Gambell Street Redevelopment Plan: Preferred Alternative and Analysis

Gambell Street Redevelopment and Implementation Plan

Date:	June 10, 2013	Project #:13489
To:	Paul Fuhs, Fairview Business Association	
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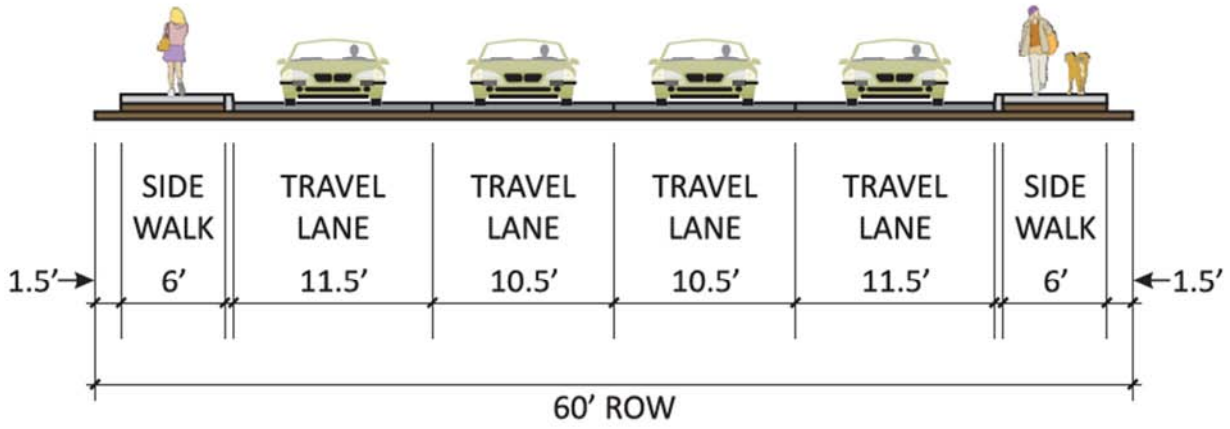
cc:	Project Management Team (PMT)	

This memorandum analyzes the impacts of converting Gambell Street from four to three lanes between 3rd and 15th Avenues.

BACKGROUND

Gambell Street has a 60' right-of-way (ROW) that is constrained by businesses and parking lots to both the east and west. The existing cross-section is shown in Exhibit 1.

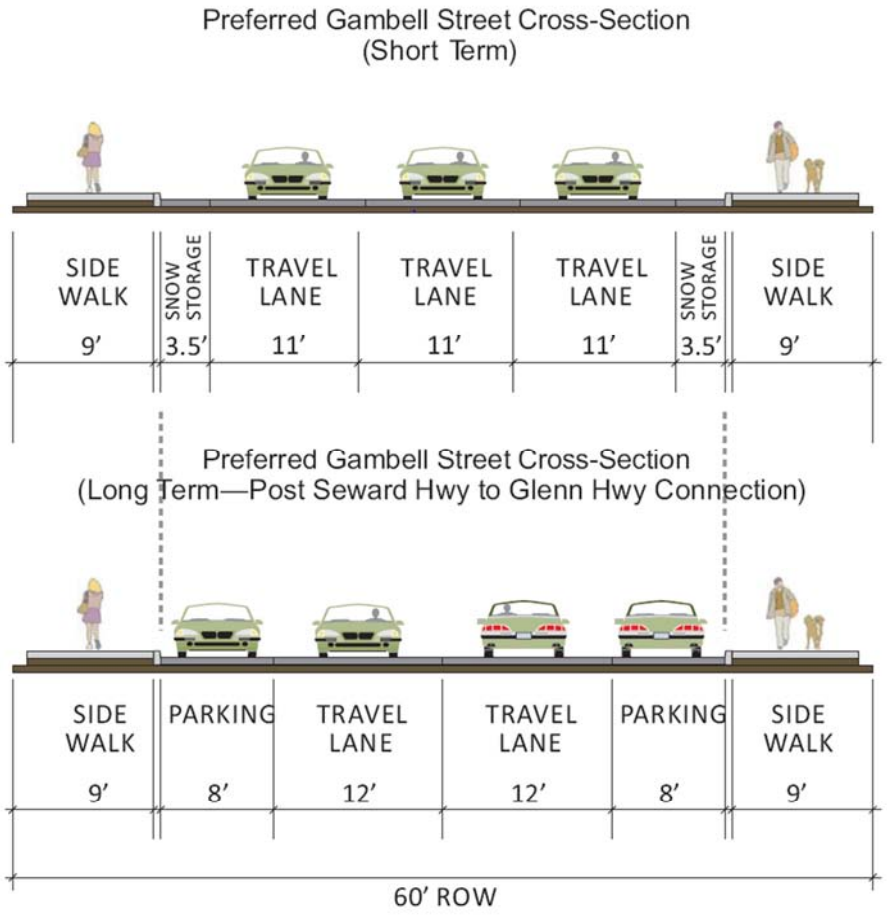
Exhibit 1: Existing Cross-Section



As seen in the exhibit, there is currently no allowance made for snow storage and little separation between pedestrians and vehicles. In order to improve the streetscape of the roadway, the Gambell Street Redevelopment and Implementation Plan has assessed other potential cross-sections. Based on

extensive public input through a three-day project Charette and focused stakeholder meetings, the cross-section shown in Exhibit 2 was preferred for the corridor.

Exhibit 2: Preferred Streetscape Cross-Section Alternative



Advantages of the preferred cross-section include:

