Intersection V/C	0.701					

Emissions

Vehicle Miles Traveled [mph]	189.90	91.08	75.17	43.63
Stops [stops/h]	301.88	131.62	109.90	117.21
Fuel consumption [US gal/h]	10.87	5.06	4.18	2.96
CO [g/h]	759.88	353.45	292.46	206.93
NOx [g/h]	147.85	68.77	56.90	40.26
VOC [g/h]	176.11	81.92	67.78	47.96

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2529	2529	1000
d_b, Bicycle Delay [s]	1.19	1.19	4.25
I_b,int, Bicycle LOS Score for Intersection	2.903	3.008	1.870
Bicycle LOS	C	C	A

Sequence

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



**Intersection Level Of Service Report
Intersection 105: 142nd Avenue/OR 212**

Control Type:	Two-way stop	Delay (sec / veh):	90.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.065

Intersection Setup

Name	142nd Ave			142nd Ave			EB OR212			WB OR212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↶			↷			↶			↷		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	165.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	142nd Ave			142nd Ave			EB OR212			WB OR212		
Base Volume Input [veh/h]	0	0	467	0	0	385	0	1142	790	0	786	182
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 [%]	0.00	0.00	2.00	0.00	0.00	4.00	0.00	8.00	1.00	0.00	7.00	3.00
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	0	467	0	0	385	0	1142	790	0	786	182
Peak Hour Factor	1.0000	1.0000	0.9700	1.0000	1.0000	0.9700	1.0000	0.9700	0.9700	1.0000	0.9700	0.9700
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	120	0	0	99	0	294	204	0	203	47
Total Analysis Volume [veh/h]	0	0	481	0	0	397	0	1177	814	0	810	188
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

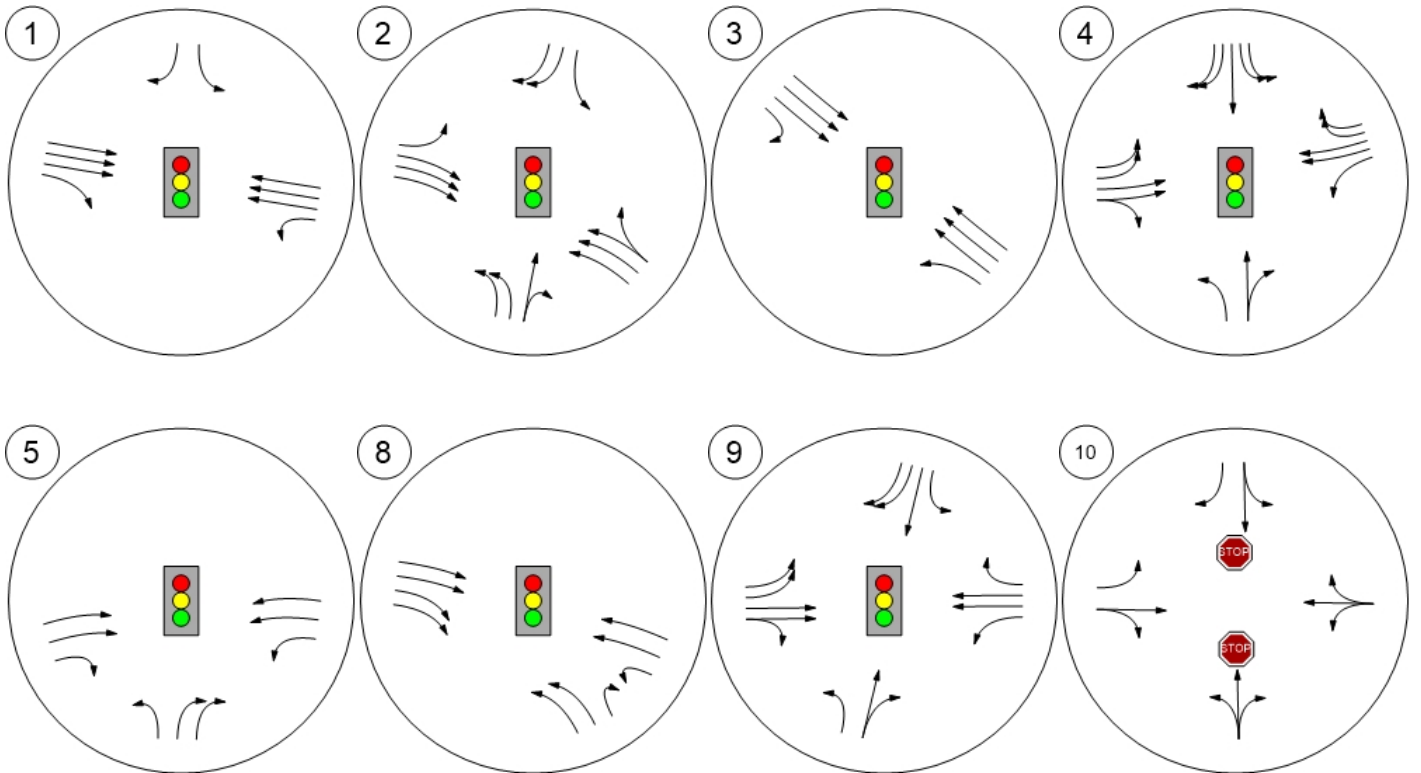
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	1.06	0.00	0.00	0.78	0.00	0.01	0.01	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	90.94	0.00	0.00	32.31	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			F			D		A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	15.38	0.00	0.00	6.98	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	384.38	0.00	0.00	174.55	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	90.94			32.31			0.00			0.00		
Approach LOS	F			D			A			A		
d_I, Intersection Delay [s/veh]	14.63											
Intersection LOS	F											

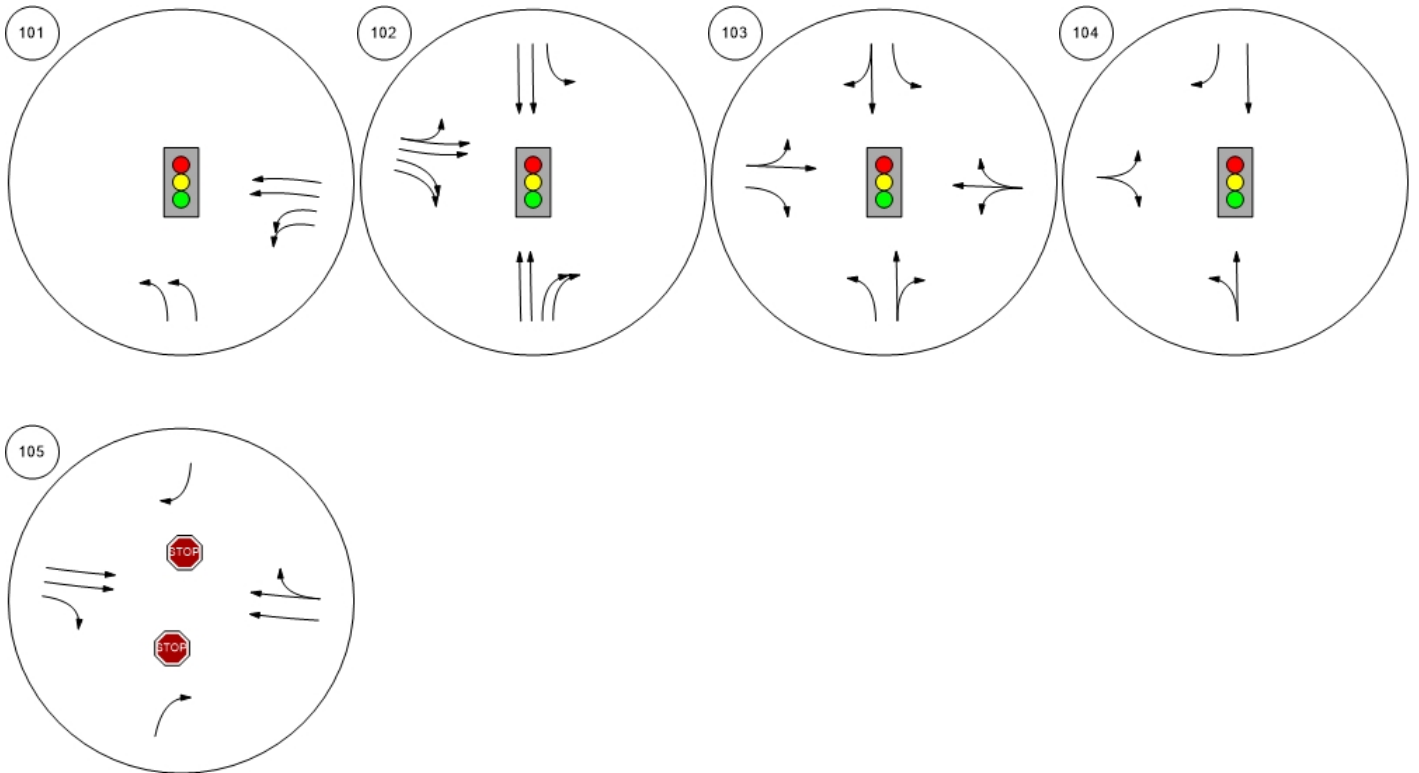
Study Intersections



Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



Sunrise Refinement Plan

Vistro File: H:\...\Sunrise_AM_4LaneGateway.vistro

Scenario: Base Scenario

Report File: H:\...\2045_4LaneAM.pdf

3/17/2025

Intersection Analysis Summary




ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	OR 213 SB Ramps/OR 224	Signalized	HCM 7th Edition	SB Left	0.835	17.4	B
2	OR 213 NB Ramps/I-205 SB Ramps/OR 224	Signalized	HCM 7th Edition	WB Right	1.077	538.2	F
3	I-205 NB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.680	13.1	B
4	122nd Avenue/OR 224/OR 212	Signalized	HCM 7th Edition	WB Left	0.694	32.5	C
5	135th Avenue/OR 212	Signalized	HCM 7th Edition	WB Left	0.555	9.9	A
8	OR 212/OR 224 (Rock Creek Junction)	Signalized	HCM 7th Edition	WB Left	0.685	18.0	B
9	172nd Avenue/OR 212	Signalized	HCM 7th Edition	WB Left	0.643	46.5	D
10	122nd Avenue/Jennifer Street	Two-way stop	HCM 7th Edition	SB Left	0.077	14.4	B
101	122nd Avenue/Sunrise Westbound	Signalized	HCM 7th Edition	NB Left	0.981	39.8	D
102	122nd Avenue/Sunrise Eastbound	Signalized	HCM 7th Edition	EB Right	0.742	13.2	B
103	142nd Avenue/Backage Road	Signalized	HCM 7th Edition	SB Left	0.421	19.9	B
104	142nd Avenue/Highway 212 Access	Signalized	HCM 7th Edition	EB Left	0.581	7.9	A
105	142nd Avenue/OR 212	Two-way stop	HCM 7th Edition	SB Right	1.633	329.1	F

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: OR 213 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	17.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.835

Intersection Setup

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1000.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	0.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	0	0	0	233	0	237	0	1365	120	18	2690	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 [%]	0.00	0.00	0.00	7.00	0.00	7.00	0.00	8.00	16.00	47.00	8.00	0.00
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	119	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	233	0	118	0	1365	120	18	2690	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9200	1.0000	0.9200	1.0000	0.9200	0.9200	0.9200	0.9200	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	63	0	32	0	371	33	5	731	0
Total Analysis Volume [veh/h]	0	0	0	253	0	128	0	1484	130	20	2924	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Fully actuated
Offset [s]	24.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	4	0	4	0	2	2	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	0	0	16	0	16	0	82	82	7	93	0
Amber [s]	0.0	0.0	0.0	4.0	0.0	4.0	0.0	5.0	5.0	3.5	5.0	0.0
All red [s]	0.0	0.0	0.0	1.5	0.0	1.5	0.0	1.0	1.0	0.5	1.0	0.0
Walk [s]	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
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]	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	3.5	0.0	3.5	0.0	4.0	4.0	2.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	0.0	20.0	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	21	0	21	0	88	88	11	99	0
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	6	0	10	10	4	10	0
Vehicle Extension [s]	0.0	0.0	0.0	2.3	0.0	2.3	0.0	0.5	0.5	2.3	0.5	0.0
Minimum Recall				No				Yes		No	Yes	
Maximum Recall				No				No		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		L	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		5.50	5.50	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		3.50	3.50	4.00	4.00	2.00	4.00
g_i, Effective Green Time [s]		16	16	87	87	2	93
g / C, Green / Cycle		0.13	0.13	0.72	0.72	0.02	0.77
(v / s)_i Volume / Saturation Flow Rate		0.15	0.08	0.31	0.09	0.02	0.60
s, saturation flow rate [veh/h]		1709	1526	4849	1411	1138	4849
c, Capacity [veh/h]		221	197	3509	1021	20	3757
d1, Uniform Delay [s]		52.25	49.66	6.60	5.05	58.91	7.66
k, delay calibration		0.42	0.08	0.50	0.50	0.07	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		100.47	2.66	0.38	0.26	67.36	1.65
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		1.14	0.65	0.42	0.13	0.98	0.78
d, Delay for Lane Group [s/veh]		152.72	52.32	6.98	5.31	126.27	9.31
Lane Group LOS		F	D	A	A	F	A
Critical Lane Group		Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		12.80	3.80	4.62	0.98	0.99	11.92
50th-Percentile Queue Length [ft/ln]		320.07	94.96	115.43	24.40	24.75	297.88
95th-Percentile Queue Length [veh/ln]		19.78	6.84	8.14	1.76	1.78	17.58
95th-Percentile Queue Length [ft/ln]		494.46	170.94	203.53	43.91	44.55	439.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	152.72	0.00	52.32	0.00	6.98	5.31	126.27	9.31	0.00
Movement LOS				F		D		A	A	F	A	
d_A, Approach Delay [s/veh]	0.00			118.99			6.85			10.11		
Approach LOS	A			F			A			B		
d_I, Intersection Delay [s/veh]	17.44											
Intersection LOS	B											
Intersection V/C	0.835											

Emissions

Vehicle Miles Traveled [mph]		48.96	24.77	470.10	41.18	3.15	461.04
Stops [stops/h]		384.06	113.95	415.52	29.27	29.70	1072.28
Fuel consumption [US gal/h]		12.00	3.01	23.76	2.00	0.81	30.45
CO [g/h]		838.70	210.54	1660.56	139.62	56.46	2128.22
NOx [g/h]		163.18	40.96	323.08	27.16	10.98	414.08
VOC [g/h]		194.38	48.79	384.85	32.36	13.08	493.24

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	258	1367	1550
d_b, Bicycle Delay [s]	60.00	45.50	6.02	3.04
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.447	3.179
Bicycle LOS	D	A	B	C

Sequence

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



Intersection Level Of Service Report
Intersection 2: OR 213 NB Ramps/I-205 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	538.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.077

Intersection Setup

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	415.00	100.00	100.00	160.00	100.00	405.00	365.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	2
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	332	1	243	12	0	364	323	1275	0	0	2012	513
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 [%]	8.00	0.00	18.00	23.00	0.00	9.00	6.00	8.00	0.00	0.00	8.00	4.00
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	0	0	0	38
Total Hourly Volume [veh/h]	332	1	243	12	0	364	323	1275	0	0	2012	475
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200
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]	90	0	66	3	0	99	88	346	0	0	547	129
Total Analysis Volume [veh/h]	361	1	264	13	0	396	351	1386	0	0	2187	516
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	1			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Fully actuated
Offset [s]	81.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Split	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	8	7	0	4	5	2	0	0	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	19	31	31	18	0	30	30	54	0	0	20	20
Amber [s]	4.0	4.0	4.0	4.0	0.0	4.0	3.5	5.0	0.0	0.0	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	0.0	1.5	0.5	1.0	0.0	0.0	1.0	1.0
Walk [s]	7	7	7	0	0	0	0	7	0	0	7	7
Pedestrian Clearance [s]	12	24	24	0	0	0	0	20	0	0	12	12
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	0.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	0.0	3.5	2.0	4.0	0.0	0.0	4.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	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]	25	37	37	24	0	35	34	60	0	0	26	26
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	4	4	4	0	4	4	6	0	0	6	6
Vehicle Extension [s]	2.3	2.3	2.3	2.3	0.0	2.3	2.3	4.6	0.0	0.0	4.6	4.6
Minimum Recall	No	No		No		No	Yes	Yes			No	
Maximum Recall	No	No		No		No	No	No			No	
Pedestrian Recall	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	L	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	4.00	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
l2, Clearance Lost Time [s]	3.50	3.50	3.50	0.00	2.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	16	22	6	67	51	75	20	20
g / C, Green / Cycle	0.13	0.18	0.05	0.56	0.43	0.63	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.11	0.16	0.01	0.15	0.20	0.29	0.53	0.56
s, saturation flow rate [veh/h]	3292	1616	1481	2655	1724	4849	3389	1617
c, Capacity [veh/h]	430	292	77	1489	734	3034	565	269
d1, Uniform Delay [s]	50.92	48.20	54.40	13.59	24.84	11.76	50.00	50.00
k, delay calibration	0.07	0.12	0.07	0.07	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]	2.77	11.49	0.63	0.06	2.23	0.50	990.28	1064.32
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	0.84	0.91	0.17	0.27	0.48	0.46	3.19	3.34
d, Delay for Lane Group [s/veh]	53.69	59.69	55.02	13.65	27.07	12.26	1040.28	1114.32
Lane Group LOS	D	E	E	B	C	B	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.46	8.68	0.39	2.75	7.61	6.33	86.12	87.70
50th-Percentile Queue Length [ft/ln]	136.38	216.92	9.76	68.66	190.21	158.21	2153.05	2192.56
95th-Percentile Queue Length [veh/ln]	9.29	13.51	0.70	4.94	12.13	10.45	133.15	135.56
95th-Percentile Queue Length [ft/ln]	232.13	337.69	17.56	123.59	303.30	261.35	3328.80	3389.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.69	59.69	59.69	55.02	0.00	13.65	27.07	12.26	0.00	0.00	1053.31	1114.32
Movement LOS	D	E	E	E		B	C	B			F	F
d_A, Approach Delay [s/veh]	56.23			14.97			15.25			1064.96		
Approach LOS	E			B			B			F		
d_I, Intersection Delay [s/veh]	538.16											
Intersection LOS	F											
Intersection V/C	1.077											

Emissions

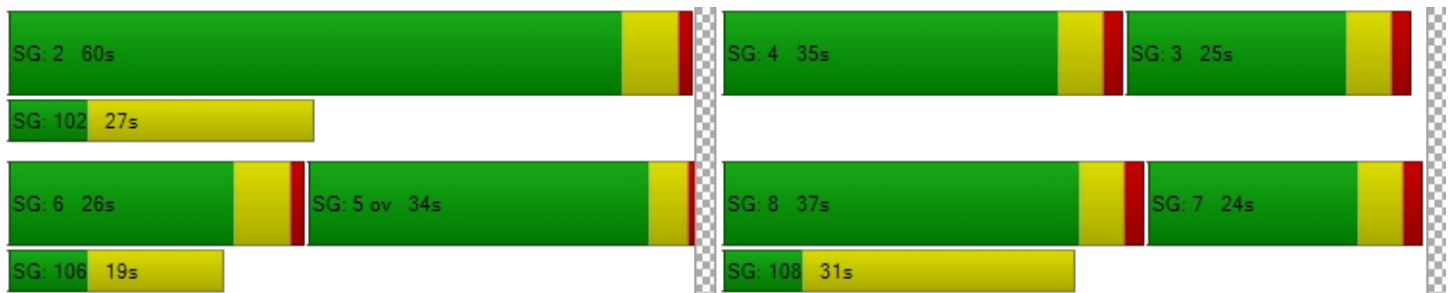
Vehicle Miles Traveled [mph]	75.62	55.51	1.95	59.46	55.34	218.54	451.45	225.73
Stops [stops/h]	327.30	260.30	11.71	164.78	228.25	569.56	5167.32	2631.07
Fuel consumption [US gal/h]	8.86	6.94	0.29	4.46	5.47	15.60	428.51	228.09
CO [g/h]	619.66	485.25	20.31	311.65	382.54	1090.57	29953.03	15943.53
NOx [g/h]	120.56	94.41	3.95	60.63	74.43	212.19	5827.77	3102.03
VOC [g/h]	143.61	112.46	4.71	72.23	88.66	252.75	6941.90	3695.07

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	49.50
I_p,int, Pedestrian LOS Score for Intersectio	2.157	2.465	0.000	3.236
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	525	308	900	333
d_b, Bicycle Delay [s]	32.63	42.93	18.15	41.67
I_b,int, Bicycle LOS Score for Intersection	2.593	1.560	2.515	3.067
Bicycle LOS	B	A	B	C

Sequence

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



Intersection Level Of Service Report
Intersection 3: I-205 NB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	13.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.680

Intersection Setup

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Approach	Eastbound		Westbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	1	2
Entry Pocket Length [ft]	100.00	100.00	630.00	100.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	0.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present			No		No	
Crosswalk	No		No		No	

Volumes

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Base Volume Input [veh/h]	0	0	512	2525	1207	378
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	19.00	3.00	12.00	7.00
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	0	0	0
Total Hourly Volume [veh/h]	0	0	512	2525	1207	378
Peak Hour Factor	1.0000	1.0000	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	131	644	308	96
Total Analysis Volume [veh/h]	0	0	522	2577	1232	386
Presence of On-Street Parking			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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	101
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	0	0	1	6	2	2
Auxiliary Signal Groups						
Maximum Green [s]	0	0	26	60	30	30
Amber [s]	0.0	0.0	3.5	5.0	5.0	5.0
All red [s]	0.0	0.0	0.5	2.0	2.0	2.0
Walk [s]	0	0	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	17	17
Delayed Vehicle Green [s]	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	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	5.0	5.0	5.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	30	30	30	30
Lead / Lag	-	-	Lag	-	-	-
Minimum Green [s]	0	0	4	10	10	10
Vehicle Extension [s]	0.0	0.0	2.3	4.7	4.7	4.7
Minimum Recall			No	Yes	Yes	
Maximum Recall			No	No	No	
Pedestrian Recall			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	R
C, Cycle Length [s]	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	25	56	27	27
g / C, Green / Cycle	0.36	0.80	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.34	0.51	0.26	0.25
s, saturation flow rate [veh/h]	1538	5053	4685	1526
c, Capacity [veh/h]	555	4038	1786	582
d1, Uniform Delay [s]	21.60	2.87	18.12	17.88
k, delay calibration	0.37	0.20	0.20	0.20
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.18	0.32	0.90	2.45
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	0.94	0.64	0.69	0.66
d, Delay for Lane Group [s/veh]	42.78	3.19	19.02	20.33
Lane Group LOS	D	A	B	C
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.77	1.88	5.22	5.10
50th-Percentile Queue Length [ft/ln]	269.28	47.07	130.39	127.39
95th-Percentile Queue Length [veh/ln]	16.15	3.39	8.96	8.80
95th-Percentile Queue Length [ft/ln]	403.84	84.73	224.02	219.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	42.78	3.19	19.02	20.33
Movement LOS			D	A	B	C
d_A, Approach Delay [s/veh]	0.00		9.86		19.33	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	13.11					
Intersection LOS	B					
Intersection V/C	0.680					

Emissions

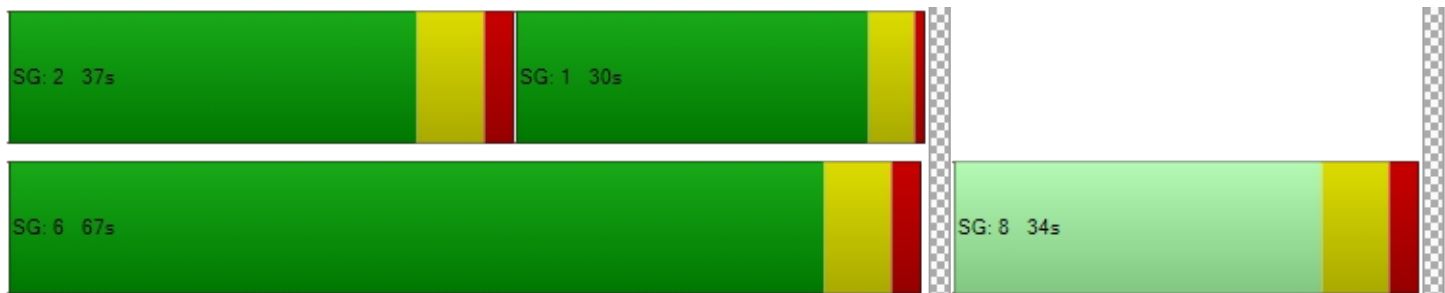
Vehicle Miles Traveled [mph]		723.42	3571.36	308.65	96.70
Stops [stops/h]		556.27	291.70	808.06	263.16
Fuel consumption [US gal/h]		37.40	150.30	21.94	7.03
CO [g/h]		2614.10	10506.20	1533.53	491.54
NOx [g/h]		508.61	2044.13	298.37	95.64
VOC [g/h]		605.84	2434.91	355.41	113.92

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1721	861
d_b, Bicycle Delay [s]	34.85	0.68	11.31
I_b,int, Bicycle LOS Score for Intersection	4.132	3.264	2.450
Bicycle LOS	D	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 4: 122nd Avenue/OR 224/OR 212

Control Type:	Signalized	Delay (sec / veh):	32.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.694

Intersection Setup

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T			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 [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	2	2	0	0	1	0	2
Entry Pocket Length [ft]	135.00	100.00	100.00	525.00	100.00	350.00	220.00	100.00	100.00	255.00	100.00	410.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Base Volume Input [veh/h]	15	96	0	209	279	1165	505	444	107	2	736	1244
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 [%]	50.00	48.00	20.00	8.00	19.00	14.00	30.00	14.00	27.00	17.00	8.00	3.00
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	0	0	0	0
Total Hourly Volume [veh/h]	15	96	0	209	279	1165	505	444	107	2	736	1244
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
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]	4	26	0	56	74	310	134	118	28	1	196	331
Total Analysis Volume [veh/h]	16	102	0	222	297	1239	537	472	114	2	783	1323
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			1			1		

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	Fully actuated
Offset [s]	17.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						6,7
Maximum Green [s]	4	38	38	4	38	38	28	66	66	4	42	42
Amber [s]	3.5	4.3	4.3	3.5	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	9	9	0	7	7	0	8	8	0	7	7
Pedestrian Clearance [s]	0	26	26	0	21	21	0	23	23	0	18	18
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.8	2.8	2.0	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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]	8	43	43	8	43	43	32	71	71	8	47	47
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	4.6	2.0	4.6	4.6
Minimum Recall	No	No		No	No	No	No	Yes		No	Yes	Yes
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.80	4.40	4.80	4.80	4.00	5.40	5.40	4.00	5.40	5.40
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	0.00
l2, Clearance Lost Time [s]	2.00	2.80	0.00	2.80	0.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	2	13	40	39	77	28	71	71	0	43	75
g / C, Green / Cycle	0.01	0.10	0.31	0.30	0.59	0.21	0.54	0.54	0.00	0.33	0.58
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.07	0.18	0.49	0.20	0.18	0.18	0.00	0.23	0.48
s, saturation flow rate [veh/h]	276	1180	3176	1615	2514	2681	1690	1563	1567	3389	2756
c, Capacity [veh/h]	55	117	887	486	1486	575	918	849	3	1121	1591
d1, Uniform Delay [s]	65.00	57.72	35.09	38.89	21.23	50.16	16.54	16.58	64.80	37.86	22.10
k, delay calibration	0.50	0.07	0.07	0.11	0.28	0.04	0.50	0.50	0.04	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]	12.68	11.43	0.09	1.29	3.21	3.22	0.96	1.06	46.51	3.62	5.22
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	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	0.29	0.87	0.25	0.61	0.83	0.93	0.33	0.33	0.58	0.70	0.83
d, Delay for Lane Group [s/veh]	77.68	69.15	35.18	40.19	24.44	53.38	17.51	17.64	111.31	41.48	27.32
Lane Group LOS	E	E	D	D	C	D	B	B	F	D	C
Critical Lane Group	No	Yes	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.76	3.68	2.64	8.30	15.02	8.81	5.27	4.96	0.11	11.41	16.73
50th-Percentile Queue Length [ft/ln]	18.99	92.05	66.08	207.60	375.53	220.33	131.85	124.08	2.77	285.13	418.23
95th-Percentile Queue Length [veh/ln]	1.37	6.63	4.76	13.03	21.38	13.68	9.04	8.62	0.20	16.94	23.44
95th-Percentile Queue Length [ft/ln]	34.18	165.68	118.95	325.75	534.43	342.05	226.01	215.42	4.99	423.59	585.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	77.68	69.15	69.15	35.18	40.19	24.44	53.38	17.55	17.64	111.31	41.48	27.32
Movement LOS	E	E	E	D	D	C	D	B	B	F	D	C
d_A, Approach Delay [s/veh]	70.31			28.46			34.69			32.66		
Approach LOS	E			C			C			C		
d_I, Intersection Delay [s/veh]	32.53											
Intersection LOS	C											
Intersection V/C	0.694											

Emissions

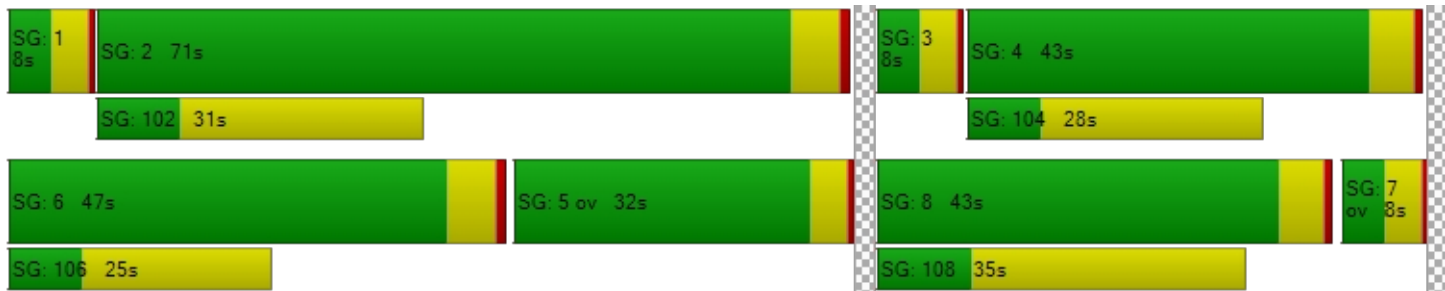
Vehicle Miles Traveled [mph]	3.61	22.99	51.26	68.58	286.08	482.67	272.18	254.53	1.32	516.24	872.27
Stops [stops/h]	21.03	101.96	146.39	229.96	831.94	488.12	146.05	137.44	3.07	631.67	926.55
Fuel consumption [US gal/h]	0.52	2.94	4.51	6.52	22.54	28.40	13.09	12.25	0.12	31.35	48.38
CO [g/h]	36.18	205.84	315.11	455.90	1575.22	1985.12	915.02	856.55	8.15	2191.44	3381.94
NOx [g/h]	7.04	40.05	61.31	88.70	306.48	386.23	178.03	166.65	1.59	426.37	658.00
VOC [g/h]	8.38	47.71	73.03	105.66	365.07	460.07	212.06	198.51	1.89	507.89	783.80

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	11.0	13.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.55	54.47	54.47	52.65
I_p,int, Pedestrian LOS Score for Intersectio	2.130	3.130	3.007	3.080
Crosswalk LOS	B	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]	588	588	1009	640
d_b, Bicycle Delay [s]	32.41	32.43	15.96	30.07
I_b,int, Bicycle LOS Score for Intersection	1.754	4.460	2.486	3.299
Bicycle LOS	A	E	B	C

Sequence

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



Intersection Level Of Service Report
Intersection 5: 135th Avenue/OR 212

Control Type:	Signalized	Delay (sec / veh):	9.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.555

Intersection Setup

Name	135th Ave		Highway 212		Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↔↔↔		↑↑		↔↔	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	300.00	100.00	100.00	60.00	200.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	135th Ave		Highway 212		Highway 212	
Base Volume Input [veh/h]	119	110	307	4	16	1354
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	14.00	14.00	17.00	8.00	8.00
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	0	0	0
Total Hourly Volume [veh/h]	119	110	307	4	16	1354
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	29	81	1	4	356
Total Analysis Volume [veh/h]	125	116	323	4	17	1425
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		1		0	
v_ci, Inbound Pedestrian Volume crossing mi	1		1		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		4	

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	Fully actuated
Offset [s]	79.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	Protected	Permissive
Signal Group	3	3	2	2	1	6
Auxiliary Signal Groups						
Maximum Green [s]	18	18	72	72	7	83
Amber [s]	3.5	3.5	4.7	4.7	3.5	4.7
All red [s]	0.5	0.5	0.7	0.7	0.5	0.7
Walk [s]	0	0	8	8	0	7
Pedestrian Clearance [s]	0	0	18	18	0	14
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]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	3.4	3.4	2.0	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	6.0	6.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	22	22	77	77	11	88
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Vehicle Extension [s]	2.3	2.3	4.5	4.5	2.3	4.5
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		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	L	R	C	R	L	C
C, Cycle Length [s]	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	5.40	5.40	4.00	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	3.40	3.40	2.00	3.40
g_i, Effective Green Time [s]	10	10	85	85	2	90
g / C, Green / Cycle	0.09	0.09	0.77	0.77	0.02	0.82
(v / s)_i Volume / Saturation Flow Rate	0.07	0.05	0.10	0.00	0.01	0.42
s, saturation flow rate [veh/h]	1695	2542	3217	1396	1695	3389
c, Capacity [veh/h]	159	238	2474	1074	26	2782
d1, Uniform Delay [s]	48.78	47.34	3.26	2.94	53.85	3.04
k, delay calibration	0.07	0.07	0.50	0.50	0.07	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.25	0.94	0.11	0.01	15.13	0.68
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	0.79	0.49	0.13	0.00	0.65	0.51
d, Delay for Lane Group [s/veh]	54.03	48.29	3.37	2.95	68.98	3.72
Lane Group LOS	D	D	A	A	E	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.58	1.54	0.78	0.02	0.58	3.43
50th-Percentile Queue Length [ft/ln]	89.53	38.49	19.57	0.46	14.44	85.77
95th-Percentile Queue Length [veh/ln]	6.45	2.77	1.41	0.03	1.04	6.18
95th-Percentile Queue Length [ft/ln]	161.15	69.29	35.22	0.83	26.00	154.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.03	48.29	3.37	2.95	68.98	3.72
Movement LOS	D	D	A	A	E	A
d_A, Approach Delay [s/veh]	51.26		3.37		4.49	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	9.92					
Intersection LOS	A					
Intersection V/C	0.555					

Emissions

Vehicle Miles Traveled [mph]	24.46	22.70	212.96	2.64	5.06	424.42
Stops [stops/h]	117.20	100.78	51.23	0.61	18.91	224.56
Fuel consumption [US gal/h]	3.03	2.63	9.27	0.11	0.55	19.79
CO [g/h]	211.70	183.90	648.07	7.99	38.55	1383.48
NOx [g/h]	41.19	35.78	126.09	1.55	7.50	269.17
VOC [g/h]	49.06	42.62	150.20	1.85	8.93	320.63

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0		0.0		0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00
d_p, Pedestrian Delay [s]	43.66		0.00		0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.204		0.000		0.000
Crosswalk LOS	B		F		F
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000
c_b, Capacity of the bicycle lane [bicycles/h]	327		1302		1502
d_b, Bicycle Delay [s]	38.47		6.70		3.42
I_b,int, Bicycle LOS Score for Intersection	1.560		1.829		2.749
Bicycle LOS	A		A		B

Sequence

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



MOVEMENT SUMMARY

Site: 106 [Highway 212/Riverbend_4LanePM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Four-Lane Sunrise
 Site Category: (None)
 Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	[Dist]			mph	
			veh/h		veh/h					veh	ft				
South: Riverbend															
3	L2	All MCs	75	3.0	75	3.0	0.622	34.1	LOS D	1.9	50.3	0.89	1.19	1.54	14.5
18	R2	All MCs	63	20.0	63	20.0	0.622	54.5	LOS F	1.9	50.3	0.89	1.19	1.54	14.5
Approach			138	10.7	138	10.7	0.622	42.2	LOS E	1.9	50.3	0.89	1.19	1.54	14.5
East: Highway 212															
1	L2	All MCs	22	0.0	22	0.0	0.383	5.9	LOS A	2.1	55.9	0.27	0.11	0.27	34.9
6	T1	All MCs	923	7.0	923	7.0	0.383	6.4	LOS A	2.1	55.9	0.27	0.11	0.27	34.8
Approach			944	6.8	944	6.8	0.383	6.4	LOS A	2.1	55.9	0.27	0.11	0.27	34.8
West: Highway 212															
2	T1	All MCs	1573	6.0	1573	6.0	0.630	8.4	LOS A	6.0	156.9	0.21	0.05	0.21	34.0
12	R2	All MCs	86	2.0	86	2.0	0.630	8.1	LOS A	6.0	156.9	0.21	0.05	0.21	34.1
Approach			1659	5.8	1659	5.8	0.630	8.4	LOS A	6.0	156.9	0.21	0.05	0.21	34.0
All Vehicles			2741	6.4	2741	6.4	0.630	9.5	LOS A	6.0	156.9	0.27	0.13	0.30	32.0

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

Roundabout LOS Method: Same as Sign Control.

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

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

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

Roundabout Capacity Model: US HCM 6.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: H:\27\27852 - Sunrise Corridor Community Visioning\synchro\27852_RoundaboutsAnalysis.sjp9

Intersection Level Of Service Report
Intersection 8: OR 212/OR 224 (Rock Creek Junction)

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name	Highway 224		Highway 212		Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	1	0	2	1	0
Entry Pocket Length [ft]	155.00	70.00	100.00	125.00	230.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Highway 224		Highway 212		Highway 212	
Base Volume Input [veh/h]	1141	162	110	428	264	381
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	8.00	12.00	15.00	3.00	8.00
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	81	0	214	0	0
Total Hourly Volume [veh/h]	1141	81	110	214	264	381
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	300	21	29	56	69	100
Total Analysis Volume [veh/h]	1201	85	116	225	278	401
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	148
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	41.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Overlap	Protected	Permissive
Signal Group	8	0	2	2	1	6
Auxiliary Signal Groups				2,8		
Maximum Green [s]	72	0	24	24	37	65
Amber [s]	4.7	0.0	5.0	5.0	3.5	5.0
All red [s]	0.7	0.0	1.0	1.0	0.5	1.0
Walk [s]	8	0	7	7	7	0
Pedestrian Clearance [s]	16	0	14	14	10	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]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	0.0	4.0	4.0	2.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	0	30	30	30	30
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	8	0	10	10	4	10
Vehicle Extension [s]	2.5	0.0	4.8	4.8	3.5	4.8
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	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	L	R	C	R	L	C
C, Cycle Length [s]	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	5.40	5.40	6.00	5.40	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	4.00	0.00	2.00	4.00
g_i, Effective Green Time [s]	31	31	10	47	13	27
g / C, Green / Cycle	0.44	0.44	0.14	0.67	0.19	0.39
(v / s)_i Volume / Saturation Flow Rate	0.36	0.06	0.04	0.09	0.16	0.12
s, saturation flow rate [veh/h]	3320	1492	3275	2520	1767	3389
c, Capacity [veh/h]	1468	660	470	1693	341	1335
d1, Uniform Delay [s]	16.96	11.47	26.43	4.11	26.88	14.48
k, delay calibration	0.08	0.08	0.21	0.21	0.13	0.21
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.88	0.06	0.53	0.07	5.73	0.24
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	0.82	0.13	0.25	0.13	0.82	0.30
d, Delay for Lane Group [s/veh]	17.83	11.53	26.96	4.17	32.61	14.73
Lane Group LOS	B	B	C	A	C	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	7.59	0.72	0.85	0.44	4.73	2.05
50th-Percentile Queue Length [ft/ln]	189.72	18.03	21.32	11.01	118.13	51.13
95th-Percentile Queue Length [veh/ln]	12.11	1.30	1.54	0.79	8.29	3.68
95th-Percentile Queue Length [ft/ln]	302.67	32.45	38.38	19.82	207.25	92.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.83	11.53	26.96	4.17	32.61	14.73
Movement LOS	B	B	C	A	C	B
d_A, Approach Delay [s/veh]	17.42		11.93		22.05	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	17.97					
Intersection LOS	B					
Intersection V/C	0.685					

Emissions

Vehicle Miles Traveled [mph]	392.82	27.80	16.84	32.67	17.70	25.53
Stops [stops/h]	787.56	37.42	88.52	45.71	245.18	212.23
Fuel consumption [US gal/h]	24.88	1.55	1.82	1.79	3.93	3.43
CO [g/h]	1739.18	108.39	127.13	125.02	274.57	239.42
NOx [g/h]	338.38	21.09	24.74	24.32	53.42	46.58
VOC [g/h]	403.07	25.12	29.46	28.97	63.63	55.49

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	12.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.56	0.00	23.73
I_p,int, Pedestrian LOS Score for Intersectio	2.807	0.000	2.472
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]	2076	692	1874
d_b, Bicycle Delay [s]	0.05	14.84	0.14
I_b,int, Bicycle LOS Score for Intersection	1.560	2.017	2.120
Bicycle LOS	A	B	B

Sequence

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



Intersection Level Of Service Report
Intersection 9: 172nd Avenue/OR 212

Control Type:	Signalized	Delay (sec / veh):	46.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	2	2	0	0	1	0	1
Entry Pocket Length [ft]	110.00	100.00	100.00	235.00	100.00	290.00	550.00	100.00	100.00	395.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	245	122	23	121	71	1253	432	597	31	10	1253	72
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 [%]	0.00	2.00	6.00	6.00	4.00	5.00	9.00	14.00	12.00	11.00	8.00	13.00
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	0	0	0	0
Total Hourly Volume [veh/h]	245	122	23	121	71	1253	432	597	31	10	1253	72
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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]	68	34	6	34	20	348	120	166	9	3	348	20
Total Analysis Volume [veh/h]	272	136	26	134	79	1392	480	663	34	11	1392	80
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			2			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			2			0		
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	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	8.5
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	8	8	4	4	5	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	36	36	36	35	35	19	19	64	64	4	50	50
Amber [s]	3.5	3.5	3.5	4.7	4.7	3.5	3.5	5.0	5.0	3.5	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.5	1.5	1.0	1.5	1.5
Walk [s]	9	9	9	9	9	0	0	7	7	0	8	8
Pedestrian Clearance [s]	22	22	22	21	21	0	0	11	11	0	20	20
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	4.2	4.2	2.5	2.5	4.5	4.5	2.5	4.5	4.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	20.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	4	4	10	10	4	10	10
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.3	2.3	5.4	5.4	2.3	5.4	5.4
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	121	121	121	121	121	121	121	121	121	121	121
L, Total Lost Time per Cycle [s]	5.00	5.00	6.20	6.20	4.50	4.50	6.50	6.50	4.50	6.50	6.50
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	0.00
l2, Clearance Lost Time [s]	3.00	3.00	4.20	4.20	0.00	2.50	4.50	4.50	2.50	4.50	4.50
g_i, Effective Green Time [s]	36	36	35	35	60	19	68	68	1	50	50
g / C, Green / Cycle	0.30	0.30	0.29	0.29	0.50	0.16	0.56	0.56	0.01	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.20	0.09	0.11	0.04	0.51	0.15	0.21	0.21	0.01	0.41	0.06
s, saturation flow rate [veh/h]	1335	1818	1184	1840	2737	3264	1690	1661	1652	3389	1449
c, Capacity [veh/h]	394	543	301	531	1359	512	944	927	18	1398	598
d1, Uniform Delay [s]	42.78	32.72	43.31	32.03	30.40	50.52	14.92	14.92	59.68	35.49	22.14
k, delay calibration	0.19	0.08	0.08	0.08	0.32	0.07	0.28	0.28	0.07	0.28	0.28
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]	3.82	0.23	0.77	0.09	25.98	5.81	0.64	0.65	18.55	17.11	0.26
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	0.69	0.30	0.45	0.15	1.02	0.94	0.37	0.37	0.61	1.00	0.13
d, Delay for Lane Group [s/veh]	46.60	32.95	44.08	32.12	56.37	56.33	15.56	15.58	78.23	52.60	22.40
Lane Group LOS	D	C	D	C	F	E	B	B	E	D	C
Critical Lane Group	No	No	No	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.05	3.72	3.68	1.75	23.82	7.40	5.18	5.10	0.42	22.47	1.42
50th-Percentile Queue Length [ft/ln]	201.36	93.00	91.96	43.81	595.55	184.95	129.40	127.39	10.56	561.81	35.41
95th-Percentile Queue Length [veh/ln]	12.71	6.70	6.62	3.15	32.43	11.86	8.91	8.80	0.76	30.25	2.55
95th-Percentile Queue Length [ft/ln]	317.72	167.41	165.53	78.86	810.78	296.46	222.68	219.94	19.01	756.17	63.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.60	32.95	32.95	44.08	32.12	56.37	56.33	15.57	15.58	78.23	52.60	22.40
Movement LOS	D	C	C	D	C	F	E	B	B	E	D	C
d_A, Approach Delay [s/veh]	41.50			54.15			32.19			51.16		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	46.54											
Intersection LOS	D											
Intersection V/C	0.643											

Emissions

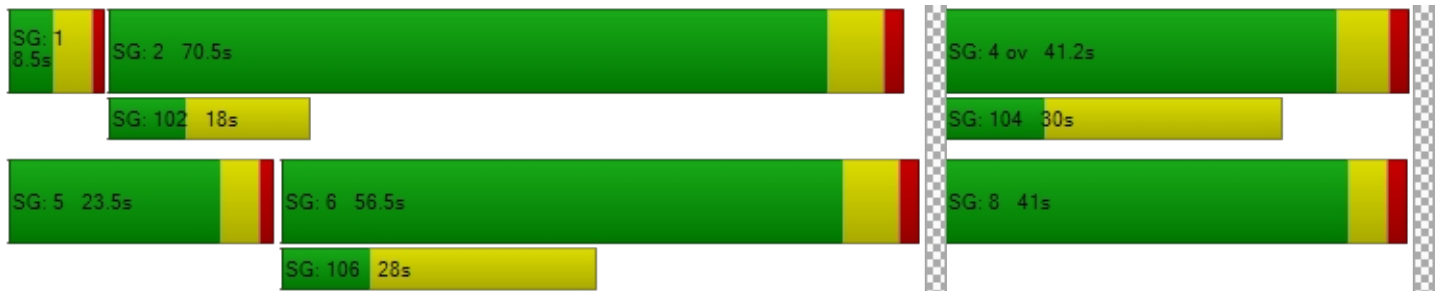
Vehicle Miles Traveled [mph]	32.00	19.06	17.43	10.28	181.06	56.54	41.39	40.71	5.15	651.84	37.46
Stops [stops/h]	239.24	110.50	109.26	52.05	1415.18	439.48	153.75	151.35	12.55	1335.00	42.07
Fuel consumption [US gal/h]	5.22	2.48	2.52	1.23	31.24	12.90	4.44	4.37	0.51	53.84	2.17
CO [g/h]	364.75	173.43	176.37	85.77	2183.63	902.00	310.56	305.67	35.49	3763.57	151.81
NOx [g/h]	70.97	33.74	34.31	16.69	424.86	175.50	60.42	59.47	6.90	732.25	29.54
VOC [g/h]	84.53	40.19	40.87	19.88	506.08	209.05	71.98	70.84	8.22	872.24	35.18

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			12.0			13.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	50.10			49.19			48.30			0.00		
I_p,int, Pedestrian LOS Score for Intersectio	2.136			2.840			3.884			0.000		
Crosswalk LOS	B			C			D			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	594			578			1056			825		
d_b, Bicycle Delay [s]	29.95			30.65			13.50			20.91		
I_b,int, Bicycle LOS Score for Intersection	2.276			4.208			2.531			2.783		
Bicycle LOS	B			D			B			C		

Sequence

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



Intersection Level Of Service Report
Intersection 10: 122nd Avenue/Jennifer Street

Control Type:	Two-way stop	Delay (sec / veh):	14.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.077

Intersection Setup

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⊕			⊕			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	75.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Base Volume Input [veh/h]	0	0	0	29	0	205	71	260	0	0	86	4
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 [%]	0.00	0.00	0.00	12.00	0.00	32.00	61.00	12.00	0.00	100.00	14.00	12.00
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	0	0	29	0	205	71	260	0	0	86	4
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	8	0	56	19	71	0	0	23	1
Total Analysis Volume [veh/h]	0	0	0	32	0	223	77	283	0	0	93	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.08	0.00	0.25	0.06	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	18.22	13.46	9.73	14.41	14.16	10.43	8.21	0.00	0.00	9.11	0.00	0.00
Movement LOS	C	B	A	B	B	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.25	0.25	1.00	0.21	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	6.24	6.24	24.95	5.15	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.80			10.93			1.76			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	4.80											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 101: 122nd Avenue/Sunrise Westbound

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):	0.981

Intersection Setup

Name	122nd Avenue		Sunrise WB		Sunrise WB	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↵↵				↵↵	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	300.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		0.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No				No	
Crosswalk	No		No		Yes	

Volumes

Name	122nd Avenue		Sunrise WB		Sunrise WB	
Base Volume Input [veh/h]	1345	0	0	0	1059	1692
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	0.00	0.00	2.00	1.00
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	0	0	0
Total Hourly Volume [veh/h]	1345	0	0	0	1059	1692
Peak Hour Factor	0.9300	1.0000	1.0000	1.0000	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	362	0	0	0	285	455
Total Analysis Volume [veh/h]	1446	0	0	0	1139	1819
Presence of On-Street Parking	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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	Protected	Permissive
Signal Group	2	0	0	0	3	8
Auxiliary Signal Groups						
Maximum Green [s]	60	0	0	0	72	72
Amber [s]	3.5	0.0	0.0	0.0	3.5	3.5
All red [s]	1.0	0.0	0.0	0.0	1.0	1.0
Walk [s]	7	0	0	0	0	7
Pedestrian Clearance [s]	11	0	0	0	0	11
Delayed Vehicle Green [s]	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	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	0.0	0.0	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	0.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	0	0	0	30	30
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	5	0	0	0	5	5
Vehicle Extension [s]	3.0	0.0	0.0	0.0	3.0	3.0
Minimum Recall	No				No	No
Maximum Recall	No				No	No
Pedestrian Recall	No				No	No

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	L	C
C, Cycle Length [s]	141	141	141
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50
g_i, Effective Green Time [s]	60	72	72
g / C, Green / Cycle	0.43	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.42	0.33	0.51
s, saturation flow rate [veh/h]	3459	3459	3589
c, Capacity [veh/h]	1472	1766	1833
d1, Uniform Delay [s]	39.98	25.17	34.23
k, delay calibration	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	7.57	0.40	8.20
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	0.98	0.64	0.99
d, Delay for Lane Group [s/veh]	47.55	25.57	42.43
Lane Group LOS	D	C	D
Critical Lane Group	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	25.92	13.92	32.11
50th-Percentile Queue Length [ft/ln]	647.97	348.10	802.86
95th-Percentile Queue Length [veh/ln]	34.27	20.04	41.41
95th-Percentile Queue Length [ft/ln]	856.71	501.09	1035.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.55	0.00	0.00	0.00	25.57	42.43
Movement LOS	D				C	D
d_A, Approach Delay [s/veh]	47.55		0.00		35.94	
Approach LOS	D		A		D	
d_I, Intersection Delay [s/veh]	39.75					
Intersection LOS	D					
Intersection V/C	0.981					

Emissions

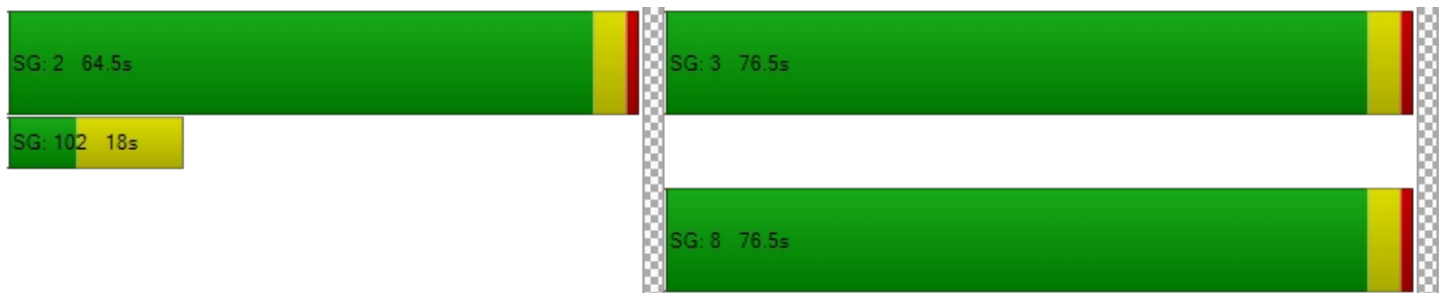
Vehicle Miles Traveled [mph]	120.46		150.95	241.07
Stops [stops/h]	1323.52		711.02	1639.89
Fuel consumption [US gal/h]	26.26		16.07	34.69
CO [g/h]	1835.75		1123.26	2424.83
NOx [g/h]	357.17		218.55	471.78
VOC [g/h]	425.45		260.33	561.98

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	59.93
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.874
Crosswalk LOS	F	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	851	0	1021
d_b, Bicycle Delay [s]	23.27	70.50	16.88
I_b,int, Bicycle LOS Score for Intersection	1.560	4.132	4.000
Bicycle LOS	A	D	D

Sequence

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



Intersection Level Of Service Report
Intersection 102: 122nd Avenue/Sunrise Eastbound

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.742

Intersection Setup

Name	122nd Avenue			122nd Avenue			Sunrise EB			Sunrise EB		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	1	0	0	0	0	2	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	50.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			0.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	Yes			No			Yes			No		

Volumes

Name	122nd Avenue			122nd Avenue			Sunrise EB			Sunrise EB		
Base Volume Input [veh/h]	0	1345	500	0	1059	0	0	560	594	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 [%]	0.00	5.00	6.00	0.00	2.00	0.00	0.00	2.00	6.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	1345	500	0	1059	0	0	560	594	0	0	0
Peak Hour Factor	1.0000	0.9300	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	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	362	134	0	285	0	0	151	160	0	0	0
Total Analysis Volume [veh/h]	0	1446	538	0	1139	0	0	602	639	0	0	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	2	2	6	6	0	4	4	4	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	73	73	73	73	0	39	39	39	0	0	0
Amber [s]	0.0	3.5	3.5	3.5	3.5	0.0	3.5	3.5	3.5	0.0	0.0	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	7	7	7	0	7	7	7	0	0	0
Pedestrian Clearance [s]	0	11	11	11	11	0	11	11	11	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		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	2.5	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	6.0	20.0	20.0	0.0	6.0	6.0	6.0	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: Free Running (No Pattern)

Split [s]	0	30	30	30	30	0	30	30	30	0	0	0
Lead / Lag	-	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	5	5	5	5	0	5	5	5	0	0	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		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	L	C	C	C	R	
C, Cycle Length [s]	65	65	65	65	65	65	65	
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	
g_i, Effective Green Time [s]	36	36	36	36	20	20	20	
g / C, Green / Cycle	0.56	0.56	0.56	0.56	0.30	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.42	0.20	0.00	0.32	0.16	0.16	0.23	
s, saturation flow rate [veh/h]	3475	2723	222	3560	1870	1870	2723	
c, Capacity [veh/h]	1934	1516	158	1982	570	570	829	
d1, Uniform Delay [s]	10.92	7.95	0.00	9.38	18.70	18.70	20.51	
k, delay calibration	0.11	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	
d2, Incremental Delay [s]	0.59	0.14	0.00	0.26	0.76	0.76	1.55	
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	0.75	0.35	0.00	0.57	0.53	0.53	0.77	
d, Delay for Lane Group [s/veh]	11.51	8.09	0.00	9.64	19.47	19.47	22.06	
Lane Group LOS	B	A	A	A	B	B	C	
Critical Lane Group	Yes	No	No	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	6.47	1.74	0.00	4.34	3.58	3.58	4.20	
50th-Percentile Queue Length [ft/ln]	161.70	43.44	0.00	108.48	89.42	89.42	105.01	
95th-Percentile Queue Length [veh/ln]	10.64	3.13	0.00	7.76	6.44	6.44	7.56	
95th-Percentile Queue Length [ft/ln]	265.97	78.19	0.00	193.88	160.95	160.95	189.01	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	11.51	8.09	0.00	9.64	0.00	19.47	19.47	22.06	0.00	0.00	0.00
Movement LOS		B	A	A	A		B	B	C			
d_A, Approach Delay [s/veh]	10.59			9.64			20.80			0.00		
Approach LOS	B			A			C			A		
d_I, Intersection Delay [s/veh]	13.24											
Intersection LOS	B											
Intersection V/C	0.742											

Emissions

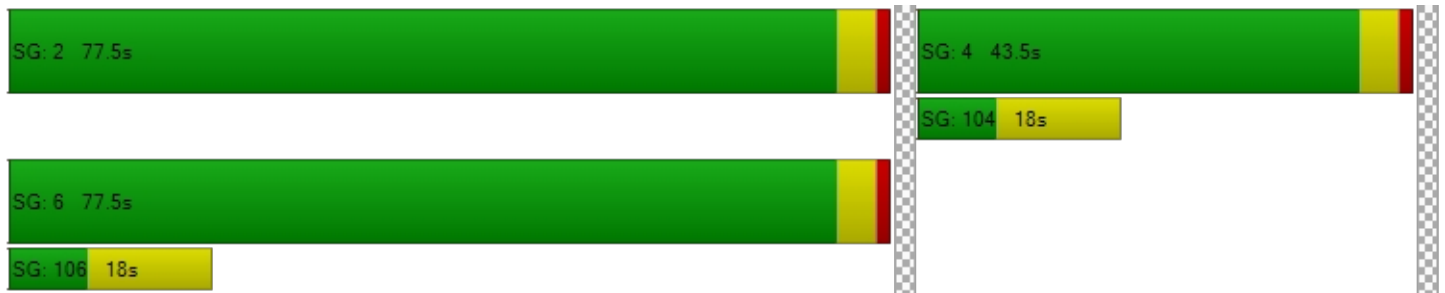
Vehicle Miles Traveled [mph]	333.87	124.22	0.00	94.89	36.03	36.03	76.48
Stops [stops/h]	718.80	193.10	0.00	482.21	198.74	198.74	466.78
Fuel consumption [US gal/h]	21.10	7.07	0.00	8.81	3.77	3.77	8.60
CO [g/h]	1475.19	493.93	0.00	615.50	263.77	263.77	600.82
NOx [g/h]	287.02	96.10	0.00	119.75	51.32	51.32	116.90
VOC [g/h]	341.89	114.47	0.00	142.65	61.13	61.13	139.25

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.33	0.00	22.33	0.00
I_p,int, Pedestrian LOS Score for Intersectio	3.046	0.000	2.415	0.000
Crosswalk LOS	C	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2253	2253	1204	0
d_b, Bicycle Delay [s]	0.52	0.52	5.13	32.39
I_b,int, Bicycle LOS Score for Intersection	3.196	2.499	2.583	4.132
Bicycle LOS	C	B	B	D

Sequence

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



Intersection Level Of Service Report
Intersection 103: 142nd Avenue/Backage Road

Control Type:	Signalized	Delay (sec / veh):	19.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.421

Intersection Setup

Name	142nd Avenue			142nd Avenue			Backage Road			Backage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	142nd Avenue			142nd Avenue			Backage Road			Backage Road		
Base Volume Input [veh/h]	371	61	137	10	50	10	10	100	530	60	100	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 [%]	2.00	2.00	5.00	2.00	8.00	2.00	2.00	2.00	4.00	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	0	0	0	0
Total Hourly Volume [veh/h]	371	61	137	10	50	10	10	100	530	60	100	10
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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]	101	17	37	3	14	3	3	27	144	16	27	3
Total Analysis Volume [veh/h]	403	66	149	11	54	11	11	109	576	65	109	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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	23.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	2	2	2	1	6	6	4	4	1	8	8	8
Auxiliary Signal Groups									1,4			
Maximum Green [s]	40	40	40	19	63	63	18	18	19	18	18	18
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Walk [s]	7	7	7	0	7	7	7	7	0	7	7	7
Pedestrian Clearance [s]	11	11	11	0	11	11	11	11	0	11	11	11
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No		No	No			No	No		No	
Maximum Recall		No		No	No			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	C	R	C
C, Cycle Length [s]	59	59	59	59	59	59	59
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	0.00	2.50
g_i, Effective Green Time [s]	24	24	3	28	18	26	18
g / C, Green / Cycle	0.41	0.41	0.06	0.47	0.30	0.44	0.30
(v / s)_i Volume / Saturation Flow Rate	0.30	0.13	0.01	0.04	0.07	0.37	0.15
s, saturation flow rate [veh/h]	1336	1666	1781	1728	1842	1564	1271
c, Capacity [veh/h]	590	680	104	821	628	687	470
d1, Uniform Delay [s]	17.85	11.87	26.34	8.45	15.25	14.69	16.11
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.41	0.26	0.44	0.04	0.15	11.69	0.54
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	0.68	0.32	0.11	0.08	0.19	0.84	0.39
d, Delay for Lane Group [s/veh]	19.26	12.14	26.78	8.50	15.40	26.37	16.64
Lane Group LOS	B	B	C	A	B	C	B
Critical Lane Group	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.72	1.74	0.15	0.40	1.12	7.97	1.82
50th-Percentile Queue Length [ft/ln]	118.06	43.42	3.79	9.90	27.92	199.20	45.48
95th-Percentile Queue Length [veh/ln]	8.29	3.13	0.27	0.71	2.01	12.60	3.27
95th-Percentile Queue Length [ft/ln]	207.16	78.15	6.82	17.82	50.25	314.93	81.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.26	12.14	12.14	26.78	8.50	8.50	15.40	15.40	26.37	16.64	16.64	16.64
Movement LOS	B	B	B	C	A	A	B	B	C	B	B	B
d_A, Approach Delay [s/veh]	16.78			11.14			24.48			16.64		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	19.90											
Intersection LOS	B											
Intersection V/C	0.421											

Emissions

Vehicle Miles Traveled [mph]	76.31	40.71	2.02	11.96	28.90	138.74	45.02
Stops [stops/h]	288.06	105.94	9.25	24.16	68.12	486.03	110.97
Fuel consumption [US gal/h]	6.31	2.79	0.19	0.74	1.94	11.49	3.09
CO [g/h]	441.24	195.18	13.59	51.61	135.76	803.03	216.20
NOx [g/h]	85.85	37.98	2.64	10.04	26.41	156.24	42.06
VOC [g/h]	102.26	45.24	3.15	11.96	31.46	186.11	50.11

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	19.53	19.53	19.53	19.53
I_p,int, Pedestrian LOS Score for Intersectio	2.520	1.986	2.886	1.913
Crosswalk LOS	B	A	C	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1356	2135	610	610
d_b, Bicycle Delay [s]	3.06	0.13	14.25	14.25
I_b,int, Bicycle LOS Score for Intersection	2.579	1.685	2.708	1.865
Bicycle LOS	B	A	B	A

Sequence

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



Intersection Level Of Service Report
Intersection 104: 142nd Avenue/Highway 212 Access

Control Type:	Signalized	Delay (sec / veh):	7.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

Intersection Setup

Name	142nd Avenue		142nd Avenue		Highway 212 Accesses	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	142nd Avenue		142nd Avenue		Highway 212 Accesses	
Base Volume Input [veh/h]	0	353	201	439	216	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	5.00	3.00	3.00	0.00
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	0	0	0
Total Hourly Volume [veh/h]	0	353	201	439	216	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	91	52	113	56	0
Total Analysis Volume [veh/h]	0	364	207	453	223	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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal Group	2	2	6	6	4	4
Auxiliary Signal Groups						
Maximum Green [s]	54	54	54	54	16	16
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	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]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	8	8	5	5	8	8
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		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	R	C
C, Cycle Length [s]	27	27	27	27
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]	11	11	11	7
g / C, Green / Cycle	0.39	0.39	0.39	0.24
(v / s)_i Volume / Saturation Flow Rate	0.20	0.11	0.29	0.12
s, saturation flow rate [veh/h]	1855	1825	1577	1810
c, Capacity [veh/h]	862	719	621	437
d1, Uniform Delay [s]	6.27	5.68	7.07	9.00
k, delay calibration	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	0.22	1.66	0.92
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	0.42	0.29	0.73	0.51
d, Delay for Lane Group [s/veh]	6.60	5.90	8.73	9.92
Lane Group LOS	A	A	A	A
Critical Lane Group	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.86	0.45	1.38	0.84
50th-Percentile Queue Length [ft/ln]	21.46	11.14	34.52	21.07
95th-Percentile Queue Length [veh/ln]	1.54	0.80	2.49	1.52
95th-Percentile Queue Length [ft/ln]	38.62	20.05	62.14	37.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.60	6.60	5.90	8.73	9.92	9.92
Movement LOS	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	6.60		7.84		9.92	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.85					
Intersection LOS	A					
Intersection V/C	0.581					

Emissions

Vehicle Miles Traveled [mph]	84.92	39.19	85.77	51.76
Stops [stops/h]	113.16	58.74	182.09	111.13
Fuel consumption [US gal/h]	4.61	2.19	5.34	3.20
CO [g/h]	322.21	152.84	373.41	223.34
NOx [g/h]	62.69	29.74	72.65	43.45
VOC [g/h]	74.67	35.42	86.54	51.76

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3956	3956	1172
d_b, Bicycle Delay [s]	13.05	13.05	2.34
I_b,int, Bicycle LOS Score for Intersection	2.160	2.649	1.928
Bicycle LOS	B	B	A

Sequence

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



**Intersection Level Of Service Report
Intersection 105: 142nd Avenue/OR 212**

Control Type:	Two-way stop	Delay (sec / veh):	329.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.633

Intersection Setup

Name	142nd Ave			142nd Ave			EB OR 212			WB OR 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↶			↷			↶↷			↶↷		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	165.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	142nd Ave			142nd Ave			EB OR 212			WB OR 212		
Base Volume Input [veh/h]	0	0	279	0	0	482	0	445	333	0	1400	209
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 [%]	0.00	0.00	18.00	0.00	0.00	3.00	0.00	13.00	13.00	0.00	8.00	3.00
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	0	279	0	0	482	0	445	333	0	1400	209
Peak Hour Factor	1.0000	1.0000	0.9600	1.0000	1.0000	0.9600	1.0000	0.9600	0.9600	1.0000	0.9600	0.9600
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	73	0	0	126	0	116	87	0	365	54
Total Analysis Volume [veh/h]	0	0	291	0	0	502	0	464	347	0	1458	218
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

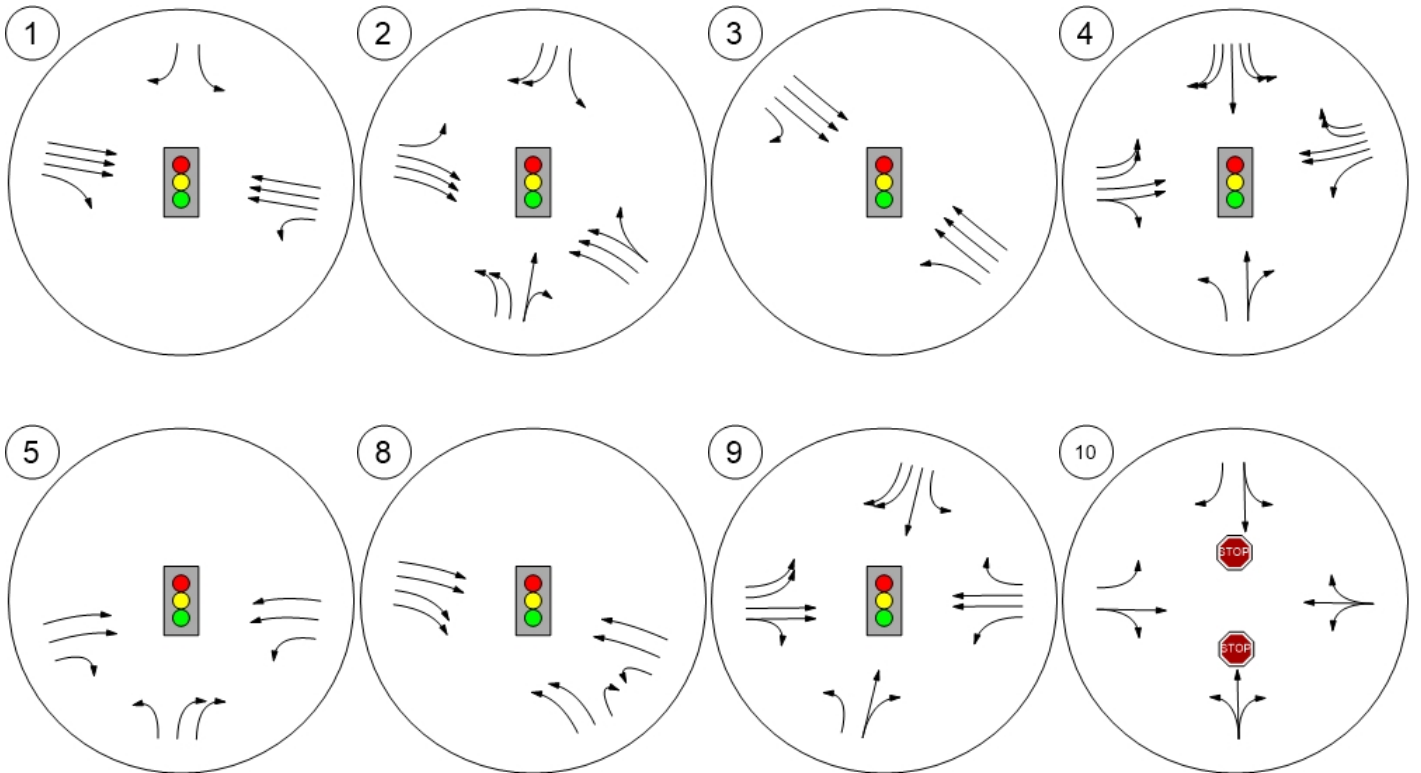
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.40	0.00	0.00	1.63	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	13.29	0.00	0.00	329.06	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			B			F		A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	1.95	0.00	0.00	30.49	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	48.73	0.00	0.00	762.36	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.29				329.06		0.00		0.00			
Approach LOS	B				F		A		A			
d_I, Intersection Delay [s/veh]	51.54											
Intersection LOS	F											

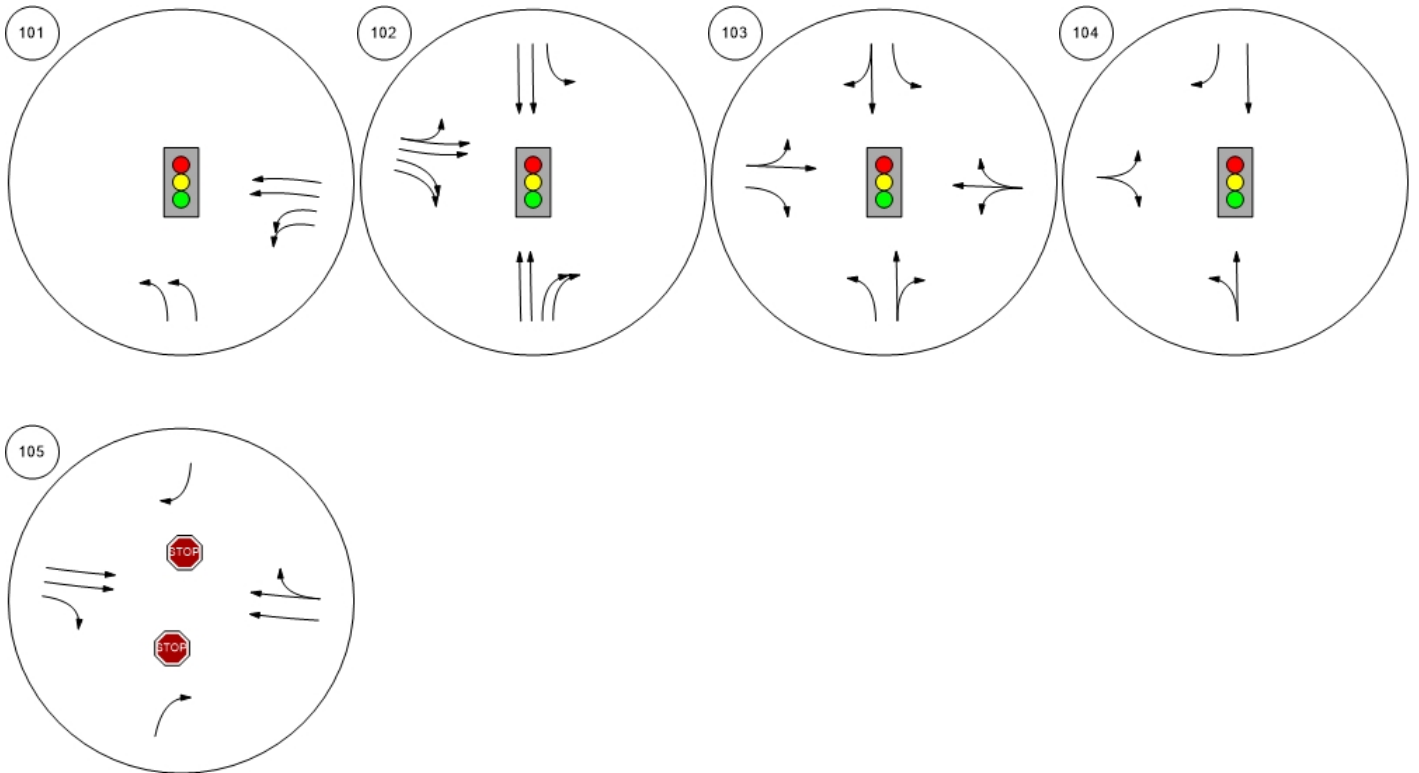
Study Intersections



Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



2045 4.4.2 Concept Results

Sunrise Refinement Plan

Vistro File: H:\...\Sunrise_AM_PREFERREDGateway.vistro

Scenario: Base Scenario

Report File: H:\...\2045_PREFERREDGatewayAM.pdf

3/17/2025

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1		Signalized	HCM 7th Edition	WB Left	0.985	25.9	C
2		Signalized	HCM 7th Edition	WB Right	1.232	639.0	F
3		Signalized	HCM 7th Edition	WB Left	0.773	15.9	B
4		Signalized	HCM 7th Edition	WB Left	0.956	29.8	C
5		Signalized	HCM 7th Edition	WB Left	0.719	13.9	B
8		Signalized	HCM 7th Edition	EB Thru	0.822	29.7	C
101		Signalized	HCM 7th Edition	WB Left	0.727	14.5	B
102		Signalized	HCM 7th Edition	EB Right	0.741	10.5	B
103		Signalized	HCM 7th Edition	SB Left	0.748	11.0	B
104		Signalized	HCM 7th Edition	EB Left	0.606	7.8	A
105		Signalized	HCM 7th Edition	NB Right	0.783	19.0	B
109		Signalized	HCM 7th Edition	NB Left	0.784	34.3	C
110		Signalized	HCM 7th Edition	EB Right	0.790	56.8	E
111		Signalized	HCM 7th Edition	WB Right	0.759	14.1	B
112		Signalized	HCM 7th Edition	SB Left	0.617	15.9	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:

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):	0.985

Intersection Setup

Name	I-205 SB On-Ramp						Sunrise Pkwy								
Approach	Northbound						Southbound			Eastbound			Westbound		
Lane Configuration															
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right			
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00			
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0			
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1000.00	75.00	100.00	100.00			
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0			
Exit Pocket Length [ft]	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 [mph]	0.00			30.00			30.00			30.00					
Grade [%]	0.00			0.00			0.00			0.00					
Curb Present				No			No			No					
Crosswalk	No			No			No			No					

Volumes

Name	I-205 SB On-Ramp						Sunrise Pkwy					
Base Volume Input [veh/h]	0	0	0	194	0	267	0	1452	81	7	2379	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 [%]	0.00	0.00	0.00	7.00	0.00	7.00	0.00	8.00	16.00	47.00	8.00	0.00
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	134	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	194	0	133	0	1452	81	7	2379	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9200	1.0000	0.9200	1.0000	0.9200	0.9200	0.9200	0.9200	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	53	0	36	0	395	22	2	646	0
Total Analysis Volume [veh/h]	0	0	0	211	0	145	0	1578	88	8	2586	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Fully actuated
Offset [s]	23.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	4	0	4	0	2	2	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	0	0	18	0	18	0	83	83	4	91	0
Amber [s]	0.0	0.0	0.0	4.0	0.0	4.0	0.0	5.0	5.0	3.5	5.0	0.0
All red [s]	0.0	0.0	0.0	1.5	0.0	1.5	0.0	1.0	1.0	0.5	1.0	0.0
Walk [s]	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
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]	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	3.5	0.0	3.5	0.0	4.0	4.0	2.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	0.0	20.0	0.0	6.0	6.0	20.0	6.0	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	23	0	23	0	89	89	8	97	0
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	6	0	10	10	4	10	0
Vehicle Extension [s]	0.0	0.0	0.0	2.3	0.0	2.3	0.0	0.5	0.5	2.3	0.5	0.0
Minimum Recall				No				Yes		No	Yes	
Maximum Recall				No				No		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		L	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		5.50	5.50	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		3.50	3.50	4.00	4.00	2.00	4.00
g_i, Effective Green Time [s]		17	17	87	87	1	92
g / C, Green / Cycle		0.14	0.14	0.72	0.72	0.01	0.77
(v / s)_i Volume / Saturation Flow Rate		0.12	0.10	0.47	0.06	0.01	0.76
s, saturation flow rate [veh/h]		1709	1526	3389	1411	1138	3389
c, Capacity [veh/h]		237	212	2451	1021	10	2593
d1, Uniform Delay [s]		50.76	49.16	8.60	4.90	59.40	13.96
k, delay calibration		0.23	0.09	0.50	0.50	0.07	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		19.89	3.32	1.32	0.17	61.95	17.02
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		0.89	0.68	0.64	0.09	0.82	1.00
d, Delay for Lane Group [s/veh]		70.65	52.49	9.91	5.07	121.34	30.97
Lane Group LOS		E	D	A	A	F	C
Critical Lane Group		Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		7.53	4.33	9.78	0.64	0.41	33.07
50th-Percentile Queue Length [ft/ln]		188.21	108.33	244.57	16.01	10.29	826.87
95th-Percentile Queue Length [veh/ln]		12.03	7.75	14.91	1.15	0.74	42.51
95th-Percentile Queue Length [ft/ln]		300.70	193.68	372.81	28.82	18.52	1062.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	70.65	0.00	52.49	0.00	9.91	5.07	121.34	30.97	0.00
Movement LOS				E		D		A	A	F	C	
d_A, Approach Delay [s/veh]	0.00			63.25			9.66			31.25		
Approach LOS	A			E			A			C		
d_I, Intersection Delay [s/veh]	25.93											
Intersection LOS	C											
Intersection V/C	0.985											

Emissions

Vehicle Miles Traveled [mph]		40.83	28.06	499.87	27.88	1.26	407.75
Stops [stops/h]		225.83	129.99	586.93	19.21	12.35	1984.37
Fuel consumption [US gal/h]		5.96	3.42	27.00	1.34	0.32	44.05
CO [g/h]		416.72	239.19	1887.60	93.98	22.20	3079.00
NOx [g/h]		81.08	46.54	367.26	18.28	4.32	599.06
VOC [g/h]		96.58	55.43	437.47	21.78	5.15	713.59

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	292	1383	1517
d_b, Bicycle Delay [s]	60.00	43.78	5.71	3.51
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.934	3.700
Bicycle LOS	D	A	C	D

Sequence

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



**Intersection Level Of Service Report
Intersection 2:**

Control Type:	Signalized	Delay (sec / veh):	639.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.232

Intersection Setup

Name	OR 213 NB											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	415.00	100.00	100.00	160.00	100.00	405.00	365.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name				OR 213 NB								
Base Volume Input [veh/h]	332	1	253	12	0	350	326	1320	0	0	1704	438
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 [%]	8.00	0.00	18.00	23.00	0.00	9.00	6.00	8.00	0.00	0.00	8.00	4.00
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	0	0	0	0	0	0	43
Total Hourly Volume [veh/h]	332	1	252	12	0	350	326	1320	0	0	1704	395
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200
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]	90	0	68	3	0	95	89	359	0	0	463	107
Total Analysis Volume [veh/h]	361	1	274	13	0	380	354	1435	0	0	1852	429
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Fully actuated
Offset [s]	81.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Split	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	8	7	0	4	5	2	0	0	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	19	31	31	18	0	30	30	54	0	0	20	20
Amber [s]	4.0	4.0	4.0	4.0	0.0	4.0	3.5	5.0	0.0	0.0	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	0.0	1.5	0.5	1.0	0.0	0.0	1.0	1.0
Walk [s]	7	7	7	0	0	0	0	7	0	0	7	7
Pedestrian Clearance [s]	12	24	24	0	0	0	0	20	0	0	12	12
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	0.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	0.0	3.5	2.0	4.0	0.0	0.0	4.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	0.0	0.0	20.0	6.0	0.0	0.0	6.0	6.0
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]	25	37	37	24	0	35	34	60	0	0	26	26
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	4	4	4	0	4	4	6	0	0	6	6
Vehicle Extension [s]	2.3	2.3	2.3	2.3	0.0	2.3	2.3	4.6	0.0	0.0	4.6	4.6
Minimum Recall	No	No		No		No	Yes	Yes			No	
Maximum Recall	No	No		No		No	No	No			No	
Pedestrian Recall	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	L	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	4.00	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
l2, Clearance Lost Time [s]	3.50	3.50	3.50	0.00	2.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	16	22	5	67	52	76	20	20
g / C, Green / Cycle	0.13	0.19	0.04	0.56	0.43	0.63	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.11	0.17	0.01	0.14	0.21	0.42	0.64	0.68
s, saturation flow rate [veh/h]	3292	1616	1481	2655	1724	3389	1780	1669
c, Capacity [veh/h]	430	302	62	1489	741	2134	297	278
d1, Uniform Delay [s]	50.92	47.84	55.55	13.50	24.56	14.27	50.00	50.00
k, delay calibration	0.07	0.14	0.07	0.07	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]	2.76	12.92	1.00	0.05	2.20	1.71	1288.20	1403.40
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	0.84	0.91	0.21	0.26	0.48	0.67	3.84	4.10
d, Delay for Lane Group [s/veh]	53.68	60.76	56.55	13.55	26.76	15.98	1338.20	1453.40
Lane Group LOS	D	E	E	B	C	B	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.45	9.11	0.40	2.62	7.63	12.25	115.01	116.76
50th-Percentile Queue Length [ft/ln]	136.37	227.81	9.97	65.42	190.68	306.24	2875.35	2918.91
95th-Percentile Queue Length [veh/ln]	9.28	14.06	0.72	4.71	12.16	17.99	175.48	178.06
95th-Percentile Queue Length [ft/ln]	232.12	351.58	17.94	117.76	303.90	449.74	4386.93	4451.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.68	60.76	60.76	56.55	0.00	13.55	26.76	15.98	0.00	0.00	1382.45	1453.40
Movement LOS	D	E	E	E		B	C	B			F	F
d_A, Approach Delay [s/veh]	56.74			14.98			18.11			1395.80		
Approach LOS	E			B			B			F		
d_I, Intersection Delay [s/veh]	638.99											
Intersection LOS	F											
Intersection V/C	1.232											

Emissions

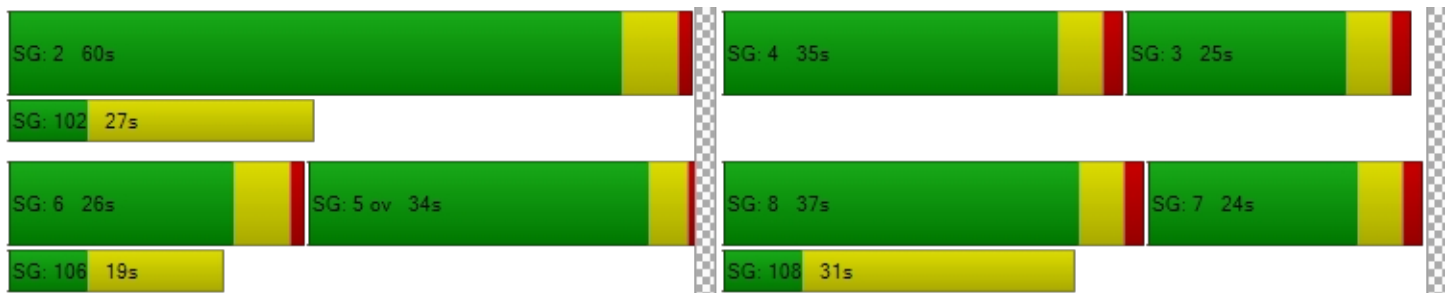
Vehicle Miles Traveled [mph]	75.62	57.61	1.75	51.21	55.82	226.26	285.73	285.73
Stops [stops/h]	327.28	273.37	11.96	157.02	228.81	734.99	3450.42	3502.69
Fuel consumption [US gal/h]	8.86	7.28	0.29	4.02	5.49	18.04	341.33	368.35
CO [g/h]	619.62	508.98	20.12	281.25	383.73	1261.15	23858.87	25747.40
NOx [g/h]	120.56	99.03	3.91	54.72	74.66	245.37	4642.07	5009.51
VOC [g/h]	143.60	117.96	4.66	65.18	88.93	292.28	5529.52	5967.21

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	49.50
l_p,int, Pedestrian LOS Score for Intersectio	2.162	2.442	0.000	3.192
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	525	308	900	333
d_b, Bicycle Delay [s]	32.63	42.93	18.15	41.67
l_b,int, Bicycle LOS Score for Intersection	2.611	1.560	3.036	3.477
Bicycle LOS	B	A	C	C

Sequence



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



**Intersection Level Of Service Report
Intersection 3:**

Control Type:	Signalized	Delay (sec / veh):	15.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.773

Intersection Setup

Name	I-205 NB On-Ramp					
Approach	Eastbound		Westbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	0	2
Entry Pocket Length [ft]	100.00	100.00	630.00	100.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	0.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present			No		No	
Crosswalk	No		No		No	

Volumes

Name	I-205 NB On-Ramp					
Base Volume Input [veh/h]	0	0	472	2142	1207	378
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	19.00	3.00	12.00	7.00
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	0	0	0
Total Hourly Volume [veh/h]	0	0	472	2142	1207	378
Peak Hour Factor	1.0000	1.0000	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	120	546	308	96
Total Analysis Volume [veh/h]	0	0	482	2186	1232	386
Presence of On-Street Parking			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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	101
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	31.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	0	0	1	6	2	2
Auxiliary Signal Groups						
Maximum Green [s]	0	0	25	60	31	31
Amber [s]	0.0	0.0	3.5	5.0	5.0	5.0
All red [s]	0.0	0.0	0.5	2.0	2.0	2.0
Walk [s]	0	0	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	17	17
Delayed Vehicle Green [s]	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	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	5.0	5.0	5.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	30	30	30	30
Lead / Lag	-	-	Lag	-	-	-
Minimum Green [s]	0	0	4	10	10	10
Vehicle Extension [s]	0.0	0.0	2.3	4.7	4.7	4.7
Minimum Recall			No	Yes	Yes	
Maximum Recall			No	No	No	
Pedestrian Recall			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	R
C, Cycle Length [s]	74	74	74	74
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	25	60	31	31
g / C, Green / Cycle	0.34	0.81	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.31	0.62	0.38	0.25
s, saturation flow rate [veh/h]	1538	3532	3275	1526
c, Capacity [veh/h]	525	2860	1356	632
d1, Uniform Delay [s]	23.40	3.52	20.38	17.02
k, delay calibration	0.38	0.20	0.20	0.21
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.12	0.82	4.75	1.89
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	0.92	0.76	0.91	0.61
d, Delay for Lane Group [s/veh]	42.52	4.34	25.13	18.91
Lane Group LOS	D	A	C	B
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.27	3.25	9.95	5.07
50th-Percentile Queue Length [ft/ln]	256.65	81.21	248.65	126.71
95th-Percentile Queue Length [veh/ln]	15.52	5.85	15.12	8.76
95th-Percentile Queue Length [ft/ln]	388.01	146.18	377.95	219.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	42.52	4.34	25.13	18.91
Movement LOS			D	A	C	B
d_A, Approach Delay [s/veh]	0.00		11.24		23.65	
Approach LOS	A		B		C	
d_I, Intersection Delay [s/veh]	15.92					
Intersection LOS	B					
Intersection V/C	0.773					

Emissions

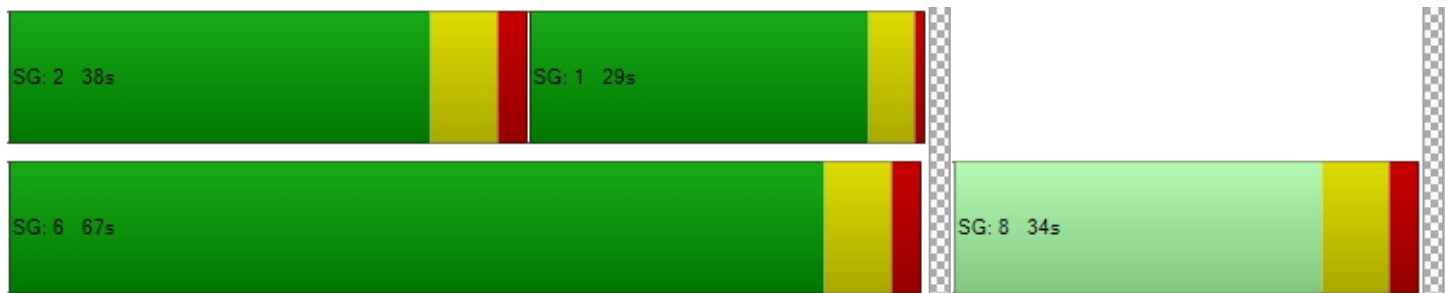
Vehicle Miles Traveled [mph]		667.98	3029.49	308.65	96.70
Stops [stops/h]		499.07	315.83	967.03	246.39
Fuel consumption [US gal/h]		34.43	128.39	24.35	6.83
CO [g/h]		2406.39	8974.38	1702.11	477.28
NOx [g/h]		468.20	1746.09	331.17	92.86
VOC [g/h]		557.70	2079.90	394.48	110.61

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1620	837
d_b, Bicycle Delay [s]	37.03	1.33	12.51
I_b,int, Bicycle LOS Score for Intersection	4.132	3.761	2.894
Bicycle LOS	D	D	C

Sequence

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



**Intersection Level Of Service Report
Intersection 4:**

Control Type:	Signalized	Delay (sec / veh):	29.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.956

Intersection Setup

Name	Northbound			Southbound			Highway 212			Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T			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 [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	2	2	0	0	1	0	2
Entry Pocket Length [ft]	135.00	100.00	100.00	525.00	100.00	350.00	220.00	100.00	100.00	255.00	100.00	410.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Highway 212					
Base Volume Input [veh/h]	17	95	0	222	195	918	401	554	88	2	806	1160
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 [%]	50.00	48.00	20.00	8.00	19.00	14.00	30.00	14.00	27.00	17.00	8.00	3.00
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	44	0	0	0
Total Hourly Volume [veh/h]	17	95	0	222	195	918	401	554	44	2	806	1160
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	25	0	59	52	244	107	147	12	1	214	309
Total Analysis Volume [veh/h]	18	101	0	236	207	977	427	589	47	2	857	1234
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	0			1			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			1		
v_co, Outbound Pedestrian Volume crossing	1			4			4			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			4			4			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

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	Fully actuated
Offset [s]	12.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						6,7
Maximum Green [s]	7	35	35	12	40	40	25	61	61	4	40	40
Amber [s]	3.5	4.3	4.3	3.5	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	9	9	0	7	7	0	8	8	0	7	7
Pedestrian Clearance [s]	0	26	26	0	21	21	0	23	23	0	18	18
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.8	2.8	2.0	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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	40	40	16	45	45	29	66	66	8	45	45
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	4.6	2.0	4.6	4.6
Minimum Recall	No	No		No	No	No	No	Yes		No	Yes	Yes
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.80	4.00	4.80	4.80	4.00	5.40	5.40	4.00	5.40	5.40
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]	2.00	2.80	2.00	2.80	0.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	2	14	27	39	72	23	71	71	0	47	79
g / C, Green / Cycle	0.02	0.10	0.21	0.30	0.56	0.18	0.54	0.54	0.00	0.37	0.61
(v / s)_i Volume / Saturation Flow Rate	0.05	0.09	0.07	0.13	0.38	0.16	0.19	0.19	0.00	0.25	0.45
s, saturation flow rate [veh/h]	354	1180	3292	1615	2542	2681	1690	1646	1567	3389	2755
c, Capacity [veh/h]	56	123	692	480	1414	484	918	895	3	1238	1671
d1, Uniform Delay [s]	64.99	57.07	43.67	36.80	20.78	51.93	16.73	16.74	64.80	35.05	18.06
k, delay calibration	0.27	0.07	0.07	0.07	0.09	0.04	0.50	0.50	0.04	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]	7.88	8.17	0.18	0.37	0.49	2.15	1.05	1.08	46.51	3.20	2.97
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	0.32	0.82	0.34	0.43	0.69	0.88	0.35	0.35	0.58	0.69	0.74
d, Delay for Lane Group [s/veh]	72.87	65.23	43.85	37.17	21.27	54.08	17.79	17.82	111.31	38.25	21.03
Lane Group LOS	E	E	D	D	C	D	B	B	F	D	C
Critical Lane Group	No	Yes	No	No	Yes	No	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.75	3.53	3.28	5.38	10.52	6.93	5.68	5.54	0.11	12.04	13.22
50th-Percentile Queue Length [ft/ln]	18.80	88.35	81.89	134.58	263.06	173.19	142.00	138.56	2.77	301.02	330.54
95th-Percentile Queue Length [veh/ln]	1.35	6.36	5.90	9.19	15.84	11.24	9.59	9.40	0.20	17.73	19.18
95th-Percentile Queue Length [ft/ln]	33.84	159.03	147.40	229.71	396.06	281.10	239.72	235.08	4.99	443.28	479.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.87	65.23	65.23	43.85	37.17	21.27	54.08	17.80	17.82	111.31	38.25	21.03
Movement LOS	E	E	E	D	D	C	D	B	B	F	D	C
d_A, Approach Delay [s/veh]	66.39			27.34			32.38			28.17		
Approach LOS	E			C			C			C		
d_I, Intersection Delay [s/veh]	29.84											
Intersection LOS	C											
Intersection V/C	0.956											

Emissions

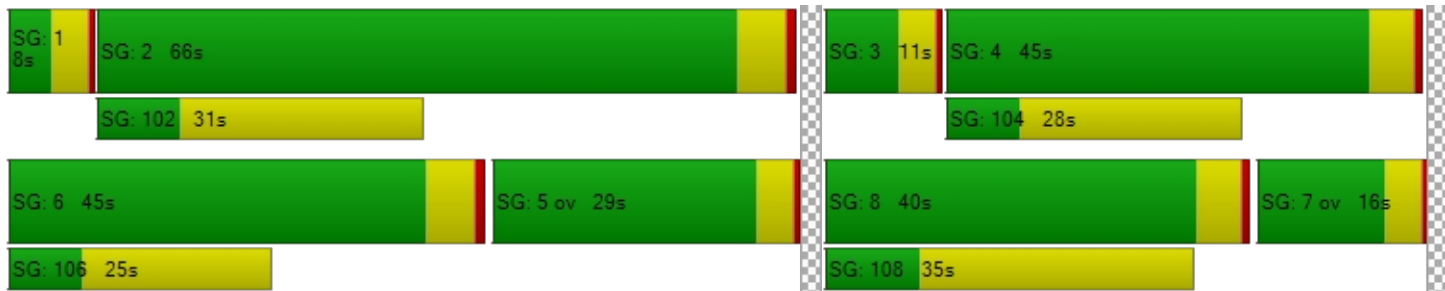
Vehicle Miles Traveled [mph]	4.06	22.76	54.49	47.79	225.58	383.80	289.52	282.13	1.32	565.03	813.59
Stops [stops/h]	20.83	97.86	181.41	149.08	582.78	383.68	157.30	153.48	3.07	666.87	732.26
Fuel consumption [US gal/h]	0.55	2.82	5.35	4.36	16.74	22.62	13.95	13.60	0.12	33.62	42.82
CO [g/h]	38.37	196.99	374.04	304.54	1169.84	1581.00	975.37	950.67	8.15	2349.72	2993.10
NOx [g/h]	7.47	38.33	72.77	59.25	227.61	307.60	189.77	184.97	1.59	457.17	582.35
VOC [g/h]	8.89	45.66	86.69	70.58	271.12	366.41	226.05	220.33	1.89	544.57	693.68

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0		11.0		11.0		13.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00
d_p, Pedestrian Delay [s]	53.55		54.47		54.47		52.65
I_p,int, Pedestrian LOS Score for Intersectio	2.093		3.055		3.040		3.017
Crosswalk LOS	B		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]	542		618		932		609
d_b, Bicycle Delay [s]	34.57		31.02		18.52		31.45
I_b,int, Bicycle LOS Score for Intersection	1.756		3.903		2.473		3.286
Bicycle LOS	A		D		B		C

Sequence

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



Intersection Level Of Service Report
Intersection 5:

Control Type:	Signalized	Delay (sec / veh):	13.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

Intersection Setup

Name	135th Ave				Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	300.00	100.00	100.00	60.00	200.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	135th Ave				Highway 212	
Base Volume Input [veh/h]	112	234	545	11	109	1761
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	12.00	13.00	17.00	5.00	7.00
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	0	0	0
Total Hourly Volume [veh/h]	112	234	545	11	109	1761
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	62	143	3	29	463
Total Analysis Volume [veh/h]	118	246	574	12	115	1854
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	2		2		0	
v_ci, Inbound Pedestrian Volume crossing mi	2		2		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		3	

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	Fully actuated
Offset [s]	70.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	Protected	Permissive
Signal Group	3	3	2	2	1	6
Auxiliary Signal Groups						
Maximum Green [s]	17	17	63	63	17	84
Amber [s]	3.5	3.5	4.7	4.7	3.5	4.7
All red [s]	0.5	0.5	0.7	0.7	0.5	0.7
Walk [s]	0	0	8	8	0	7
Pedestrian Clearance [s]	0	0	18	18	0	14
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]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	3.4	3.4	2.0	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	6.0	6.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	21	21	68	68	21	89
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Vehicle Extension [s]	2.3	2.3	4.5	4.5	2.3	4.5
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		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	L	R	C	R	L	C
C, Cycle Length [s]	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	5.40	5.40	4.00	5.40
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	3.40	3.40	2.00	3.40
g_i, Effective Green Time [s]	13	13	75	75	9	88
g / C, Green / Cycle	0.11	0.11	0.68	0.68	0.08	0.80
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.18	0.01	0.07	0.54
s, saturation flow rate [veh/h]	1695	2511	3246	1394	1738	3418
c, Capacity [veh/h]	195	289	2210	949	143	2733
d1, Uniform Delay [s]	46.30	47.61	6.81	5.65	49.59	4.83
k, delay calibration	0.07	0.07	0.50	0.50	0.07	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.85	4.44	0.29	0.02	6.31	1.38
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	0.61	0.85	0.26	0.01	0.80	0.68
d, Delay for Lane Group [s/veh]	48.15	52.05	7.09	5.68	55.90	6.21
Lane Group LOS	D	D	A	A	E	A
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.16	3.46	2.48	0.09	3.35	7.08
50th-Percentile Queue Length [ft/ln]	79.12	86.57	61.91	2.23	83.76	176.92
95th-Percentile Queue Length [veh/ln]	5.70	6.23	4.46	0.16	6.03	11.44
95th-Percentile Queue Length [ft/ln]	142.42	155.82	111.44	4.02	150.76	285.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.15	52.05	7.09	5.68	55.90	6.21
Movement LOS	D	D	A	A	E	A
d_A, Approach Delay [s/veh]	50.79		7.06		9.11	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	13.90					
Intersection LOS	B					
Intersection V/C	0.719					

Emissions

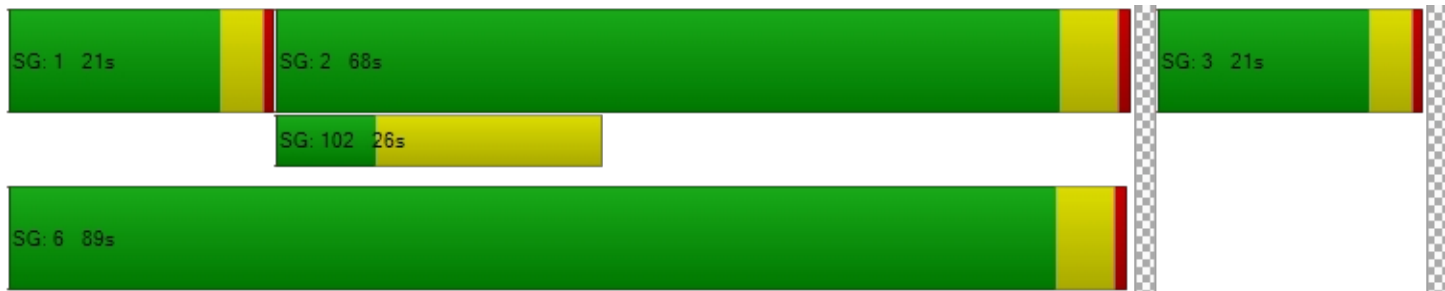
Vehicle Miles Traveled [mph]	23.09	48.14	378.45	7.91	34.25	552.20
Stops [stops/h]	103.58	226.64	162.08	2.92	109.64	463.19
Fuel consumption [US gal/h]	2.68	5.84	17.30	0.36	3.32	27.63
CO [g/h]	187.26	408.15	1209.51	24.86	232.34	1931.55
NOx [g/h]	36.43	79.41	235.33	4.84	45.20	375.81
VOC [g/h]	43.40	94.59	280.32	5.76	53.85	447.66

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	43.66	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.260	0.000	0.000
Crosswalk LOS	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	309	1138	1520
d_b, Bicycle Delay [s]	39.37	10.21	3.17
I_b,int, Bicycle LOS Score for Intersection	1.560	2.043	3.184
Bicycle LOS	A	B	C

Sequence

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



MOVEMENT SUMMARY

 Site: 106 [Highway 212/Riverbend_4LaneAM_Couplet (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Four-Lane Sunrise
Site Category: (None)
Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV]		Arrival Flows [Total HV]		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh.]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			veh/h	%	veh/h	%	v/c	sec		ft				mph	
South: Riverbend															
3	L2	All MCs	31	7.0	31	7.0	0.180	7.3	LOS A	0.5	13.4	0.59	0.55	0.59	18.3
18	R2	All MCs	61	20.0	61	20.0	0.180	10.7	LOS B	0.5	13.4	0.59	0.55	0.59	18.3
Approach			92	15.6	92	15.6	0.180	9.5	LOS A	0.5	13.4	0.59	0.55	0.59	18.3
East: Highway 212															
1	L2	All MCs	28	0.0	28	0.0	0.625	8.5	LOS A	5.9	151.1	0.27	0.08	0.27	33.7
6	T1	All MCs	1628	4.0	1628	4.0	0.625	8.8	LOS A	5.9	151.1	0.27	0.08	0.27	33.9
Approach			1656	3.9	1656	3.9	0.625	8.8	LOS A	5.9	151.1	0.27	0.08	0.27	33.9
West: Highway 212															
2	T1	All MCs	728	13.0	728	13.0	0.305	5.4	LOS A	1.5	40.7	0.13	0.04	0.13	34.6
12	R2	All MCs	19	11.0	19	11.0	0.305	5.2	LOS A	1.5	40.7	0.13	0.04	0.13	34.5
Approach			746	13.0	746	13.0	0.305	5.4	LOS A	1.5	40.7	0.13	0.04	0.13	34.6
All Vehicles			2494	7.1	2494	7.1	0.625	7.8	LOS A	5.9	151.1	0.24	0.08	0.24	33.1

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

Roundabout LOS Method: Same as Sign Control.

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

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

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

Roundabout Capacity Model: US HCM 6.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: H:\27\27852 - Sunrise Corridor Community Visioning\synchro\27852_RoundaboutsAnalysis.sjp9

Intersection Level Of Service Report
Intersection 8:

Control Type:	Signalized	Delay (sec / veh):	29.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name	Highway 224				Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	1	0	2	1	0
Entry Pocket Length [ft]	155.00	70.00	100.00	125.00	230.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Highway 224				Highway 212	
Base Volume Input [veh/h]	1023	319	264	630	538	580
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	8.00	12.00	15.00	3.00	8.00
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	160	0	315	0	0
Total Hourly Volume [veh/h]	1023	159	264	315	538	580
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	269	42	69	83	142	153
Total Analysis Volume [veh/h]	1077	167	278	332	566	611
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		4		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	148
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	60.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Overlap	Protected	Permissive
Signal Group	8	0	2	2	1	6
Auxiliary Signal Groups				2,8		
Maximum Green [s]	54	0	23	23	56	83
Amber [s]	4.7	0.0	5.0	5.0	3.5	5.0
All red [s]	0.7	0.0	1.0	1.0	0.5	1.0
Walk [s]	8	0	7	7	7	0
Pedestrian Clearance [s]	16	0	14	14	10	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]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	0.0	4.0	4.0	2.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	6.0	6.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	0	30	30	30	30
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	8	0	10	10	4	10
Vehicle Extension [s]	2.5	0.0	4.8	4.8	3.5	4.8
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	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	L	R	C	R	L	C
C, Cycle Length [s]	107	107	107	107	107	107
L, Total Lost Time per Cycle [s]	5.40	5.40	6.00	5.40	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	4.00	0.00	2.00	4.00
g_i, Effective Green Time [s]	41	41	14	60	37	55
g / C, Green / Cycle	0.38	0.38	0.13	0.56	0.35	0.52
(v / s)_i Volume / Saturation Flow Rate	0.32	0.11	0.08	0.13	0.32	0.18
s, saturation flow rate [veh/h]	3320	1492	3275	2503	1767	3389
c, Capacity [veh/h]	1255	564	423	1408	618	1748
d1, Uniform Delay [s]	30.77	23.36	44.52	11.82	33.43	15.35
k, delay calibration	0.08	0.08	0.21	0.21	0.20	0.21
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.36	0.22	3.37	0.17	10.06	0.23
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	0.86	0.30	0.66	0.24	0.92	0.35
d, Delay for Lane Group [s/veh]	32.13	23.58	47.90	11.99	43.49	15.59
Lane Group LOS	C	C	D	B	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	12.72	2.97	3.70	1.97	15.47	4.36
50th-Percentile Queue Length [ft/ln]	317.94	74.32	92.56	49.29	386.73	108.98
95th-Percentile Queue Length [veh/ln]	18.57	5.35	6.66	3.55	21.92	7.78
95th-Percentile Queue Length [ft/ln]	464.15	133.77	166.61	88.72	547.99	194.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.13	23.58	47.90	11.99	43.49	15.59
Movement LOS	C	C	D	B	D	B
d_A, Approach Delay [s/veh]	30.98		28.35		29.00	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	29.69					
Intersection LOS	C					
Intersection V/C	0.822					

Emissions

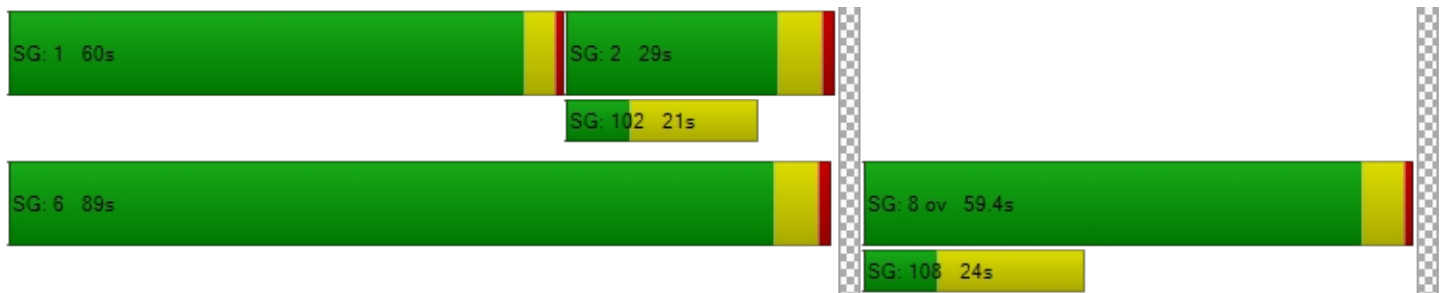
Vehicle Miles Traveled [mph]	352.26	54.62	40.36	48.20	36.03	38.89
Stops [stops/h]	853.45	99.75	248.46	132.31	519.05	292.53
Fuel consumption [US gal/h]	26.26	3.60	5.74	3.53	9.36	5.16
CO [g/h]	1835.47	251.71	401.48	246.41	654.24	360.37
NOx [g/h]	357.12	48.97	78.11	47.94	127.29	70.11
VOC [g/h]	425.39	58.34	93.05	57.11	151.63	83.52

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	12.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	43.21	0.00	42.32
I_p,int, Pedestrian LOS Score for Intersectio	3.046	0.000	2.655
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]	1007	429	1547
d_b, Bicycle Delay [s]	13.25	33.18	2.75
I_b,int, Bicycle LOS Score for Intersection	1.560	2.323	2.531
Bicycle LOS	A	B	B

Sequence

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



**Intersection Level Of Service Report
Intersection 101:**

Control Type:	Signalized	Delay (sec / veh):	14.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.727

Intersection Setup

Name	Sunrise WB					
	Northbound		Eastbound		Westbound	
Approach						
Lane Configuration	↵↵				↵↵	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	300.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		0.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No				No	
Crosswalk	No		No		Yes	

Volumes

Name	Sunrise WB					
Base Volume Input [veh/h]	1279	0	0	0	698	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	6.00	0.00
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	0	0	0
Total Hourly Volume [veh/h]	1279	0	0	0	698	0
Peak Hour Factor	0.9300	1.0000	1.0000	1.0000	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	344	0	0	0	188	0
Total Analysis Volume [veh/h]	1375	0	0	0	751	0
Presence of On-Street Parking	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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	2	0	0	0	3	8
Auxiliary Signal Groups						
Maximum Green [s]	66	0	0	0	5	46
Amber [s]	3.5	0.0	0.0	0.0	3.5	3.5
All red [s]	1.0	0.0	0.0	0.0	1.0	1.0
Walk [s]	7	0	0	0	0	7
Pedestrian Clearance [s]	11	0	0	0	0	11
Delayed Vehicle Green [s]	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	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	0.0	0.0	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	0	0	0	30	30
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	5	0	0	0	5	5
Vehicle Extension [s]	3.0	0.0	0.0	0.0	3.0	3.0
Minimum Recall	No				Yes	No
Maximum Recall	No				No	No
Pedestrian Recall	No				No	No

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L		L	C
C, Cycle Length [s]	49		49	49
L, Total Lost Time per Cycle [s]	4.50		4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.50		2.50	2.50
g_i, Effective Green Time [s]	25		15	15
g / C, Green / Cycle	0.51		0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.39		0.22	0.21
s, saturation flow rate [veh/h]	3514		1724	1810
c, Capacity [veh/h]	1776		539	566
d1, Uniform Delay [s]	9.94		14.95	14.75
k, delay calibration	0.11		0.50	0.50
l, Upstream Filtering Factor	1.00		1.00	1.00
d2, Incremental Delay [s]	0.74		7.28	6.03
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	0.77		0.70	0.66
d, Delay for Lane Group [s/veh]	10.69		22.23	20.79
Lane Group LOS	B		C	C
Critical Lane Group	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	4.59		4.23	4.05
50th-Percentile Queue Length [ft/ln]	114.76		105.80	101.24
95th-Percentile Queue Length [veh/ln]	8.10		7.61	7.29
95th-Percentile Queue Length [ft/ln]	202.60		190.14	182.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.69	0.00	0.00	0.00	21.51	20.79
Movement LOS	B				C	C
d_A, Approach Delay [s/veh]	10.69		0.00		21.51	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	14.51					
Intersection LOS	B					
Intersection V/C	0.727					

Emissions

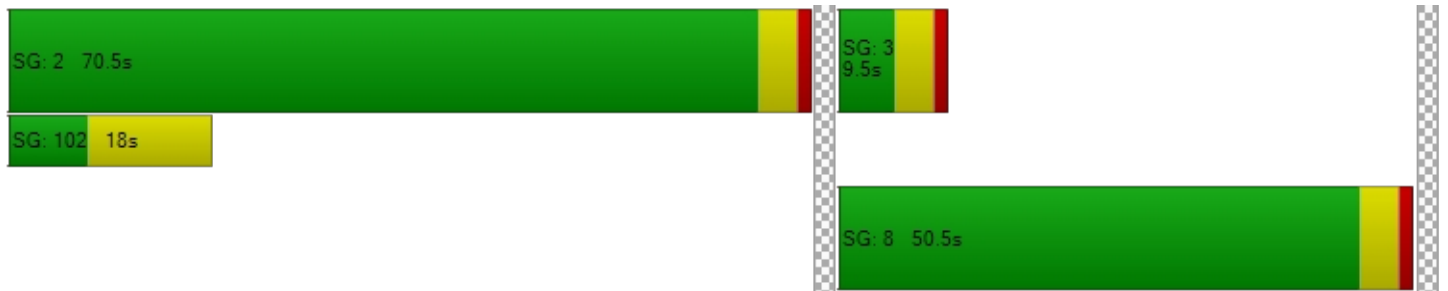
Vehicle Miles Traveled [mph]	114.55		49.76	49.76
Stops [stops/h]	669.40		308.57	295.27
Fuel consumption [US gal/h]	11.41		5.45	5.27
CO [g/h]	797.22		381.09	368.26
NOx [g/h]	155.11		74.15	71.65
VOC [g/h]	184.76		88.32	85.35

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	14.91
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.047
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2674	0	1863
d_b, Bicycle Delay [s]	2.80	24.69	0.12
I_b,int, Bicycle LOS Score for Intersection	1.560	4.132	2.799
Bicycle LOS	A	D	C

Sequence




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



**Intersection Level Of Service Report
Intersection 102:**

Control Type:	Signalized	Delay (sec / veh):	10.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

Intersection Setup

Name	Northbound			Southbound			Eastbound			Sunrise EB Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	50.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			0.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	Yes			No			Yes			No		

Volumes

Name										Sunrise EB		
Base Volume Input [veh/h]	0	1279	377	0	698	0	0	0	637	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 [%]	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	1279	377	0	698	0	0	0	637	0	0	0
Peak Hour Factor	1.0000	0.9300	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	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	344	101	0	188	0	0	0	171	0	0	0
Total Analysis Volume [veh/h]	0	1375	405	0	751	0	0	0	685	0	0	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	2	2	6	6	0	4	4	4	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	72	72	72	72	0	40	40	40	0	0	0
Amber [s]	0.0	3.5	3.5	3.5	3.5	0.0	3.5	3.5	3.5	0.0	0.0	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	7	7	7	0	7	7	7	0	0	0
Pedestrian Clearance [s]	0	11	11	11	11	0	11	11	11	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		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	2.5	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	6.0	20.0	20.0	0.0	6.0	6.0	6.0	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: Free Running (No Pattern)

Split [s]	0	30	30	30	30	0	30	30	30	0	0	0
Lead / Lag	-	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	5	5	5	5	0	5	5	5	0	0	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		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	R	L	C	C	R	
C, Cycle Length [s]	45	45	45	45	45	45	45	
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	
g_i, Effective Green Time [s]	23	23	23	23	23	13	13	
g / C, Green / Cycle	0.51	0.51	0.51	0.51	0.51	0.29	0.29	
(v / s)_i Volume / Saturation Flow Rate	0.36	0.39	0.25	0.00	0.22	0.21	0.22	
s, saturation flow rate [veh/h]	1900	1759	1615	271	3446	1615	1564	
c, Capacity [veh/h]	968	896	823	199	1755	472	457	
d1, Uniform Delay [s]	8.57	8.97	7.30	0.00	6.99	14.43	14.56	
k, delay calibration	0.11	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	
d2, Incremental Delay [s]	0.98	1.41	0.46	0.00	0.17	2.14	2.48	
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	0.71	0.77	0.49	0.00	0.43	0.73	0.75	
d, Delay for Lane Group [s/veh]	9.54	10.39	7.75	0.00	7.16	16.56	17.04	
Lane Group LOS	A	B	A	A	A	B	B	
Critical Lane Group	No	Yes	No	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	3.81	4.07	1.88	0.00	1.62	2.90	2.96	
50th-Percentile Queue Length [ft/ln]	95.22	101.67	47.09	0.00	40.52	72.43	73.89	
95th-Percentile Queue Length [veh/ln]	6.86	7.32	3.39	0.00	2.92	5.22	5.32	
95th-Percentile Queue Length [ft/ln]	171.40	183.00	84.77	0.00	72.93	130.38	133.00	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	9.84	7.75	0.00	7.16	0.00	16.56	16.56	16.80	0.00	0.00	0.00
Movement LOS		A	A	A	A		B	B	B			
d_A, Approach Delay [s/veh]		9.46			7.16			16.80			0.00	
Approach LOS		A			A			B			A	
d_I, Intersection Delay [s/veh]	10.49											
Intersection LOS	B											
Intersection V/C	0.741											

Emissions

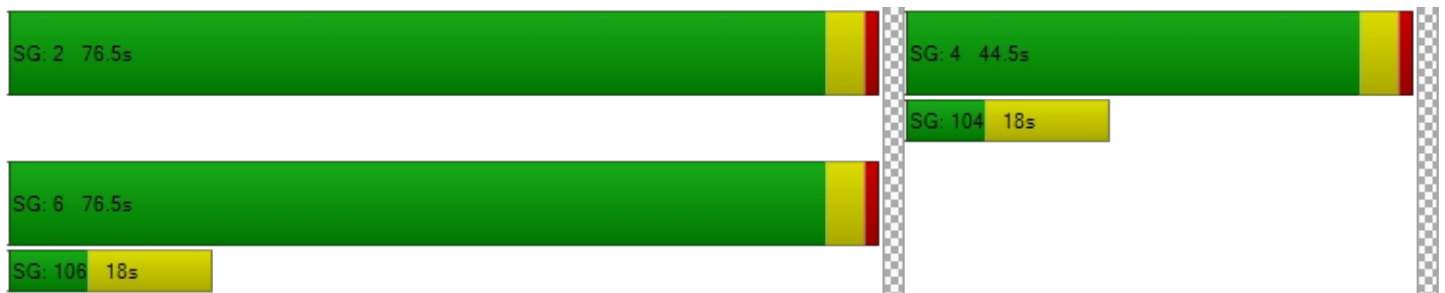
Vehicle Miles Traveled [mph]	158.74	158.74	93.51	0.00	62.56	40.99	40.99
Stops [stops/h]	302.75	323.25	149.73	0.00	257.64	230.30	234.92
Fuel consumption [US gal/h]	9.54	9.77	5.32	0.00	5.09	4.11	4.17
CO [g/h]	667.05	683.21	371.58	0.00	355.98	287.61	291.70
NOx [g/h]	129.78	132.93	72.30	0.00	69.26	55.96	56.75
VOC [g/h]	154.59	158.34	86.12	0.00	82.50	66.66	67.60

Other Modes

g_Walk,mi, Effective Walk Time [s]		11.0		0.0		11.0		0.0
M_corner, Corner Circulation Area [ft ² /ped]		0.00		0.00		0.00		0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]		0.00		0.00		0.00		0.00
d_p, Pedestrian Delay [s]		12.98		0.00		12.98		0.00
I_p,int, Pedestrian LOS Score for Intersectio		2.887		0.000		2.009		0.000
Crosswalk LOS		C		F		B		F
s_b, Saturation Flow Rate of the bicycle lane		2000		2000		2000		2000
c_b, Capacity of the bicycle lane [bicycles/h]		3180		3180		1766		0
d_b, Bicycle Delay [s]		7.88		7.88		0.31		22.65
I_b,int, Bicycle LOS Score for Intersection		3.028		2.179		2.690		4.132
Bicycle LOS		C		B		B		D

Sequence

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



**Intersection Level Of Service Report
Intersection 103:**

Control Type:	Signalized	Delay (sec / veh):	11.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.748

Intersection Setup

Name	142nd Avenue			Backage Road			Backage Road					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				142nd Avenue			Backage Road			Backage Road		
Base Volume Input [veh/h]	359	60	123	10	92	10	10	100	579	90	100	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 [%]	9.00	4.00	7.00	0.00	4.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	359	60	123	10	92	10	10	100	579	90	100	10
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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]	98	16	33	3	25	3	3	27	157	24	27	3
Total Analysis Volume [veh/h]	390	65	134	11	100	11	11	109	629	98	109	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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	39.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	5	2	2	1	6	6	4	4	5	8	8	8
Auxiliary Signal Groups									4,5			
Maximum Green [s]	35	50	50	5	20	20	22	22	35	22	22	22
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Walk [s]	0	7	7	0	7	7	7	7	0	7	7	7
Pedestrian Clearance [s]	0	11	11	0	11	11	11	11	0	11	11	11
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	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	L	C	C	R	C
C, Cycle Length [s]	45	45	45	45	45	45	45
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	0.00	2.50
g_i, Effective Green Time [s]	15	18	1	4	13	32	13
g / C, Green / Cycle	0.33	0.40	0.01	0.08	0.29	0.71	0.29
(v / s)_i Volume / Saturation Flow Rate	0.23	0.12	0.01	0.06	0.06	0.41	0.20
s, saturation flow rate [veh/h]	1681	1645	1810	1808	1880	1551	1105
c, Capacity [veh/h]	553	655	26	153	626	1110	433
d1, Uniform Delay [s]	13.18	9.24	21.95	20.06	12.21	3.06	13.85
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.30	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.67	0.26	10.18	6.45	0.15	1.26	0.91
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	0.71	0.30	0.42	0.73	0.19	0.57	0.50
d, Delay for Lane Group [s/veh]	14.85	9.50	32.13	26.51	12.36	4.33	14.76
Lane Group LOS	B	A	C	C	B	A	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.04	1.09	0.18	1.28	0.79	1.09	1.73
50th-Percentile Queue Length [ft/ln]	75.89	27.25	4.46	31.99	19.84	27.27	43.37
95th-Percentile Queue Length [veh/ln]	5.46	1.96	0.32	2.30	1.43	1.96	3.12
95th-Percentile Queue Length [ft/ln]	136.60	49.04	8.02	57.58	35.71	49.09	78.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.85	9.50	9.50	32.13	26.51	26.51	12.36	12.36	4.33	14.76	14.76	14.76
Movement LOS	B	A	A	C	C	C	B	B	A	B	B	B
d_A, Approach Delay [s/veh]	13.04			27.02			5.61			14.76		
Approach LOS	B			C			A			B		
d_I, Intersection Delay [s/veh]	10.97											
Intersection LOS	B											
Intersection V/C	0.748											

Emissions

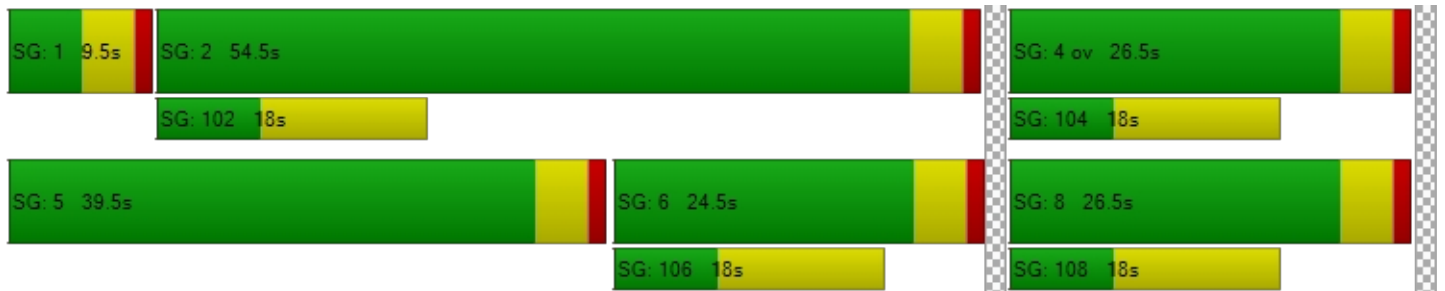
Vehicle Miles Traveled [mph]	73.84	37.68	2.02	20.43	28.90	151.51	53.05
Stops [stops/h]	244.04	87.61	14.33	102.86	63.79	87.69	139.47
Fuel consumption [US gal/h]	5.57	2.42	0.23	2.01	1.84	7.28	3.61
CO [g/h]	389.13	169.17	16.39	140.37	128.91	508.54	252.29
NOx [g/h]	75.71	32.91	3.19	27.31	25.08	98.94	49.09
VOC [g/h]	90.18	39.21	3.80	32.53	29.88	117.86	58.47

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	12.74	12.74	12.74	12.74
I_p,int, Pedestrian LOS Score for Intersectio	2.575	1.983	2.309	1.904
Crosswalk LOS	B	A	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2233	893	983	983
d_b, Bicycle Delay [s]	0.30	6.86	5.79	5.79
I_b,int, Bicycle LOS Score for Intersection	2.531	1.761	2.795	1.919
Bicycle LOS	B	A	C	A

Sequence

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



Intersection Level Of Service Report
Intersection 104:

Control Type:	Signalized	Delay (sec / veh):	7.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.606

Intersection Setup

Name	142nd Avenue				Highway 212 Accesses	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑		↓↘		↙↘	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	142nd Avenue				Highway 212 Accesses	
Base Volume Input [veh/h]	0	333	279	482	209	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	9.00	2.00	5.00	9.00	0.00
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	0	0	0
Total Hourly Volume [veh/h]	0	333	279	482	209	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	86	72	124	54	0
Total Analysis Volume [veh/h]	0	343	288	497	215	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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal Group	2	2	6	6	4	4
Auxiliary Signal Groups						
Maximum Green [s]	45	45	45	45	25	25
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	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]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	8	8	5	5	8	8
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		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	R	C
C, Cycle Length [s]	29	29	29	29
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]	12	12	12	7
g / C, Green / Cycle	0.43	0.43	0.43	0.23
(v / s)_i Volume / Saturation Flow Rate	0.19	0.15	0.32	0.12
s, saturation flow rate [veh/h]	1765	1870	1551	1810
c, Capacity [veh/h]	878	800	663	415
d1, Uniform Delay [s]	5.93	5.65	7.03	9.82
k, delay calibration	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.28	0.27	1.73	1.00
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	0.39	0.36	0.75	0.52
d, Delay for Lane Group [s/veh]	6.21	5.92	8.76	10.82
Lane Group LOS	A	A	A	B
Critical Lane Group	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.81	0.65	1.59	0.93
50th-Percentile Queue Length [ft/ln]	20.24	16.32	39.76	23.20
95th-Percentile Queue Length [veh/ln]	1.46	1.18	2.86	1.67
95th-Percentile Queue Length [ft/ln]	36.44	29.38	71.56	41.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.21	6.21	5.92	8.76	10.82	10.82
Movement LOS	A	A	A	A	B	B
d_A, Approach Delay [s/veh]	6.21		7.72		10.82	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	7.83					
Intersection LOS	A					
Intersection V/C	0.606					

Emissions

Vehicle Miles Traveled [mph]	80.02	54.53	94.10	49.90
Stops [stops/h]	100.46	81.01	197.29	115.12
Fuel consumption [US gal/h]	4.28	3.04	5.85	3.16
CO [g/h]	299.37	212.46	408.90	221.16
NOx [g/h]	58.25	41.34	79.56	43.03
VOC [g/h]	69.38	49.24	94.77	51.26

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3102	3102	1723
d_b, Bicycle Delay [s]	4.40	4.40	0.28
I_b,int, Bicycle LOS Score for Intersection	2.126	2.855	1.914
Bicycle LOS	B	C	A

Sequence

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



**Intersection Level Of Service Report
Intersection 105:**

Control Type:	Signalized	Delay (sec / veh):	19.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.783

Intersection Setup

Name	142nd Ave			142nd Ave			EB OR 212					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↶			↷			↶↷			↶↷		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	165.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	142nd Ave			142nd Ave			EB OR 212					
Base Volume Input [veh/h]	0	0	279	0	0	482	0	445	333	0	1400	209
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 [%]	0.00	0.00	3.00	0.00	0.00	5.00	0.00	17.00	9.00	0.00	8.00	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	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	279	0	0	482	0	445	333	0	1400	209
Peak Hour Factor	1.0000	1.0000	0.9600	1.0000	1.0000	0.9600	1.0000	0.9600	0.9600	1.0000	0.9600	0.9600
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	73	0	0	126	0	116	87	0	365	54
Total Analysis Volume [veh/h]	0	0	291	0	0	502	0	464	347	0	1458	218
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	33.6
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	5	0	0	1	0	2	2	0	6	6
Auxiliary Signal Groups												
Maximum Green [s]	0	0	11	0	0	29	0	22	22	0	41	41
Amber [s]	0.0	0.0	3.5	0.0	0.0	3.5	0.0	3.5	3.5	0.0	3.5	3.5
All red [s]	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0
Walk [s]	0	0	0	0	0	0	0	7	7	0	7	7
Pedestrian Clearance [s]	0	0	0	0	0	0	0	11	11	0	11	11
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	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	2.5	0.0	0.0	2.5	0.0	2.5	2.5	0.0	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0	0.0	6.0	6.0	0.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	0	0	30	0	0	30	0	30	30	0	30	30
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	5	0	5	5	0	5	5
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Minimum Recall			No			No		No			No	
Maximum Recall			No			No		Yes			Yes	
Pedestrian Recall			No			No		Yes			Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	R	R	C	R	C	C
C, Cycle Length [s]	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	11	22	30	30	41	41
g / C, Green / Cycle	0.18	0.36	0.49	0.49	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.18	0.32	0.15	0.24	0.47	0.50
s, saturation flow rate [veh/h]	1577	1551	3132	1469	1780	1691
c, Capacity [veh/h]	284	560	1539	722	1196	1137
d1, Uniform Delay [s]	25.00	18.42	9.26	10.26	6.20	6.50
k, delay calibration	0.37	0.21	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]	52.02	9.59	0.50	2.28	3.43	4.29
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	1.02	0.90	0.30	0.48	0.70	0.74
d, Delay for Lane Group [s/veh]	77.02	28.00	9.76	12.54	9.63	10.79
Lane Group LOS	F	C	A	B	A	B
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.93	7.39	1.67	3.04	5.37	5.79
50th-Percentile Queue Length [ft/ln]	198.14	184.85	41.66	76.04	134.26	144.78
95th-Percentile Queue Length [veh/ln]	12.68	11.85	3.00	5.47	9.17	9.74
95th-Percentile Queue Length [ft/ln]	317.06	296.33	74.98	136.87	229.28	243.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	77.02	0.00	0.00	28.00	0.00	9.76	12.54	0.00	10.12	10.79
Movement LOS			F			C		A	B		B	B
d_A, Approach Delay [s/veh]	77.02			28.00			10.95			10.21		
Approach LOS	E			C			B			B		
d_I, Intersection Delay [s/veh]	19.04											
Intersection LOS	B											
Intersection V/C	0.783											

Emissions

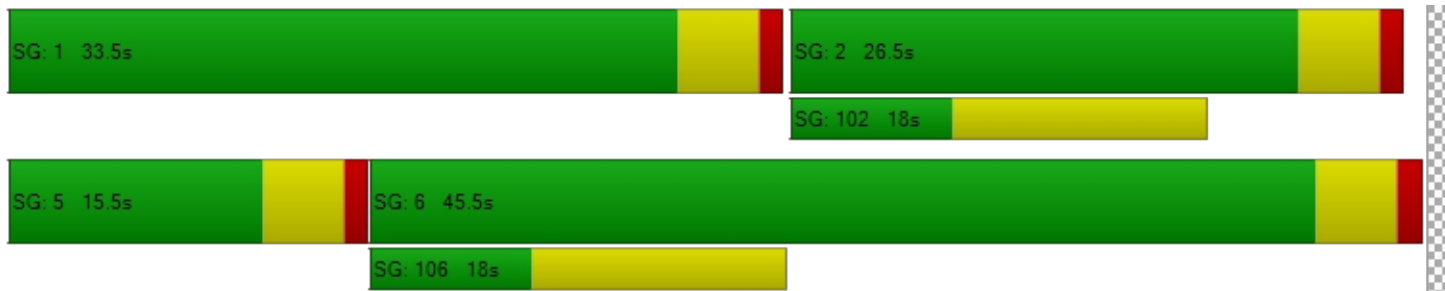
Vehicle Miles Traveled [mph]	35.75	68.13	25.63	19.17	198.60	198.60
Stops [stops/h]	467.75	436.36	196.68	179.50	316.95	341.78
Fuel consumption [US gal/h]	8.62	8.08	3.06	2.67	11.57	11.90
CO [g/h]	602.30	564.53	214.14	186.39	808.66	832.08
NOx [g/h]	117.18	109.84	41.66	36.26	157.33	161.89
VOC [g/h]	139.59	130.83	49.63	43.20	187.41	192.84

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.49	20.49	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.004	2.044	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	361	951	721	1344
d_b, Bicycle Delay [s]	20.49	8.39	12.47	3.28
I_b,int, Bicycle LOS Score for Intersection	1.560	1.560	2.229	2.942
Bicycle LOS	A	A	B	C

Sequence

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



**Intersection Level Of Service Report
Intersection 109:**

Control Type:	Signalized	Delay (sec / veh):	34.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.784

Intersection Setup

Name	162nd Avenue			WB Couplet								
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			0.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name				162nd Avenue			WB Couplet					
Base Volume Input [veh/h]	181	105	0	0	115	125	0	0	0	447	802	218
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	181	105	0	0	115	125	0	0	0	447	802	218
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
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	28	0	0	30	33	0	0	0	118	211	57
Total Analysis Volume [veh/h]	191	111	0	0	121	132	0	0	0	471	844	229
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	18.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split
Signal Group	5	2	0	0	6	6	0	0	0	0	8	8	8
Auxiliary Signal Groups													
Maximum Green [s]	14	38	0	0	20	20	0	0	0	0	44	44	44
Amber [s]	3.5	3.5	0.0	0.0	3.5	3.5	0.0	0.0	0.0	0.0	3.5	3.5	3.5
All red [s]	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0
Walk [s]	0	7	0	0	7	7	0	0	0	0	7	7	7
Pedestrian Clearance [s]	0	11	0	0	11	11	0	0	0	0	11	11	11
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	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	0.0	0.0	2.5	2.5	0.0	0.0	0.0	0.0	2.5	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	0.0	6.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	0	0	30	30	0	0	0	0	30	30	30
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	5	5	0	0	5	5	0	0	0	0	5	5	5
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0
Minimum Recall	No	No			No							No	
Maximum Recall	No	Yes			Yes							No	
Pedestrian Recall	No	Yes			Yes							No	

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, Cycle Length [s]	87	87	87		87	87
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50		4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50		2.50	2.50
g_i, Effective Green Time [s]	11	38	22		40	40
g / C, Green / Cycle	0.13	0.44	0.26		0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.11	0.06	0.15		0.42	0.42
s, saturation flow rate [veh/h]	1810	1900	1740		1844	1805
c, Capacity [veh/h]	231	829	447		849	831
d1, Uniform Delay [s]	37.07	14.71	28.16		21.93	22.04
k, delay calibration	0.15	0.50	0.50		0.34	0.34
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	10.06	0.34	5.12		11.77	12.78
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	0.83	0.13	0.57		0.92	0.92
d, Delay for Lane Group [s/veh]	47.13	15.05	33.28		33.69	34.82
Lane Group LOS	D	B	C		C	C
Critical Lane Group	Yes	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	4.54	1.34	5.10		16.45	16.50
50th-Percentile Queue Length [ft/ln]	113.43	33.59	127.41		411.32	412.61
95th-Percentile Queue Length [veh/ln]	8.03	2.42	8.80		23.10	23.17
95th-Percentile Queue Length [ft/ln]	200.77	60.46	219.97		577.62	579.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.13	15.05	0.00	0.00	33.28	33.28	0.00	0.00	0.00	33.69	34.41	34.82
Movement LOS	D	B			C	C				C	C	C
d_A, Approach Delay [s/veh]	35.33			33.28			0.00			34.25		
Approach LOS	D			C			A			C		
d_I, Intersection Delay [s/veh]	34.29											
Intersection LOS	C											
Intersection V/C	0.784											

Emissions

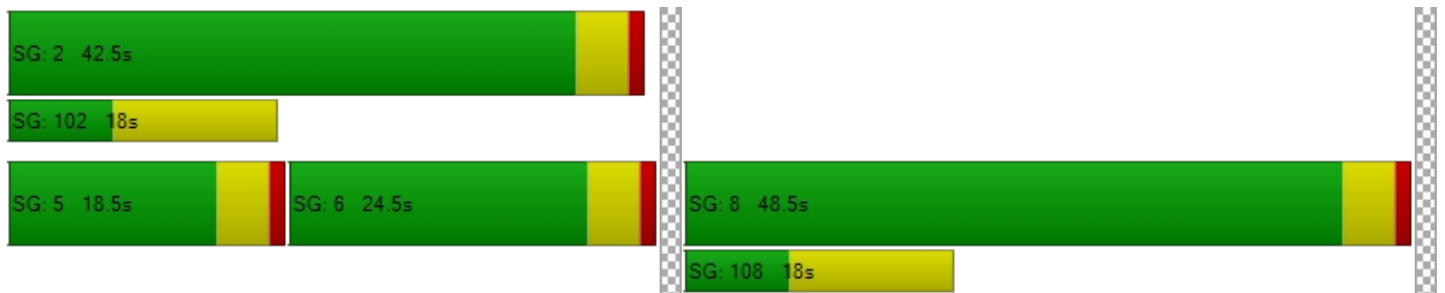
Vehicle Miles Traveled [mph]	26.22	15.24	11.45		152.46	150.29
Stops [stops/h]	187.62	55.56	210.74		680.33	682.47
Fuel consumption [US gal/h]	3.95	1.27	3.35		15.37	15.39
CO [g/h]	275.94	89.06	234.11		1074.10	1075.69
NOx [g/h]	53.69	17.33	45.55		208.98	209.29
VOC [g/h]	63.95	20.64	54.26		248.93	249.30

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	33.23	0.00	33.23
I_p,int, Pedestrian LOS Score for Intersectio	0.000	2.002	0.000	2.465
Crosswalk LOS	F	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]	873	459	0	1011
d_b, Bicycle Delay [s]	13.82	25.83	43.53	10.65
I_b,int, Bicycle LOS Score for Intersection	2.058	1.977	4.132	2.833
Bicycle LOS	B	A	D	C

Sequence

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



**Intersection Level Of Service Report
Intersection 110:**

Control Type:	Signalized	Delay (sec / veh):	56.8
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.790

Intersection Setup

Name	162nd Avenue									EB Couplet		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑↔			↔↑			↔↔					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			0.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	Yes			No			Yes			No		

Volumes

Name	162nd Avenue									EB Couplet		
Base Volume Input [veh/h]	0	125	637	137	425	0	161	107	692	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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	125	637	137	425	0	161	107	692	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	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	33	168	36	112	0	42	28	182	0	0	0
Total Analysis Volume [veh/h]	0	132	671	144	447	0	169	113	728	0	0	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Unsigna	Protecte	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	2	2	1	6	0	4	4	4	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	26	26	16	46	0	36	36	36	0	0	0
Amber [s]	0.0	3.5	3.5	3.5	3.5	0.0	3.5	3.5	3.5	0.0	0.0	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	7	0	7	0	7	7	7	0	0	0
Pedestrian Clearance [s]	0	11	11	0	11	0	11	11	11	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		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	2.5	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	30	30	30	30	0	30	30	30	0	0	0
Lead / Lag	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	5	5	5	5	0	5	5	5	0	0	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		Yes		No	Yes			No				
Pedestrian Recall		Yes		No	Yes			No				

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	L	C	L	C	R	
C, Cycle Length [s]	91	91	91	91	91	91	
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	
g_i, Effective Green Time [s]	32	9	46	36	36	36	
g / C, Green / Cycle	0.36	0.10	0.51	0.40	0.40	0.40	
(v / s)_i Volume / Saturation Flow Rate	0.07	0.08	0.24	0.09	0.06	0.45	
s, saturation flow rate [veh/h]	1900	1810	1900	1810	1900	1615	
c, Capacity [veh/h]	676	182	961	716	752	639	
d1, Uniform Delay [s]	20.31	40.00	14.55	18.34	17.68	27.51	
k, delay calibration	0.50	0.11	0.50	0.11	0.11	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.65	7.53	1.62	0.17	0.09	80.74	
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	0.20	0.79	0.47	0.24	0.15	1.14	
d, Delay for Lane Group [s/veh]	20.95	47.53	16.17	18.51	17.77	108.25	
Lane Group LOS	C	D	B	B	B	F	
Critical Lane Group	No	No	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	2.02	3.49	6.05	2.34	1.51	27.43	
50th-Percentile Queue Length [ft/ln]	50.50	87.25	151.32	58.60	37.71	685.67	
95th-Percentile Queue Length [veh/ln]	3.64	6.28	10.09	4.22	2.72	39.34	
95th-Percentile Queue Length [ft/ln]	90.89	157.05	252.19	105.48	67.88	983.51	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	20.95	0.00	47.53	16.17	0.00	18.51	17.77	108.25	0.00	0.00	0.00
Movement LOS		C		D	B		B	B	F			
d_A, Approach Delay [s/veh]	3.60		23.81				83.11			0.00		
Approach LOS	A		C				F			A		
d_I, Intersection Delay [s/veh]	56.83											
Intersection LOS	E											
Intersection V/C	0.790											

Emissions

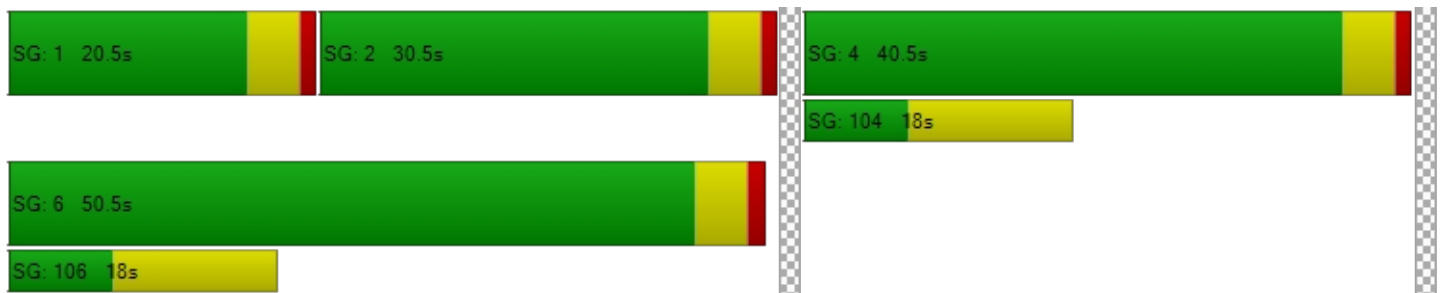
Vehicle Miles Traveled [mph]	9.10	19.77	61.37	31.37	20.97	135.12
Stops [stops/h]	79.90	138.06	239.43	92.72	59.67	1084.92
Fuel consumption [US gal/h]	1.38	2.97	5.32	2.44	1.60	27.59
CO [g/h]	96.38	207.55	371.85	170.56	111.96	1928.62
NOx [g/h]	18.75	40.38	72.35	33.19	21.78	375.24
VOC [g/h]	22.34	48.10	86.18	39.53	25.95	446.98

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	35.17	0.00	35.17	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.365	0.000	2.269	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	571	1011	791	0
d_b, Bicycle Delay [s]	23.22	11.13	16.62	45.50
I_b,int, Bicycle LOS Score for Intersection	1.777	2.535	3.226	4.132
Bicycle LOS	A	B	C	D

Sequence

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



Intersection Level Of Service Report
Intersection 111:

Control Type:	Signalized	Delay (sec / veh):	14.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.759

Intersection Setup

Name	172nd Ave			WB Couplet								
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			0.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name				172nd Ave			WB Couplet					
Base Volume Input [veh/h]	247	664	0	0	164	1220	0	0	0	7	0	73
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	247	664	0	0	164	1220	0	0	0	7	0	73
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
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]	65	175	0	0	43	321	0	0	0	2	0	19
Total Analysis Volume [veh/h]	260	699	0	0	173	1284	0	0	0	7	0	77
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	26.4
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split
Signal Group	5	2	0	0	6	6	0	0	0	0	8	8	8
Auxiliary Signal Groups													
Maximum Green [s]	22	63	0	0	37	37	0	0	0	0	18	18	18
Amber [s]	3.5	3.5	0.0	0.0	3.5	3.5	0.0	0.0	0.0	0.0	3.5	3.5	3.5
All red [s]	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0
Walk [s]	0	7	0	0	7	7	0	0	0	0	7	7	7
Pedestrian Clearance [s]	0	11	0	0	11	11	0	0	0	0	11	11	11
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	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	0.0	0.0	2.5	2.5	0.0	0.0	0.0	0.0	2.5	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	0.0	6.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	0	0	30	30	0	0	0	0	30	30	30
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	5	5	0	0	5	5	0	0	0	0	5	5	5
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0
Minimum Recall	No	No			No							No	
Maximum Recall	No	Yes			Yes							No	
Pedestrian Recall	No	Yes			Yes							No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R		C	C
C, Cycle Length [s]	77	77	77	77		77	77
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50		4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50		2.50	2.50
g_i, Effective Green Time [s]	13	63	45	45		5	5
g / C, Green / Cycle	0.17	0.82	0.59	0.59		0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.14	0.19	0.05	0.45		0.00	0.05
s, saturation flow rate [veh/h]	1810	3618	3618	2859		1810	1615
c, Capacity [veh/h]	312	2964	2129	1682		115	103
d1, Uniform Delay [s]	30.77	1.56	6.84	11.82		33.84	35.40
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	5.82	0.19	0.07	3.34		0.22	10.32
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	0.83	0.24	0.08	0.76		0.06	0.75
d, Delay for Lane Group [s/veh]	36.59	1.74	6.91	15.16		34.06	45.72
Lane Group LOS	D	A	A	B		C	D
Critical Lane Group	Yes	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	5.00	0.49	0.56	7.63		0.13	1.68
50th-Percentile Queue Length [ft/ln]	124.90	12.32	13.90	190.74		3.18	41.97
95th-Percentile Queue Length [veh/ln]	8.66	0.89	1.00	12.16		0.23	3.02
95th-Percentile Queue Length [ft/ln]	216.54	22.18	25.01	303.98		5.73	75.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.59	1.74	0.00	0.00	6.91	15.16	0.00	0.00	0.00	34.06	39.89	45.72
Movement LOS	D	A			A	B				C	D	D
d_A, Approach Delay [s/veh]	11.19			14.18			0.00			44.75		
Approach LOS	B			B			A			D		
d_I, Intersection Delay [s/veh]	14.06											
Intersection LOS	B											
Intersection V/C	0.759											

Emissions

Vehicle Miles Traveled [mph]	28.04	75.38	12.29	91.21		0.60	6.57
Stops [stops/h]	234.06	46.18	52.08	714.88		5.96	78.65
Fuel consumption [US gal/h]	4.38	3.61	1.04	11.67		0.11	1.42
CO [g/h]	306.38	252.09	72.49	815.54		7.41	99.35
NOx [g/h]	59.61	49.05	14.10	158.67		1.44	19.33
VOC [g/h]	71.01	58.42	16.80	189.01		1.72	23.02

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	28.21	0.00	28.21
I_p,int, Pedestrian LOS Score for Intersectio	0.000	2.807	0.000	1.747
Crosswalk LOS	F	C	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1640	963	0	469
d_b, Bicycle Delay [s]	1.25	10.33	38.42	22.53
I_b,int, Bicycle LOS Score for Intersection	2.351	2.762	4.132	1.629
Bicycle LOS	B	C	D	A

Sequence

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



**Intersection Level Of Service Report
Intersection 112:**

Control Type:	Signalized	Delay (sec / veh):	15.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.617

Intersection Setup

Name	172nd Ave						EB Couplet			EB Couplet		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			45.00			0.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	Yes			No			Yes			No		

Volumes

Name	172nd Ave						EB Couplet			EB Couplet		
Base Volume Input [veh/h]	0	370	19	110	61	0	541	313	27	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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	370	19	110	61	0	541	313	27	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	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	97	5	29	16	0	142	82	7	0	0	0
Total Analysis Volume [veh/h]	0	389	20	116	64	0	569	329	28	0	0	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	8	4	4	0	2	2	2	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	38	38	37	37	0	41	41	41	0	0	0
Amber [s]	0.0	3.5	3.5	4.7	4.7	0.0	5.0	5.0	5.0	0.0	0.0	0.0
All red [s]	0.0	1.5	1.5	1.5	1.5	0.0	1.5	1.5	1.5	0.0	0.0	0.0
Walk [s]	0	9	9	9	9	0	7	7	7	0	0	0
Pedestrian Clearance [s]	0	22	22	21	21	0	11	11	11	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		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	4.2	4.2	0.0	4.5	4.5	4.5	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	6.0	20.0	20.0	0.0	6.0	6.0	6.0	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: Free Running (No Pattern)

Split [s]	0	30	30	30	30	0	30	30	30	0	0	0
Lead / Lag	-	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	6	6	6	6	0	10	10	10	0	0	0
Vehicle Extension [s]	0.0	2.5	2.5	2.5	2.5	0.0	5.4	5.4	5.4	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		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	C	C	C	
C, Cycle Length [s]	58	58	58	58	58	
L, Total Lost Time per Cycle [s]	5.00	6.20	6.20	6.50	6.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.00	4.20	4.20	4.50	4.50	
g_i, Effective Green Time [s]	21	20	20	25	25	
g / C, Green / Cycle	0.37	0.35	0.35	0.43	0.43	
(v / s)_i Volume / Saturation Flow Rate	0.22	0.12	0.03	0.31	0.19	
s, saturation flow rate [veh/h]	1884	992	1900	1810	1874	
c, Capacity [veh/h]	692	260	659	787	815	
d1, Uniform Delay [s]	14.87	24.50	12.84	13.55	11.48	
k, delay calibration	0.08	0.08	0.08	0.28	0.28	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.60	0.89	0.05	3.29	0.97	
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	0.59	0.45	0.10	0.72	0.44	
d, Delay for Lane Group [s/veh]	15.47	25.39	12.89	16.84	12.45	
Lane Group LOS	B	C	B	B	B	
Critical Lane Group	Yes	No	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	3.94	1.51	0.52	5.33	2.67	
50th-Percentile Queue Length [ft/ln]	98.44	37.83	12.88	133.29	66.76	
95th-Percentile Queue Length [veh/ln]	7.09	2.72	0.93	9.12	4.81	
95th-Percentile Queue Length [ft/ln]	177.19	68.09	23.19	227.97	120.17	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	15.47	15.47	25.39	12.89	0.00	16.84	12.45	12.45	0.00	0.00	0.00
Movement LOS		B	B	C	B		B	B	B			
d_A, Approach Delay [s/veh]		15.47		20.95			15.15			0.00		
Approach LOS		B		C			B			A		
d_I, Intersection Delay [s/veh]	15.92											
Intersection LOS	B											
Intersection V/C	0.617											

Emissions

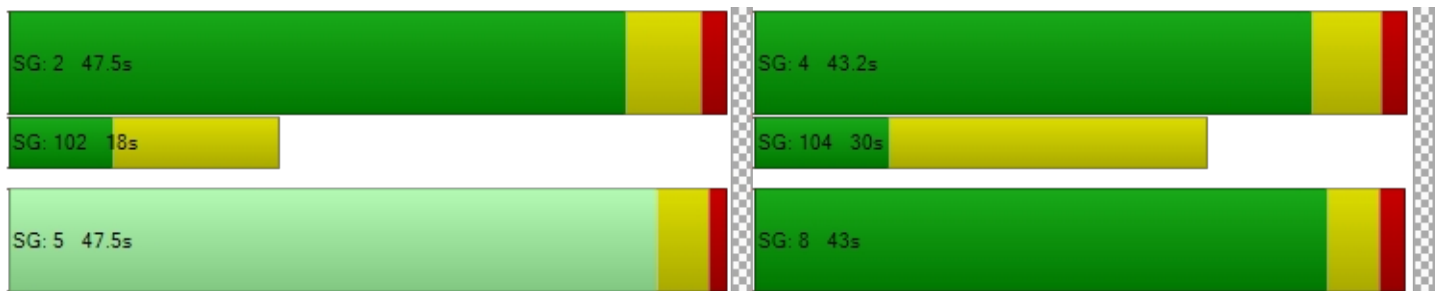
Vehicle Miles Traveled [mph]	48.11	12.51	6.90	67.03	42.05
Stops [stops/h]	244.14	93.82	31.95	330.59	165.58
Fuel consumption [US gal/h]	4.62	1.63	0.63	8.36	4.40
CO [g/h]	322.74	114.13	43.94	584.23	307.87
NOx [g/h]	62.79	22.20	8.55	113.67	59.90
VOC [g/h]	74.80	26.45	10.18	135.40	71.35

Other Modes

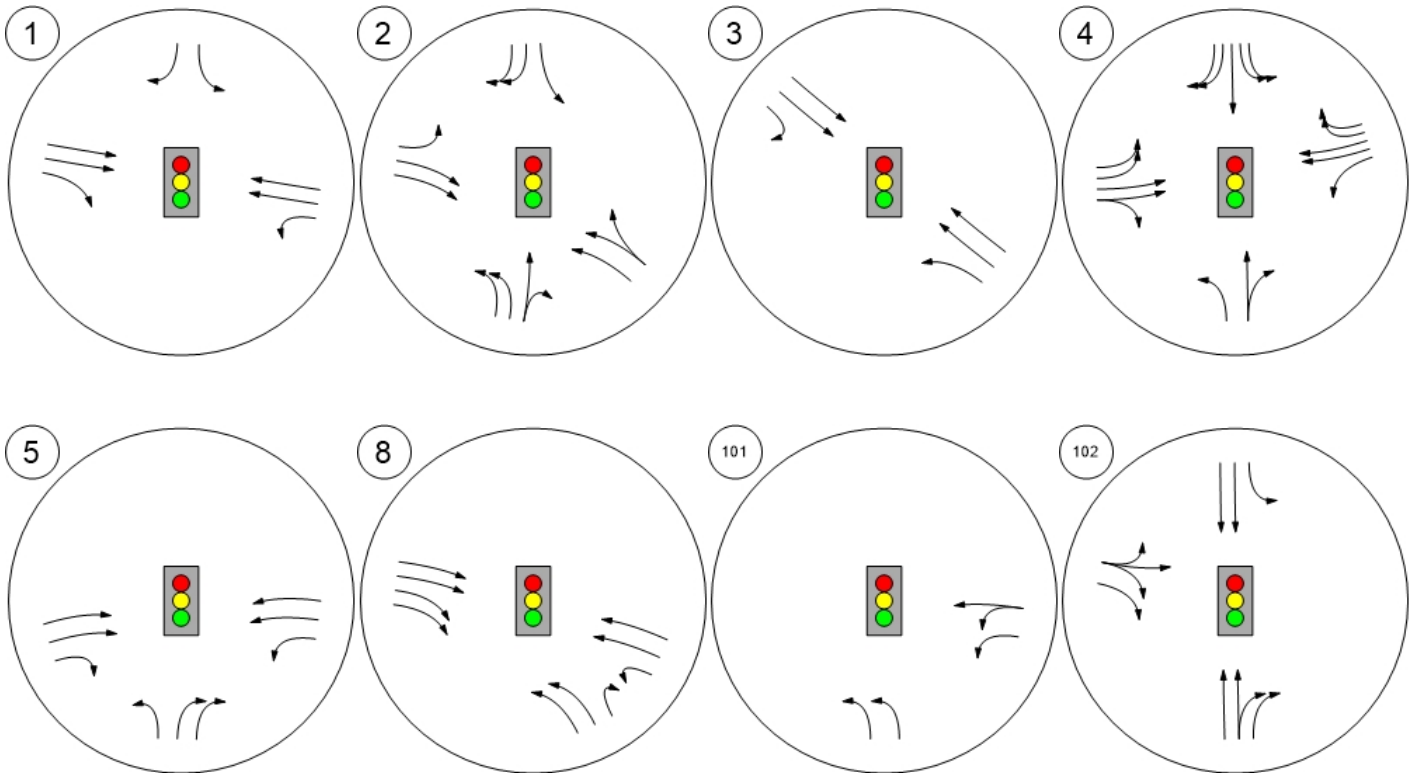
g_Walk,mi, Effective Walk Time [s]	11.0	0.0	13.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	19.07	0.00	17.49	0.00
I_p,int, Pedestrian LOS Score for Intersectio	1.935	0.000	2.442	0.000
Crosswalk LOS	A	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1309	1275	1412	0
d_b, Bicycle Delay [s]	3.47	3.82	2.51	29.03
I_b,int, Bicycle LOS Score for Intersection	2.234	1.857	2.324	4.132
Bicycle LOS	B	A	B	D

Sequence

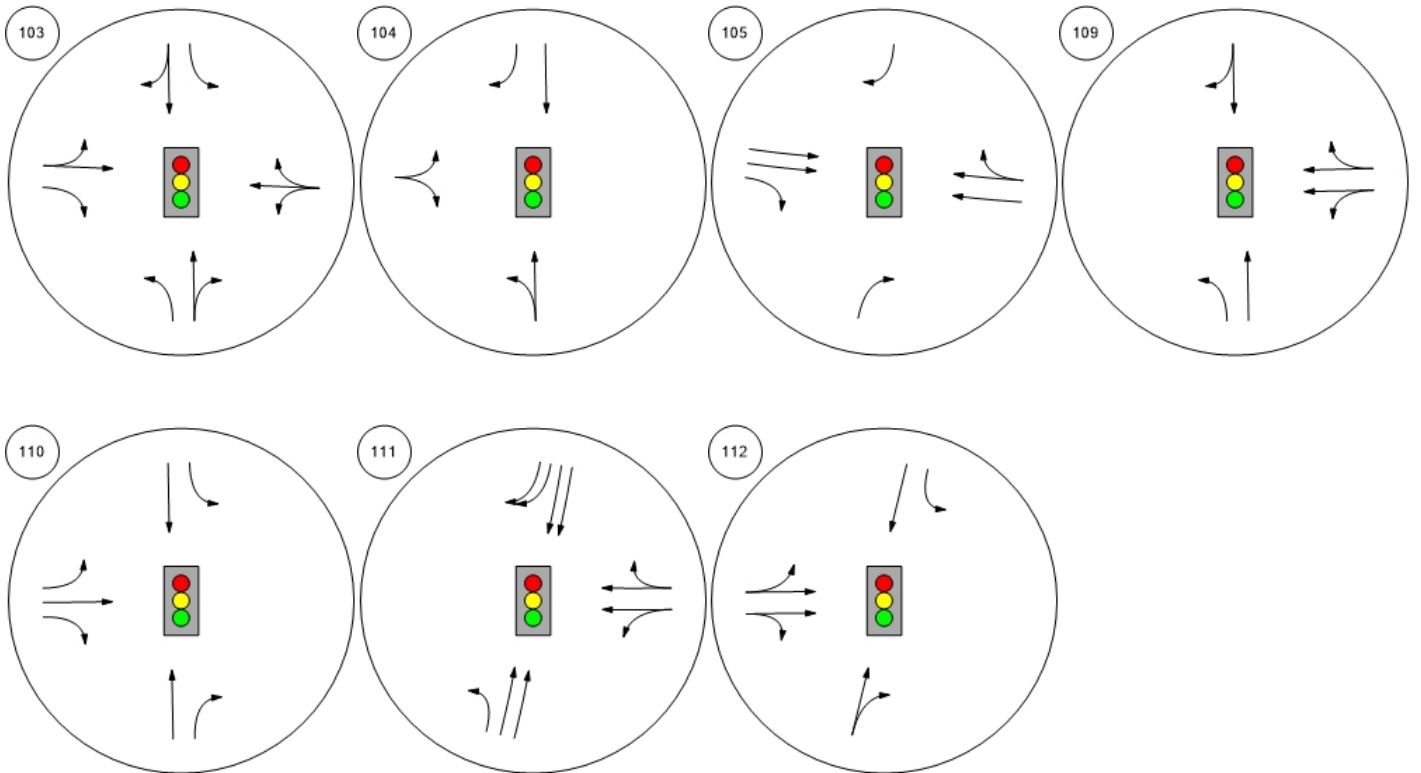
Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



Sunrise Refinement Plan

Vistro File: H:\...\Sunrise_PM_PREFERREDGateway.vistro

Scenario: Base Scenario

Report File: H:\...\2045_PREFERREDGatewayPM.pdf

3/17/2025

Intersection Analysis Summary




ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1		Signalized	HCM 7th Edition	WB Left	0.990	40.2	D
2		Signalized	HCM 7th Edition	WB Right	1.155	111.1	F
3		Signalized	HCM 7th Edition	WB Left	0.883	25.3	C
4		Signalized	HCM 7th Edition	SB Left	0.764	49.1	D
5		Signalized	HCM 7th Edition	NB Right	0.850	74.5	E
8		Signalized	HCM 7th Edition	WB Left	0.649	32.2	C
101		Signalized	HCM 7th Edition	WB Left	0.567	9.4	A
102		Signalized	HCM 7th Edition	EB Right	0.773	13.7	B
103		Signalized	HCM 7th Edition	SB Left	0.835	17.1	B
104		Signalized	HCM 7th Edition	EB Left	0.697	8.0	A
105		Signalized	HCM 7th Edition	SB Right	0.957	16.9	B
109		Signalized	HCM 7th Edition	NB Left	0.830	49.5	D
110		Signalized	HCM 7th Edition	EB Right	0.815	172.2	F
111		Signalized	HCM 7th Edition	NB Left	0.456	6.0	A
112		Signalized	HCM 7th Edition	EB Left	0.873	59.1	E

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:

Control Type:	Signalized	Delay (sec / veh):	40.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.990

Intersection Setup

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1000.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	0.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	0	0	0	297	1	395	0	2382	279	27	1424	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 [%]	0.00	0.00	0.00	4.00	2.00	2.00	0.00	5.00	5.00	13.00	4.00	0.00
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	198	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	297	1	197	0	2382	279	27	1424	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9700	1.0000	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	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	77	0	51	0	614	72	7	367	0
Total Analysis Volume [veh/h]	0	0	0	306	1	203	0	2456	288	28	1468	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	10.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	4	0	4	0	2	2	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	0	0	25	0	25	0	86	86	4	94	0
Amber [s]	0.0	0.0	0.0	4.0	0.0	4.0	0.0	5.0	5.0	3.5	5.0	0.0
All red [s]	0.0	0.0	0.0	1.5	0.0	1.5	0.0	1.0	1.0	0.5	1.0	0.0
Walk [s]	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
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]	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	3.5	0.0	3.5	0.0	4.0	4.0	2.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	0.0	20.0	0.0	6.0	6.0	20.0	6.0	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	30	0	30	0	92	92	8	100	0
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	6	0	10	10	4	10	0
Vehicle Extension [s]	0.0	0.0	0.0	2.3	0.0	2.3	0.0	0.5	0.5	2.3	0.5	0.0
Minimum Recall				No				Yes		No	Yes	
Maximum Recall				No				No		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		L	R	C	R	L	C
C, Cycle Length [s]		130	130	130	130	130	130
L, Total Lost Time per Cycle [s]		5.50	5.50	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		3.50	3.50	4.00	4.00	2.00	4.00
g_i, Effective Green Time [s]		24	24	87	87	3	94
g / C, Green / Cycle		0.19	0.19	0.67	0.67	0.02	0.72
(v / s)_i Volume / Saturation Flow Rate		0.17	0.13	0.71	0.19	0.02	0.42
s, saturation flow rate [veh/h]		1752	1589	3475	1551	1624	3503
c, Capacity [veh/h]		329	299	2331	1041	36	2535
d1, Uniform Delay [s]		51.96	49.16	21.40	8.65	63.30	8.55
k, delay calibration		0.32	0.14	0.50	0.50	0.07	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		25.69	3.44	34.64	0.66	20.21	0.97
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		0.93	0.68	1.05	0.28	0.79	0.58
d, Delay for Lane Group [s/veh]		77.65	52.60	56.03	9.31	83.51	9.52
Lane Group LOS		E	D	F	A	F	A
Critical Lane Group		Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		12.16	6.44	43.00	3.36	1.13	9.30
50th-Percentile Queue Length [ft/ln]		303.97	161.06	1074.90	84.10	28.13	232.50
95th-Percentile Queue Length [veh/ln]		17.88	10.61	56.33	6.05	2.03	14.30
95th-Percentile Queue Length [ft/ln]		446.93	265.13	1408.35	151.37	50.63	357.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	77.65	0.00	52.60	0.00	56.03	9.31	83.51	9.52	0.00
Movement LOS				E		D		F	A	F	A	
d_A, Approach Delay [s/veh]	0.00			67.66			51.13			10.91		
Approach LOS	A			E			D			B		
d_I, Intersection Delay [s/veh]	40.23											
Intersection LOS	D											
Intersection V/C	0.990											

Emissions

Vehicle Miles Traveled [mph]		59.22	39.28	778.01	91.23	4.43	232.12
Stops [stops/h]		336.62	178.36	2380.75	93.13	31.15	514.95
Fuel consumption [US gal/h]		9.13	4.78	73.18	4.82	0.83	15.25
CO [g/h]		638.34	333.80	5115.56	336.62	58.03	1065.63
NOx [g/h]		124.20	64.95	995.30	65.49	11.29	207.33
VOC [g/h]		147.94	77.36	1185.58	78.02	13.45	246.97

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	377	1323	1446
d_b, Bicycle Delay [s]	65.02	42.82	7.45	4.99
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560	3.823	2.794
Bicycle LOS	D	A	D	C

Sequence

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



**Intersection Level Of Service Report
Intersection 2:**

Control Type:	Signalized	Delay (sec / veh):	111.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.155

Intersection Setup

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	415.00	100.00	100.00	160.00	100.00	405.00	365.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	357	8	333	21	0	235	543	2136	0	0	859	445
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 [%]	5.00	12.00	17.00	10.00	0.00	5.00	2.00	6.00	0.00	0.00	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	1	0	0	0	0	0	0	0	0	13
Total Hourly Volume [veh/h]	357	8	332	21	0	235	543	2136	0	0	859	432
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	1.0000	1.0000	0.9300	0.9300
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]	96	2	89	6	0	63	146	574	0	0	231	116
Total Analysis Volume [veh/h]	384	9	357	23	0	253	584	2297	0	0	924	465
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	1			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	11.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	8	7	0	4	5	2	0	0	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	18	31	31	3	0	16	35	80	0	0	41	41
Amber [s]	4.0	4.0	4.0	4.0	0.0	4.0	3.5	5.0	0.0	0.0	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	0.0	1.5	0.5	1.0	0.0	0.0	1.0	1.0
Walk [s]	7	7	7	0	0	0	0	7	0	0	7	7
Pedestrian Clearance [s]	12	24	24	0	0	0	0	20	0	0	12	12
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	0.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	0.0	3.5	2.0	4.0	0.0	0.0	4.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	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	37	37	8	0	22	39	86	0	0	47	47
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	3	4	4	3	0	4	4	6	0	0	6	6
Vehicle Extension [s]	2.3	2.3	2.3	2.3	0.0	2.3	2.3	4.6	0.0	0.0	4.6	4.6
Minimum Recall	No	No		No		No	Yes	Yes			No	
Maximum Recall	No	No		No		No	No	No			No	
Pedestrian Recall	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	L	R	L	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	4.00	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
l2, Clearance Lost Time [s]	3.50	3.50	3.50	0.00	2.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	23	31	2	49	34	79	41	41
g / C, Green / Cycle	0.18	0.24	0.02	0.38	0.26	0.61	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.11	0.25	0.01	0.09	0.33	0.67	0.38	0.42
s, saturation flow rate [veh/h]	3375	1467	1667	2746	1781	3446	1840	1646
c, Capacity [veh/h]	598	355	28	1035	471	2104	580	519
d1, Uniform Delay [s]	49.68	49.27	63.75	27.81	47.83	25.33	44.52	44.52
k, delay calibration	0.07	0.44	0.07	0.07	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]	0.71	52.57	29.74	0.07	125.16	49.78	104.66	165.01
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	0.64	1.03	0.83	0.24	1.24	1.09	1.20	1.34
d, Delay for Lane Group [s/veh]	50.39	101.84	93.49	27.88	172.99	75.11	149.18	209.52
Lane Group LOS	D	F	F	C	F	F	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.87	16.67	0.99	2.75	31.53	44.75	35.37	40.33
50th-Percentile Queue Length [ft/ln]	146.74	416.64	24.76	68.68	788.28	1118.65	884.35	1008.33
95th-Percentile Queue Length [veh/ln]	9.84	23.77	1.78	4.94	45.98	60.03	50.45	59.91
95th-Percentile Queue Length [ft/ln]	246.07	594.34	44.58	123.62	1149.50	1500.70	1261.21	1497.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.39	101.84	101.84	93.49	0.00	27.88	172.99	75.11	0.00	0.00	164.16	209.52
Movement LOS	D	F	F	F		C	F	F			F	F
d_A, Approach Delay [s/veh]	75.50			33.35			94.95			179.35		
Approach LOS	E			C			F			F		
d_I, Intersection Delay [s/veh]	111.12											
Intersection LOS	F											
Intersection V/C	1.155											

Emissions

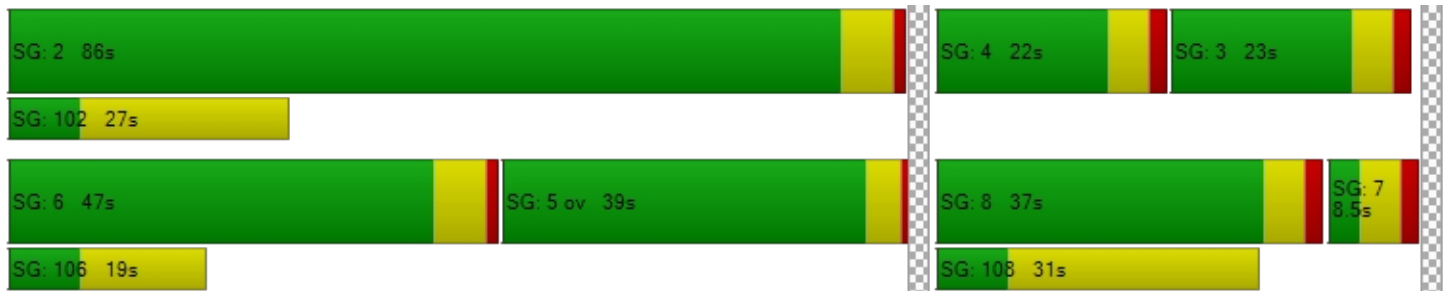
Vehicle Miles Traveled [mph]	80.44	76.67	3.06	33.67	92.34	363.20	173.89	173.89
Stops [stops/h]	325.04	461.45	27.43	152.13	873.06	2477.94	979.47	1116.79
Fuel consumption [US gal/h]	9.04	13.29	0.72	3.66	29.18	63.75	33.65	42.93
CO [g/h]	632.19	928.96	49.98	255.97	2039.63	4455.83	2352.08	3001.09
NOx [g/h]	123.00	180.74	9.72	49.80	396.84	866.94	457.63	583.90
VOC [g/h]	146.52	215.30	11.58	59.32	472.70	1032.68	545.12	695.53

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	54.47	0.00	54.47
I_p,int, Pedestrian LOS Score for Intersectio	2.203	2.477	0.000	3.162
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	485	46	1231	631
d_b, Bicycle Delay [s]	37.32	62.04	9.62	30.47
I_b,int, Bicycle LOS Score for Intersection	2.799	1.560	3.936	2.716
Bicycle LOS	C	A	D	B

Sequence

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



**Intersection Level Of Service Report
Intersection 3:**

Control Type:	Signalized	Delay (sec / veh):	25.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.883

Intersection Setup

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Approach	Eastbound		Westbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	0	2
Entry Pocket Length [ft]	100.00	100.00	630.00	100.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	0.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present			No		No	
Crosswalk	No		No		No	

Volumes

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Base Volume Input [veh/h]	0	0	249	1304	2140	350
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	6.00	1.00	7.00	4.00
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	0	0	175
Total Hourly Volume [veh/h]	0	0	249	1304	2140	175
Peak Hour Factor	1.0000	1.0000	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	67	351	575	47
Total Analysis Volume [veh/h]	0	0	268	1402	2301	188
Presence of On-Street Parking			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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

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]	50.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	0	0	1	6	2	2
Auxiliary Signal Groups						
Maximum Green [s]	0	0	16	89	69	69
Amber [s]	0.0	0.0	3.5	5.0	5.0	5.0
All red [s]	0.0	0.0	0.5	2.0	2.0	2.0
Walk [s]	0	0	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	17	17
Delayed Vehicle Green [s]	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	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	5.0	5.0	5.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	20	96	76	76
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	0	4	10	10	10
Vehicle Extension [s]	0.0	0.0	2.3	4.7	4.7	4.7
Minimum Recall			No	Yes	Yes	
Maximum Recall			No	No	No	
Pedestrian Recall			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	R
C, Cycle Length [s]	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	16	116	96	96
g / C, Green / Cycle	0.12	0.89	0.74	0.74
(v / s)_i Volume / Saturation Flow Rate	0.16	0.39	0.67	0.12
s, saturation flow rate [veh/h]	1724	3589	3418	1564
c, Capacity [veh/h]	212	3200	2521	1154
d1, Uniform Delay [s]	57.00	1.26	13.69	5.09
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]	150.50	0.44	6.42	0.30
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	1.26	0.44	0.91	0.16
d, Delay for Lane Group [s/veh]	207.50	1.69	20.11	5.39
Lane Group LOS	F	A	C	A
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	15.83	1.37	25.40	1.50
50th-Percentile Queue Length [ft/ln]	395.82	34.18	635.03	37.56
95th-Percentile Queue Length [veh/ln]	24.55	2.46	33.67	2.70
95th-Percentile Queue Length [ft/ln]	613.79	61.53	841.67	67.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	207.50	1.69	20.11	5.39
Movement LOS			F	A	C	A
d_A, Approach Delay [s/veh]	0.00		34.72		19.00	
Approach LOS	A		C		B	
d_I, Intersection Delay [s/veh]	25.31					
Intersection LOS	C					
Intersection V/C	0.883					

Emissions

Vehicle Miles Traveled [mph]		371.41	1942.97	576.13	47.07
Stops [stops/h]		438.44	75.73	1406.83	41.60
Fuel consumption [US gal/h]		29.03	80.89	40.91	2.37
CO [g/h]		2028.94	5653.99	2859.47	165.93
NOx [g/h]		394.76	1100.06	556.35	32.28
VOC [g/h]		470.23	1310.37	662.71	38.46

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1369	1062
d_b, Bicycle Delay [s]	65.00	6.47	14.31
I_b,int, Bicycle LOS Score for Intersection	4.132	2.937	3.757
Bicycle LOS	D	C	D

Sequence

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



**Intersection Level Of Service Report
Intersection 4:**

Control Type:	Signalized	Delay (sec / veh):	49.1
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.764

Intersection Setup

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T			T			T			T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	2	2	0	0	1	0	2
Entry Pocket Length [ft]	135.00	100.00	100.00	525.00	100.00	350.00	220.00	100.00	100.00	255.00	100.00	410.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Base Volume Input [veh/h]	26	175	1	689	210	621	667	591	49	1	515	661
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 [%]	7.00	5.00	5.00	4.00	13.00	2.00	6.00	5.00	16.00	5.00	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	0	0	0	0	0	0	25	0	0	0
Total Hourly Volume [veh/h]	26	175	1	689	210	621	667	591	24	1	515	661
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
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	45	0	178	54	160	172	152	6	0	133	170
Total Analysis Volume [veh/h]	27	180	1	710	216	640	688	609	25	1	531	681
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

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	Fully actuated
Offset [s]	38.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						6,7
Maximum Green [s]	8	35	35	23	50	50	27	50	50	4	27	27
Amber [s]	3.5	4.3	4.3	3.5	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	9	9	0	7	7	0	8	8	0	7	7
Pedestrian Clearance [s]	0	26	26	0	21	21	0	23	23	0	18	18
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.8	2.8	2.0	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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	40	40	27	55	55	31	55	55	8	32	32
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	4.6	2.0	4.6	4.6
Minimum Recall	No	No		No	No	No	No	Yes		No	Yes	Yes
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.80	4.00	4.80	4.80	4.00	5.40	5.40	4.00	5.40	5.40
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]	2.00	2.80	2.00	2.80	0.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	13	15	23	25	56	27	74	74	0	47	94
g / C, Green / Cycle	0.10	0.11	0.18	0.19	0.43	0.21	0.57	0.57	0.00	0.36	0.72
(v / s)_i Volume / Saturation Flow Rate	0.02	0.10	0.21	0.13	0.23	0.21	0.17	0.18	0.00	0.16	0.24
s, saturation flow rate [veh/h]	1709	1823	3403	1705	2813	3348	1825	1800	1738	3389	2783
c, Capacity [veh/h]	166	210	602	332	1218	695	1034	1020	2	1221	2005
d1, Uniform Delay [s]	53.81	56.52	53.50	48.28	27.04	51.36	14.79	14.79	64.87	31.54	6.72
k, delay calibration	0.07	0.07	0.10	0.07	0.07	0.04	0.50	0.50	0.04	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]	0.28	6.45	84.53	1.32	0.22	7.55	0.77	0.79	41.53	1.13	0.46
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	0.16	0.86	1.18	0.65	0.53	0.99	0.31	0.31	0.43	0.43	0.34
d, Delay for Lane Group [s/veh]	54.09	62.97	138.03	49.60	27.26	58.92	15.56	15.58	106.40	32.67	7.18
Lane Group LOS	D	E	F	D	C	E	B	B	F	C	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.83	6.22	16.88	6.60	7.32	11.87	5.15	5.09	0.06	6.55	3.38
50th-Percentile Queue Length [ft/ln]	20.70	155.51	422.11	165.07	183.09	296.73	128.72	127.30	1.49	163.81	84.38
95th-Percentile Queue Length [veh/ln]	1.49	10.31	25.56	10.82	11.76	17.52	8.87	8.79	0.11	10.75	6.08
95th-Percentile Queue Length [ft/ln]	37.26	257.76	639.09	270.43	294.04	437.98	221.75	219.81	2.69	268.76	151.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.09	62.97	62.97	138.03	49.60	27.26	58.92	15.57	15.58	106.40	32.67	7.18
Movement LOS	D	E	E	F	D	C	E	B	B	F	C	A
d_A, Approach Delay [s/veh]	61.81			80.56			38.13			18.42		
Approach LOS	E			F			D			B		
d_I, Intersection Delay [s/veh]	49.15											
Intersection LOS	D											
Intersection V/C	0.764											

Emissions

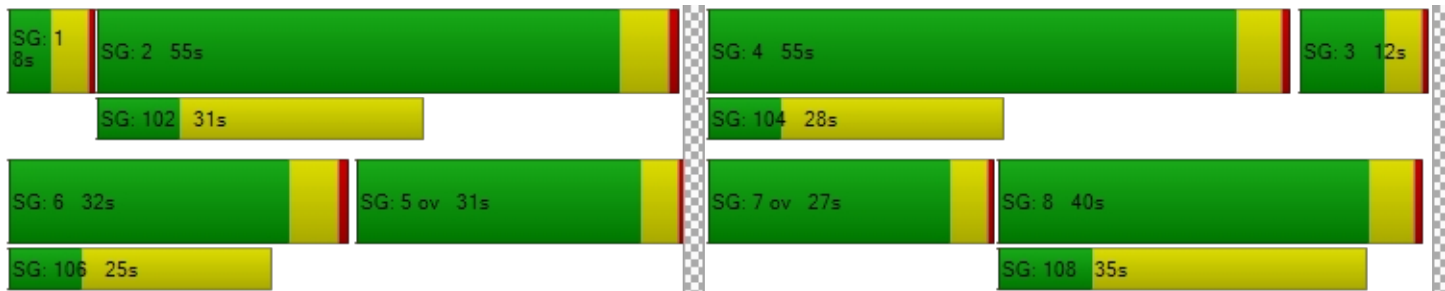
Vehicle Miles Traveled [mph]	6.08	40.79	163.93	49.87	147.77	618.39	286.66	283.20	0.66	350.10	448.99
Stops [stops/h]	22.93	172.25	935.12	182.85	405.61	657.36	142.58	141.00	1.65	362.89	186.92
Fuel consumption [US gal/h]	0.67	4.95	31.85	5.24	11.87	37.34	13.60	13.44	0.06	19.95	20.51
CO [g/h]	47.13	345.99	2226.63	366.52	830.01	2609.82	950.52	939.20	4.05	1394.28	1433.78
NOx [g/h]	9.17	67.32	433.22	71.31	161.49	507.78	184.94	182.73	0.79	271.28	278.96
VOC [g/h]	10.92	80.19	516.04	84.94	192.36	604.85	220.29	217.67	0.94	323.14	332.29

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	11.0	13.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.55	54.47	54.47	52.65
I_p,int, Pedestrian LOS Score for Intersectio	2.112	3.045	2.920	2.963
Crosswalk LOS	B	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]	542	772	763	409
d_b, Bicycle Delay [s]	34.57	24.49	24.86	41.14
I_b,int, Bicycle LOS Score for Intersection	1.903	4.144	2.671	2.560
Bicycle LOS	A	D	B	B

Sequence

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



**Intersection Level Of Service Report
Intersection 5:**

Control Type:	Signalized	Delay (sec / veh):	74.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.850

Intersection Setup

Name	135th Ave		Highway 212		OR 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↵↵↵		↑↵		↵↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	300.00	100.00	100.00	60.00	200.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name	135th Ave		Highway 212		OR 212	
Base Volume Input [veh/h]	49	612	1252	24	284	935
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	4.00	5.00	4.00	3.00	6.00
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	0	0	0
Total Hourly Volume [veh/h]	49	612	1252	24	284	935
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	158	323	6	73	241
Total Analysis Volume [veh/h]	51	631	1291	25	293	964
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		1		0	
v_ci, Inbound Pedestrian Volume crossing mi	1		1		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		3	

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	Fully actuated
Offset [s]	71.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	Protected	Permissive
Signal Group	3	3	2	2	1	6
Auxiliary Signal Groups						
Maximum Green [s]	20	20	66	66	31	101
Amber [s]	3.5	3.5	4.7	4.7	3.5	4.7
All red [s]	0.5	0.5	0.7	0.7	0.5	0.5
Walk [s]	0	0	8	8	0	7
Pedestrian Clearance [s]	0	0	18	18	0	14
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]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	3.4	3.4	2.0	3.2
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	6.0	6.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	24	24	71	71	35	106
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Vehicle Extension [s]	2.3	2.3	4.5	4.5	2.3	4.5
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		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	L	R	C	R	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	5.40	5.40	4.00	5.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	3.40	3.40	2.00	3.20
g_i, Effective Green Time [s]	20	20	73	73	24	101
g / C, Green / Cycle	0.15	0.15	0.56	0.56	0.18	0.78
(v / s)_i Volume / Saturation Flow Rate	0.03	0.23	0.37	0.02	0.17	0.28
s, saturation flow rate [veh/h]	1695	2693	3475	1561	1767	3446
c, Capacity [veh/h]	261	414	1951	877	321	2672
d1, Uniform Delay [s]	47.99	54.74	19.89	12.71	52.19	4.55
k, delay calibration	0.07	0.23	0.50	0.50	0.20	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	241.22	1.78	0.06	16.49	0.38
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	0.20	1.52	0.66	0.03	0.91	0.36
d, Delay for Lane Group [s/veh]	48.21	295.95	21.68	12.77	68.68	4.93
Lane Group LOS	D	F	C	B	E	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.47	20.62	13.77	0.34	10.84	3.64
50th-Percentile Queue Length [ft/ln]	36.78	515.46	344.36	8.59	271.06	90.97
95th-Percentile Queue Length [veh/ln]	2.65	32.94	19.86	0.62	16.24	6.55
95th-Percentile Queue Length [ft/ln]	66.20	823.47	496.52	15.45	406.07	163.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.21	295.95	21.68	12.77	68.68	4.93
Movement LOS	D	F	C	B	E	A
d_A, Approach Delay [s/veh]	277.42		21.51		19.79	
Approach LOS	F		C		B	
d_I, Intersection Delay [s/veh]	74.47					
Intersection LOS	E					
Intersection V/C	0.850					

Emissions

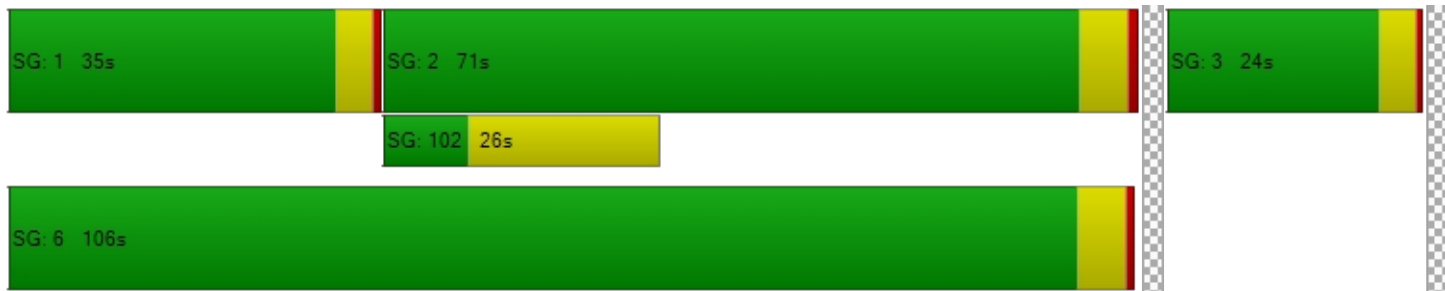
Vehicle Miles Traveled [mph]	9.98	123.47	851.17	16.48	103.45	340.36
Stops [stops/h]	40.74	1141.89	762.85	9.51	300.24	201.52
Fuel consumption [US gal/h]	1.14	49.39	44.95	0.80	10.01	16.09
CO [g/h]	79.42	3452.06	3141.99	55.64	699.84	1124.87
NOx [g/h]	15.45	671.65	611.32	10.83	136.16	218.86
VOC [g/h]	18.41	800.05	728.19	12.90	162.19	260.70

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.56	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.392	0.000	0.000
Crosswalk LOS	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	308	1009	1551
d_b, Bicycle Delay [s]	46.61	15.95	3.29
I_b,int, Bicycle LOS Score for Intersection	1.560	2.645	2.597
Bicycle LOS	A	B	B

Sequence

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



MOVEMENT SUMMARY

Site: 106 [Highway 212/Riverbend_4LanePM_Couplet (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Four-Lane Sunrise
 Site Category: (None)
 Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. Dist]				mph	
			veh/h		veh/h					veh	ft				
South: Riverbend															
3	L2	All MCs	72	3.0	72	3.0	0.716	48.3	LOS E	2.2	59.2	0.93	1.30	1.76	13.2
18	R2	All MCs	67	18.0	67	18.0	0.716	70.4	LOS F	2.2	59.2	0.93	1.30	1.76	13.2
Approach			139	10.2	139	10.2	0.716	57.6	LOS F	2.2	59.2	0.93	1.30	1.76	13.2
East: Highway 212															
1	L2	All MCs	26	0.0	26	0.0	0.415	6.3	LOS A	2.4	63.9	0.27	0.11	0.27	34.7
6	T1	All MCs	1011	6.0	1011	6.0	0.415	6.8	LOS A	2.4	63.9	0.27	0.11	0.27	34.7
Approach			1037	5.9	1037	5.9	0.415	6.7	LOS A	2.4	63.9	0.27	0.11	0.27	34.7
West: Highway 212															
2	T1	All MCs	1699	6.0	1699	6.0	0.680	9.4	LOS A	7.4	192.8	0.27	0.07	0.27	33.4
12	R2	All MCs	85	2.0	85	2.0	0.680	9.1	LOS A	7.4	192.8	0.27	0.07	0.27	33.6
Approach			1784	5.8	1784	5.8	0.680	9.4	LOS A	7.4	192.8	0.27	0.07	0.27	33.5
All Vehicles			2960	6.0	2960	6.0	0.716	10.8	LOS B	7.4	192.8	0.30	0.14	0.34	31.6

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

Roundabout LOS Method: Same as Sign Control.

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

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

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

Roundabout Capacity Model: US HCM 6.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: H:\27\27852 - Sunrise Corridor Community Visioning\synchro\27852_RoundaboutsAnalysis.sjp9

Intersection Level Of Service Report
Intersection 8:

Control Type:	Signalized	Delay (sec / veh):	32.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name	Highway 224		Highway 212		Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	1	0	2	1	0
Entry Pocket Length [ft]	155.00	70.00	100.00	125.00	230.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Highway 224		Highway 212		Highway 212	
Base Volume Input [veh/h]	649	300	540	1222	341	298
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	5.00	6.00	6.00	5.00	7.00
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	150	0	611	0	0
Total Hourly Volume [veh/h]	649	150	540	611	341	298
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	171	39	142	161	90	78
Total Analysis Volume [veh/h]	683	158	568	643	359	314
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		4		0	

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	Fully actuated
Offset [s]	40.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Overlap	Protected	Permissive
Signal Group	8	0	2	2	1	6
Auxiliary Signal Groups				2,8		
Maximum Green [s]	34	0	44	44	37	85
Amber [s]	4.7	0.0	5.0	5.0	3.5	5.0
All red [s]	0.7	0.0	1.0	1.0	0.5	1.0
Walk [s]	8	0	7	7	7	0
Pedestrian Clearance [s]	16	0	14	14	10	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]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	0.0	4.0	4.0	2.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	6.0	6.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	39	0	50	50	41	91
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	8	0	10	10	4	10
Vehicle Extension [s]	2.5	0.0	4.8	4.8	3.5	4.8
Minimum Recall	No		Yes	Yes	No	Yes
Maximum Recall	No		No	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	L	R	C	R	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	5.40	5.40	6.00	5.40	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	4.00	0.00	2.00	4.00
g_i, Effective Green Time [s]	31	31	54	91	29	88
g / C, Green / Cycle	0.24	0.24	0.42	0.70	0.22	0.67
(v / s)_i Volume / Saturation Flow Rate	0.20	0.10	0.16	0.24	0.21	0.09
s, saturation flow rate [veh/h]	3375	1528	3446	2685	1738	3418
c, Capacity [veh/h]	805	365	1440	1885	391	2303
d1, Uniform Delay [s]	47.25	41.97	26.38	7.53	49.18	7.62
k, delay calibration	0.08	0.08	0.50	0.50	0.27	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.95	0.60	0.81	0.49	18.39	0.12
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	0.85	0.43	0.39	0.34	0.92	0.14
d, Delay for Lane Group [s/veh]	49.20	42.57	27.20	8.03	67.57	7.74
Lane Group LOS	D	D	C	A	E	A
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	10.76	4.39	6.33	3.43	13.36	1.58
50th-Percentile Queue Length [ft/ln]	268.98	109.81	158.13	85.82	333.96	39.41
95th-Percentile Queue Length [veh/ln]	16.14	7.83	10.45	6.18	19.35	2.84
95th-Percentile Queue Length [ft/ln]	403.47	195.74	261.24	154.48	483.82	70.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.20	42.57	27.20	8.03	67.57	7.74
Movement LOS	D	D	C	A	E	A
d_A, Approach Delay [s/veh]	47.96		17.02		39.65	
Approach LOS	D		B		D	
d_I, Intersection Delay [s/veh]	32.16					
Intersection LOS	C					
Intersection V/C	0.649					

Emissions

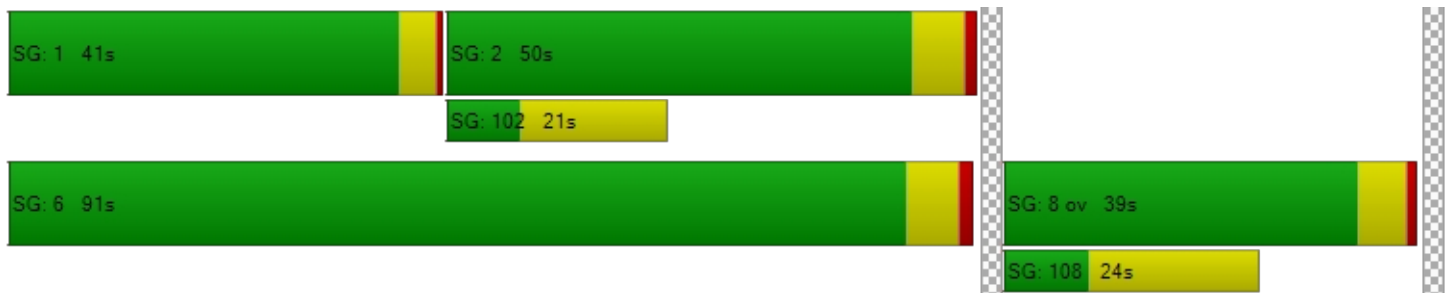
Vehicle Miles Traveled [mph]	223.40	51.68	82.47	93.36	22.85	19.99
Stops [stops/h]	595.87	121.63	350.30	190.12	369.91	87.30
Fuel consumption [US gal/h]	19.33	4.17	8.47	5.94	7.92	1.80
CO [g/h]	1350.91	291.35	592.31	415.48	553.60	125.81
NOx [g/h]	262.84	56.69	115.24	80.84	107.71	24.48
VOC [g/h]	313.09	67.52	137.27	96.29	128.30	29.16

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	12.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	0.00	53.56
I_p,int, Pedestrian LOS Score for Intersectio	3.039	0.000	2.619
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]	517	677	1308
d_b, Bicycle Delay [s]	35.80	28.51	7.79
I_b,int, Bicycle LOS Score for Intersection	1.560	3.063	2.115
Bicycle LOS	A	C	B

Sequence

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



**Intersection Level Of Service Report
Intersection 101:**

Control Type:	Signalized	Delay (sec / veh):	9.4
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.567

Intersection Setup

Name	122nd Avenue		Sunrise WB		Sunrise WB	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↵↵				↵↵	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	300.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		0.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No				No	
Crosswalk	No		No		Yes	

Volumes

Name	122nd Avenue		Sunrise WB		Sunrise WB	
Base Volume Input [veh/h]	715	0	0	0	640	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	0.00	0.00	0.00	0.00	0.00
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	0	0	0
Total Hourly Volume [veh/h]	715	0	0	0	640	0
Peak Hour Factor	0.9300	1.0000	1.0000	1.0000	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	192	0	0	0	172	0
Total Analysis Volume [veh/h]	769	0	0	0	688	0
Presence of On-Street Parking	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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	2	0	0	0	3	8
Auxiliary Signal Groups						
Maximum Green [s]	57	0	0	0	5	55
Amber [s]	3.5	0.0	0.0	0.0	3.5	3.5
All red [s]	1.0	0.0	0.0	0.0	1.0	1.0
Walk [s]	7	0	0	0	0	7
Pedestrian Clearance [s]	11	0	0	0	0	11
Delayed Vehicle Green [s]	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	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	0.0	0.0	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	0	0	0	30	30
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	5	0	0	0	5	5
Vehicle Extension [s]	3.0	0.0	0.0	0.0	3.0	3.0
Minimum Recall	No				Yes	No
Maximum Recall	No				No	No
Pedestrian Recall	No				No	No

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	L	C
C, Cycle Length [s]	30	30	30
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50
g_i, Effective Green Time [s]	11	10	10
g / C, Green / Cycle	0.36	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.23	0.19	0.19
s, saturation flow rate [veh/h]	3403	1810	1810
c, Capacity [veh/h]	1232	616	616
d1, Uniform Delay [s]	7.96	8.12	8.12
k, delay calibration	0.11	0.32	0.32
l, Upstream Filtering Factor	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	2.32	2.32
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	0.62	0.56	0.56
d, Delay for Lane Group [s/veh]	8.48	10.44	10.44
Lane Group LOS	A	B	B
Critical Lane Group	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.31	1.52	1.52
50th-Percentile Queue Length [ft/ln]	32.80	37.94	37.94
95th-Percentile Queue Length [veh/ln]	2.36	2.73	2.73
95th-Percentile Queue Length [ft/ln]	59.04	68.29	68.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.48	0.00	0.00	0.00	10.44	10.44
Movement LOS	A				B	B
d_A, Approach Delay [s/veh]	8.48		0.00		10.44	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	9.41					
Intersection LOS	A					
Intersection V/C	0.567					

Emissions

Vehicle Miles Traveled [mph]	64.06		45.59	45.59
Stops [stops/h]	313.53		181.33	181.33
Fuel consumption [US gal/h]	5.70		3.61	3.61
CO [g/h]	398.19		252.32	252.32
NOx [g/h]	77.47		49.09	49.09
VOC [g/h]	92.28		58.48	58.48

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	6.07
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	1.980
Crosswalk LOS	F	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3784	0	3651
d_b, Bicycle Delay [s]	11.98	15.06	10.27
I_b,int, Bicycle LOS Score for Intersection	1.560	4.132	2.695
Bicycle LOS	A	D	B

Sequence

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



**Intersection Level Of Service Report
Intersection 102:**

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.773

Intersection Setup

Name	122nd Avenue			122nd Avenue			Sunrise EB			Sunrise EB		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	50.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			0.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	Yes			No			Yes			No		

Volumes

Name	122nd Avenue			122nd Avenue			Sunrise EB			Sunrise EB		
Base Volume Input [veh/h]	0	715	788	0	640	0	0	0	880	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 [%]	0.00	5.00	4.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	715	788	0	640	0	0	0	880	0	0	0
Peak Hour Factor	1.0000	0.9300	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	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	192	212	0	172	0	0	0	237	0	0	0
Total Analysis Volume [veh/h]	0	769	847	0	688	0	0	0	946	0	0	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	2	2	6	6	0	4	4	4	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	59	59	59	59	0	53	53	53	0	0	0
Amber [s]	0.0	3.5	3.5	3.5	3.5	0.0	3.5	3.5	3.5	0.0	0.0	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	7	7	7	0	7	7	7	0	0	0
Pedestrian Clearance [s]	0	11	11	11	11	0	11	11	11	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		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	2.5	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	6.0	20.0	20.0	0.0	6.0	6.0	6.0	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: Free Running (No Pattern)

Split [s]	0	30	30	30	30	0	30	30	30	0	0	0
Lead / Lag	-	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	5	5	5	5	0	5	5	5	0	0	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		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	R	L	C	C	R	
C, Cycle Length [s]	52	52	52	52	52	52	52	
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	
g_i, Effective Green Time [s]	23	23	23	23	23	20	20	
g / C, Green / Cycle	0.45	0.45	0.45	0.45	0.45	0.38	0.38	
(v / s)_i Volume / Saturation Flow Rate	0.30	0.35	0.34	0.00	0.19	0.29	0.31	
s, saturation flow rate [veh/h]	1825	1551	1564	318	3618	1615	1538	
c, Capacity [veh/h]	820	697	703	175	1625	612	583	
d1, Uniform Delay [s]	11.29	12.19	12.14	0.00	9.83	14.30	14.60	
k, delay calibration	0.11	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	
d2, Incremental Delay [s]	0.90	1.86	1.79	0.00	0.18	2.11	2.77	
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	0.66	0.77	0.77	0.00	0.42	0.77	0.81	
d, Delay for Lane Group [s/veh]	12.19	14.05	13.92	0.00	10.00	16.41	17.37	
Lane Group LOS	B	B	B	A	B	B	B	
Critical Lane Group	No	Yes	No	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	4.12	4.59	4.56	0.00	2.22	4.47	4.64	
50th-Percentile Queue Length [ft/ln]	103.03	114.72	113.96	0.00	55.40	111.71	116.11	
95th-Percentile Queue Length [veh/ln]	7.42	8.10	8.06	0.00	3.99	7.94	8.18	
95th-Percentile Queue Length [ft/ln]	185.45	202.55	201.50	0.00	99.71	198.38	204.46	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.19	13.97	0.00	10.00	0.00	16.41	16.41	16.89	0.00	0.00	0.00
Movement LOS		B	B	A	B		B	B	B			
d_A, Approach Delay [s/veh]		13.39			10.00			16.89			0.00	
Approach LOS		B			B			B			A	
d_I, Intersection Delay [s/veh]		13.69										
Intersection LOS		B										
Intersection V/C		0.773										

Emissions

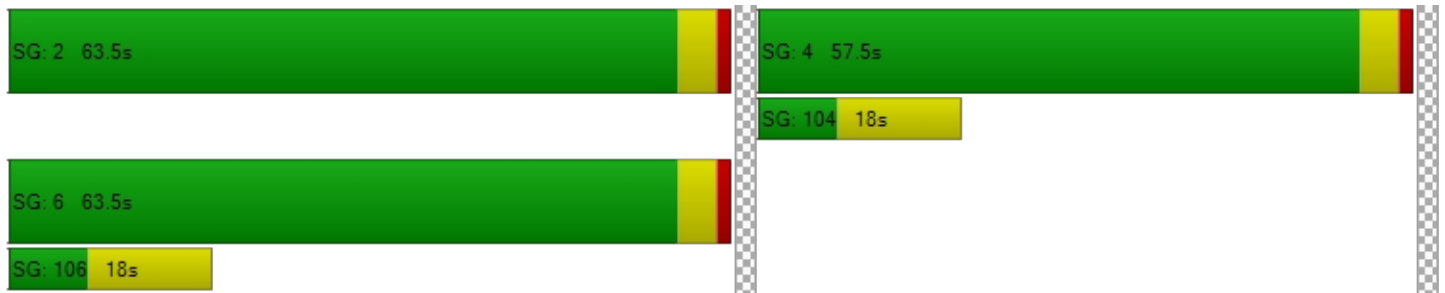
Vehicle Miles Traveled [mph]	124.37	124.37	124.37	0.00	57.32	56.61	56.61
Stops [stops/h]	283.53	315.71	313.62	0.00	304.90	307.43	319.52
Fuel consumption [US gal/h]	8.02	8.41	8.38	0.00	5.44	5.61	5.77
CO [g/h]	560.82	587.52	585.72	0.00	380.57	392.07	403.17
NOx [g/h]	109.12	114.31	113.96	0.00	74.05	76.28	78.44
VOC [g/h]	129.98	136.16	135.75	0.00	88.20	90.87	93.44

Other Modes

g_Walk,mi, Effective Walk Time [s]		11.0		0.0		11.0		0.0
M_corner, Corner Circulation Area [ft ² /ped]		0.00		0.00		0.00		0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]		0.00		0.00		0.00		0.00
d_p, Pedestrian Delay [s]		16.32		0.00		16.32		0.00
I_p,int, Pedestrian LOS Score for Intersectio		2.903		0.000		2.145		0.000
Crosswalk LOS		C		F		B		F
s_b, Saturation Flow Rate of the bicycle lane		2000		2000		2000		2000
c_b, Capacity of the bicycle lane [bicycles/h]		2255		2255		2026		0
d_b, Bicycle Delay [s]		0.43		0.43		0.00		26.16
I_b,int, Bicycle LOS Score for Intersection		2.893		2.127		3.121		4.132
Bicycle LOS		C		B		C		D

Sequence

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



**Intersection Level Of Service Report
Intersection 103:**

Control Type:	Signalized	Delay (sec / veh):	17.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.835

Intersection Setup

Name	142nd Avenue			142nd Avenue			Backage Road			Backage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	142nd Avenue			142nd Avenue			Backage Road			Backage Road		
Base Volume Input [veh/h]	585	74	301	10	115	10	10	100	620	134	100	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 [%]	2.00	1.00	2.00	0.00	3.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
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	11	0	0	310	0	0	11
Total Hourly Volume [veh/h]	585	74	290	10	115	0	10	100	310	134	100	0
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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]	159	20	79	3	31	0	3	27	84	36	27	0
Total Analysis Volume [veh/h]	636	80	315	11	125	0	11	109	337	146	109	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	41.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal Group	5	2	2	1	6	6	4	4	5	8	8	8
Auxiliary Signal Groups									4,5			
Maximum Green [s]	37	52	52	5	21	21	20	20	37	20	20	20
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Walk [s]	0	7	7	0	7	7	7	7	0	7	7	7
Pedestrian Clearance [s]	0	11	11	0	11	11	11	11	0	11	11	11
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	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	L	C	C	R	C
C, Cycle Length [s]	61	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	0.00	2.50
g_i, Effective Green Time [s]	25	30	1	6	17	47	17
g / C, Green / Cycle	0.41	0.49	0.01	0.09	0.28	0.76	0.28
(v / s)_i Volume / Saturation Flow Rate	0.36	0.24	0.01	0.07	0.06	0.21	0.25
s, saturation flow rate [veh/h]	1781	1652	1810	1855	1877	1577	1032
c, Capacity [veh/h]	733	806	25	168	586	1203	379
d1, Uniform Delay [s]	16.55	10.59	30.06	27.27	17.09	2.19	22.15
k, delay calibration	0.15	0.11	0.11	0.11	0.11	0.17	0.25
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.53	0.46	11.15	6.43	0.17	0.20	4.64
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	0.87	0.49	0.43	0.75	0.20	0.28	0.67
d, Delay for Lane Group [s/veh]	21.08	11.05	41.21	33.70	17.26	2.39	26.79
Lane Group LOS	C	B	D	C	B	A	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.00	3.14	0.23	1.99	1.23	0.56	3.76
50th-Percentile Queue Length [ft/ln]	199.91	78.54	5.82	49.79	30.83	14.04	93.96
95th-Percentile Queue Length [veh/ln]	12.63	5.65	0.42	3.58	2.22	1.01	6.77
95th-Percentile Queue Length [ft/ln]	315.85	141.36	10.48	89.62	55.50	25.27	169.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.08	11.05	11.05	41.21	33.70	33.70	17.26	17.26	2.39	26.79	26.79	26.79
Movement LOS	C	B	B	D	C	C	B	B	A	C	C	C
d_A, Approach Delay [s/veh]	17.24			34.31			6.30			26.79		
Approach LOS	B			C			A			C		
d_I, Intersection Delay [s/veh]	17.11											
Intersection LOS	B											
Intersection V/C	0.835											

Emissions

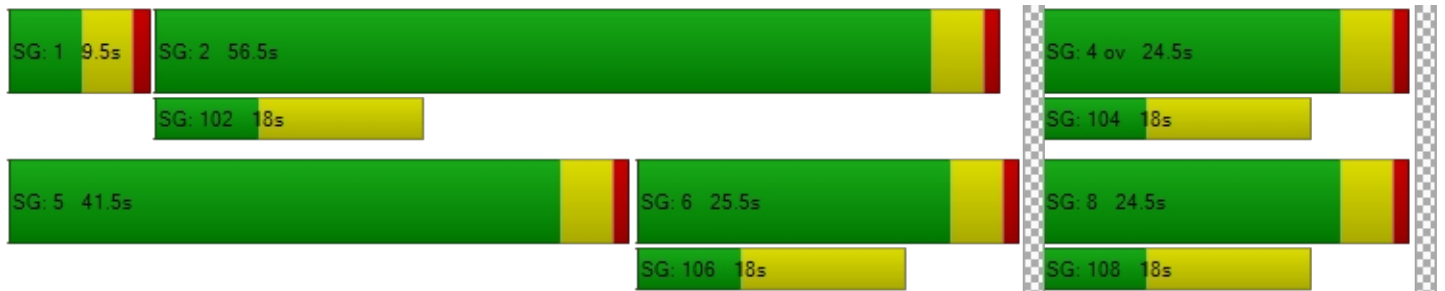
Vehicle Miles Traveled [mph]	120.42	74.79	2.02	23.00	28.90	81.17	62.05
Stops [stops/h]	469.15	184.31	13.66	116.85	72.36	32.95	220.52
Fuel consumption [US gal/h]	10.28	4.99	0.25	2.45	2.01	3.69	5.16
CO [g/h]	718.40	348.49	17.55	171.25	140.59	257.78	360.92
NOx [g/h]	139.78	67.80	3.41	33.32	27.35	50.16	70.22
VOC [g/h]	166.50	80.77	4.07	39.69	32.58	59.74	83.65

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.67	20.67	20.67	20.67
I_p,int, Pedestrian LOS Score for Intersectio	2.811	2.031	2.855	2.056
Crosswalk LOS	C	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]	1695	684	652	652
d_b, Bicycle Delay [s]	0.71	13.27	13.94	13.94
I_b,int, Bicycle LOS Score for Intersection	3.279	1.802	2.825	1.999
Bicycle LOS	C	A	C	A

Sequence

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



**Intersection Level Of Service Report
Intersection 104:**

Control Type:	Signalized	Delay (sec / veh):	8.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.697

Intersection Setup

Name	142nd Avenue		142nd Avenue		Highway 212 Accesses	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	142nd Avenue		142nd Avenue		Highway 212 Accesses	
Base Volume Input [veh/h]	0	756	491	378	204	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	2.00	4.00	3.00	0.00
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	0	0	0
Total Hourly Volume [veh/h]	0	756	491	378	204	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	195	127	97	53	0
Total Analysis Volume [veh/h]	0	779	506	390	210	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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal Group	2	2	6	6	4	4
Auxiliary Signal Groups						
Maximum Green [s]	45	45	45	45	15	15
Amber [s]	4.0	4.0	4.0	4.0	4.0	4.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	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]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	3.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	8	8	5	5	8	8
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		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	R	C
C, Cycle Length [s]	33	33	33	33
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]	16	16	16	7
g / C, Green / Cycle	0.49	0.49	0.49	0.21
(v / s)_i Volume / Saturation Flow Rate	0.41	0.27	0.25	0.12
s, saturation flow rate [veh/h]	1885	1870	1564	1810
c, Capacity [veh/h]	1037	922	771	375
d1, Uniform Delay [s]	7.31	5.88	5.71	11.85
k, delay calibration	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.12	0.51	0.52	1.31
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	0.75	0.55	0.51	0.56
d, Delay for Lane Group [s/veh]	8.43	6.39	6.23	13.17
Lane Group LOS	A	A	A	B
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.72	1.38	1.05	1.19
50th-Percentile Queue Length [ft/ln]	68.00	34.59	26.21	29.77
95th-Percentile Queue Length [veh/ln]	4.90	2.49	1.89	2.14
95th-Percentile Queue Length [ft/ln]	122.41	62.27	47.18	53.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.43	8.43	6.39	6.23	13.17	13.17
Movement LOS	A	A	A	A	B	B
d_A, Approach Delay [s/veh]	8.43		6.32		13.17	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	7.95					
Intersection LOS	A					
Intersection V/C	0.697					

Emissions

Vehicle Miles Traveled [mph]	181.73	95.81	73.84	48.74
Stops [stops/h]	294.59	149.86	113.55	128.97
Fuel consumption [US gal/h]	10.45	5.43	4.16	3.28
CO [g/h]	730.11	379.57	290.90	229.39
NOx [g/h]	142.05	73.85	56.60	44.63
VOC [g/h]	169.21	87.97	67.42	53.16

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2707	2707	902
d_b, Bicycle Delay [s]	2.08	2.08	5.01
I_b,int, Bicycle LOS Score for Intersection	2.845	3.038	1.906
Bicycle LOS	C	C	A

Sequence

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



**Intersection Level Of Service Report
Intersection 105:**

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.957

Intersection Setup

Name	142nd Ave			142nd Ave			EB OR212			WB OR212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↶			↷			↶↷			↶↷		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	165.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	142nd Ave			142nd Ave			EB OR212			WB OR212		
Base Volume Input [veh/h]	0	0	491	0	0	378	0	1239	756	0	847	204
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 [%]	0.00	0.00	2.00	0.00	0.00	4.00	0.00	7.00	1.00	0.00	6.00	3.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	0	491	0	0	378	0	1239	756	0	847	204
Peak Hour Factor	1.0000	1.0000	0.9700	1.0000	1.0000	0.9700	1.0000	0.9700	0.9700	1.0000	0.9700	0.9700
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	127	0	0	97	0	319	195	0	218	53
Total Analysis Volume [veh/h]	0	0	506	0	0	390	0	1277	779	0	873	210
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	1			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	5	0	0	1	0	2	2	0	6	6
Auxiliary Signal Groups												
Maximum Green [s]	0	0	26	0	0	14	0	38	38	0	26	26
Amber [s]	0.0	0.0	3.5	0.0	0.0	3.5	0.0	3.5	3.5	0.0	3.5	3.5
All red [s]	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0
Walk [s]	0	0	0	0	0	0	0	7	7	0	7	7
Pedestrian Clearance [s]	0	0	0	0	0	0	0	11	11	0	11	11
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	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	2.5	0.0	0.0	2.5	0.0	2.5	2.5	0.0	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0	0.0	6.0	6.0	0.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	0	0	30	0	0	30	0	30	30	0	30	30
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	5	0	0	5	0	5	5	0	5	5
Vehicle Extension [s]	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0
Minimum Recall			No			No		Yes			Yes	
Maximum Recall			No			No		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	R	R	C	R	C	C
C, Cycle Length [s]	55	55	55	55	55	55
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	20	14	32	32	26	26
g / C, Green / Cycle	0.36	0.26	0.58	0.58	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.32	0.25	0.37	0.50	0.30	0.32
s, saturation flow rate [veh/h]	1589	1564	3418	1568	1810	1678
c, Capacity [veh/h]	572	401	1979	908	860	798
d1, Uniform Delay [s]	16.41	20.13	7.73	9.42	10.73	11.11
k, delay calibration	0.19	0.36	0.11	0.24	0.17	0.20
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.08	32.23	0.36	5.35	1.17	1.89
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	0.88	0.97	0.65	0.86	0.63	0.68
d, Delay for Lane Group [s/veh]	24.49	52.36	8.09	14.77	11.90	13.00
Lane Group LOS	C	D	A	B	B	B
Critical Lane Group	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.35	7.95	3.67	6.66	4.19	4.47
50th-Percentile Queue Length [ft/ln]	158.82	198.65	91.77	166.54	104.84	111.73
95th-Percentile Queue Length [veh/ln]	10.49	12.57	6.61	10.89	7.55	7.94
95th-Percentile Queue Length [ft/ln]	262.16	314.23	165.19	272.36	188.71	198.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	24.49	0.00	0.00	52.36	0.00	8.09	14.77	0.00	12.32	13.00
Movement LOS			C			D		A	B		B	B
d_A, Approach Delay [s/veh]	24.49			52.36			10.62			12.45		
Approach LOS	C			D			B			B		
d_I, Intersection Delay [s/veh]	16.88											
Intersection LOS	B											
Intersection V/C	0.957											

Emissions

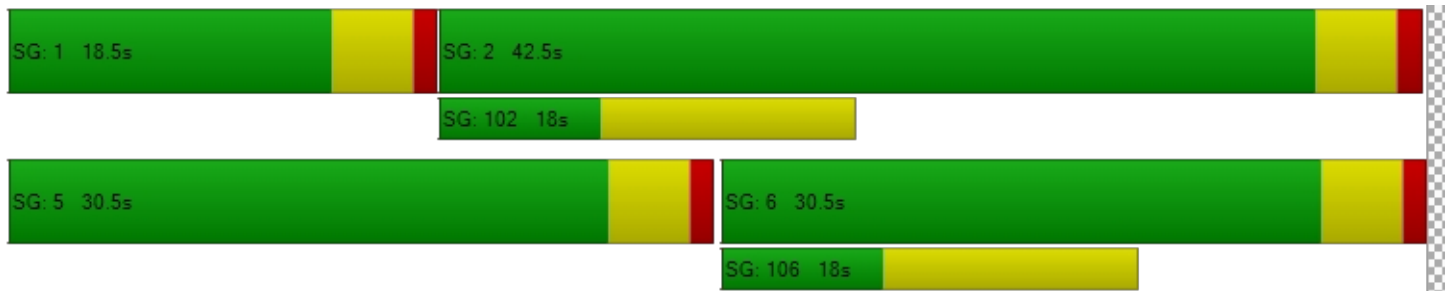
Vehicle Miles Traveled [mph]	62.16	52.93	450.87	275.04	128.33	128.33
Stops [stops/h]	419.01	524.10	484.24	439.39	276.60	294.78
Fuel consumption [US gal/h]	7.40	9.23	23.34	16.09	8.12	8.34
CO [g/h]	517.00	645.15	1631.34	1124.81	567.82	583.28
NOx [g/h]	100.59	125.52	317.40	218.85	110.48	113.48
VOC [g/h]	119.82	149.52	378.08	260.69	131.60	135.18

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	17.40	17.40	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.313	1.979	0.000	0.000
Crosswalk LOS	B	A	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	953	513	1392	953
d_b, Bicycle Delay [s]	7.48	15.09	2.52	7.49
I_b,int, Bicycle LOS Score for Intersection	1.560	1.560	3.256	2.453
Bicycle LOS	A	A	C	B

Sequence




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



**Intersection Level Of Service Report
Intersection 109:**

Control Type:	Signalized	Delay (sec / veh):	49.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.830

Intersection Setup

Name	162nd Avenue			162nd Avenue			WB Couplet			WB Couplet		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			0.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	162nd Avenue			162nd Avenue			WB Couplet			WB Couplet		
Base Volume Input [veh/h]	178	193	0	0	490	270	0	0	0	96	190	140
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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	178	193	0	0	490	270	0	0	0	96	190	140
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
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	51	0	0	129	71	0	0	0	25	50	37
Total Analysis Volume [veh/h]	187	203	0	0	516	284	0	0	0	101	200	147
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	9.5
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split
Signal Group	5	2	0	0	6	6	0	0	0	0	8	8	8
Auxiliary Signal Groups													
Maximum Green [s]	5	43	0	0	32	32	0	0	0	0	36	36	36
Amber [s]	3.5	3.5	0.0	0.0	4.7	4.7	0.0	0.0	0.0	0.0	5.0	5.0	5.0
All red [s]	1.0	1.5	0.0	0.0	1.5	1.5	0.0	0.0	0.0	0.0	1.5	1.5	1.5
Walk [s]	0	7	0	0	7	7	0	0	0	0	7	7	7
Pedestrian Clearance [s]	0	11	0	0	11	11	0	0	0	0	11	11	11
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	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	3.0	0.0	0.0	4.2	4.2	0.0	0.0	0.0	0.0	4.5	4.5	4.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	0.0	6.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	0	0	30	30	0	0	0	0	30	30	30
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	5	6	0	0	6	6	0	0	0	0	10	10	10
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0
Minimum Recall	No	No			No							No	
Maximum Recall	No	Yes			Yes							No	
Pedestrian Recall	No	Yes			Yes							No	

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, Cycle Length [s]	66	66	66		66	66
L, Total Lost Time per Cycle [s]	4.50	5.00	6.20		6.50	6.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.50	3.00	4.20		4.50	4.50
g_i, Effective Green Time [s]	5	43	32		11	11
g / C, Green / Cycle	0.08	0.65	0.49		0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.10	0.11	0.45		0.12	0.13
s, saturation flow rate [veh/h]	1810	1900	1788		1859	1697
c, Capacity [veh/h]	137	1241	877		320	292
d1, Uniform Delay [s]	30.41	4.43	15.45		25.77	25.87
k, delay calibration	0.43	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	196.92	0.28	15.30		3.11	3.72
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	1.36	0.16	0.91		0.72	0.74
d, Delay for Lane Group [s/veh]	227.33	4.71	30.74		28.88	29.59
Lane Group LOS	F	A	C		C	C
Critical Lane Group	Yes	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	9.60	0.88	12.99		3.51	3.34
50th-Percentile Queue Length [ft/ln]	239.99	21.91	324.83		87.87	83.61
95th-Percentile Queue Length [veh/ln]	16.10	1.58	18.90		6.33	6.02
95th-Percentile Queue Length [ft/ln]	402.61	39.45	472.62		158.17	150.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	227.33	4.71	0.00	0.00	30.74	30.74	0.00	0.00	0.00	28.88	29.13	29.59
Movement LOS	F	A			C	C				C	C	C
d_A, Approach Delay [s/veh]	111.46			30.74			0.00			29.22		
Approach LOS	F			C			A			C		
d_I, Intersection Delay [s/veh]	49.54											
Intersection LOS	D											
Intersection V/C	0.830											

Emissions

Vehicle Miles Traveled [mph]	25.67	27.87	36.20		45.37	42.47
Stops [stops/h]	525.84	48.02	711.74		192.54	183.19
Fuel consumption [US gal/h]	12.61	1.61	10.43		4.29	4.06
CO [g/h]	881.56	112.35	728.90		299.99	284.11
NOx [g/h]	171.52	21.86	141.82		58.37	55.28
VOC [g/h]	204.31	26.04	168.93		69.52	65.85

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	22.78	0.00	22.78
I_p,int, Pedestrian LOS Score for Intersectio	0.000	2.258	0.000	1.916
Crosswalk LOS	F	B	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1309	974	0	1096
d_b, Bicycle Delay [s]	3.93	8.65	32.86	6.72
I_b,int, Bicycle LOS Score for Intersection	2.203	2.880	4.132	1.929
Bicycle LOS	B	C	D	A

Sequence

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



**Intersection Level Of Service Report
Intersection 110:**

Control Type:	Signalized	Delay (sec / veh):	172.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.815

Intersection Setup

Name	162nd Avenue			162nd Avenue			EB Couplet			EB Couplet		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑↔			↔↑			↔↔					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			0.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	Yes			No			Yes			No		

Volumes

Name	162nd Avenue			162nd Avenue			EB Couplet			EB Couplet		
Base Volume Input [veh/h]	0	139	749	434	152	0	232	154	578	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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	139	749	434	152	0	232	154	578	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	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	37	197	114	40	0	61	41	152	0	0	0
Total Analysis Volume [veh/h]	0	146	788	457	160	0	244	162	608	0	0	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	33.2
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Unsigna	Protecte	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	2	2	1	6	0	4	4	4	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	27	27	27	59	0	18	18	18	0	0	0
Amber [s]	0.0	3.5	3.5	4.7	4.7	0.0	5.0	5.0	5.0	0.0	0.0	0.0
All red [s]	0.0	1.5	1.5	1.5	1.5	0.0	1.5	1.5	1.5	0.0	0.0	0.0
Walk [s]	0	7	7	0	7	0	7	7	7	0	0	0
Pedestrian Clearance [s]	0	11	11	0	11	0	11	11	11	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		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	4.2	4.2	0.0	4.5	4.5	4.5	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	30	30	30	30	0	30	30	30	0	0	0
Lead / Lag	-	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	6	6	6	6	0	4	4	4	0	0	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		Yes		No	Yes			No				
Pedestrian Recall		Yes		No	Yes			No				

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	L	C	L	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	5.00	6.20	6.20	6.50	6.50	6.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.00	4.20	4.20	4.50	4.50	4.50	
g_i, Effective Green Time [s]	30	24	59	18	18	18	
g / C, Green / Cycle	0.33	0.27	0.66	0.20	0.20	0.20	
(v / s)_i Volume / Saturation Flow Rate	0.08	0.25	0.08	0.13	0.09	0.38	
s, saturation flow rate [veh/h]	1900	1810	1900	1810	1900	1615	
c, Capacity [veh/h]	623	496	1250	363	381	324	
d1, Uniform Delay [s]	21.93	31.64	5.74	33.12	31.33	35.85	
k, delay calibration	0.50	0.29	0.50	0.14	0.11	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.88	16.64	0.21	2.74	0.75	405.79	
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	0.23	0.92	0.13	0.67	0.42	1.88	
d, Delay for Lane Group [s/veh]	22.81	48.27	5.95	35.86	32.08	441.64	
Lane Group LOS	C	D	A	D	C	F	
Critical Lane Group	Yes	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	2.34	11.60	1.06	5.08	3.10	43.44	
50th-Percentile Queue Length [ft/ln]	58.52	290.04	26.48	127.00	77.40	1085.90	
95th-Percentile Queue Length [veh/ln]	4.21	17.19	1.91	8.78	5.57	68.52	
95th-Percentile Queue Length [ft/ln]	105.33	429.68	47.67	219.41	139.32	1713.07	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	22.81	0.00	48.27	5.95	0.00	35.86	32.08	441.64	0.00	0.00	0.00
Movement LOS		C		D	A		D	C	F			
d_A, Approach Delay [s/veh]	3.72		37.30				278.56			0.00		
Approach LOS	A		D				F			A		
d_I, Intersection Delay [s/veh]	172.21											
Intersection LOS	F											
Intersection V/C	0.815											

Emissions

Vehicle Miles Traveled [mph]	10.06	62.74	21.97	45.29	30.07	112.85
Stops [stops/h]	93.94	465.61	42.52	203.89	124.26	1743.24
Fuel consumption [US gal/h]	1.61	9.64	1.33	4.77	2.98	68.91
CO [g/h]	112.62	674.14	93.17	333.53	208.43	4816.68
NOx [g/h]	21.91	131.16	18.13	64.89	40.55	937.15
VOC [g/h]	26.10	156.24	21.59	77.30	48.31	1116.31

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.52	0.00	34.52	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.237	0.000	2.269	0.000
Crosswalk LOS	B	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	602	1315	401	0
d_b, Bicycle Delay [s]	21.91	5.25	28.66	44.85
I_b,int, Bicycle LOS Score for Intersection	1.801	2.578	3.233	4.132
Bicycle LOS	A	B	C	D

Sequence

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



Intersection Level Of Service Report
Intersection 111:

Control Type:	Signalized	Delay (sec / veh):	6.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.456

Intersection Setup

Name	172nd Ave			172nd Ave			WB Couplet			WB Couplet		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			0.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	172nd Ave			172nd Ave			WB Couplet			WB Couplet		
Base Volume Input [veh/h]	41	1128	0	0	301	385	0	0	0	18	0	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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	41	1128	0	0	301	385	0	0	0	18	0	87
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9500	0.9500	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500
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	297	0	0	79	101	0	0	0	5	0	23
Total Analysis Volume [veh/h]	43	1187	0	0	317	405	0	0	0	19	0	92
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	15.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split
Signal Group	5	2	0	0	6	6	0	0	0	0	8	8	8
Auxiliary Signal Groups													
Maximum Green [s]	11	62	0	0	47	47	0	0	0	0	20	20	20
Amber [s]	3.5	3.5	0.0	0.0	3.5	3.5	0.0	0.0	0.0	0.0	3.5	3.5	3.5
All red [s]	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0
Walk [s]	0	7	0	0	7	7	0	0	0	0	7	7	7
Pedestrian Clearance [s]	0	11	0	0	11	11	0	0	0	0	11	11	11
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	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	0.0	0.0	2.5	2.5	0.0	0.0	0.0	0.0	2.5	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	0.0	0.0	6.0	6.0	0.0	0.0	0.0	0.0	6.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	0	0	30	30	0	0	0	0	30	30	30
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	5	5	0	0	5	5	0	0	0	0	5	5	5
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	3.0
Minimum Recall	No	No			No							No	
Maximum Recall	No	Yes			Yes							No	
Pedestrian Recall	No	Yes			Yes							No	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	R		C	C
C, Cycle Length [s]	77	77	77	77		77	77
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50		4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50		2.50	2.50
g_i, Effective Green Time [s]	3	62	54	54		6	6
g / C, Green / Cycle	0.04	0.81	0.71	0.71		0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.02	0.33	0.09	0.14		0.01	0.06
s, saturation flow rate [veh/h]	1810	3618	3618	2859		1810	1615
c, Capacity [veh/h]	73	2913	2556	2020		141	126
d1, Uniform Delay [s]	36.34	2.18	3.63	3.86		33.08	34.71
k, delay calibration	0.11	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	7.50	0.42	0.10	0.22		0.43	7.86
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	0.59	0.41	0.12	0.20		0.13	0.73
d, Delay for Lane Group [s/veh]	43.85	2.60	3.73	4.08		33.51	42.57
Lane Group LOS	D	A	A	A		C	D
Critical Lane Group	No	Yes	No	No		No	Yes
50th-Percentile Queue Length [veh/ln]	0.93	1.29	0.62	0.86		0.34	1.92
50th-Percentile Queue Length [ft/ln]	23.21	32.27	15.49	21.40		8.50	47.94
95th-Percentile Queue Length [veh/ln]	1.67	2.32	1.12	1.54		0.61	3.45
95th-Percentile Queue Length [ft/ln]	41.77	58.09	27.88	38.53		15.31	86.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.85	2.60	0.00	0.00	3.73	4.08	0.00	0.00	0.00	33.51	38.04	42.57
Movement LOS	D	A			A	A				C	D	D
d_A, Approach Delay [s/veh]	4.04				3.93		0.00		41.02			
Approach LOS	A				A		A		D			
d_I, Intersection Delay [s/veh]	5.99											
Intersection LOS	A											
Intersection V/C	0.456											

Emissions

Vehicle Miles Traveled [mph]	5.00	137.93	35.53	45.39		1.46	7.06
Stops [stops/h]	43.43	120.78	57.98	80.11		15.91	89.72
Fuel consumption [US gal/h]	0.83	6.97	2.02	2.65		0.28	1.58
CO [g/h]	57.97	487.46	141.46	185.10		19.40	110.67
NOx [g/h]	11.28	94.84	27.52	36.01		3.77	21.53
VOC [g/h]	13.44	112.97	32.79	42.90		4.50	25.65

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	28.26	0.00	28.26
I_p,int, Pedestrian LOS Score for Intersectio	0.000	2.769	0.000	1.760
Crosswalk LOS	F	C	F	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1612	1222	0	520
d_b, Bicycle Delay [s]	1.45	5.83	38.47	21.07
I_b,int, Bicycle LOS Score for Intersection	2.574	2.155	4.132	1.651
Bicycle LOS	B	B	D	A

Sequence

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



Intersection Level Of Service Report
Intersection 112:

Control Type:	Signalized	Delay (sec / veh):	59.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name	172nd Ave			172nd Ave			EB Couplet			EB Couplet		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			0.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	Yes			No			Yes			No		

Volumes

Name	172nd Ave			172nd Ave			EB Couplet			EB Couplet		
Base Volume Input [veh/h]	0	117	19	207	112	0	1052	191	94	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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	47	0	0	0
Total Hourly Volume [veh/h]	0	117	19	207	112	0	1052	191	47	0	0	0
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	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	31	5	54	29	0	277	50	12	0	0	0
Total Analysis Volume [veh/h]	0	123	20	218	118	0	1107	201	49	0	0	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			2			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			2			0		
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]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	8	4	4	0	2	2	2	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	35	35	34	34	0	43	43	43	0	0	0
Amber [s]	0.0	3.5	3.5	4.7	4.7	0.0	5.0	5.0	5.0	0.0	0.0	0.0
All red [s]	0.0	1.5	1.5	1.5	1.5	0.0	1.5	1.5	1.5	0.0	0.0	0.0
Walk [s]	0	9	9	9	9	0	7	7	7	0	0	0
Pedestrian Clearance [s]	0	22	22	21	21	0	11	11	11	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		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	4.2	4.2	0.0	4.5	4.5	4.5	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	6.0	20.0	20.0	0.0	6.0	6.0	6.0	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: Free Running (No Pattern)

Split [s]	0	30	30	30	30	0	30	30	30	0	0	0
Lead / Lag	-	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	6	6	6	6	0	10	10	10	0	0	0
Vehicle Extension [s]	0.0	2.5	2.5	2.5	2.5	0.0	5.4	5.4	5.4	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		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	C	C	C	
C, Cycle Length [s]	79	79	79	79	79	
L, Total Lost Time per Cycle [s]	5.00	6.20	6.20	6.50	6.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.00	4.20	4.20	4.50	4.50	
g_i, Effective Green Time [s]	24	23	23	43	43	
g / C, Green / Cycle	0.31	0.29	0.29	0.55	0.55	
(v / s)_i Volume / Saturation Flow Rate	0.08	0.17	0.06	0.61	0.14	
s, saturation flow rate [veh/h]	1854	1265	1900	1810	1836	
c, Capacity [veh/h]	568	349	553	990	1005	
d1, Uniform Delay [s]	20.48	30.12	21.05	17.80	9.33	
k, delay calibration	0.08	0.08	0.08	0.50	0.28	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.17	1.36	0.14	66.84	0.34	
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	0.25	0.62	0.21	1.12	0.25	
d, Delay for Lane Group [s/veh]	20.65	31.48	21.19	84.63	9.66	
Lane Group LOS	C	C	C	F	A	
Critical Lane Group	No	Yes	No	Yes	No	
50th-Percentile Queue Length [veh/ln]	1.93	3.95	1.61	33.71	2.12	
50th-Percentile Queue Length [ft/ln]	48.14	98.81	40.14	842.71	53.06	
95th-Percentile Queue Length [veh/ln]	3.47	7.11	2.89	47.16	3.82	
95th-Percentile Queue Length [ft/ln]	86.66	177.86	72.25	1178.91	95.51	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	20.65	20.65	31.48	21.19	0.00	84.63	9.66	9.66	0.00	0.00	0.00
Movement LOS		C	C	C	C		F	A	A			
d_A, Approach Delay [s/veh]		20.65		27.87			70.82			0.00		
Approach LOS		C		C			E			A		
d_I, Intersection Delay [s/veh]	59.05											
Intersection LOS	E											
Intersection V/C	0.873											

Emissions

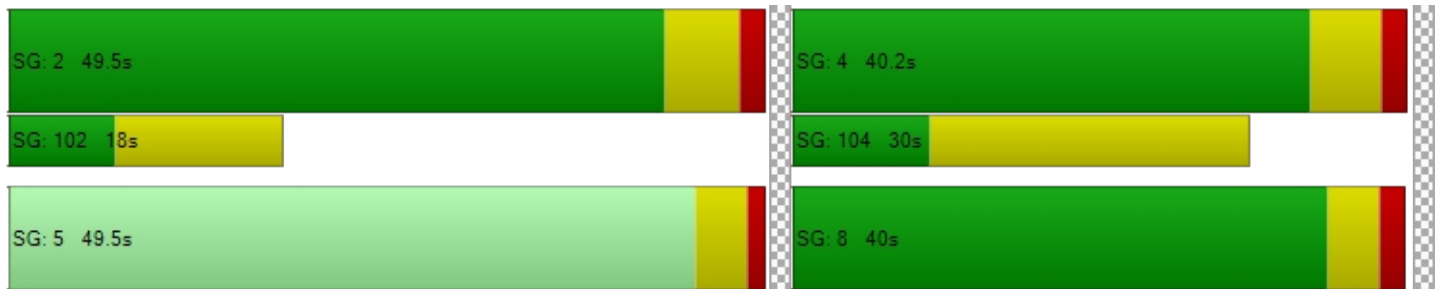
Vehicle Miles Traveled [mph]	16.82	25.33	13.71	130.40	29.45	
Stops [stops/h]	88.18	180.98	73.51	1543.48	97.18	
Fuel consumption [US gal/h]	1.78	3.44	1.48	32.96	2.24	
CO [g/h]	124.46	240.41	103.41	2303.86	156.64	
NOx [g/h]	24.21	46.78	20.12	448.25	30.48	
VOC [g/h]	28.84	55.72	23.97	533.94	36.30	

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	13.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.08	0.00	27.39	0.00
I_p,int, Pedestrian LOS Score for Intersectio	1.881	0.000	2.530	0.000
Crosswalk LOS	A	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	890	865	1094	0
d_b, Bicycle Delay [s]	12.10	12.66	8.07	39.31
I_b,int, Bicycle LOS Score for Intersection	1.796	2.114	2.718	4.132
Bicycle LOS	A	B	B	D

Sequence

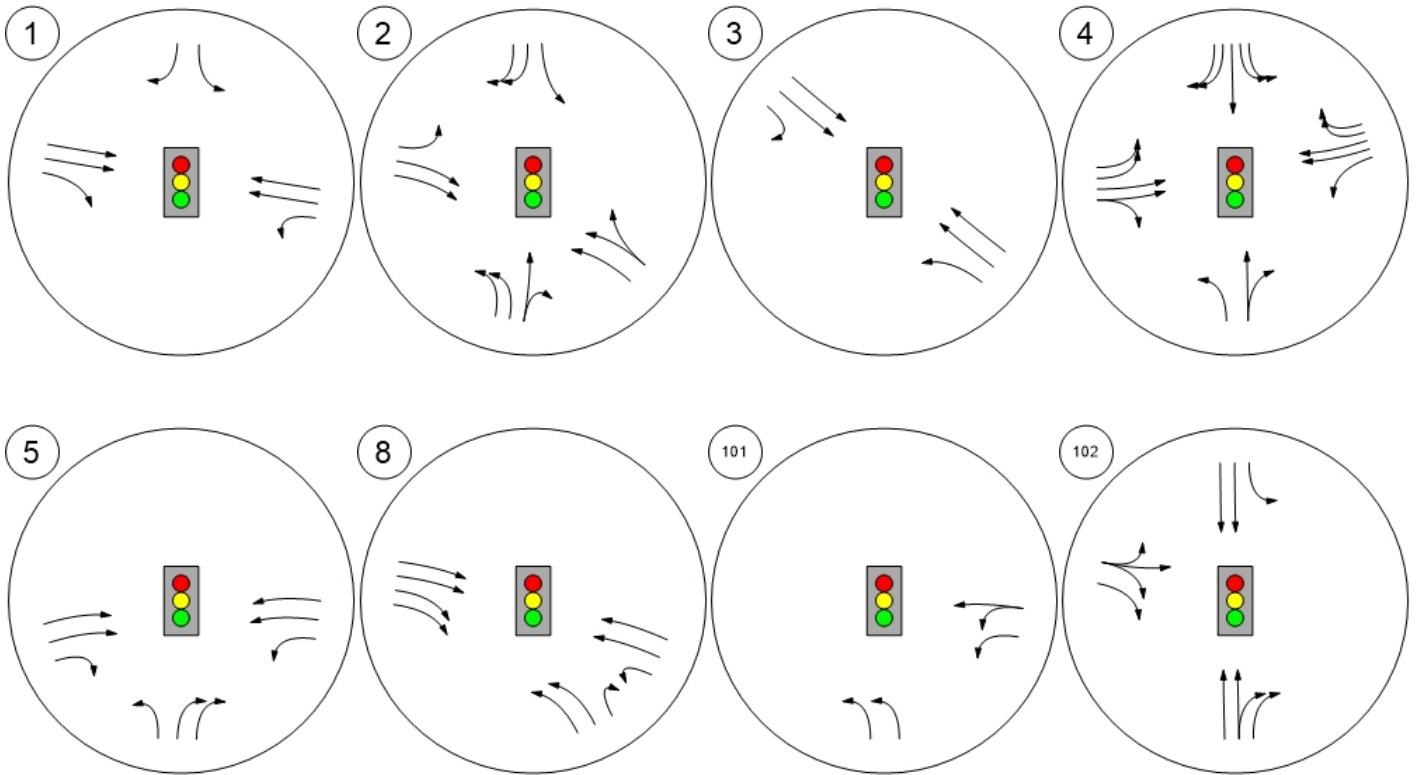
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Ring 2	5	-	-	8	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



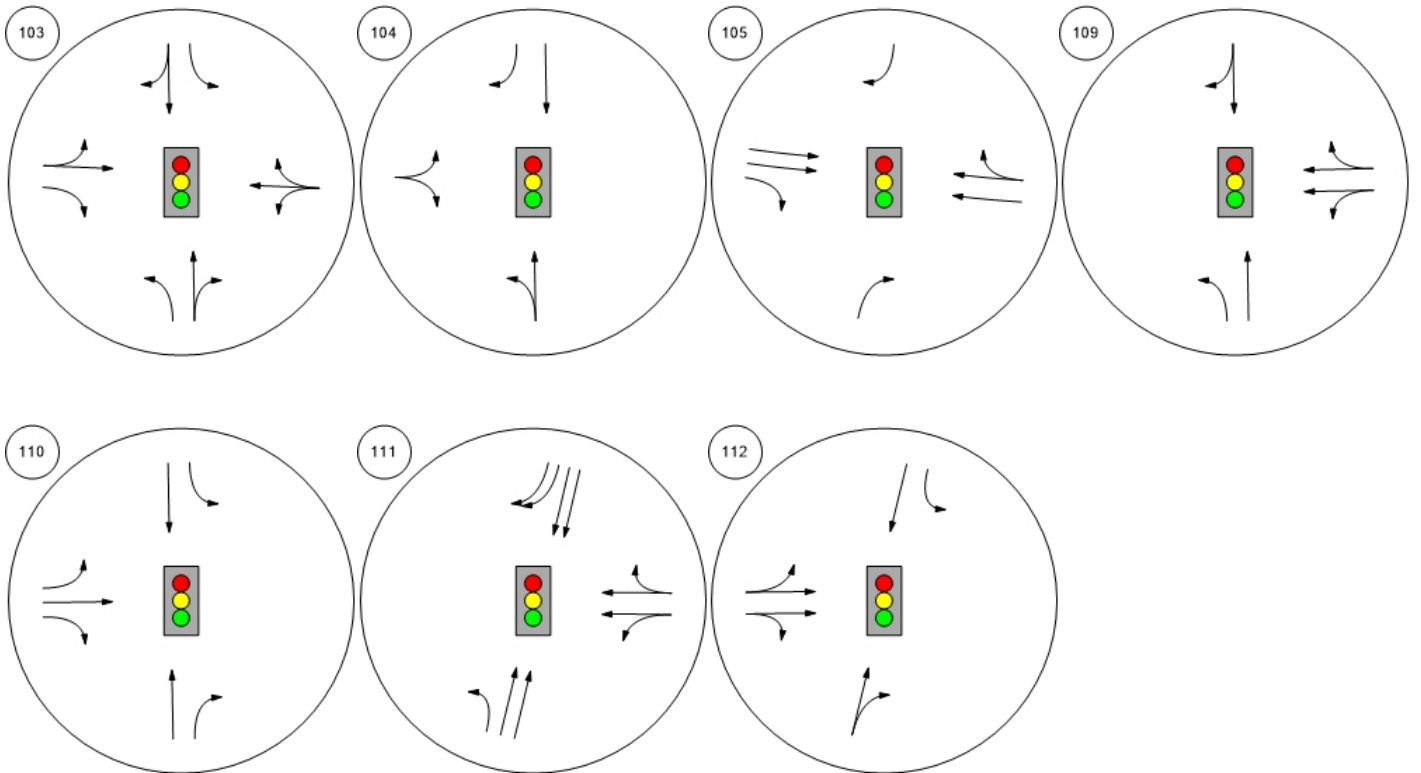
Study Intersections



Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



2045 FEIS Results

Sunrise Refinement Plan

Vistro File: H:\...\Sunrise_AM_FEIS.vistro

Scenario: Base Scenario

Report File: H:\...\2045_FEISAM.pdf

3/17/2025

Intersection Analysis Summary




ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	OR 213 SB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.770	15.7	B
2	OR 213 NB Ramps/I-205 SB Ramps/OR 224	Signalized	HCM 7th Edition	WB Right	0.995	430.3	F
3	I-205 NB Ramps/OR 224	Signalized	HCM 7th Edition	SEB Right	0.675	13.1	B
4	122nd Avenue/OR 224/OR 212	Signalized	HCM 7th Edition	WB Left	0.881	29.9	C
5	135th Avenue/OR 212	Signalized	HCM 7th Edition	EB Left	0.830	43.9	D
6	142nd Avenue/OR 212	Signalized	HCM 7th Edition	NB Left	0.563	14.7	B
7	152nd Avenue/OR 212	Two-way stop	HCM 7th Edition	SB Right	0.930	52.5	F
8	OR 212/OR 224 (Rock Creek Junction)	Signalized	HCM 7th Edition	WB Left	0.570	9.7	A
9	172nd Avenue/OR 212	Signalized	HCM 7th Edition	WB Left	0.855	33.2	C
10	122nd Avenue/Jennifer Street	Two-way stop	HCM 7th Edition	SB Left	0.075	13.8	B
101	Sunrise Expy/122nd Avenue EB Ramps	Signalized	HCM 7th Edition	WB Left	0.951	45.8	D
102	Sunrise Expy/122nd Avenue WB Ramps	Signalized	HCM 7th Edition	EB Right	0.814	13.2	B
107	Sunrise Expy/OR 224	Signalized	HCM 7th Edition	SB Left	0.731	17.6	B
108	Sunrise Expy/OR 224 Jughandle	Signalized	HCM 7th Edition	NB Left	0.571	8.9	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: OR 213 SB Ramps/OR 224**

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1000.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	0.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	0	0	0	242	0	206	0	1188	141	26	2405	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 [%]	0.00	0.00	0.00	7.00	0.00	7.00	0.00	8.00	16.00	47.00	8.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	242	0	206	0	1188	141	26	2405	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9200	1.0000	0.9200	1.0000	0.9200	0.9200	0.9200	0.9200	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	66	0	56	0	323	38	7	654	0
Total Analysis Volume [veh/h]	0	0	0	263	0	224	0	1291	153	28	2614	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Fully actuated
Offset [s]	9.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	4	0	4	0	2	2	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	0	0	30	0	30	0	67	67	8	79	0
Amber [s]	0.0	0.0	0.0	4.0	0.0	4.0	0.0	5.0	5.0	3.5	5.0	0.0
All red [s]	0.0	0.0	0.0	1.5	0.0	1.5	0.0	1.0	1.0	0.5	1.0	0.0
Walk [s]	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
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]	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	3.5	0.0	3.5	0.0	4.0	4.0	2.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	0.0	20.0	0.0	6.0	6.0	20.0	6.0	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	35	0	35	0	73	73	12	85	0
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	6	0	10	10	4	10	0
Vehicle Extension [s]	0.0	0.0	0.0	2.3	0.0	2.3	0.0	0.5	0.5	2.3	0.5	0.0
Minimum Recall				No				Yes		No	Yes	
Maximum Recall				No				No		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		L	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		5.50	5.50	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		3.50	3.50	4.00	4.00	2.00	4.00
g_i, Effective Green Time [s]		21	21	81	81	3	88
g / C, Green / Cycle		0.17	0.17	0.67	0.67	0.03	0.73
(v / s)_i Volume / Saturation Flow Rate		0.15	0.15	0.27	0.11	0.02	0.54
s, saturation flow rate [veh/h]		1709	1526	4849	1411	1138	4849
c, Capacity [veh/h]		297	265	3255	947	29	3541
d1, Uniform Delay [s]		48.39	47.99	8.84	7.27	58.40	9.47
k, delay calibration		0.11	0.09	0.50	0.50	0.07	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		8.76	5.99	0.36	0.37	50.73	1.42
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		0.88	0.84	0.40	0.16	0.96	0.74
d, Delay for Lane Group [s/veh]		57.15	53.98	9.20	7.64	109.13	10.89
Lane Group LOS		E	D	A	A	F	B
Critical Lane Group		Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		8.39	6.92	4.83	1.48	1.26	12.00
50th-Percentile Queue Length [ft/ln]		209.72	172.90	120.87	36.97	31.53	299.94
95th-Percentile Queue Length [veh/ln]		13.14	11.23	8.44	2.66	2.27	17.68
95th-Percentile Queue Length [ft/ln]		328.47	280.73	211.02	66.55	56.76	441.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	57.15	0.00	53.98	0.00	9.20	7.64	109.13	10.89	0.00
Movement LOS				E		D		A	A	F	B	
d_A, Approach Delay [s/veh]	0.00			55.70			9.04			11.93		
Approach LOS	A			E			A			B		
d_I, Intersection Delay [s/veh]	15.68											
Intersection LOS	B											
Intersection V/C	0.770											

Emissions

Vehicle Miles Traveled [mph]		50.89	43.35	408.96	48.47	4.41	412.16
Stops [stops/h]		251.65	207.48	435.10	44.36	37.84	1079.76
Fuel consumption [US gal/h]		6.54	5.39	21.66	2.48	1.01	28.73
CO [g/h]		457.43	376.85	1513.82	173.23	70.78	2008.01
NOx [g/h]		89.00	73.32	294.53	33.70	13.77	390.69
VOC [g/h]		106.01	87.34	350.84	40.15	16.40	465.38

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	492	1117	1317
d_b, Bicycle Delay [s]	60.00	34.13	11.71	7.01
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560	2.354	3.013
Bicycle LOS	D	A	B	C

Sequence

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



Intersection Level Of Service Report
Intersection 2: OR 213 NB Ramps/I-205 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	430.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.995

Intersection Setup

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	415.00	100.00	100.00	160.00	100.00	405.00	365.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	356	2	251	11	0	337	311	1119	0	0	1738	466
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 [%]	8.00	2.00	18.00	23.00	0.00	9.00	6.00	8.00	0.00	0.00	8.00	4.00
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	0	0	0	0	0	0	41
Total Hourly Volume [veh/h]	356	2	250	11	0	337	311	1119	0	0	1738	425
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200
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]	97	1	68	3	0	92	85	304	0	0	472	115
Total Analysis Volume [veh/h]	387	2	272	12	0	366	338	1216	0	0	1889	462
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	1			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Fully actuated
Offset [s]	81.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	8	7	0	4	5	2	0	0	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	20	31	31	18	0	29	30	54	0	0	20	20
Amber [s]	4.0	4.0	4.0	4.0	0.0	4.0	3.5	5.0	0.0	0.0	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	0.0	1.5	0.5	1.0	0.0	0.0	1.0	1.0
Walk [s]	7	7	7	0	0	0	0	7	0	0	7	7
Pedestrian Clearance [s]	12	24	24	0	0	0	0	20	0	0	12	12
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	0.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	0.0	3.5	2.0	4.0	0.0	0.0	4.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	0.0	0.0	20.0	6.0	0.0	0.0	6.0	6.0
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	37	37	24	0	34	34	60	0	0	26	26
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	4	4	4	0	4	4	6	0	0	6	6
Vehicle Extension [s]	2.3	2.3	2.3	2.3	0.0	2.3	2.3	4.6	0.0	0.0	4.6	4.6
Minimum Recall	No	No		No		No	Yes	Yes			No	
Maximum Recall	No	No		No		No	No	No			No	
Pedestrian Recall	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	L	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	4.00	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
l2, Clearance Lost Time [s]	3.50	3.50	3.50	0.00	2.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	17	23	5	66	51	75	20	20
g / C, Green / Cycle	0.14	0.19	0.05	0.55	0.42	0.62	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.12	0.17	0.01	0.14	0.20	0.25	0.46	0.49
s, saturation flow rate [veh/h]	3292	1591	1481	2655	1724	4849	3389	1612
c, Capacity [veh/h]	457	300	68	1468	730	3024	565	269
d1, Uniform Delay [s]	50.41	47.73	55.05	13.92	24.78	11.34	50.00	50.00
k, delay calibration	0.07	0.14	0.07	0.07	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]	2.75	13.55	0.74	0.05	2.10	0.40	803.65	872.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.91	0.18	0.25	0.46	0.40	2.77	2.92
d, Delay for Lane Group [s/veh]	53.16	61.28	55.79	13.98	26.89	11.74	853.65	922.51
Lane Group LOS	D	E	E	B	C	B	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.84	9.13	0.36	2.56	7.28	5.32	71.48	73.15
50th-Percentile Queue Length [ft/ln]	145.90	228.22	9.10	64.08	182.02	133.12	1787.03	1828.74
95th-Percentile Queue Length [veh/ln]	9.80	14.08	0.66	4.61	11.71	9.11	111.32	113.95
95th-Percentile Queue Length [ft/ln]	244.95	352.09	16.39	115.34	292.65	227.72	2782.90	2848.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.16	61.28	61.28	55.79	0.00	13.98	26.89	11.74	0.00	0.00	865.38	922.51
Movement LOS	D	E	E	E		B	C	B			F	F
d_A, Approach Delay [s/veh]	56.53			15.30			15.03			876.60		
Approach LOS	E			B			B			F		
d_I, Intersection Delay [s/veh]	430.30											
Intersection LOS	F											
Intersection V/C	0.995											

Emissions

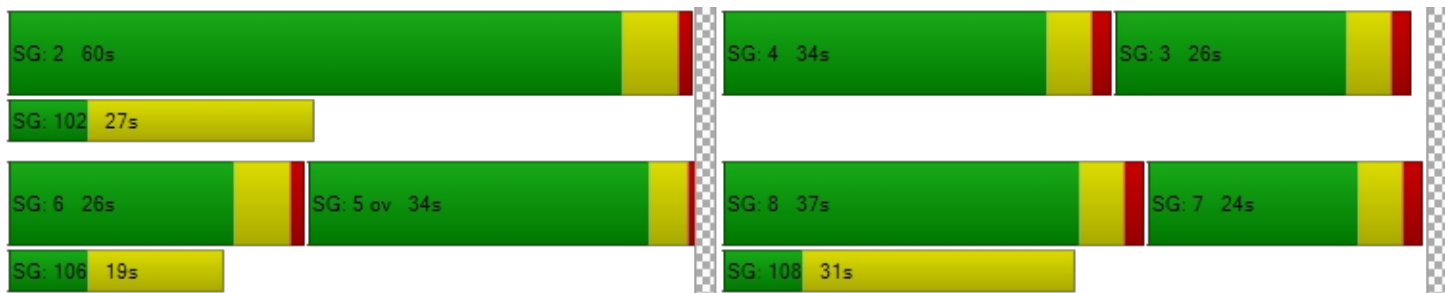
Vehicle Miles Traveled [mph]	81.07	57.40	1.76	53.77	53.29	191.73	392.66	196.33
Stops [stops/h]	350.16	273.86	10.92	153.79	218.42	479.22	4288.88	2194.49
Fuel consumption [US gal/h]	9.46	7.29	0.27	4.10	5.25	13.44	312.06	167.29
CO [g/h]	661.11	509.74	18.81	286.88	366.97	939.80	21813.34	11693.41
NOx [g/h]	128.63	99.18	3.66	55.82	71.40	182.85	4244.08	2275.11
VOC [g/h]	153.22	118.14	4.36	66.49	85.05	217.81	5055.45	2710.06

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	49.50
I_p,int, Pedestrian LOS Score for Intersectio	2.171	2.442	0.000	3.131
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	525	308	900	333
d_b, Bicycle Delay [s]	32.63	42.93	18.15	41.67
I_b,int, Bicycle LOS Score for Intersection	2.652	1.560	2.414	2.875
Bicycle LOS	B	A	B	C

Sequence



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



**Intersection Level Of Service Report
Intersection 3: I-205 NB Ramps/OR 224**

Control Type:	Signalized	Delay (sec / veh):	13.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

Intersection Setup

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Approach	Eastbound		Westbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	0	2
Entry Pocket Length [ft]	100.00	100.00	630.00	100.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	0.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present			No		No	
Crosswalk	No		No		No	

Volumes

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Base Volume Input [veh/h]	0	0	502	2204	979	402
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	19.00	3.00	12.00	7.00
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	0	0	0
Total Hourly Volume [veh/h]	0	0	502	2204	979	402
Peak Hour Factor	1.0000	1.0000	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	128	562	250	103
Total Analysis Volume [veh/h]	0	0	512	2249	999	410
Presence of On-Street Parking			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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	101
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	24.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	0	0	1	6	2	2
Auxiliary Signal Groups						
Maximum Green [s]	0	0	32	60	24	24
Amber [s]	0.0	0.0	3.5	5.0	5.0	5.0
All red [s]	0.0	0.0	0.5	2.0	2.0	2.0
Walk [s]	0	0	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	17	17
Delayed Vehicle Green [s]	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	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	5.0	5.0	5.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	0	0	30	30	30	30
Lead / Lag	-	-	Lag	-	-	-
Minimum Green [s]	0	0	4	10	10	10
Vehicle Extension [s]	0.0	0.0	2.3	4.7	4.7	4.7
Minimum Recall			No	Yes	Yes	
Maximum Recall			No	No	No	
Pedestrian Recall			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	R
C, Cycle Length [s]	74	74	74	74
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	33	60	23	23
g / C, Green / Cycle	0.44	0.81	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.33	0.45	0.21	0.27
s, saturation flow rate [veh/h]	1538	5053	4685	1526
c, Capacity [veh/h]	679	4091	1473	480
d1, Uniform Delay [s]	17.34	2.42	22.14	23.82
k, delay calibration	0.26	0.20	0.20	0.31
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.11	0.22	1.03	11.72
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	0.75	0.55	0.68	0.85
d, Delay for Lane Group [s/veh]	21.45	2.64	23.17	35.54
Lane Group LOS	C	A	C	D
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.37	1.46	4.89	7.85
50th-Percentile Queue Length [ft/ln]	184.32	36.48	122.25	196.32
95th-Percentile Queue Length [veh/ln]	11.83	2.63	8.52	12.45
95th-Percentile Queue Length [ft/ln]	295.65	65.66	212.91	311.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	21.45	2.64	23.17	35.54
Movement LOS			C	A	C	D
d_A, Approach Delay [s/veh]	0.00		6.13		26.77	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	13.10					
Intersection LOS	B					
Intersection V/C	0.675					

Emissions

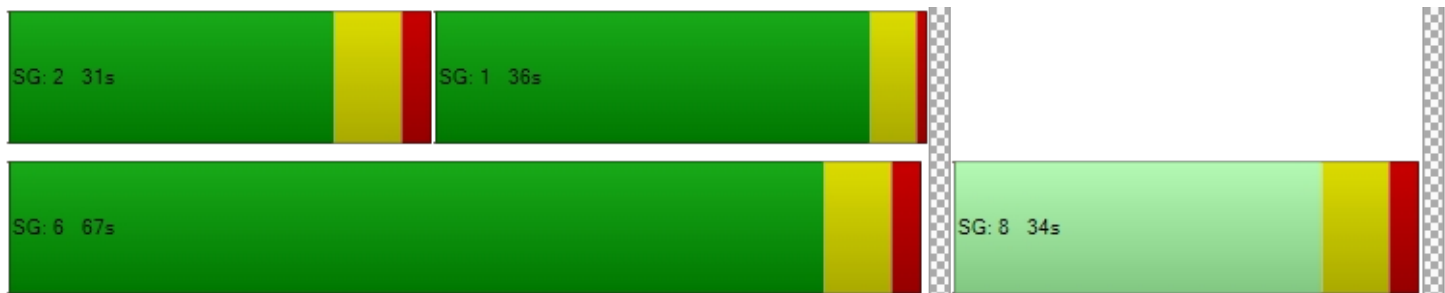
Vehicle Miles Traveled [mph]		709.56	3116.80	250.28	102.72
Stops [stops/h]		358.42	212.79	713.16	381.76
Fuel consumption [US gal/h]		33.43	130.69	18.95	9.30
CO [g/h]		2336.46	9135.18	1324.83	650.25
NOx [g/h]		454.59	1777.37	257.76	126.51
VOC [g/h]		541.50	2117.17	307.04	150.70

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1620	648
d_b, Bicycle Delay [s]	37.03	1.33	16.92
I_b,int, Bicycle LOS Score for Intersection	4.132	3.078	2.335
Bicycle LOS	D	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 4: 122nd Avenue/OR 224/OR 212

Control Type:	Signalized	Delay (sec / veh):	29.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.881

Intersection Setup

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T			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 [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	2	2	0	0	1	0	2
Entry Pocket Length [ft]	135.00	100.00	100.00	525.00	100.00	350.00	220.00	100.00	100.00	255.00	100.00	410.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Base Volume Input [veh/h]	19	80	0	86	213	926	520	356	158	2	746	841
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 [%]	50.00	48.00	0.00	8.00	19.00	14.00	30.00	14.00	27.00	17.00	8.00	3.00
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	0	0	0	0
Total Hourly Volume [veh/h]	19	80	0	86	213	926	520	356	158	2	746	841
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	21	0	23	57	246	138	95	42	1	198	224
Total Analysis Volume [veh/h]	20	85	0	91	227	985	553	379	168	2	794	895
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	19.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						6,7
Maximum Green [s]	5	35	35	5	35	35	33	68	68	4	39	39
Amber [s]	3.5	4.3	4.3	3.5	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	9	9	0	7	7	0	8	8	0	7	7
Pedestrian Clearance [s]	0	26	26	0	21	21	0	23	23	0	18	18
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.8	2.8	2.0	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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]	9	40	40	9	40	40	37	73	73	8	44	44
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	4.6	2.0	4.6	4.6
Minimum Recall	No	No		No	No	No	No	Yes		No	Yes	Yes
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.80	4.00	4.80	4.80	4.00	5.40	5.40	4.00	5.40	5.40
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]	2.00	2.80	2.00	2.80	0.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	2	11	17	25	66	30	84	84	0	54	75
g / C, Green / Cycle	0.02	0.08	0.13	0.19	0.51	0.23	0.64	0.64	0.00	0.42	0.58
(v / s)_i Volume / Saturation Flow Rate	0.06	0.07	0.03	0.14	0.39	0.21	0.17	0.17	0.00	0.23	0.32
s, saturation flow rate [veh/h]	351	1180	3292	1615	2542	2681	1690	1516	1567	3389	2791
c, Capacity [veh/h]	57	99	426	314	1289	621	1088	976	4	1405	1605
d1, Uniform Delay [s]	64.97	58.75	50.66	49.11	25.81	48.35	9.93	9.94	64.78	29.08	17.29
k, delay calibration	0.50	0.07	0.07	0.07	0.17	0.04	0.50	0.50	0.04	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]	15.96	11.98	0.15	1.95	1.55	1.83	0.59	0.66	38.45	1.65	1.40
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	0.35	0.86	0.21	0.72	0.76	0.89	0.26	0.27	0.54	0.56	0.56
d, Delay for Lane Group [s/veh]	80.93	70.73	50.81	51.06	27.36	50.18	10.53	10.60	103.22	30.73	18.69
Lane Group LOS	F	E	D	D	C	D	B	B	F	C	B
Critical Lane Group	No	Yes	No	No	Yes	No	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	0.96	3.10	1.35	7.09	12.30	8.82	3.63	3.29	0.11	9.77	8.51
50th-Percentile Queue Length [ft/ln]	23.88	77.43	33.63	177.31	307.41	220.48	90.85	82.15	2.65	244.31	212.81
95th-Percentile Queue Length [veh/ln]	1.72	5.57	2.42	11.46	18.05	13.69	6.54	5.92	0.19	14.90	13.30
95th-Percentile Queue Length [ft/ln]	42.98	139.37	60.54	286.50	451.18	342.23	163.53	147.88	4.77	372.48	332.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	80.93	70.73	70.73	50.81	51.06	27.36	50.18	10.55	10.60	103.22	30.73	18.69
Movement LOS	F	E	E	D	D	C	D	B	B	F	C	B
d_A, Approach Delay [s/veh]	72.67			33.13			30.48			24.44		
Approach LOS	E			C			C			C		
d_I, Intersection Delay [s/veh]	29.93											
Intersection LOS	C											
Intersection V/C	0.881											

Emissions

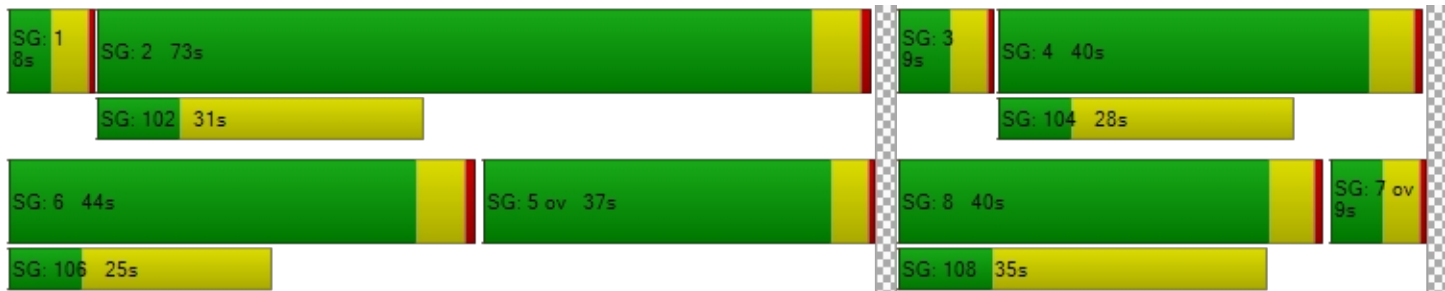
Vehicle Miles Traveled [mph]	4.51	19.15	21.01	52.41	227.43	497.05	258.93	232.73	1.32	523.50	590.09
Stops [stops/h]	26.45	85.77	74.50	196.41	681.03	488.44	100.64	91.00	2.93	541.24	471.45
Fuel consumption [US gal/h]	0.66	2.49	2.22	5.60	18.61	28.81	11.83	10.64	0.11	29.51	30.30
CO [g/h]	46.21	173.75	154.99	391.53	1300.83	2013.58	827.07	743.89	7.86	2062.43	2118.00
NOx [g/h]	8.99	33.81	30.16	76.18	253.09	391.77	160.92	144.73	1.53	401.27	412.09
VOC [g/h]	10.71	40.27	35.92	90.74	301.48	466.67	191.68	172.40	1.82	477.99	490.87

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0		11.0		11.0		13.0	
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	53.55		54.47		54.47		52.65	
I_p,int, Pedestrian LOS Score for Intersectio	2.120		2.931		2.970		2.911	
Crosswalk LOS	B		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]	542		542		1040		594	
d_b, Bicycle Delay [s]	34.57		34.57		14.98		32.13	
I_b,int, Bicycle LOS Score for Intersection	1.733		3.710		2.467		2.955	
Bicycle LOS	A		D		B		C	

Sequence

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



**Intersection Level Of Service Report
Intersection 5: 135th Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	43.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.830

Intersection Setup

Name	135th Ave			135th Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	300.00	100.00	60.00	320.00	100.00	100.00	415.00	100.00	60.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	135th Ave			135th Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	114	110	95	71	30	283	52	155	3	19	1229	143
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 [%]	8.00	10.00	14.00	4.00	4.00	5.00	11.00	14.00	17.00	8.00	8.00	6.00
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	0	0	0	0
Total Hourly Volume [veh/h]	114	110	95	71	30	283	52	155	3	19	1229	143
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
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]	30	29	25	19	8	74	14	41	1	5	323	38
Total Analysis Volume [veh/h]	120	116	100	75	32	298	55	163	3	20	1294	151
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	1			1			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			1			1		
v_co, Outbound Pedestrian Volume crossing	1			0			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			0			1		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	67.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	11	34	34	12	35	35	5	60	60	6	61	61
Amber [s]	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	8	8	0	10	10	0	8	8	0	7	7
Pedestrian Clearance [s]	0	22	22	0	25	25	0	18	18	0	14	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	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.5	2.5	2.0	2.5	2.5	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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	39	16	40	40	9	65	65	10	66	66
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	3.0	3.0	2.3	3.0	3.0	2.3	4.5	4.5	2.3	4.5	4.5
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	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	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.50	4.50	4.00	4.50	4.00	5.40	5.40	4.00	5.40	5.40
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]	2.00	2.50	2.50	2.00	2.50	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	11	12	12	28	29	5	70	70	2	67	67
g / C, Green / Cycle	0.08	0.09	0.09	0.22	0.22	0.04	0.54	0.54	0.02	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.07	0.07	0.07	0.04	0.21	0.03	0.05	0.00	0.01	0.41	0.42
s, saturation flow rate [veh/h]	1695	1750	1436	1752	1585	1652	3217	1396	1695	1780	1715
c, Capacity [veh/h]	144	163	134	379	356	64	1728	749	27	916	883
d1, Uniform Delay [s]	58.61	57.23	57.44	41.74	49.35	62.17	14.68	13.97	63.68	26.03	26.20
k, delay calibration	0.07	0.11	0.11	0.07	0.27	0.17	0.50	0.50	0.07	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]	7.65	5.61	7.99	0.15	21.32	37.81	0.11	0.01	20.59	7.26	7.84
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	0.84	0.71	0.75	0.20	0.93	0.87	0.09	0.00	0.73	0.80	0.81
d, Delay for Lane Group [s/veh]	66.26	62.85	65.42	41.89	70.67	99.98	14.79	13.98	84.27	33.29	34.04
Lane Group LOS	E	E	E	D	E	F	B	B	F	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.20	3.97	3.51	2.01	12.58	2.48	1.21	0.04	0.82	20.07	19.77
50th-Percentile Queue Length [ft/ln]	105.03	99.15	87.70	50.18	314.41	61.97	30.34	1.09	20.41	501.85	494.33
95th-Percentile Queue Length [veh/ln]	7.56	7.14	6.31	3.61	18.39	4.46	2.18	0.08	1.47	27.42	27.07
95th-Percentile Queue Length [ft/ln]	189.05	178.46	157.86	90.33	459.80	111.55	54.61	1.96	36.74	685.54	676.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	66.26	62.85	65.42	41.89	70.67	70.67	99.98	14.79	13.98	84.27	33.62	34.04
Movement LOS	E	E	E	D	E	E	F	B	B	F	C	C
d_A, Approach Delay [s/veh]	64.83			65.34			35.98			34.35		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	43.89											
Intersection LOS	D											
Intersection V/C	0.830											

Emissions

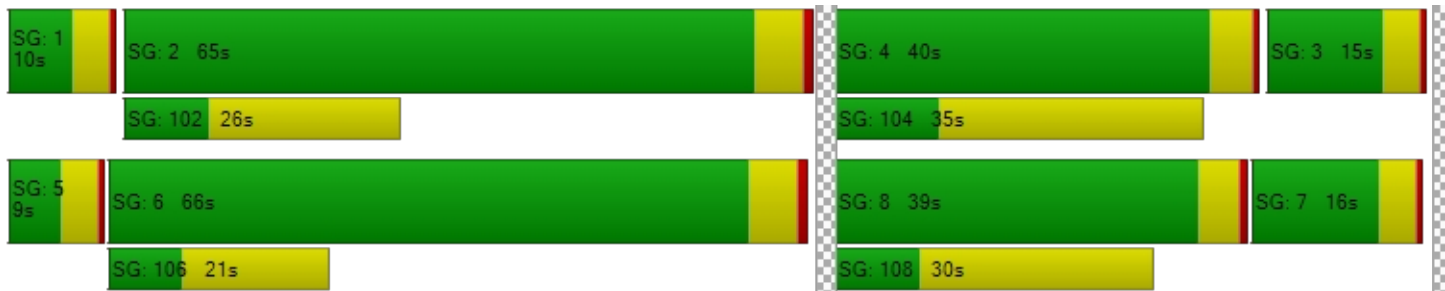
Vehicle Miles Traveled [mph]	23.48	22.70	19.57	9.29	40.88	36.26	107.47	1.98	7.06	258.60	251.59
Stops [stops/h]	116.34	109.82	97.15	55.59	348.27	68.65	67.21	1.21	22.61	555.89	547.57
Fuel consumption [US gal/h]	3.23	3.02	2.67	1.33	8.35	2.99	5.29	0.10	0.76	18.68	18.32
CO [g/h]	225.58	211.41	186.87	92.89	583.83	209.06	369.49	6.75	53.02	1305.62	1280.46
NOx [g/h]	43.89	41.13	36.36	18.07	113.59	40.68	71.89	1.31	10.32	254.03	249.13
VOC [g/h]	52.28	49.00	43.31	21.53	135.31	48.45	85.63	1.57	12.29	302.59	296.76

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			11.0			14.0			12.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	53.55			54.47			51.75			53.55		
I_p,int, Pedestrian LOS Score for Intersectio	2.243			2.194			2.783			2.668		
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]	531			546			917			932		
d_b, Bicycle Delay [s]	35.08			34.35			19.06			18.52		
I_b,int, Bicycle LOS Score for Intersection	2.114			2.228			1.742			2.768		
Bicycle LOS	B			B			A			C		

Sequence

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



**Intersection Level Of Service Report
Intersection 6: 142nd Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.563

Intersection Setup

Name	142nd Ave			142nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	20.00	100.00	100.00	100.00	225.00	100.00	165.00	220.00	100.00	70.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	142nd Ave			142nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	109	19	44	29	2	106	15	270	25	15	1218	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	18.00	5.00	2.00	3.00	13.00	13.00	13.00	2.00	8.00	3.00
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	0	0	0	0
Total Hourly Volume [veh/h]	109	19	44	29	2	106	15	270	25	15	1218	43
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
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]	28	5	11	8	1	28	4	70	7	4	317	11
Total Analysis Volume [veh/h]	114	20	46	30	2	110	16	281	26	16	1269	45
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			0			0			2		
v_di, Inbound Pedestrian Volume crossing m	2			0			0			2		
v_co, Outbound Pedestrian Volume crossing	1			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			1			0		
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]	112
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Protecte	ProtPer	Permiss	Permiss
Signal Group	8	8	8	4	4	4	5	2	4	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	33	33	33	33	33	33	7	60	33	5	58	58
Amber [s]	4.3	4.3	4.3	4.3	4.3	4.3	3.5	4.7	4.3	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.5	0.5	0.7	0.7
Walk [s]	7	7	7	0	0	0	0	8	0	0	7	7
Pedestrian Clearance [s]	26	26	26	0	0	0	0	26	0	0	18	18
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.8	2.8	2.8	2.8	2.8	2.8	2.0	3.4	2.8	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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]	38	38	38	38	38	38	11	66	38	9	64	64
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	4	10	6	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	2.3	2.0	4.6	4.6
Minimum Recall		No			No		No	Yes	No	No	Yes	
Maximum Recall		No			No		No	No	No	No	No	
Pedestrian Recall		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	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	112	112	112	112	112	112	112	112	112
L, Total Lost Time per Cycle [s]	4.80	4.80	4.80	4.70	5.40	4.80	5.40	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.80	2.80	2.80	0.00	3.40	2.80	0.00	3.40	3.40
g_i, Effective Green Time [s]	18	18	18	80	78	18	78	78	78
g / C, Green / Cycle	0.16	0.16	0.16	0.71	0.70	0.16	0.70	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.13	0.03	0.09	0.03	0.09	0.02	0.01	0.37	0.03
s, saturation flow rate [veh/h]	1050	1375	1637	521	3246	1449	1129	3389	1577
c, Capacity [veh/h]	228	220	301	333	2268	232	857	2368	1102
d1, Uniform Delay [s]	46.17	40.84	43.21	13.54	5.56	40.20	5.16	8.12	5.23
k, delay calibration	0.07	0.07	0.07	0.50	0.50	0.07	0.04	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]	1.48	0.28	0.70	0.27	0.11	0.13	0.00	0.87	0.07
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	0.59	0.21	0.47	0.05	0.12	0.11	0.02	0.54	0.04
d, Delay for Lane Group [s/veh]	47.65	41.12	43.91	13.81	5.67	40.33	5.17	9.00	5.30
Lane Group LOS	D	D	D	B	A	D	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.71	1.12	3.67	0.12	1.04	0.62	0.11	6.88	0.32
50th-Percentile Queue Length [ft/ln]	92.82	28.06	91.71	3.10	25.88	15.58	2.64	172.03	8.06
95th-Percentile Queue Length [veh/ln]	6.68	2.02	6.60	0.22	1.86	1.12	0.19	11.18	0.58
95th-Percentile Queue Length [ft/ln]	167.07	50.51	165.07	5.58	46.58	28.04	4.76	279.58	14.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.65	47.65	41.12	43.91	43.91	43.91	13.81	5.67	40.33	5.17	9.00	5.30
Movement LOS	D	D	D	D	D	D	B	A	D	A	A	A
d_A, Approach Delay [s/veh]	45.98			43.91			8.87			8.83		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	14.74											
Intersection LOS	B											
Intersection V/C	0.563											

Emissions

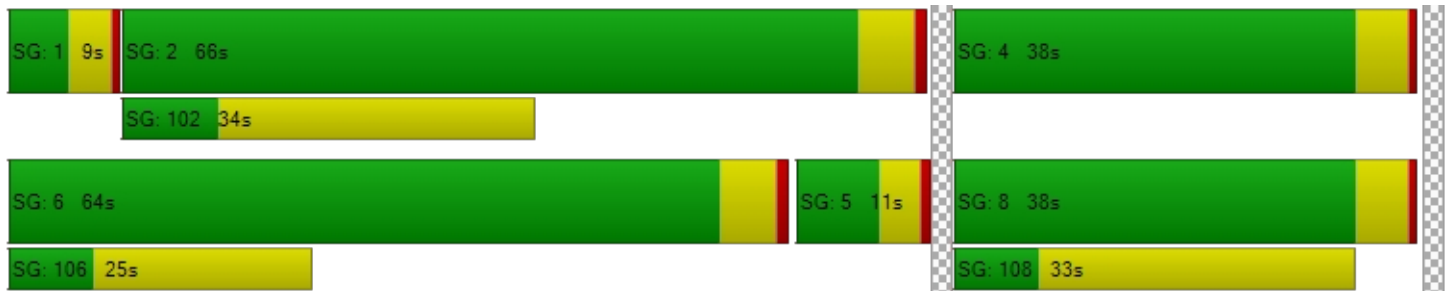
Vehicle Miles Traveled [mph]	16.46	5.65	19.27	5.35	93.95	8.69	7.68	609.16	21.60
Stops [stops/h]	119.33	36.08	117.91	3.99	66.54	20.03	3.40	442.35	10.36
Fuel consumption [US gal/h]	2.64	0.82	2.71	0.29	4.56	0.68	0.35	29.84	1.00
CO [g/h]	184.28	57.10	189.68	20.08	318.73	47.67	24.59	2086.13	69.55
NOx [g/h]	35.85	11.11	36.91	3.91	62.01	9.27	4.78	405.89	13.53
VOC [g/h]	42.71	13.23	43.96	4.65	73.87	11.05	5.70	483.48	16.12

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.64	45.54	0.00	45.54
I_p,int, Pedestrian LOS Score for Intersectio	2.038	1.855	0.000	2.780
Crosswalk LOS	B	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	593	593	1082	1046
d_b, Bicycle Delay [s]	27.72	27.72	11.79	12.73
I_b,int, Bicycle LOS Score for Intersection	1.857	1.794	1.826	2.657
Bicycle LOS	A	A	A	B

Sequence

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



**Intersection Level Of Service Report
Intersection 7: 152nd Avenue/OR 212**

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

Delay (sec / veh): 52.5
 Level Of Service: F
 Volume to Capacity (v/c): 0.930

Intersection Setup

Name	152nd Ave		Highway 212		Highway 212	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵		↵		↵	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	220.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	152nd Ave		Highway 212		Highway 212	
Base Volume Input [veh/h]	27	457	109	230	860	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.00	7.00	11.00	5.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	457	109	230	860	82
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	120	29	61	226	22
Total Analysis Volume [veh/h]	28	481	115	242	905	86
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.93	0.17	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	41.35	52.49	11.56	0.00	0.00	0.00
Movement LOS	E	F	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.80	11.36	0.62	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	20.01	284.10	15.58	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	51.87		3.72		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	14.93					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 8: OR 212/OR 224 (Rock Creek Junction)

Control Type:	Signalized	Delay (sec / veh):	9.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.570

Intersection Setup

Name	Highway 224		Highway 212		Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	1	0	1	1	0
Entry Pocket Length [ft]	155.00	70.00	100.00	125.00	230.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Highway 224		Highway 212		Highway 212	
Base Volume Input [veh/h]	136	203	49	208	109	806
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	8.00	12.00	15.00	3.00	8.00
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	0	0	0
Total Hourly Volume [veh/h]	136	203	49	208	109	806
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	53	13	55	29	212
Total Analysis Volume [veh/h]	143	214	52	219	115	848
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	148
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	41.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Overlap	Protected	Permissive
Signal Group	8	0	2	2	1	6
Auxiliary Signal Groups				2,8		
Maximum Green [s]	41	0	55	55	37	96
Amber [s]	4.7	0.0	5.0	5.0	3.5	5.0
All red [s]	0.7	0.0	1.0	1.0	0.5	1.0
Walk [s]	8	0	7	7	7	0
Pedestrian Clearance [s]	16	0	14	14	10	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]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	0.0	4.0	4.0	2.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	6.0	6.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	0	30	30	30	30
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	8	0	10	10	4	10
Vehicle Extension [s]	2.5	0.0	4.8	4.8	3.5	4.8
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	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	L	R	C	R	L	C
C, Cycle Length [s]	38	38	38	38	38	38
L, Total Lost Time per Cycle [s]	5.40	5.40	6.00	5.40	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	4.00	0.00	2.00	4.00
g_i, Effective Green Time [s]	9	9	10	25	3	18
g / C, Green / Cycle	0.24	0.24	0.27	0.66	0.09	0.46
(v / s)_i Volume / Saturation Flow Rate	0.04	0.14	0.02	0.15	0.07	0.25
s, saturation flow rate [veh/h]	3320	1513	3275	1424	1767	3389
c, Capacity [veh/h]	807	368	868	946	161	1560
d1, Uniform Delay [s]	11.51	12.82	10.54	2.56	16.98	7.46
k, delay calibration	0.08	0.08	0.21	0.21	0.13	0.21
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	1.09	0.06	0.24	6.92	0.58
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	0.18	0.58	0.06	0.23	0.71	0.54
d, Delay for Lane Group [s/veh]	11.58	13.91	10.60	2.80	23.90	8.04
Lane Group LOS	B	B	B	A	C	A
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.40	1.40	0.14	0.24	1.15	1.74
50th-Percentile Queue Length [ft/ln]	9.88	35.03	3.43	6.04	28.63	43.59
95th-Percentile Queue Length [veh/ln]	0.71	2.52	0.25	0.43	2.06	3.14
95th-Percentile Queue Length [ft/ln]	17.79	63.05	6.17	10.87	51.53	78.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.58	13.91	10.60	2.80	23.90	8.04
Movement LOS	B	B	B	A	C	A
d_A, Approach Delay [s/veh]	12.98		4.30		9.93	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	9.66					
Intersection LOS	A					
Intersection V/C	0.570					

Emissions

Vehicle Miles Traveled [mph]	46.77	69.99	7.55	31.80	7.32	53.98
Stops [stops/h]	74.32	131.69	25.77	22.71	107.63	327.74
Fuel consumption [US gal/h]	2.67	4.21	0.57	1.56	1.46	5.42
CO [g/h]	186.86	294.63	39.52	108.99	101.72	378.91
NOx [g/h]	36.36	57.32	7.69	21.21	19.79	73.72
VOC [g/h]	43.31	68.28	9.16	25.26	23.58	87.82

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	12.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	9.73	0.00	9.03
I_p,int, Pedestrian LOS Score for Intersectio	2.248	0.000	2.485
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]	2141	2872	5013
d_b, Bicycle Delay [s]	0.10	3.64	43.46
I_b,int, Bicycle LOS Score for Intersection	1.560	1.783	2.354
Bicycle LOS	A	A	B

Sequence

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



**Intersection Level Of Service Report
Intersection 9: 172nd Avenue/OR 212**

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):	0.855

Intersection Setup

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	2	2	0	0	1	0	1
Entry Pocket Length [ft]	110.00	100.00	100.00	235.00	100.00	290.00	550.00	100.00	100.00	395.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	95	78	11	144	47	1192	576	600	18	7	1187	112
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	6.00	6.00	4.00	5.00	9.00	14.00	12.00	11.00	8.00	13.00
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	596	0	0	18	0	0	56
Total Hourly Volume [veh/h]	95	78	0	144	47	596	576	600	0	7	1187	56
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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	22	0	40	13	166	160	167	0	2	330	16
Total Analysis Volume [veh/h]	106	87	0	160	52	662	640	667	0	8	1319	62
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			2			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			2			0		
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]	132
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	8.5
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	8	8	4	4	5	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	35	35	35	34	34	28	28	77	77	4	54	54
Amber [s]	3.5	3.5	3.5	4.7	4.7	3.5	3.5	5.0	5.0	3.5	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.5	1.5	1.0	1.5	1.5
Walk [s]	9	9	9	9	9	0	0	7	7	0	8	8
Pedestrian Clearance [s]	22	22	22	21	21	0	0	11	11	0	20	20
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	4.2	4.2	2.5	2.5	4.5	4.5	2.5	4.5	4.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	20.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	4	4	10	10	4	10	10
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.3	2.3	5.4	5.4	2.3	5.4	5.4
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	123	123	123	123	123	123	123	123	123	123	123
L, Total Lost Time per Cycle [s]	5.00	5.00	6.20	6.20	4.50	4.50	6.50	6.50	4.50	6.50	6.50
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	0.00
l2, Clearance Lost Time [s]	3.00	3.00	4.20	4.20	0.00	2.50	4.50	4.50	2.50	4.50	4.50
g_i, Effective Green Time [s]	27	27	26	26	59	27	79	79	1	53	53
g / C, Green / Cycle	0.22	0.22	0.21	0.21	0.48	0.22	0.64	0.64	0.01	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.14	0.05	0.13	0.03	0.24	0.20	0.20	0.20	0.00	0.39	0.04
s, saturation flow rate [veh/h]	734	1870	1268	1840	2738	3264	1690	1690	1652	3389	1449
c, Capacity [veh/h]	192	414	257	389	1311	707	1082	1082	13	1463	625
d1, Uniform Delay [s]	48.11	39.04	50.00	39.27	21.98	46.86	9.89	9.89	60.75	32.48	20.73
k, delay calibration	0.08	0.08	0.08	0.08	0.08	0.07	0.28	0.28	0.07	0.28	0.28
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]	1.85	0.19	1.83	0.11	0.22	2.98	0.42	0.42	26.21	5.67	0.18
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	0.55	0.21	0.62	0.13	0.50	0.90	0.31	0.31	0.62	0.90	0.10
d, Delay for Lane Group [s/veh]	49.95	39.23	51.83	39.39	22.20	49.84	10.31	10.31	86.96	38.15	20.91
Lane Group LOS	D	D	D	D	C	D	B	B	F	D	C
Critical Lane Group	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.20	2.18	4.87	1.30	6.54	9.79	4.03	4.03	0.34	19.00	1.10
50th-Percentile Queue Length [ft/ln]	80.06	54.56	121.83	32.44	163.47	244.71	100.74	100.74	8.57	474.92	27.54
95th-Percentile Queue Length [veh/ln]	5.76	3.93	8.49	2.34	10.73	14.92	7.25	7.25	0.62	26.14	1.98
95th-Percentile Queue Length [ft/ln]	144.11	98.21	212.33	58.39	268.31	372.98	181.33	181.33	15.43	653.62	49.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.95	39.23	39.23	51.83	39.39	22.20	49.84	10.31	10.31	86.96	38.15	20.91
Movement LOS	D	D	D	D	D	C	D	B	B	F	D	C
d_A, Approach Delay [s/veh]	45.12			28.65			29.66			37.66		
Approach LOS	D			C			C			D		
d_I, Intersection Delay [s/veh]	33.17											
Intersection LOS	C											
Intersection V/C	0.855											

Emissions

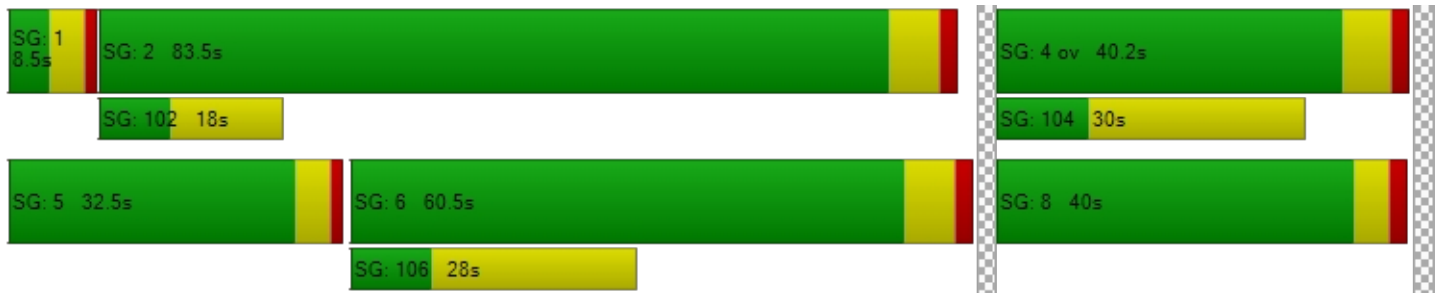
Vehicle Miles Traveled [mph]	12.47	10.23	20.81	6.76	86.11	75.39	39.28	39.28	3.75	617.66	29.03
Stops [stops/h]	93.81	63.93	142.75	38.01	383.07	573.46	118.04	118.04	10.04	1112.95	32.27
Fuel consumption [US gal/h]	2.11	1.47	3.33	0.91	8.65	12.76	2.97	2.97	0.35	41.82	1.64
CO [g/h]	147.42	102.68	232.97	63.27	604.77	892.09	207.52	207.52	24.55	2922.93	114.44
NOx [g/h]	28.68	19.98	45.33	12.31	117.67	173.57	40.38	40.38	4.78	568.70	22.27
VOC [g/h]	34.17	23.80	53.99	14.66	140.16	206.75	48.09	48.09	5.69	677.42	26.52

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		12.0		13.0		0.0	
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	50.94		50.03		49.14		0.00	
I_p,int, Pedestrian LOS Score for Intersectio	2.062		3.691		3.271		0.000	
Crosswalk LOS	B		D		C		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	570		553		1253		879	
d_b, Bicycle Delay [s]	31.43		32.15		8.57		19.31	
I_b,int, Bicycle LOS Score for Intersection	1.896		3.985		2.653		2.752	
Bicycle LOS	A		D		B		C	

Sequence

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



**Intersection Level Of Service Report
Intersection 10: 122nd Avenue/Jennifer Street**

Control Type:	Two-way stop	Delay (sec / veh):	13.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.075

Intersection Setup

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⊕			⊕			⊕			⊕		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	75.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Base Volume Input [veh/h]	0	0	0	30	0	235	74	261	0	0	44	2
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 [%]	0.00	0.00	0.00	12.00	0.00	32.00	61.00	12.00	0.00	0.00	14.00	12.00
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	0	0	30	0	235	74	261	0	0	44	2
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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	8	0	64	20	71	0	0	12	1
Total Analysis Volume [veh/h]	0	0	0	33	0	255	80	284	0	0	48	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.07	0.00	0.27	0.06	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	18.10	13.02	9.74	13.84	13.67	10.24	8.08	0.00	0.00	7.79	0.00	0.00
Movement LOS	C	B	A	B	B	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.24	0.24	1.10	0.20	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	6.05	6.05	27.54	5.12	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.62			10.66			1.78			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	5.29											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 101: Sunrise Expy/122nd Avenue EB Ramps

Control Type:	Signalized	Delay (sec / veh):	45.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.951

Intersection Setup

Name	122nd Avenue		Sunrise WB		Sunrise WB	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶				↷	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		0.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No				No	
Crosswalk	No		No		Yes	

Volumes

Name	122nd Avenue		Sunrise WB		Sunrise WB	
Base Volume Input [veh/h]	725	0	0	0	596	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	0.00	0.00	0.00	2.00	0.00
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	0	0	0
Total Hourly Volume [veh/h]	725	0	0	0	596	19
Peak Hour Factor	0.9300	1.0000	1.0000	1.0000	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	195	0	0	0	160	5
Total Analysis Volume [veh/h]	780	0	0	0	641	20
Presence of On-Street Parking	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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	0	8	8
Auxiliary Signal Groups						
Maximum Green [s]	93	0	0	0	18	18
Amber [s]	3.5	0.0	0.0	0.0	3.5	3.5
All red [s]	1.0	0.0	0.0	0.0	1.0	1.0
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	11	11
Delayed Vehicle Green [s]	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	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	0.0	0.0	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	0.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	0	0	0	30	30
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	5	0	0	0	5	5
Vehicle Extension [s]	3.0	0.0	0.0	0.0	3.0	3.0
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, Cycle Length [s]	54	54
L, Total Lost Time per Cycle [s]	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50
g_i, Effective Green Time [s]	27	18
g / C, Green / Cycle	0.50	0.33
(v / s)_i Volume / Saturation Flow Rate	0.45	0.36
s, saturation flow rate [veh/h]	1752	1812
c, Capacity [veh/h]	875	605
d1, Uniform Delay [s]	12.18	17.98
k, delay calibration	0.11	0.47
l, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	3.40	63.60
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	0.89	1.09
d, Delay for Lane Group [s/veh]	15.57	81.58
Lane Group LOS	B	F
Critical Lane Group	Yes	Yes
50th-Percentile Queue Length [veh/ln]	7.31	17.11
50th-Percentile Queue Length [ft/ln]	182.86	427.71
95th-Percentile Queue Length [veh/ln]	11.75	25.26
95th-Percentile Queue Length [ft/ln]	293.74	631.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.57	0.00	0.00	0.00	81.58	81.58
Movement LOS	B				F	F
d_A, Approach Delay [s/veh]	15.57		0.00		81.58	
Approach LOS	B		A		F	
d_I, Intersection Delay [s/veh]	45.85					
Intersection LOS	D					
Intersection V/C	0.951					

Emissions

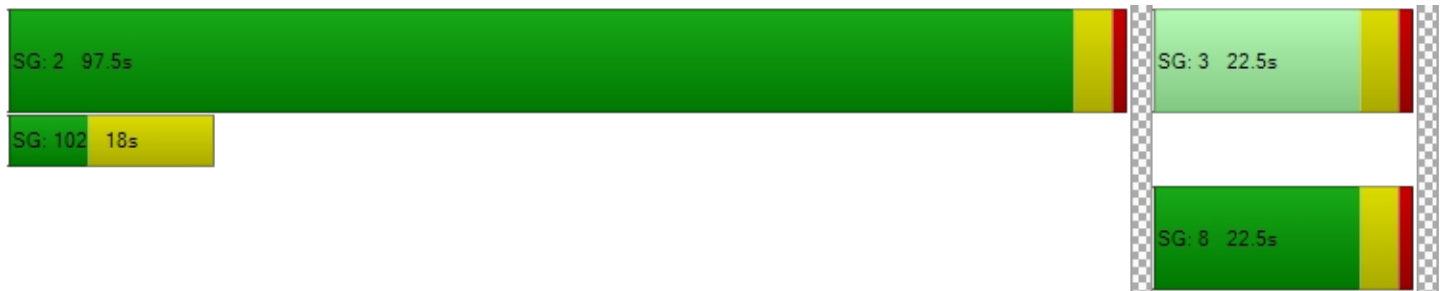
Vehicle Miles Traveled [mph]	64.98		87.60
Stops [stops/h]	488.62		1142.91
Fuel consumption [US gal/h]	7.85		20.89
CO [g/h]	548.47		1460.45
NOx [g/h]	106.71		284.15
VOC [g/h]	127.11		338.47

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	17.07
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.039
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	3452	0	668
d_b, Bicycle Delay [s]	14.19	26.94	11.95
I_b,int, Bicycle LOS Score for Intersection	1.560	4.132	2.650
Bicycle LOS	A	D	B

Sequence

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



Intersection Level Of Service Report
Intersection 102: Sunrise Expy/122nd Avenue WB Ramps

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.814

Intersection Setup

Name	122nd Avenue			122nd Avenue			Sunrise EB			Sunrise EB		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑ ↑			↑ ↑			↑ ↑					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			0.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	Yes			No			Yes			No		

Volumes

Name	122nd Avenue			122nd Avenue			Sunrise EB			Sunrise EB		
Base Volume Input [veh/h]	0	725	716	0	596	0	0	31	629	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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	725	716	0	596	0	0	31	629	0	0	0
Peak Hour Factor	1.0000	0.9300	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	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	195	192	0	160	0	0	8	169	0	0	0
Total Analysis Volume [veh/h]	0	780	770	0	641	0	0	33	676	0	0	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	2	2	6	6	0	4	4	4	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	79	79	79	79	0	33	33	33	0	0	0
Amber [s]	0.0	3.5	3.5	3.5	3.5	0.0	3.5	3.5	3.5	0.0	0.0	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	7	7	7	0	7	7	7	0	0	0
Pedestrian Clearance [s]	0	11	11	11	11	0	11	11	11	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		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	2.5	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	6.0	6.0	6.0	0.0	6.0	6.0	6.0	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: Free Running (No Pattern)

Split [s]	0	30	30	30	30	0	30	30	30	0	0	0
Lead / Lag	-	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	5	5	5	5	0	5	5	5	0	0	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		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	C	C	R	
C, Cycle Length [s]	55	55	55	55	55	
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	
g_i, Effective Green Time [s]	30	30	30	15	15	
g / C, Green / Cycle	0.56	0.56	0.56	0.28	0.28	
(v / s)_i Volume / Saturation Flow Rate	0.41	0.48	0.34	0.22	0.22	
s, saturation flow rate [veh/h]	1900	1615	1900	1638	1615	
c, Capacity [veh/h]	1058	899	1124	457	450	
d1, Uniform Delay [s]	9.12	10.28	8.12	18.21	18.22	
k, delay calibration	0.11	0.11	0.11	0.11	0.11	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.02	2.48	0.46	2.94	3.02	
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	0.74	0.86	0.57	0.78	0.78	
d, Delay for Lane Group [s/veh]	10.15	12.76	8.58	21.15	21.24	
Lane Group LOS	B	B	A	C	C	
Critical Lane Group	No	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	5.39	6.28	3.86	4.05	4.01	
50th-Percentile Queue Length [ft/ln]	134.65	156.89	96.52	101.17	100.30	
95th-Percentile Queue Length [veh/ln]	9.19	10.38	6.95	7.28	7.22	
95th-Percentile Queue Length [ft/ln]	229.80	259.60	173.74	182.11	180.53	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	10.15	12.76	8.58	8.58	0.00	21.15	21.15	21.20	0.00	0.00	0.00
Movement LOS		B	B	A	A		C	C	C			
d_A, Approach Delay [s/veh]	11.44			8.58			21.19			0.00		
Approach LOS	B			A			C			A		
d_I, Intersection Delay [s/veh]	13.19											
Intersection LOS	B											
Intersection V/C	0.814											

Emissions

Vehicle Miles Traveled [mph]	180.10	177.79	53.40	42.67	42.19	
Stops [stops/h]	354.99	413.62	254.47	266.73	264.42	
Fuel consumption [US gal/h]	10.99	11.60	4.72	4.76	4.72	
CO [g/h]	767.92	811.10	330.14	333.06	330.00	
NOx [g/h]	149.41	157.81	64.23	64.80	64.21	
VOC [g/h]	177.97	187.98	76.51	77.19	76.48	

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	17.42	0.00	17.42	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.802	0.000	2.032	0.000
Crosswalk LOS	C	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2893	2893	1208	0
d_b, Bicycle Delay [s]	5.44	5.44	4.28	27.31
I_b,int, Bicycle LOS Score for Intersection	4.117	2.617	2.729	4.132
Bicycle LOS	D	B	B	D

Sequence

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



**Intersection Level Of Service Report
Intersection 107: Sunrise Expy/OR 224**

Control Type:	Signalized	Delay (sec / veh):	17.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.731

Intersection Setup

Name	Rock Creek Blvd			Rock Creek Blvd			Sunrise			Sunrise		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Rock Creek Blvd			Rock Creek Blvd			Sunrise			Sunrise		
Base Volume Input [veh/h]	752	343	149	22	290	170	55	0	412	149	0	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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	752	343	149	22	290	170	55	0	412	149	0	34
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500
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]	198	90	39	6	76	45	14	0	108	39	0	9
Total Analysis Volume [veh/h]	792	361	157	23	305	179	58	0	434	157	0	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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	35.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	2	1	6	3	3	0	3	7	0	2
Auxiliary Signal Groups			2,7			3,6						
Maximum Green [s]	30	45	45	5	21	25	25	0	25	25	0	45
Amber [s]	4.7	4.7	4.7	4.7	4.7	3.5	3.5	0.0	3.5	3.5	0.0	4.7
All red [s]	0.7	0.7	0.7	0.7	0.7	0.5	0.5	0.0	0.5	0.5	0.0	0.7
Walk [s]	0	7	7	0	7	0	0	0	0	0	0	7
Pedestrian Clearance [s]	0	11	11	0	11	0	0	0	0	0	0	11
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	2.0	2.0	0.0	2.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	3.4	3.4	3.4	3.4	3.4	2.0	2.0	0.0	2.0	2.0	0.0	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	0.0	20.0	20.0	0.0	20.0
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: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	0	30	30	0	30
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	5	5	5	5	5	5	0	5	5	0	5
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0
Minimum Recall	No	Yes	Yes	No	Yes	No	No			No		
Maximum Recall	No	No	No	No	No	No	No			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	R	L	C	R	L	R	L	R
C, Cycle Length [s]	57	57	57	57	57	57	57	57	57	57
L, Total Lost Time per Cycle [s]	5.40	5.40	4.00	5.40	5.40	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	0.00	3.40	3.40	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	23	46	2	8	31	18	18	18	18
g / C, Green / Cycle	0.29	0.40	0.81	0.03	0.13	0.54	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.23	0.10	0.10	0.01	0.08	0.11	0.02	0.27	0.08	0.02
s, saturation flow rate [veh/h]	3514	3618	1615	3514	3618	1615	2707	1615	1883	1615
c, Capacity [veh/h]	1028	1446	1308	95	485	879	895	511	661	511
d1, Uniform Delay [s]	18.60	11.53	1.15	27.44	23.58	6.73	15.07	18.41	16.08	13.77
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.17	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.25	0.09	0.04	1.30	1.35	0.11	0.03	6.05	0.18	0.06
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	0.77	0.25	0.12	0.24	0.63	0.20	0.06	0.85	0.24	0.07
d, Delay for Lane Group [s/veh]	19.86	11.62	1.20	28.75	24.93	6.84	15.10	24.46	16.27	13.83
Lane Group LOS	B	B	A	C	C	A	B	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.48	1.36	0.04	0.16	1.91	0.91	0.26	5.62	0.75	0.30
50th-Percentile Queue Length [ft/ln]	111.88	34.02	1.05	4.09	47.77	22.78	6.42	140.55	18.70	7.59
95th-Percentile Queue Length [veh/ln]	7.94	2.45	0.08	0.29	3.44	1.64	0.46	9.51	1.35	0.55
95th-Percentile Queue Length [ft/ln]	198.61	61.23	1.89	7.36	85.99	41.01	11.55	237.77	33.65	13.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.86	11.62	1.20	28.75	24.93	6.84	15.10	0.00	24.46	16.27	0.00	13.83
Movement LOS	B	B	A	C	C	A	B		C	B		B
d_A, Approach Delay [s/veh]	15.35			18.72			23.35			15.81		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	17.64											
Intersection LOS	B											
Intersection V/C	0.731											

Emissions

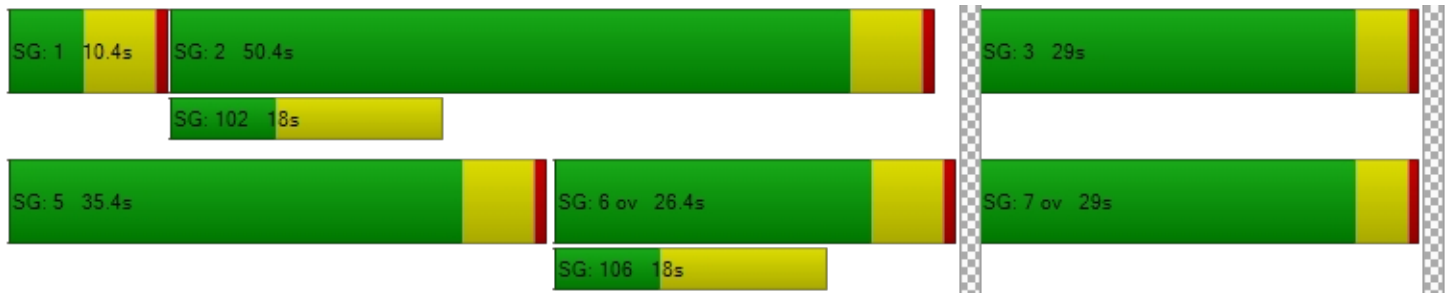
Vehicle Miles Traveled [mph]	59.98	27.34	11.89	1.73	22.98	13.49	6.21	46.43	17.30	3.97
Stops [stops/h]	561.11	170.62	2.64	20.50	239.60	57.13	32.18	352.45	93.76	19.04
Fuel consumption [US gal/h]	8.77	2.92	0.54	0.32	3.82	1.12	0.61	6.02	1.75	0.37
CO [g/h]	613.02	204.23	37.90	22.31	266.82	78.30	42.74	420.71	122.34	25.85
NOx [g/h]	119.27	39.74	7.37	4.34	51.91	15.24	8.32	81.85	23.80	5.03
VOC [g/h]	142.07	47.33	8.78	5.17	61.84	18.15	9.91	97.50	28.35	5.99

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			18.77			18.77		
I_p,int, Pedestrian LOS Score for Intersectio	0.000			0.000			2.560			2.347		
Crosswalk LOS	F			F			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1567			731			871			871		
d_b, Bicycle Delay [s]	1.34			11.55			9.15			9.15		
I_b,int, Bicycle LOS Score for Intersection	2.640			1.978			1.560			1.560		
Bicycle LOS	B			A			A			A		

Sequence

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



Intersection Level Of Service Report
Intersection 108: Sunrise Expy/OR 224 Jughandle

Control Type:	Signalized	Delay (sec / veh):	8.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.571

Intersection Setup

Name	Rock Creek Blvd		Rock Creek Blvd		Highway 212	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	⇐		⇐		⇐⇐⇐⇐⇐	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Rock Creek Blvd		Rock Creek Blvd		Highway 212	
Base Volume Input [veh/h]	191	1130	616	235	114	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
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	0	0	0
Total Hourly Volume [veh/h]	191	1130	616	235	114	174
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	297	162	62	30	46
Total Analysis Volume [veh/h]	201	1189	648	247	120	183
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	29.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						4,5
Maximum Green [s]	25	60	31	31	20	20
Amber [s]	3.5	4.7	4.7	4.7	4.7	4.7
All red [s]	0.5	0.7	0.7	0.7	0.7	0.7
Walk [s]	0	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	11	11	11
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]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	3.4	3.4	3.4	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	6.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	5	5	5	5	5	5
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	No	Yes	Yes		No	No
Maximum Recall	No	No	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	L	C	C	R	L	R
C, Cycle Length [s]	36	36	36	36	36	36
L, Total Lost Time per Cycle [s]	4.00	5.40	5.40	5.40	5.40	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.40	3.40	3.40	3.40	0.00
g_i, Effective Green Time [s]	6	20	10	10	5	16
g / C, Green / Cycle	0.17	0.56	0.28	0.28	0.13	0.45
(v / s)_i Volume / Saturation Flow Rate	0.11	0.33	0.18	0.15	0.03	0.06
s, saturation flow rate [veh/h]	1810	3618	3618	1615	3514	2859
c, Capacity [veh/h]	302	2037	1028	459	470	1292
d1, Uniform Delay [s]	13.91	5.06	11.12	10.78	13.84	5.71
k, delay calibration	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
d2, Incremental Delay [s]	2.53	0.27	0.64	0.98	0.28	0.05
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	0.67	0.58	0.63	0.54	0.26	0.14
d, Delay for Lane Group [s/veh]	16.44	5.33	11.77	11.76	14.12	5.76
Lane Group LOS	B	A	B	B	B	A
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.42	1.35	1.75	1.35	0.37	0.26
50th-Percentile Queue Length [ft/ln]	35.54	33.71	43.64	33.68	9.27	6.40
95th-Percentile Queue Length [veh/ln]	2.56	2.43	3.14	2.43	0.67	0.46
95th-Percentile Queue Length [ft/ln]	63.97	60.68	78.56	60.63	16.68	11.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.44	5.33	11.77	11.76	14.12	5.76
Movement LOS	B	A	B	B	B	A
d_A, Approach Delay [s/veh]	6.94		11.77		9.07	
Approach LOS	A		B		A	
d_I, Intersection Delay [s/veh]	8.86					
Intersection LOS	A					
Intersection V/C	0.571					

Emissions

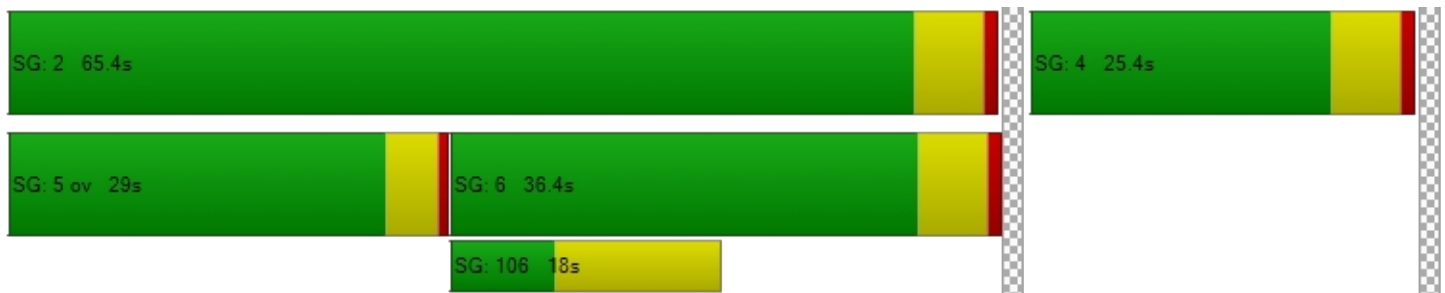
Vehicle Miles Traveled [mph]	14.61	86.45	49.08	18.71	11.03	16.83
Stops [stops/h]	143.94	273.06	353.53	136.42	75.08	51.86
Fuel consumption [US gal/h]	2.07	6.36	5.53	2.12	1.21	1.19
CO [g/h]	144.65	444.40	386.23	147.85	84.86	83.45
NOx [g/h]	28.14	86.46	75.15	28.77	16.51	16.24
VOC [g/h]	33.52	102.99	89.51	34.27	19.67	19.34

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0		0.0		11.0	
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		8.48	
I_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		2.389	
Crosswalk LOS	F		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	3375		1744		1125	
d_b, Bicycle Delay [s]	8.40		0.29		3.40	
I_b,int, Bicycle LOS Score for Intersection	2.706		2.298		1.560	
Bicycle LOS	B		B		A	

Sequence

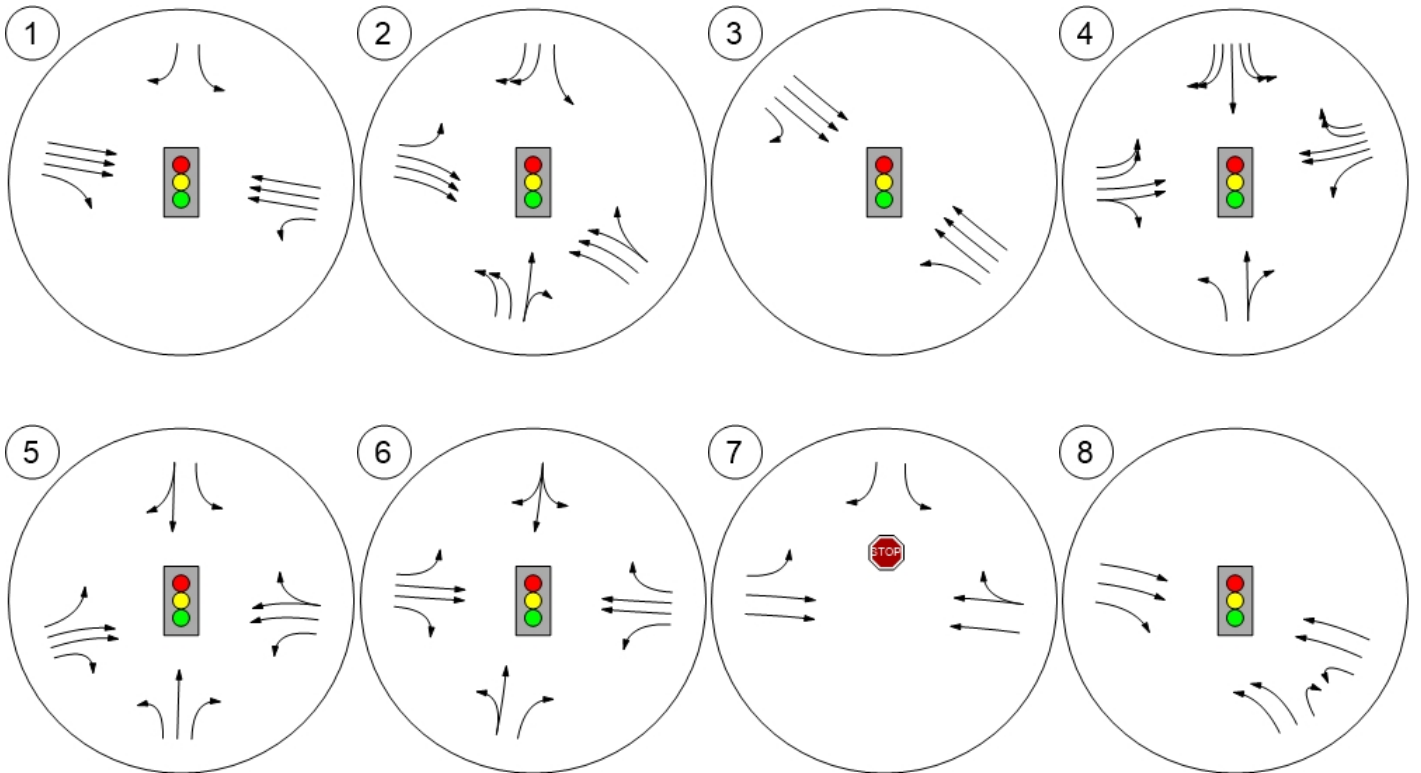
Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



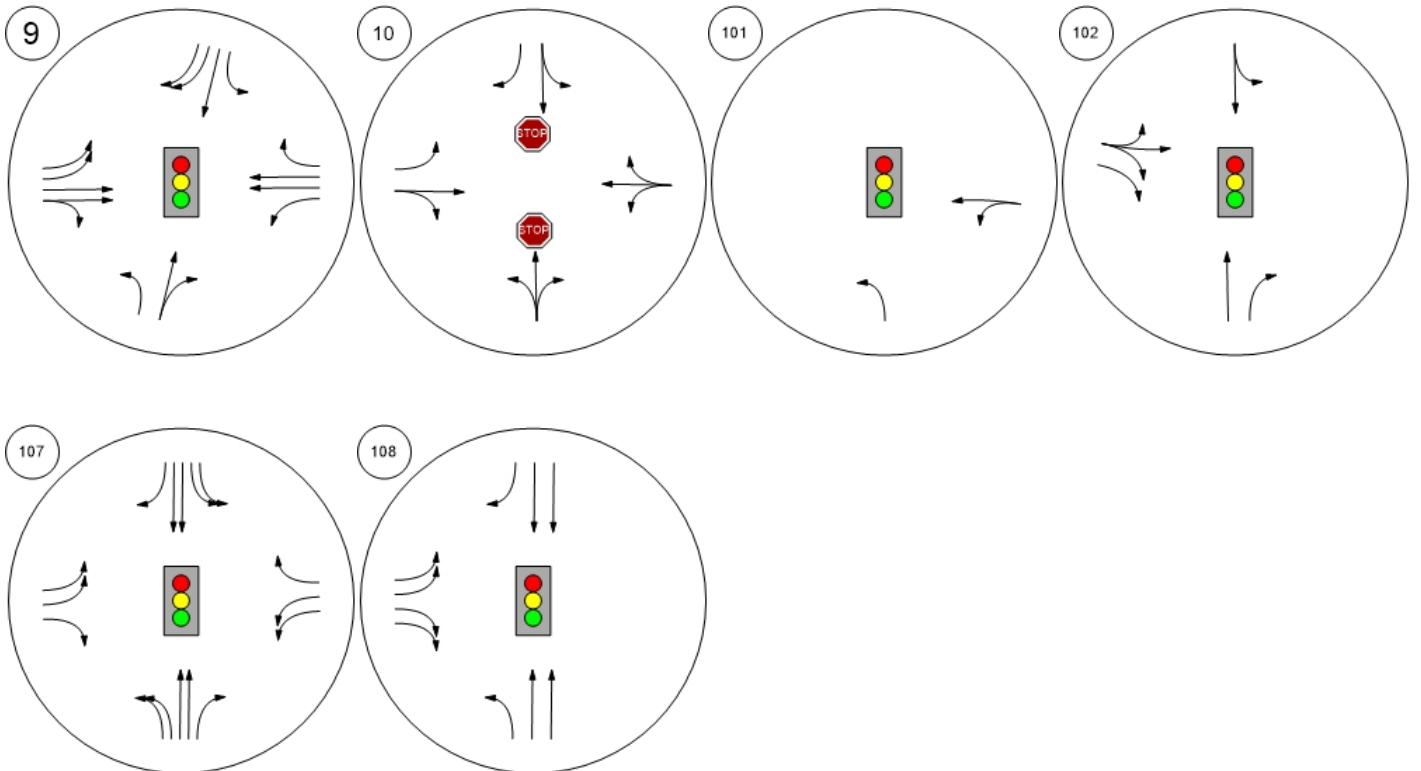
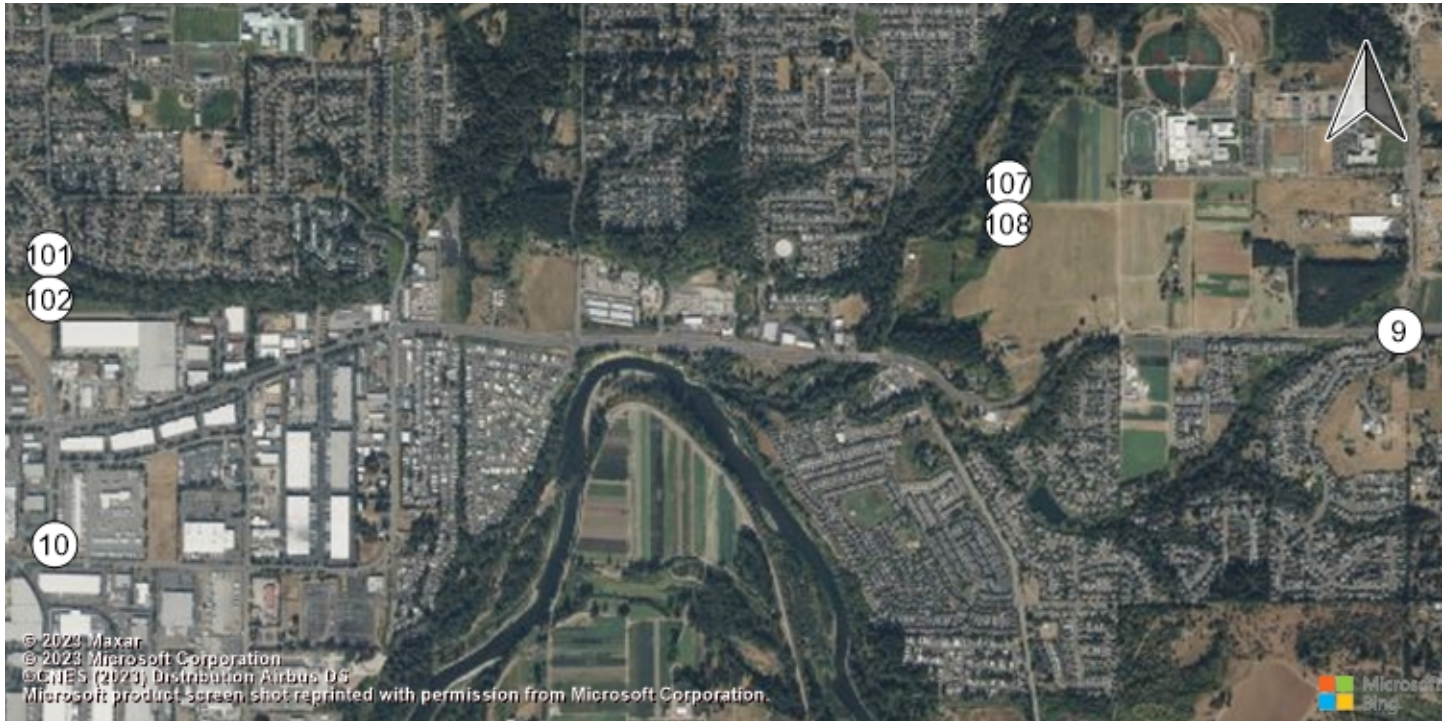
Study Intersections



Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



Sunrise Refinement Plan

Vistro File: H:\...\Sunrise_PM_FEIS.vistro

Scenario: Base Scenario

Report File: H:\...\2045_FEISPM.pdf

3/17/2025

Intersection Analysis Summary




ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	OR 213 SB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.808	24.2	C
2	OR 213 NB Ramps/I-205 SB Ramps/OR 224	Signalized	HCM 7th Edition	WB Right	0.964	58.9	E
3	I-205 NB Ramps/OR 224	Signalized	HCM 7th Edition	WB Left	0.649	13.6	B
4	122nd Avenue/OR 224/OR 212	Signalized	HCM 7th Edition	WB Left	0.678	41.9	D
5	135th Avenue/OR 212	Signalized	HCM 7th Edition	NB Right	0.870	58.6	E
6	142nd Avenue/OR 212	Signalized	HCM 7th Edition	SB Right	0.573	13.5	B
7	152nd Avenue/OR 212	Two-way stop	HCM 7th Edition	SB Left	1.215	335.6	F
8	OR 212/OR 224 (Rock Creek Junction)	Signalized	HCM 7th Edition	WB Left	0.389	10.6	B
9	172nd Avenue/OR 212	Signalized	HCM 7th Edition	WB Left	0.873	38.9	D
10	122nd Avenue/Jennifer Street	Two-way stop	HCM 7th Edition	SB Left	0.006	25.3	D
101	Sunrise Expy/122nd Avenue EB Ramps	Signalized	HCM 7th Edition	NB Left	0.802	13.5	B
102	Sunrise Expy/122nd Avenue WB Ramps	Signalized	HCM 7th Edition	EB Right	0.918	26.0	C
107	Sunrise Expy/OR 224	Signalized	HCM 7th Edition	EB Right	0.831	25.5	C
108	Sunrise Expy/OR 224 Jughandle	Signalized	HCM 7th Edition	NB Left	0.644	11.9	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: OR 213 SB Ramps/OR 224**

Control Type:	Signalized	Delay (sec / veh):	24.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.808

Intersection Setup

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	1000.00	75.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	0.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	I-205 SB On-Ramp			I-205 SB On-Ramp			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	0	0	0	308	1	370	0	2295	266	28	1332	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 [%]	0.00	0.00	0.00	4.00	2.00	2.00	0.00	5.00	5.00	13.00	4.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	308	1	370	0	2295	266	28	1332	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9700	1.0000	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	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	79	0	95	0	591	69	7	343	0
Total Analysis Volume [veh/h]	0	0	0	318	1	381	0	2366	274	29	1373	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	4	0	4	0	2	2	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	0	0	35	0	35	0	71	71	9	84	0
Amber [s]	0.0	0.0	0.0	4.0	0.0	4.0	0.0	5.0	5.0	3.5	5.0	0.0
All red [s]	0.0	0.0	0.0	1.5	0.0	1.5	0.0	1.0	1.0	0.5	1.0	0.0
Walk [s]	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
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]	0.0	0.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	3.5	0.0	3.5	0.0	4.0	4.0	2.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	0.0	20.0	0.0	6.0	6.0	20.0	6.0	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	40	0	40	0	77	77	13	90	0
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	6	0	10	10	4	10	0
Vehicle Extension [s]	0.0	0.0	0.0	2.3	0.0	2.3	0.0	0.5	0.5	2.3	0.5	0.0
Minimum Recall				No				Yes		No	Yes	
Maximum Recall				No				No		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		L	R	C	R	L	C
C, Cycle Length [s]		130	130	130	130	130	130
L, Total Lost Time per Cycle [s]		5.50	5.50	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		3.50	3.50	4.00	4.00	2.00	4.00
g_i, Effective Green Time [s]		33	33	79	79	3	85
g / C, Green / Cycle		0.25	0.25	0.60	0.60	0.02	0.66
(v / s)_i Volume / Saturation Flow Rate		0.18	0.24	0.48	0.18	0.02	0.27
s, saturation flow rate [veh/h]		1752	1589	4971	1551	1624	5012
c, Capacity [veh/h]		445	404	3001	937	37	3295
d1, Uniform Delay [s]		44.19	47.58	19.48	12.40	63.18	10.50
k, delay calibration		0.16	0.33	0.50	0.50	0.07	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.23	25.07	2.18	0.79	18.70	0.39
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		0.71	0.94	0.79	0.29	0.78	0.42
d, Delay for Lane Group [s/veh]		47.42	72.65	21.66	13.19	81.88	10.89
Lane Group LOS		D	E	C	B	F	B
Critical Lane Group		No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		9.75	14.87	17.76	4.00	1.15	6.10
50th-Percentile Queue Length [ft/ln]		243.65	371.71	443.97	99.98	28.78	152.39
95th-Percentile Queue Length [veh/ln]		14.87	21.19	24.67	7.20	2.07	10.14
95th-Percentile Queue Length [ft/ln]		371.65	529.80	616.75	179.96	51.81	253.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	47.42	0.00	72.65	0.00	21.66	13.19	81.88	10.89	0.00
Movement LOS				D		E		C	B	F	B	
d_A, Approach Delay [s/veh]	0.00			61.17			20.78			12.36		
Approach LOS	A			E			C			B		
d_I, Intersection Delay [s/veh]	24.25											
Intersection LOS	C											
Intersection V/C	0.808											

Emissions

Vehicle Miles Traveled [mph]		61.54	73.73	749.50	86.80	4.57	216.49
Stops [stops/h]		269.88	411.71	1475.26	110.74	31.88	506.38
Fuel consumption [US gal/h]		7.09	10.94	49.43	4.92	0.85	14.75
CO [g/h]		495.79	764.83	3455.48	343.94	59.24	1031.27
NOx [g/h]		96.46	148.81	672.31	66.92	11.53	200.65
VOC [g/h]		114.91	177.26	800.84	79.71	13.73	239.01

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	531	1092	1292
d_b, Bicycle Delay [s]	65.00	35.08	13.39	8.14
I_b,int, Bicycle LOS Score for Intersection	4.132	1.560	3.012	2.331
Bicycle LOS	D	A	C	B

Sequence

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



Intersection Level Of Service Report
Intersection 2: OR 213 NB Ramps/I-205 SB Ramps/OR 224

Control Type:	Signalized	Delay (sec / veh):	58.9
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.964

Intersection Setup

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	415.00	100.00	100.00	160.00	100.00	405.00	365.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	I-205 SB Off-Ramp			OR 213 NB			Sunrise Pkwy			Sunrise Pkwy		
Base Volume Input [veh/h]	354	7	318	20	0	231	542	2061	0	0	775	402
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 [%]	5.00	12.00	17.00	10.00	0.00	5.00	2.00	6.00	0.00	0.00	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	1	0	0	0	0	0	0	0	0	13
Total Hourly Volume [veh/h]	354	7	317	20	0	231	542	2061	0	0	775	389
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	1.0000	1.0000	0.9300	0.9300
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]	95	2	85	5	0	62	146	554	0	0	208	105
Total Analysis Volume [veh/h]	381	8	341	22	0	248	583	2216	0	0	833	418
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	1			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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]	130
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	19.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	8	8	7	0	4	5	2	0	0	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	21	31	31	8	0	18	43	75	0	0	28	28
Amber [s]	4.0	4.0	4.0	4.0	0.0	4.0	3.5	5.0	0.0	0.0	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	0.0	1.5	0.5	1.0	0.0	0.0	1.0	1.0
Walk [s]	7	7	7	0	0	0	0	7	0	0	7	7
Pedestrian Clearance [s]	12	24	24	0	0	0	0	20	0	0	12	12
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	0.0	2.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	3.5	3.5	3.5	3.5	0.0	3.5	2.0	4.0	0.0	0.0	4.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	0.0	0.0	20.0	6.0	0.0	0.0	6.0	6.0
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	37	37	13	0	23	47	81	0	0	34	34
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	4	4	4	0	4	4	6	0	0	6	6
Vehicle Extension [s]	2.3	2.3	2.3	2.3	0.0	2.3	2.3	4.6	0.0	0.0	4.6	4.6
Minimum Recall	No	No		No		No	Yes	Yes			No	
Maximum Recall	No	No		No		No	No	No			No	
Pedestrian Recall	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	L	R	L	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	5.50	5.50	5.50	5.50	4.00	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
l2, Clearance Lost Time [s]	3.50	3.50	3.50	0.00	2.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	24	31	2	61	47	79	28	28
g / C, Green / Cycle	0.19	0.24	0.02	0.47	0.36	0.61	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.11	0.24	0.01	0.09	0.33	0.45	0.24	0.27
s, saturation flow rate [veh/h]	3375	1467	1667	2746	1781	4930	3503	1564
c, Capacity [veh/h]	634	355	29	1279	647	3005	754	337
d1, Uniform Delay [s]	48.32	48.98	63.58	20.38	39.17	18.01	51.01	51.01
k, delay calibration	0.07	0.40	0.07	0.07	0.50	0.50	0.19	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]	0.56	38.46	20.68	0.04	18.02	1.66	55.15	131.21
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	0.60	0.98	0.75	0.19	0.90	0.74	1.10	1.24
d, Delay for Lane Group [s/veh]	48.89	87.45	84.26	20.43	57.20	19.67	106.16	182.22
Lane Group LOS	D	F	F	C	E	B	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.73	15.01	0.90	2.24	20.66	15.50	18.01	23.20
50th-Percentile Queue Length [ft/ln]	143.16	375.18	22.38	56.11	516.47	387.52	450.37	580.04
95th-Percentile Queue Length [veh/ln]	9.65	21.36	1.61	4.04	28.11	21.96	26.35	34.71
95th-Percentile Queue Length [ft/ln]	241.28	534.00	40.28	101.00	702.82	548.95	658.85	867.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.89	87.45	87.45	84.26	0.00	20.43	57.20	19.67	0.00	0.00	106.16	182.22
Movement LOS	D	F	F	F		C	E	B			F	F
d_A, Approach Delay [s/veh]	67.32			25.63			27.49			131.57		
Approach LOS	E			C			C			F		
d_I, Intersection Delay [s/veh]	58.93											
Intersection LOS	E											
Intersection V/C	0.964											

Emissions

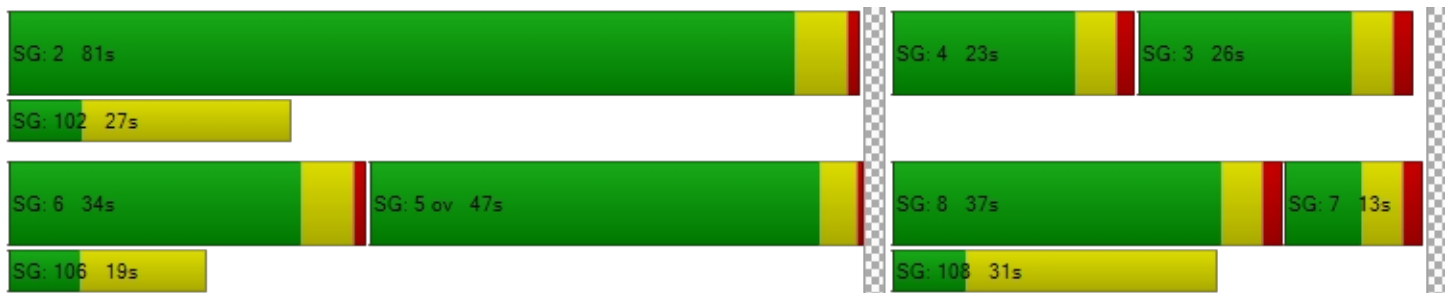
Vehicle Miles Traveled [mph]	79.81	73.11	3.15	35.55	91.92	349.41	208.69	104.72
Stops [stops/h]	317.14	415.55	24.79	124.30	572.05	1287.69	997.69	642.47
Fuel consumption [US gal/h]	8.83	11.52	0.64	3.18	13.73	30.37	32.10	23.36
CO [g/h]	617.04	804.90	45.01	222.35	959.71	2122.76	2243.44	1632.71
NOx [g/h]	120.05	156.61	8.76	43.26	186.73	413.01	436.49	317.67
VOC [g/h]	143.01	186.54	10.43	51.53	222.42	491.97	519.94	378.40

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	54.47	0.00	54.47
I_p,int, Pedestrian LOS Score for Intersectio	2.197	2.464	0.000	3.086
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	485	115	1154	431
d_b, Bicycle Delay [s]	37.32	57.72	11.64	40.02
I_b,int, Bicycle LOS Score for Intersection	2.766	1.560	3.099	2.255
Bicycle LOS	C	A	C	B

Sequence

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



**Intersection Level Of Service Report
Intersection 3: I-205 NB Ramps/OR 224**

Control Type:	Signalized	Delay (sec / veh):	13.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Approach	Eastbound		Westbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	2	0	0	2
Entry Pocket Length [ft]	100.00	100.00	630.00	100.00	100.00	220.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	0.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present			No		No	
Crosswalk	No		No		No	

Volumes

Name	I-205 NB On-Ramp		Sunrise Pkwy		Sunrise Pkwy	
Base Volume Input [veh/h]	0	0	268	1177	2029	370
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	6.00	1.00	12.00	7.00
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	0	0	0
Total Hourly Volume [veh/h]	0	0	268	1177	2029	370
Peak Hour Factor	1.0000	1.0000	0.9300	0.9300	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	72	316	518	94
Total Analysis Volume [veh/h]	0	0	288	1266	2070	378
Presence of On-Street Parking			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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		0		0	

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]	50.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	0	0	1	6	2	2
Auxiliary Signal Groups						
Maximum Green [s]	0	0	26	89	59	59
Amber [s]	0.0	0.0	3.5	5.0	5.0	5.0
All red [s]	0.0	0.0	0.5	2.0	2.0	2.0
Walk [s]	0	0	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	17	17
Delayed Vehicle Green [s]	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	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	2.0	5.0	5.0	5.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	0	30	96	66	66
Lead / Lag	-	-	Lead	-	-	-
Minimum Green [s]	0	0	4	10	10	10
Vehicle Extension [s]	0.0	0.0	2.3	4.7	4.7	4.7
Minimum Recall			No	Yes	Yes	
Maximum Recall			No	No	No	
Pedestrian Recall			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	R
C, Cycle Length [s]	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	7.00	7.00	7.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	5.00	5.00	5.00
g_i, Effective Green Time [s]	24	116	88	88
g / C, Green / Cycle	0.18	0.89	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.17	0.25	0.44	0.25
s, saturation flow rate [veh/h]	1724	5135	4685	1526
c, Capacity [veh/h]	312	4578	3185	1037
d1, Uniform Delay [s]	52.35	1.02	11.94	8.86
k, delay calibration	0.31	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.73	0.15	1.04	0.99
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	0.92	0.28	0.65	0.36
d, Delay for Lane Group [s/veh]	77.08	1.17	12.98	9.85
Lane Group LOS	E	A	B	A
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	11.37	0.63	11.02	4.64
50th-Percentile Queue Length [ft/ln]	284.30	15.87	275.46	115.99
95th-Percentile Queue Length [veh/ln]	16.90	1.14	16.46	8.17
95th-Percentile Queue Length [ft/ln]	422.56	28.56	411.55	204.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	77.08	1.17	12.98	9.85
Movement LOS			E	A	B	A
d_A, Approach Delay [s/veh]	0.00		15.23		12.50	
Approach LOS	A		B		B	
d_I, Intersection Delay [s/veh]	13.56					
Intersection LOS	B					
Intersection V/C	0.649					

Emissions

Vehicle Miles Traveled [mph]		399.13	1754.50	518.60	94.70
Stops [stops/h]		314.92	52.72	915.37	128.48
Fuel consumption [US gal/h]		22.69	72.82	31.88	5.37
CO [g/h]		1585.84	5089.98	2228.11	375.10
NOx [g/h]		308.55	990.32	433.51	72.98
VOC [g/h]		367.53	1179.65	516.39	86.93

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1369	908
d_b, Bicycle Delay [s]	65.00	6.47	19.39
I_b,int, Bicycle LOS Score for Intersection	4.132	2.414	2.906
Bicycle LOS	D	B	C

Sequence

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



Intersection Level Of Service Report
Intersection 4: 122nd Avenue/OR 224/OR 212

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):	0.678

Intersection Setup

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T			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 [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	2	2	0	0	1	0	2
Entry Pocket Length [ft]	135.00	100.00	100.00	525.00	100.00	350.00	220.00	100.00	100.00	255.00	100.00	410.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Highway 212			Highway 212		
Base Volume Input [veh/h]	45	211	10	456	197	731	704	494	58	10	394	359
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 [%]	7.00	5.00	5.00	4.00	13.00	2.00	6.00	5.00	16.00	5.00	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	10	0	0	366	0	0	37	0	0	359
Total Hourly Volume [veh/h]	45	211	0	456	197	365	704	494	21	10	394	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
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]	12	54	0	118	51	94	181	127	5	3	102	0
Total Analysis Volume [veh/h]	46	218	0	470	203	376	726	509	22	10	406	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			1		

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	Fully actuated
Offset [s]	42.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						6,7
Maximum Green [s]	9	35	35	19	45	45	31	54	54	4	27	27
Amber [s]	3.5	4.3	4.3	3.5	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	9	9	0	7	7	0	8	8	0	7	7
Pedestrian Clearance [s]	0	26	26	0	21	21	0	23	23	0	18	18
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.8	2.8	2.0	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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	40	40	23	50	50	35	59	59	8	32	32
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	2.3	2.3	2.3	2.3	2.3	2.0	4.6	4.6	2.0	4.6	4.6
Minimum Recall	No	No		No	No	No	No	Yes		No	Yes	Yes
Maximum Recall	No	No		No	No	No	No	No		No	No	No
Pedestrian Recall	No	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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.80	4.00	4.80	4.80	4.00	5.40	5.40	4.00	5.40	5.40
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]	2.00	2.80	2.00	2.80	0.00	2.00	3.40	3.40	2.00	3.40	0.00
g_i, Effective Green Time [s]	19	18	20	18	52	30	73	73	1	44	90
g / C, Green / Cycle	0.15	0.13	0.15	0.14	0.40	0.23	0.56	0.56	0.01	0.34	0.70
(v / s)_i Volume / Saturation Flow Rate	0.03	0.12	0.14	0.12	0.13	0.22	0.15	0.15	0.01	0.12	0.00
s, saturation flow rate [veh/h]	1709	1825	3403	1705	2813	3348	1825	1798	1738	3389	2813
c, Capacity [veh/h]	251	247	515	238	1131	776	1029	1014	17	1158	1958
d1, Uniform Delay [s]	48.60	55.21	54.31	54.63	26.81	48.97	14.48	14.48	64.14	32.02	0.00
k, delay calibration	0.07	0.07	0.07	0.07	0.07	0.04	0.50	0.50	0.04	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]	0.21	6.52	4.31	5.37	0.10	2.48	0.61	0.62	12.57	0.84	0.00
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	0.18	0.88	0.91	0.85	0.33	0.94	0.26	0.26	0.61	0.35	0.00
d, Delay for Lane Group [s/veh]	48.81	61.73	58.62	60.00	26.92	51.45	15.09	15.11	76.71	32.85	0.00
Lane Group LOS	D	E	E	E	C	D	B	B	E	C	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.33	7.47	7.88	6.85	4.08	11.79	4.20	4.15	0.39	4.95	0.00
50th-Percentile Queue Length [ft/ln]	33.35	186.66	196.91	171.33	101.95	294.70	105.01	103.70	9.71	123.80	0.00
95th-Percentile Queue Length [veh/ln]	2.40	11.95	12.48	11.15	7.34	17.42	7.56	7.47	0.70	8.60	0.00
95th-Percentile Queue Length [ft/ln]	60.04	298.70	311.98	278.67	183.51	435.47	189.02	186.66	17.48	215.04	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.81	61.73	61.73	58.62	60.00	26.92	51.45	15.10	15.11	76.71	32.85	0.00
Movement LOS	D	E	E	E	E	C	D	B	B	E	C	A
d_A, Approach Delay [s/veh]	59.48			47.52			36.10			33.91		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	41.87											
Intersection LOS	D											
Intersection V/C	0.678											

Emissions

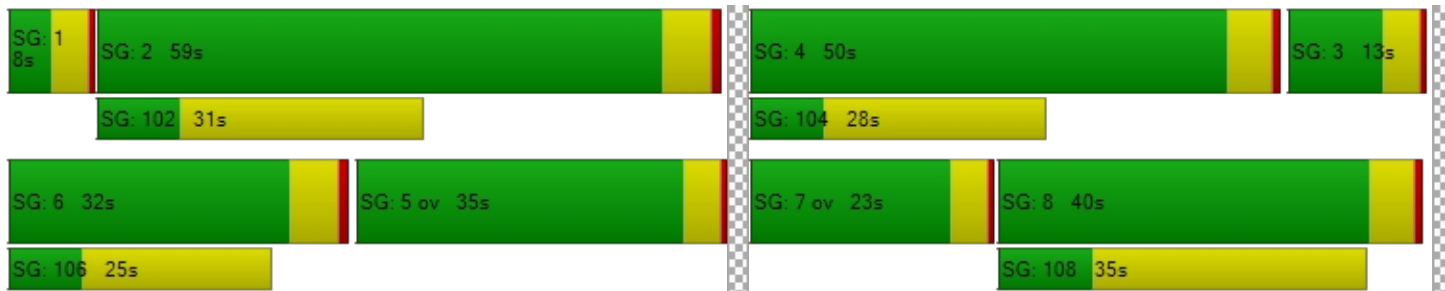
Vehicle Miles Traveled [mph]	10.37	49.13	108.52	46.87	86.82	652.55	240.23	237.04	6.59	267.68	0.00
Stops [stops/h]	36.95	206.76	436.23	189.78	225.85	652.87	116.32	114.87	10.76	274.26	0.00
Fuel consumption [US gal/h]	1.09	5.90	12.48	5.46	6.88	38.07	11.35	11.20	0.49	15.25	0.00
CO [g/h]	76.03	412.63	872.59	381.41	481.00	2661.15	793.58	783.12	34.04	1065.90	0.00
NOx [g/h]	14.79	80.28	169.77	74.21	93.59	517.76	154.40	152.37	6.62	207.39	0.00
VOC [g/h]	17.62	95.63	202.23	88.39	111.48	616.75	183.92	181.50	7.89	247.03	0.00

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0		11.0		11.0		13.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00
d_p, Pedestrian Delay [s]	53.55		54.47		54.47		52.65
I_p,int, Pedestrian LOS Score for Intersectio	2.149		3.433		2.927		3.367
Crosswalk LOS	B		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]	542		695		825		409
d_b, Bicycle Delay [s]	34.57		27.66		22.45		41.14
I_b,int, Bicycle LOS Score for Intersection	2.012		3.894		2.627		2.199
Bicycle LOS	B		D		B		B

Sequence

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



**Intersection Level Of Service Report
Intersection 5: 135th Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	58.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.870

Intersection Setup

Name	135th Ave			135th Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Entry Pocket Length [ft]	300.00	100.00	60.00	320.00	100.00	100.00	415.00	100.00	60.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	135th Ave			135th Ave			Highway 212			Highway 212		
	Base Volume Input [veh/h]	32	173	404	391	189	178	126	724	14	80	360
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 [%]	8.00	1.00	5.00	3.00	3.00	4.00	1.00	6.00	4.00	3.00	7.00	3.00
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	0	0	0	0
Total Hourly Volume [veh/h]	32	173	404	391	189	178	126	724	14	80	360	109
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
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	45	104	101	49	46	32	187	4	21	93	28
Total Analysis Volume [veh/h]	33	178	416	403	195	184	130	746	14	82	371	112
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	1			1			1			0		
v_di, Inbound Pedestrian Volume crossing m	1			0			1			1		
v_co, Outbound Pedestrian Volume crossing	1			0			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			1			0			3		

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	Fully actuated
Offset [s]	89.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	7	31	31	37	61	61	13	36	36	9	32	32
Amber [s]	3.5	4.0	4.0	3.5	4.0	4.0	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	0	8	8	0	10	10	0	8	8	0	7	7
Pedestrian Clearance [s]	0	22	22	0	25	25	0	18	18	0	14	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	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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.5	2.5	2.0	2.5	2.5	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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	35	35	41	65	65	17	41	41	13	37	37
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	4	6	6	4	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.3	3.0	3.0	2.3	3.0	3.0	2.3	4.5	4.5	2.3	4.5	4.5
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	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	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.50	4.50	4.00	4.50	4.00	5.40	5.40	4.00	5.40	5.40
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]	2.00	2.50	2.50	2.00	2.50	2.00	3.40	3.40	2.00	3.40	3.40
g_i, Effective Green Time [s]	3	32	32	32	61	11	41	41	8	37	37
g / C, Green / Cycle	0.02	0.25	0.25	0.24	0.47	0.09	0.31	0.31	0.06	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.02	0.09	0.27	0.23	0.22	0.07	0.22	0.01	0.05	0.14	0.14
s, saturation flow rate [veh/h]	1695	1885	1528	1767	1697	1795	3446	1559	1767	1795	1632
c, Capacity [veh/h]	42	466	378	429	790	155	1082	489	103	513	467
d1, Uniform Delay [s]	63.07	40.69	48.71	48.26	23.92	58.50	39.05	30.88	60.46	38.51	38.68
k, delay calibration	0.07	0.11	0.50	0.29	0.11	0.18	0.50	0.50	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]	17.90	0.52	76.54	20.98	0.45	17.25	3.60	0.11	12.96	3.28	3.79
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	0.79	0.38	1.10	0.94	0.48	0.84	0.69	0.03	0.80	0.49	0.50
d, Delay for Lane Group [s/veh]	80.97	41.21	125.25	69.24	24.37	75.75	42.66	30.98	73.41	41.79	42.48
Lane Group LOS	F	D	F	E	C	E	D	C	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.30	4.84	20.15	15.27	8.10	4.96	10.97	0.32	3.05	7.11	6.73
50th-Percentile Queue Length [ft/ln]	32.41	121.00	503.81	381.79	202.51	124.08	274.26	8.10	76.18	177.83	168.31
95th-Percentile Queue Length [veh/ln]	2.33	8.45	29.09	21.68	12.77	8.62	16.40	0.58	5.49	11.49	10.99
95th-Percentile Queue Length [ft/ln]	58.34	211.20	727.32	542.01	319.20	215.42	410.05	14.59	137.13	287.19	274.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	80.97	41.21	125.25	69.24	24.37	24.37	75.75	42.66	30.98	73.41	42.01	42.48
Movement LOS	F	D	F	E	C	C	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	99.06			47.49			47.31			46.66		
Approach LOS	F			D			D			D		
d_I, Intersection Delay [s/veh]	58.56											
Intersection LOS	E											
Intersection V/C	0.870											

Emissions

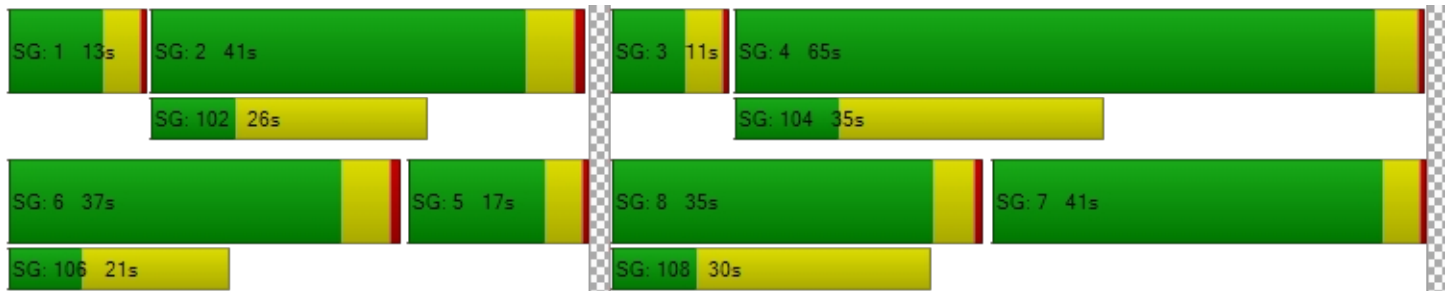
Vehicle Miles Traveled [mph]	6.46	34.83	81.40	49.92	46.95	85.71	491.85	9.23	28.95	88.14	82.39
Stops [stops/h]	35.90	134.03	558.04	422.88	224.30	137.43	607.55	8.98	84.38	196.98	186.42
Fuel consumption [US gal/h]	1.01	3.67	17.04	10.07	5.05	6.29	30.08	0.52	2.88	6.84	6.44
CO [g/h]	70.45	256.31	1190.76	703.85	353.10	439.77	2102.57	36.20	201.51	478.08	450.07
NOx [g/h]	13.71	49.87	231.68	136.94	68.70	85.56	409.08	7.04	39.21	93.02	87.57
VOC [g/h]	16.33	59.40	275.97	163.12	81.83	101.92	487.29	8.39	46.70	110.80	104.31

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0		11.0		14.0		12.0	
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	53.56		54.47		51.76		53.56	
I_p,int, Pedestrian LOS Score for Intersectio	2.372		2.348		2.709		2.732	
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]	469		931		548		486	
d_b, Bicycle Delay [s]	38.14		18.59		34.28		37.30	
I_b,int, Bicycle LOS Score for Intersection	2.594		2.850		2.294		2.026	
Bicycle LOS	B		C		B		B	

Sequence

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



**Intersection Level Of Service Report
Intersection 6: 142nd Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	13.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.573

Intersection Setup

Name	142nd Ave			142nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	100.00	100.00	20.00	100.00	100.00	100.00	225.00	100.00	165.00	220.00	100.00	70.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	142nd Ave			142nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	93	6	33	67	26	83	85	1341	159	11	423	11
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	0.00	20.00	3.00	9.00	2.00	1.00	6.00	2.00	0.00	7.00	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	0	0	0	0
Total Hourly Volume [veh/h]	93	6	33	67	26	83	85	1341	159	11	423	11
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
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	2	9	17	7	21	22	346	41	3	109	3
Total Analysis Volume [veh/h]	96	6	34	69	27	86	88	1382	164	11	436	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	2			0			0			2		
v_di, Inbound Pedestrian Volume crossing m	2			0			0			2		
v_co, Outbound Pedestrian Volume crossing	1			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			1			2		

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	Fully actuated
Offset [s]	118.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	8	8	8	4	4	4	5	2	2	1	6	6
Auxiliary Signal Groups												
Maximum Green [s]	35	35	35	34	34	34	6	76	76	6	76	76
Amber [s]	3.5	3.5	3.5	4.3	4.3	4.3	3.5	4.7	4.7	3.5	4.7	4.7
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.5	0.7	0.7
Walk [s]	7	7	7	0	0	0	0	8	8	0	7	7
Pedestrian Clearance [s]	26	26	26	0	0	0	0	26	26	0	18	18
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.8	2.8	2.8	2.0	3.4	3.4	2.0	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	20.0	6.0	6.0	20.0	6.0	6.0
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]	39	39	39	39	39	39	10	81	81	10	81	81
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	6	6	6	6	6	6	4	10	10	4	10	10
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.3	4.5	4.5	2.3	4.5	4.5
Minimum Recall		No			No		No	Yes		No	No	
Maximum Recall		No			No		No	No		No	Yes	
Pedestrian Recall		No			No		No	No		No	Yes	

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	C	R	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.80	4.70	5.40	5.40	4.70	5.40	5.40
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.80	0.00	3.40	3.40	0.00	3.40	3.40
g_i, Effective Green Time [s]	18	18	17	104	97	97	104	95	95
g / C, Green / Cycle	0.14	0.14	0.13	0.80	0.75	0.75	0.80	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.10	0.03	0.12	0.08	0.40	0.11	0.02	0.13	0.01
s, saturation flow rate [veh/h]	1032	1348	1530	1042	3446	1557	464	3418	1556
c, Capacity [veh/h]	171	189	244	800	2570	1161	330	2484	1131
d1, Uniform Delay [s]	50.89	49.27	55.05	5.03	7.01	4.68	10.92	5.56	4.89
k, delay calibration	0.08	0.08	0.08	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]	2.47	0.33	3.40	0.28	0.81	0.25	0.19	0.15	0.02
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	0.60	0.18	0.75	0.11	0.54	0.14	0.03	0.18	0.01
d, Delay for Lane Group [s/veh]	53.36	49.60	58.46	5.31	7.82	4.93	11.11	5.72	4.90
Lane Group LOS	D	D	E	A	A	A	B	A	A
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.16	1.00	6.09	0.47	7.52	1.23	0.07	1.79	0.08
50th-Percentile Queue Length [ft/ln]	79.05	25.00	152.14	11.71	187.98	30.70	1.65	44.82	2.05
95th-Percentile Queue Length [veh/ln]	5.69	1.80	10.13	0.84	12.02	2.21	0.12	3.23	0.15
95th-Percentile Queue Length [ft/ln]	142.30	45.00	253.29	21.07	300.41	55.27	2.96	80.68	3.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.36	53.36	49.60	58.46	58.46	58.46	5.31	7.82	4.93	11.11	5.72	4.90
Movement LOS	D	D	D	E	E	E	A	A	A	B	A	A
d_A, Approach Delay [s/veh]	52.42			58.46			7.39			5.83		
Approach LOS	D			E			A			A		
d_I, Intersection Delay [s/veh]	13.49											
Intersection LOS	B											
Intersection V/C	0.573											

Emissions

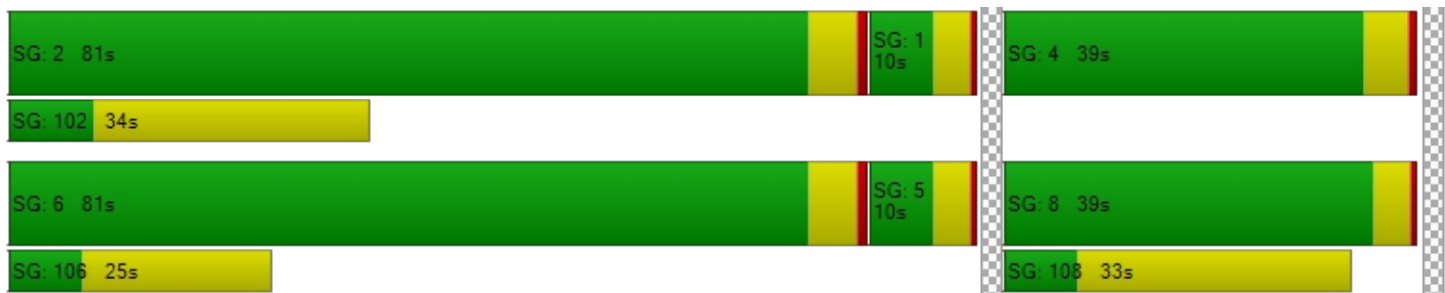
Vehicle Miles Traveled [mph]	12.53	4.18	24.70	29.42	462.07	54.83	5.28	209.29	5.28
Stops [stops/h]	87.57	27.69	168.52	12.97	416.45	34.01	1.82	99.29	2.27
Fuel consumption [US gal/h]	2.11	0.67	4.11	1.38	23.52	2.61	0.25	9.67	0.24
CO [g/h]	147.29	46.70	287.48	96.31	1644.17	182.43	17.64	676.05	16.84
NOx [g/h]	28.66	9.09	55.93	18.74	319.90	35.49	3.43	131.53	3.28
VOC [g/h]	34.14	10.82	66.63	22.32	381.05	42.28	4.09	156.68	3.90

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	53.56	54.47	0.00	54.47
I_p,int, Pedestrian LOS Score for Intersectio	2.082	1.987	0.000	2.884
Crosswalk LOS	B	A	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	538	526	1163	1163
d_b, Bicycle Delay [s]	34.71	35.30	11.39	11.39
I_b,int, Bicycle LOS Score for Intersection	1.784	1.860	2.908	1.937
Bicycle LOS	A	A	C	A

Sequence

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



**Intersection Level Of Service Report
Intersection 7: 152nd Avenue/OR 212**

Control Type:	Two-way stop	Delay (sec / veh):	335.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.215

Intersection Setup

Name	152nd Ave		Highway 212		Highway 212	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	220.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	152nd Ave		Highway 212		Highway 212	
Base Volume Input [veh/h]	59	211	462	993	206	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	2.00	5.00	4.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	211	462	993	206	71
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	55	120	259	54	18
Total Analysis Volume [veh/h]	61	220	481	1034	215	74
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.21	0.25	0.38	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	335.56	268.01	9.55	0.00	0.00	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh/ln]	17.30	17.30	1.80	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	432.45	432.45	44.92	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	282.68		3.03		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	40.30					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 8: OR 212/OR 224 (Rock Creek Junction)

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):	0.389

Intersection Setup

Name	Highway 224		Highway 212		Highway 212	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		⇐⇐		⇐⇐	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	1	0	1	1	0
Entry Pocket Length [ft]	155.00	70.00	100.00	125.00	230.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Highway 224		Highway 212		Highway 212	
Base Volume Input [veh/h]	46	7	375	677	69	231
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	5.00	6.00	6.00	5.00	7.00
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	0	0	0
Total Hourly Volume [veh/h]	46	7	375	677	69	231
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	2	99	178	18	61
Total Analysis Volume [veh/h]	48	7	395	713	73	243
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		4		0	

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	Fully actuated
Offset [s]	65.0
Offset Reference	End of Lagging Red
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Overlap	Protected	Permissive
Signal Group	8	0	2	2	1	6
Auxiliary Signal Groups				2,8		
Maximum Green [s]	67	0	29	29	19	52
Amber [s]	4.7	0.0	5.0	5.0	3.5	5.0
All red [s]	0.7	0.0	1.0	1.0	0.5	1.0
Walk [s]	8	0	7	7	7	0
Pedestrian Clearance [s]	16	0	14	14	10	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]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.4	0.0	4.0	4.0	2.0	4.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	6.0	6.0	20.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	72	0	35	35	23	58
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	8	0	10	10	4	10
Vehicle Extension [s]	2.5	0.0	4.8	4.8	3.5	4.8
Minimum Recall	No		Yes	Yes	No	Yes
Maximum Recall	No		No	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	L	R	C	R	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	5.40	5.40	6.00	6.00	4.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	4.00	0.00	2.00	4.00
g_i, Effective Green Time [s]	24	24	83	113	7	94
g / C, Green / Cycle	0.19	0.19	0.64	0.87	0.05	0.73
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.11	0.47	0.04	0.07
s, saturation flow rate [veh/h]	3375	1527	3446	1513	1738	3418
c, Capacity [veh/h]	630	285	2209	1316	93	2480
d1, Uniform Delay [s]	43.61	43.18	9.46	2.07	60.75	5.27
k, delay calibration	0.08	0.08	0.50	0.50	0.13	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	0.03	0.18	1.61	15.46	0.08
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	0.08	0.02	0.18	0.54	0.78	0.10
d, Delay for Lane Group [s/veh]	43.64	43.21	9.64	3.68	76.20	5.35
Lane Group LOS	D	D	A	A	E	A
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.65	0.19	2.30	3.03	2.79	0.94
50th-Percentile Queue Length [ft/ln]	16.21	4.71	57.48	75.63	69.64	23.60
95th-Percentile Queue Length [veh/ln]	1.17	0.34	4.14	5.45	5.01	1.70
95th-Percentile Queue Length [ft/ln]	29.18	8.48	103.46	136.14	125.35	42.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.64	43.21	9.64	3.68	76.20	5.35
Movement LOS	D	D	A	A	E	A
d_A, Approach Delay [s/veh]	43.59		5.80		21.72	
Approach LOS	D		A		C	
d_I, Intersection Delay [s/veh]	10.61					
Intersection LOS	B					
Intersection V/C	0.389					

Emissions

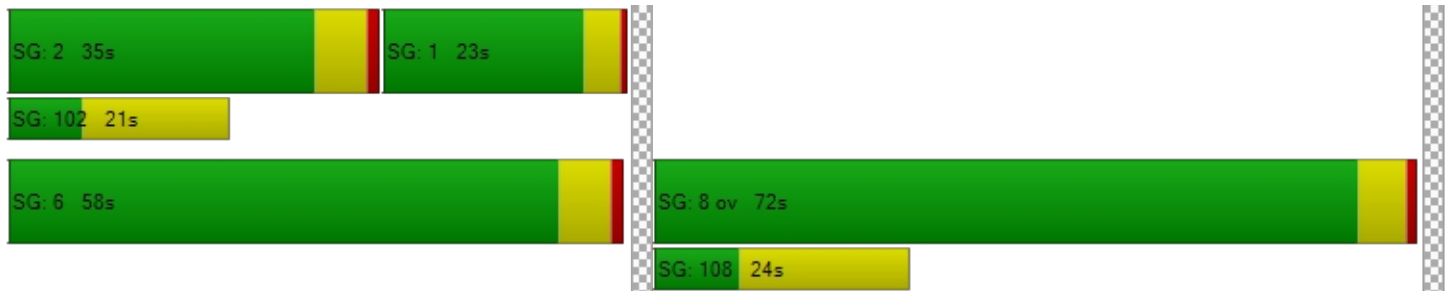
Vehicle Miles Traveled [mph]	15.70	2.29	57.35	103.52	4.65	15.47
Stops [stops/h]	35.91	5.22	127.34	83.78	77.14	52.29
Fuel consumption [US gal/h]	1.27	0.18	3.84	5.26	1.75	1.19
CO [g/h]	88.84	12.90	268.38	367.51	122.28	83.20
NOx [g/h]	17.29	2.51	52.22	71.50	23.79	16.19
VOC [g/h]	20.59	2.99	62.20	85.17	28.34	19.28

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	12.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	0.00	53.55
I_p,int, Pedestrian LOS Score for Intersectio	2.354	0.000	2.457
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]	1025	446	800
d_b, Bicycle Delay [s]	15.48	39.31	23.40
I_b,int, Bicycle LOS Score for Intersection	1.560	2.474	1.820
Bicycle LOS	A	B	A

Sequence

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



**Intersection Level Of Service Report
Intersection 9: 172nd Avenue/OR 212**

Control Type:	Signalized	Delay (sec / veh):	38.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	2	2	0	0	1	0	1
Entry Pocket Length [ft]	110.00	100.00	100.00	235.00	100.00	290.00	550.00	100.00	100.00	395.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	172nd Ave			172nd Ave			Highway 212			Highway 212		
Base Volume Input [veh/h]	32	68	16	207	77	626	1124	1170	75	15	885	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 [%]	10.00	3.00	4.00	1.00	5.00	5.00	5.00	9.00	2.00	0.00	6.00	9.00
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	313	0	0	75	0	0	48
Total Hourly Volume [veh/h]	32	68	0	207	77	313	1124	1170	0	15	885	48
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
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	18	0	55	20	83	299	311	0	4	235	13
Total Analysis Volume [veh/h]	34	72	0	220	82	333	1196	1245	0	16	941	51
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			2			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			2			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	133
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	9.9
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	8	8	8	4	4	5	5	2	2	1	6	6
Auxiliary Signal Groups						4,5						
Maximum Green [s]	35	35	35	34	34	46	46	76	76	5	36	36
Amber [s]	3.5	3.5	3.5	4.7	4.7	3.5	3.5	5.0	5.0	3.5	5.0	5.0
All red [s]	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.5	1.5	1.0	1.5	1.5
Walk [s]	9	9	9	9	9	0	0	7	7	0	8	8
Pedestrian Clearance [s]	22	22	22	21	21	0	0	11	11	0	20	20
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	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	4.2	4.2	2.5	2.5	4.5	4.5	2.5	4.5	4.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	20.0	6.0	6.0
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: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	30	30	30	30	30
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	4	4	10	10	4	10	10
Vehicle Extension [s]	2.5	2.5	2.5	2.5	2.5	2.3	2.3	5.4	5.4	2.3	5.4	5.4
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		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	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	129	129	129	129	129	129	129	129	129	129	129
L, Total Lost Time per Cycle [s]	5.00	5.00	6.20	6.20	4.50	4.50	6.50	6.50	4.50	6.50	6.50
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	0.00
l2, Clearance Lost Time [s]	3.00	3.00	4.20	4.20	0.00	2.50	4.50	4.50	2.50	4.50	4.50
g_i, Effective Green Time [s]	31	31	30	30	82	46	80	80	2	36	36
g / C, Green / Cycle	0.24	0.24	0.23	0.23	0.64	0.36	0.62	0.62	0.01	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.16	0.04	0.12	0.35	0.35	0.35	0.01	0.27	0.03
s, saturation flow rate [veh/h]	1221	1855	1339	1825	2741	3375	1765	1765	1810	3446	1500
c, Capacity [veh/h]	283	443	300	419	1740	1206	1100	1100	25	963	419
d1, Uniform Delay [s]	43.87	38.80	51.52	40.01	9.76	41.19	14.12	14.12	63.20	45.96	34.59
k, delay calibration	0.08	0.08	0.13	0.08	0.08	0.07	0.31	0.31	0.07	0.28	0.28
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]	0.14	0.13	4.01	0.17	0.04	7.72	1.32	1.32	16.40	16.93	0.34
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	0.12	0.16	0.73	0.20	0.19	0.99	0.57	0.57	0.65	0.98	0.12
d, Delay for Lane Group [s/veh]	44.01	38.93	55.53	40.18	9.80	48.92	15.43	15.43	79.60	62.90	34.92
Lane Group LOS	D	D	E	D	A	D	B	B	E	E	C
Critical Lane Group	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.93	1.84	7.28	2.14	1.94	19.93	10.60	10.60	0.64	17.09	1.25
50th-Percentile Queue Length [ft/ln]	23.21	45.97	181.88	53.44	48.42	498.28	265.11	265.11	15.88	427.21	31.21
95th-Percentile Queue Length [veh/ln]	1.67	3.31	11.70	3.85	3.49	27.25	15.95	15.95	1.14	23.87	2.25
95th-Percentile Queue Length [ft/ln]	41.77	82.74	292.47	96.20	87.15	681.33	398.63	398.63	28.58	596.70	56.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.01	38.93	38.93	55.53	40.18	9.80	48.92	15.43	15.43	79.60	62.90	34.92
Movement LOS	D	D	D	E	D	A	D	B	B	E	E	C
d_A, Approach Delay [s/veh]	40.56			29.57			31.84			61.75		
Approach LOS	D			C			C			E		
d_I, Intersection Delay [s/veh]	38.91											
Intersection LOS	D											
Intersection V/C	0.873											

Emissions

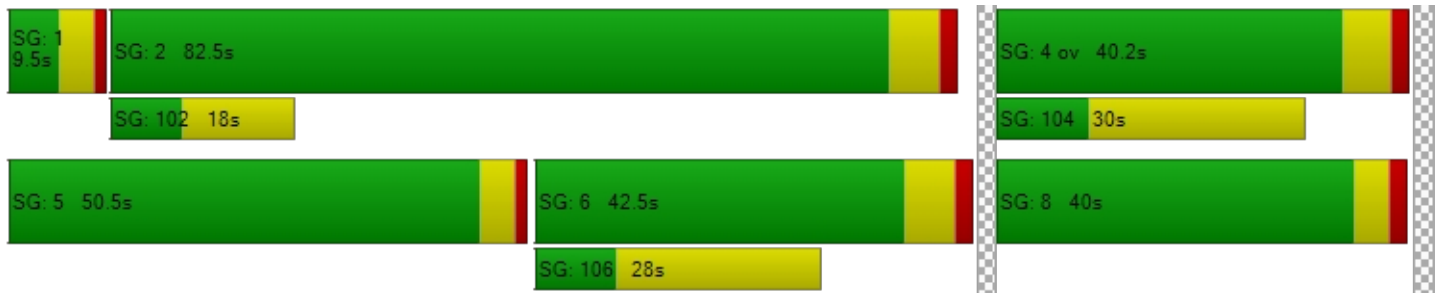
Vehicle Miles Traveled [mph]	4.00	8.47	28.62	10.67	43.31	140.88	73.33	73.33	7.49	440.65	23.88
Stops [stops/h]	25.94	51.38	203.30	59.74	108.24	1113.93	296.33	296.33	17.75	955.04	34.88
Fuel consumption [US gal/h]	0.61	1.20	4.79	1.44	3.05	23.86	6.61	6.61	0.67	35.46	1.54
CO [g/h]	42.81	84.08	334.62	100.62	212.87	1667.69	462.10	462.10	46.53	2478.59	107.53
NOx [g/h]	8.33	16.36	65.10	19.58	41.42	324.47	89.91	89.91	9.05	482.24	20.92
VOC [g/h]	9.92	19.49	77.55	23.32	49.33	386.50	107.10	107.10	10.78	574.44	24.92

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		12.0		13.0		0.0	
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	53.88		52.97		52.07		0.00	
I_p,int, Pedestrian LOS Score for Intersectio	2.076		3.291		3.277		0.000	
Crosswalk LOS	B		C		C		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	543		528		1180		559	
d_b, Bicycle Delay [s]	34.19		34.90		10.83		33.44	
I_b,int, Bicycle LOS Score for Intersection	1.761		3.124		3.635		2.431	
Bicycle LOS	A		C		D		B	

Sequence

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



Intersection Level Of Service Report
Intersection 10: 122nd Avenue/Jennifer Street

Control Type:	Two-way stop	Delay (sec / veh):	25.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+r			r+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	150.00	75.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	122nd Avenue			122nd Avenue			Jennifer Street			Jennifer Street		
Base Volume Input [veh/h]	0	0	0	1	0	81	184	278	0	0	282	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 [%]	0.00	50.00	0.00	12.00	0.00	13.00	12.00	5.00	0.00	0.00	4.00	5.00
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	0	0	1	0	81	184	278	0	0	282	1
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
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	0	0	22	49	75	0	0	76	0
Total Analysis Volume [veh/h]	0	0	0	1	0	87	198	299	0	0	303	1
Pedestrian Volume [ped/h]	1			0			1			0		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.12	0.16	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	28.56	26.39	9.84	25.34	22.71	10.78	8.58	0.00	0.00	7.83	0.00	0.00
Movement LOS	D	D	A	D	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.42	0.59	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.42	0.42	10.43	14.72	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	21.60			10.95			3.42			0.00		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	3.00											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 101: Sunrise Expy/122nd Avenue EB Ramps

Control Type:	Signalized	Delay (sec / veh):	13.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.802

Intersection Setup

Name	122nd Avenue		Sunrise WB		Sunrise WB	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶				↷	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		0.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No				No	
Crosswalk	No		No		Yes	

Volumes

Name	122nd Avenue		Sunrise WB		Sunrise WB	
Base Volume Input [veh/h]	444	0	0	0	607	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	0.00	0.00	0.00	0.00
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	0	0	0
Total Hourly Volume [veh/h]	444	0	0	0	607	0
Peak Hour Factor	0.9300	1.0000	1.0000	1.0000	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	119	0	0	0	163	0
Total Analysis Volume [veh/h]	477	0	0	0	653	0
Presence of On-Street Parking	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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	0	8	8
Auxiliary Signal Groups						
Maximum Green [s]	38	0	0	0	74	74
Amber [s]	3.5	0.0	0.0	0.0	3.5	3.5
All red [s]	1.0	0.0	0.0	0.0	1.0	1.0
Walk [s]	7	0	0	0	7	7
Pedestrian Clearance [s]	11	0	0	0	11	11
Delayed Vehicle Green [s]	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	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	0.0	0.0	0.0	2.5	2.5
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	0.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	0	0	0	30	30
Lead / Lag	Lag	-	-	-	Lag	-
Minimum Green [s]	5	0	0	0	5	5
Vehicle Extension [s]	3.0	0.0	0.0	0.0	3.0	3.0
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, Cycle Length [s]	40	40
L, Total Lost Time per Cycle [s]	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50
g_i, Effective Green Time [s]	14	17
g / C, Green / Cycle	0.34	0.43
(v / s)_i Volume / Saturation Flow Rate	0.28	0.36
s, saturation flow rate [veh/h]	1709	1810
c, Capacity [veh/h]	590	774
d1, Uniform Delay [s]	11.79	10.16
k, delay calibration	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00
d2, Incremental Delay [s]	2.69	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	0.81	0.84
d, Delay for Lane Group [s/veh]	14.48	12.77
Lane Group LOS	B	B
Critical Lane Group	Yes	Yes
50th-Percentile Queue Length [veh/ln]	3.29	4.04
50th-Percentile Queue Length [ft/ln]	82.25	100.91
95th-Percentile Queue Length [veh/ln]	5.92	7.27
95th-Percentile Queue Length [ft/ln]	148.05	181.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.48	0.00	0.00	0.00	12.77	12.77
Movement LOS	B				B	B
d_A, Approach Delay [s/veh]	14.48		0.00		12.77	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	13.49					
Intersection LOS	B					
Intersection V/C	0.802					

Emissions

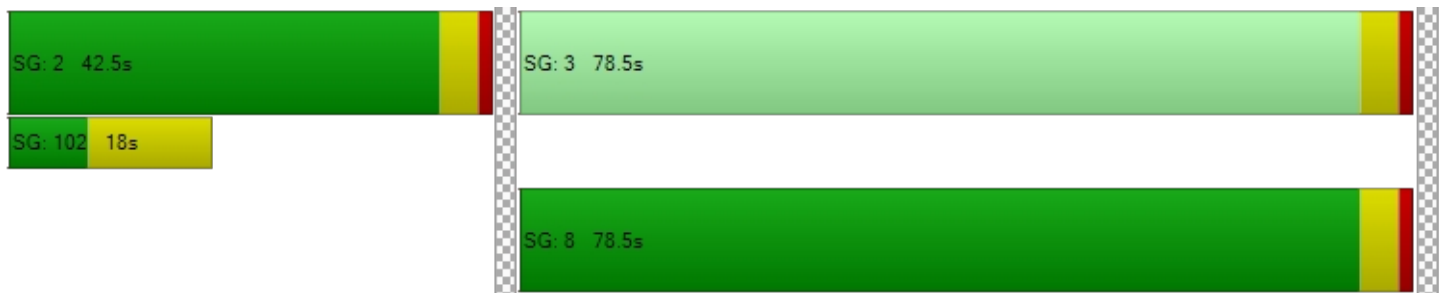
Vehicle Miles Traveled [mph]	39.74		86.54
Stops [stops/h]	299.77		367.77
Fuel consumption [US gal/h]	4.70		7.29
CO [g/h]	328.39		509.71
NOx [g/h]	63.89		99.17
VOC [g/h]	76.11		118.13

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	10.29
I_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	2.011
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1924	0	3746
d_b, Bicycle Delay [s]	0.03	19.76	15.05
I_b,int, Bicycle LOS Score for Intersection	1.560	4.132	2.637
Bicycle LOS	A	D	B

Sequence

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



Intersection Level Of Service Report
Intersection 102: Sunrise Expy/122nd Avenue WB Ramps

Control Type:	Signalized	Delay (sec / veh):	26.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.918

Intersection Setup

Name	122nd Avenue			122nd Avenue			Sunrise EB			Sunrise EB		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑ ↗			↑			↑ + ↗					
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			0.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	Yes			No			Yes			No		

Volumes

Name	122nd Avenue			122nd Avenue			Sunrise EB			Sunrise EB		
Base Volume Input [veh/h]	0	444	830	0	607	0	0	0	777	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 [%]	0.00	5.00	4.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	0	444	830	0	607	0	0	0	777	0	0	0
Peak Hour Factor	1.0000	0.9300	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	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	119	223	0	163	0	0	0	209	0	0	0
Total Analysis Volume [veh/h]	0	477	892	0	653	0	0	0	835	0	0	0
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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
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	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	2	2	6	6	0	4	4	4	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	73	73	73	73	0	39	39	39	0	0	0
Amber [s]	0.0	3.5	3.5	3.5	3.5	0.0	3.5	3.5	3.5	0.0	0.0	0.0
All red [s]	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	0.0	0.0	0.0
Walk [s]	0	7	7	7	7	0	7	7	7	0	0	0
Pedestrian Clearance [s]	0	11	11	11	11	0	11	11	11	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		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.5	2.5	2.5	2.5	0.0	2.5	2.5	2.5	0.0	0.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	6.0	6.0	6.0	0.0	6.0	6.0	6.0	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: Free Running (No Pattern)

Split [s]	0	30	30	30	30	0	30	30	30	0	0	0
Lead / Lag	-	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	0	5	5	5	5	0	5	5	5	0	0	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		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	C	C	R	
C, Cycle Length [s]	96	96	96	96	96	
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	
g_i, Effective Green Time [s]	58	58	58	29	29	
g / C, Green / Cycle	0.60	0.60	0.60	0.30	0.30	
(v / s)_i Volume / Saturation Flow Rate	0.26	0.57	0.34	0.26	0.27	
s, saturation flow rate [veh/h]	1825	1564	1900	1615	1538	
c, Capacity [veh/h]	1099	942	1182	492	468	
d1, Uniform Delay [s]	10.34	17.78	11.64	31.51	32.07	
k, delay calibration	0.11	0.29	0.11	0.19	0.21	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.27	12.78	0.41	7.01	10.89	
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	0.43	0.95	0.55	0.85	0.89	
d, Delay for Lane Group [s/veh]	10.61	30.56	12.04	38.52	42.96	
Lane Group LOS	B	C	B	D	D	
Critical Lane Group	No	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	5.10	19.48	7.87	9.83	10.44	
50th-Percentile Queue Length [ft/ln]	127.57	487.10	196.68	245.71	261.11	
95th-Percentile Queue Length [veh/ln]	8.81	26.72	12.47	14.97	15.74	
95th-Percentile Queue Length [ft/ln]	220.19	668.07	311.68	374.25	393.62	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	10.61	30.56	12.04	12.04	0.00	38.52	38.52	40.74	0.00	0.00	0.00
Movement LOS		B	C	B	B		D	D	D			
d_A, Approach Delay [s/veh]	23.61		12.04			40.74			0.00			
Approach LOS	C		B			D			A			
d_I, Intersection Delay [s/veh]	25.97											
Intersection LOS	C											
Intersection V/C	0.918											

Emissions

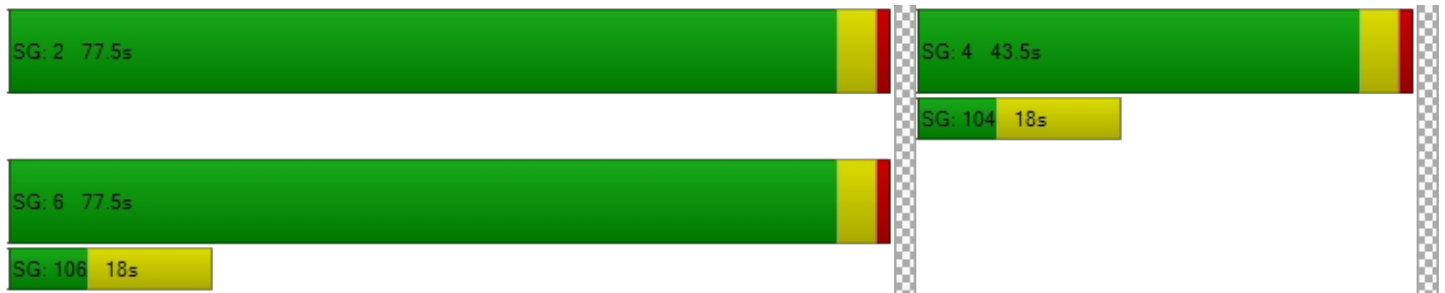
Vehicle Miles Traveled [mph]	110.14	205.96	54.40	49.97	49.97	
Stops [stops/h]	190.42	727.09	293.59	366.78	389.76	
Fuel consumption [US gal/h]	6.62	18.04	5.46	7.36	7.86	
CO [g/h]	462.46	1261.20	381.79	514.20	549.41	
NOx [g/h]	89.98	245.38	74.28	100.04	106.89	
VOC [g/h]	107.18	292.29	88.48	119.17	127.33	

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.86	0.00	37.86	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.831	0.000	2.125	0.000
Crosswalk LOS	C	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1513	1513	809	0
d_b, Bicycle Delay [s]	2.85	2.85	17.12	48.23
I_b,int, Bicycle LOS Score for Intersection	3.818	2.637	2.937	4.132
Bicycle LOS	D	B	C	D

Sequence





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



**Intersection Level Of Service Report
Intersection 107: Sunrise Expy/OR 224**

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):	0.831

Intersection Setup

Name	Rock Creek Blvd			Rock Creek Blvd			Sunrise			Sunrise		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	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 [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	Rock Creek Blvd			Rock Creek Blvd			Sunrise			Sunrise		
Base Volume Input [veh/h]	618	355	269	26	302	89	50	0	589	110	0	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 [%]	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	6.00	5.00	0.00	0.00
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	0	0	0	0
Total Hourly Volume [veh/h]	618	355	269	26	302	89	50	0	589	110	0	16
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500
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]	163	93	71	7	79	23	13	0	155	29	0	4
Total Analysis Volume [veh/h]	651	374	283	27	318	94	53	0	620	116	0	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	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			0			4			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	2	2	1	6	3	3	0	3	7	0	2
Auxiliary Signal Groups			2,7			3,6						
Maximum Green [s]	25	39	39	5	20	31	31	0	31	31	0	39
Amber [s]	4.7	4.7	4.7	4.7	4.7	3.5	3.5	0.0	3.5	3.5	0.0	4.7
All red [s]	0.7	0.7	0.7	0.7	0.7	0.5	0.5	0.0	0.5	0.5	0.0	0.7
Walk [s]	0	7	7	0	7	0	0	0	0	0	0	7
Pedestrian Clearance [s]	0	11	11	0	11	0	0	0	0	0	0	11
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	2.0	2.0	0.0	2.0	2.0	0.0	2.0
I2, Clearance Lost Time [s]	3.4	3.4	3.4	3.4	3.4	2.0	2.0	0.0	2.0	2.0	0.0	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	20.0	6.0	6.0	20.0	0.0	20.0	20.0	0.0	20.0
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: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30	30	0	30	30	0	30
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	5	5	5	5	5	5	0	5	5	0	5
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0
Minimum Recall	No	Yes	Yes	No	Yes	No	No			No		
Maximum Recall	No	No	No	No	No	No	No			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	R	L	C	R	L	R	L	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	5.40	5.40	4.00	5.40	5.40	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.40	3.40	0.00	3.40	3.40	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	24	59	2	9	44	30	30	30	30
g / C, Green / Cycle	0.24	0.33	0.84	0.03	0.12	0.63	0.43	0.43	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.19	0.10	0.18	0.01	0.09	0.06	0.02	0.41	0.08	0.01
s, saturation flow rate [veh/h]	3375	3618	1542	3514	3618	1615	2754	1517	1523	1615
c, Capacity [veh/h]	806	1210	1291	103	452	1014	1203	647	711	689
d1, Uniform Delay [s]	25.32	17.43	1.14	33.49	29.61	5.19	12.95	19.44	13.75	11.73
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.40	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
d2, Incremental Delay [s]	1.98	0.14	0.08	1.33	2.01	0.04	0.01	23.11	0.11	0.01
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	0.81	0.31	0.22	0.26	0.70	0.09	0.04	0.96	0.16	0.02
d, Delay for Lane Group [s/veh]	27.30	17.57	1.23	34.82	31.62	5.22	12.97	42.55	13.86	11.75
Lane Group LOS	C	B	A	C	C	A	B	D	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.06	2.14	0.13	0.24	2.61	0.45	0.24	12.81	0.57	0.15
50th-Percentile Queue Length [ft/ln]	126.55	53.44	3.36	5.95	65.15	11.24	6.04	320.17	14.16	3.65
95th-Percentile Queue Length [veh/ln]	8.75	3.85	0.24	0.43	4.69	0.81	0.44	18.68	1.02	0.26
95th-Percentile Queue Length [ft/ln]	218.79	96.19	6.04	10.71	117.27	20.23	10.88	466.90	25.48	6.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.30	17.57	1.23	34.82	31.62	5.22	12.97	0.00	42.55	13.86	0.00	11.75
Movement LOS	C	B	A	C	C	A	B		D	B		B
d_A, Approach Delay [s/veh]	18.88			26.16			40.22			13.59		
Approach LOS	B			C			D			B		
d_I, Intersection Delay [s/veh]	25.48											
Intersection LOS	C											
Intersection V/C	0.831											

Emissions

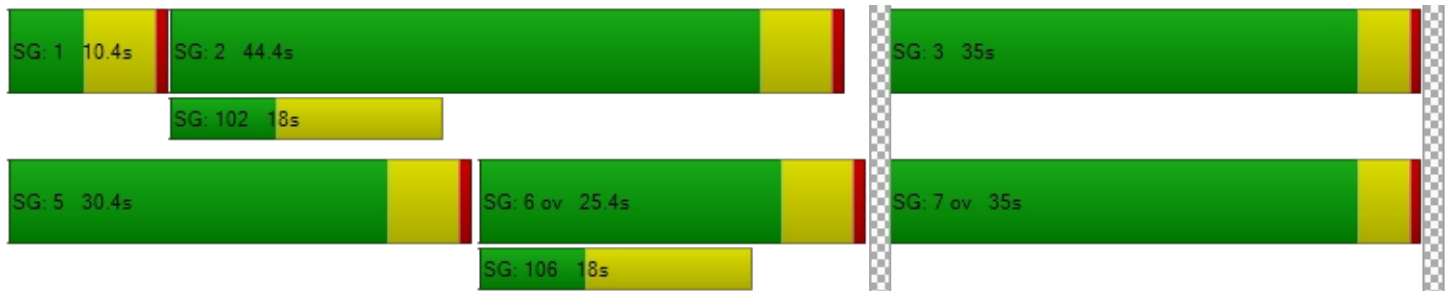
Vehicle Miles Traveled [mph]	49.30	28.32	21.43	2.03	23.96	7.08	5.67	66.33	12.79	1.87
Stops [stops/h]	517.77	218.65	6.86	24.35	266.57	22.99	24.72	655.00	57.93	7.46
Fuel consumption [US gal/h]	8.51	3.71	0.99	0.41	4.51	0.52	0.51	11.72	1.17	0.16
CO [g/h]	594.65	259.42	69.26	28.63	314.91	36.25	35.64	819.07	82.03	11.11
NOx [g/h]	115.70	50.47	13.47	5.57	61.27	7.05	6.93	159.36	15.96	2.16
VOC [g/h]	137.82	60.12	16.05	6.64	72.98	8.40	8.26	189.83	19.01	2.58

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			25.05			25.05		
I_p,int, Pedestrian LOS Score for Intersectio	0.000			0.000			2.563			2.373		
Crosswalk LOS	F			F			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1108			568			881			881		
d_b, Bicycle Delay [s]	7.01			18.04			11.04			11.02		
I_b,int, Bicycle LOS Score for Intersection	2.639			1.922			1.560			1.560		
Bicycle LOS	B			A			A			A		

Sequence

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



Intersection Level Of Service Report
Intersection 108: Sunrise Expy/OR 224 Jughandle

Control Type:	Signalized	Delay (sec / veh):	11.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.644

Intersection Setup

Name	Rock Creek Blvd		Rock Creek Blvd		Highway 212	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	⇐		⇐		⇐⇐⇐⇐⇐	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

Volumes

Name	Rock Creek Blvd		Rock Creek Blvd		Highway 212	
Base Volume Input [veh/h]	45	852	966	35	390	518
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	0.00	0.00	0.00	0.00	6.00
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	0	0	0
Total Hourly Volume [veh/h]	45	852	966	35	390	518
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	224	254	9	103	136
Total Analysis Volume [veh/h]	47	897	1017	37	411	545
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		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		4	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	<i>Free Running</i>
Actuation Type	<i>Fully actuated</i>
Offset [s]	12.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						4,5
Maximum Green [s]	8	57	45	45	23	23
Amber [s]	3.5	4.7	4.7	4.7	4.7	4.7
All red [s]	0.5	0.7	0.7	0.7	0.7	0.7
Walk [s]	0	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	11	11	11
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]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	3.4	3.4	3.4	3.4	3.4
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	6.0	6.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	30	30	30	30	30	30
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	5	5	5	5	5	5
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	No	Yes	Yes		No	No
Maximum Recall	No	No	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	L	C	C	R	L	R
C, Cycle Length [s]	49	49	49	49	49	49
L, Total Lost Time per Cycle [s]	4.00	5.40	5.40	5.40	5.40	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	3.40	3.40	3.40	3.40	0.00
g_i, Effective Green Time [s]	4	26	18	18	12	22
g / C, Green / Cycle	0.09	0.53	0.37	0.37	0.25	0.44
(v / s)_i Volume / Saturation Flow Rate	0.03	0.25	0.28	0.02	0.12	0.20
s, saturation flow rate [veh/h]	1738	3618	3618	1615	3514	2678
c, Capacity [veh/h]	150	1931	1325	592	870	1185
d1, Uniform Delay [s]	21.18	7.14	13.80	10.15	15.84	9.57
k, delay calibration	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
d2, Incremental Delay [s]	1.17	0.17	0.96	0.04	0.40	0.28
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	0.31	0.46	0.77	0.06	0.47	0.46
d, Delay for Lane Group [s/veh]	22.35	7.31	14.76	10.20	16.24	9.84
Lane Group LOS	C	A	B	B	B	A
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.51	2.14	4.28	0.23	1.77	1.66
50th-Percentile Queue Length [ft/ln]	12.85	53.42	106.91	5.67	44.37	41.51
95th-Percentile Queue Length [veh/ln]	0.93	3.85	7.67	0.41	3.19	2.99
95th-Percentile Queue Length [ft/ln]	23.13	96.16	191.70	10.20	79.87	74.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.35	7.31	14.76	10.20	16.24	9.84
Movement LOS	C	A	B	B	B	A
d_A, Approach Delay [s/veh]	8.06		14.60		12.59	
Approach LOS	A		B		B	
d_I, Intersection Delay [s/veh]	11.86					
Intersection LOS	B					
Intersection V/C	0.644					

Emissions

Vehicle Miles Traveled [mph]	3.42	65.22	77.02	2.80	37.79	50.11
Stops [stops/h]	37.54	312.13	624.66	16.56	259.25	242.54
Fuel consumption [US gal/h]	0.56	5.74	9.68	0.28	4.35	4.49
CO [g/h]	39.27	401.51	676.39	19.82	303.80	314.19
NOx [g/h]	7.64	78.12	131.60	3.86	59.11	61.13
VOC [g/h]	9.10	93.05	156.76	4.59	70.41	72.82

Other Modes

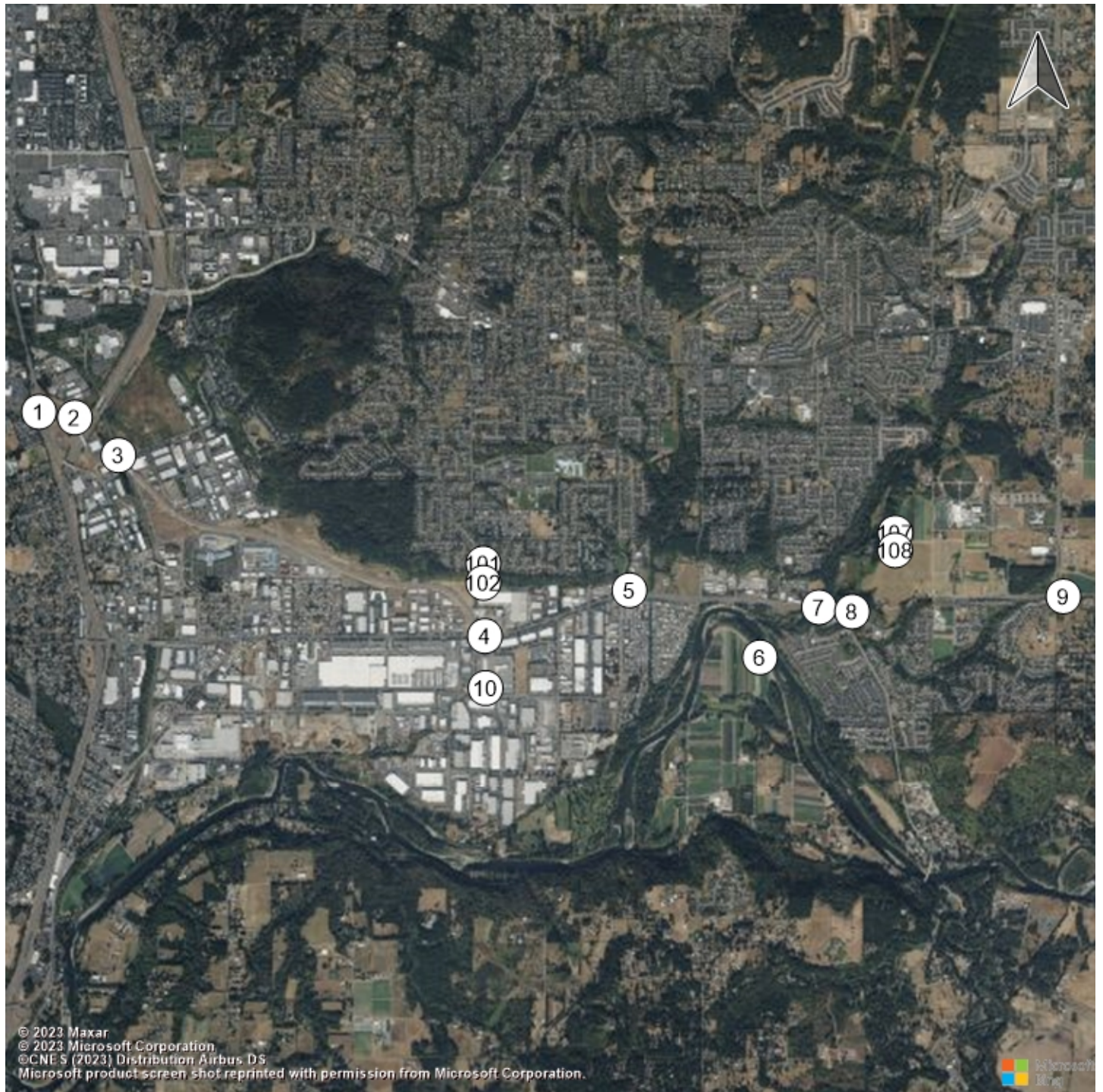
g_Walk,mi, Effective Walk Time [s]	0.0		0.0		11.0	
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	0.00		0.00		14.87	
I_p,int, Pedestrian LOS Score for Intersectio	0.000		0.000		2.468	
Crosswalk LOS	F		F		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	2313		1826		933	
d_b, Bicycle Delay [s]	0.60		0.19		7.03	
I_b,int, Bicycle LOS Score for Intersection	2.338		2.429		1.560	
Bicycle LOS	B		B		A	

Sequence

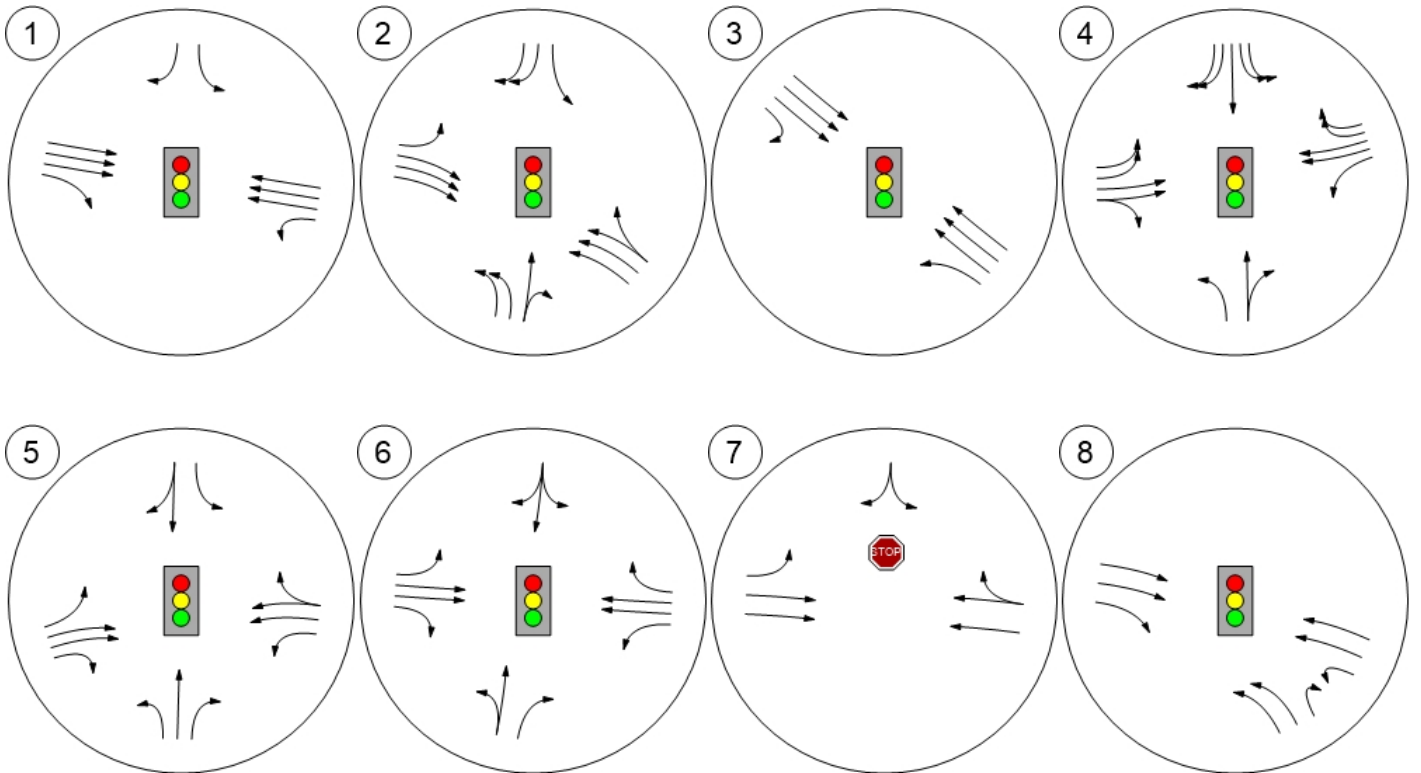
Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Study Intersections



Lane Configuration and Traffic Control



Lane Configuration and Traffic Control

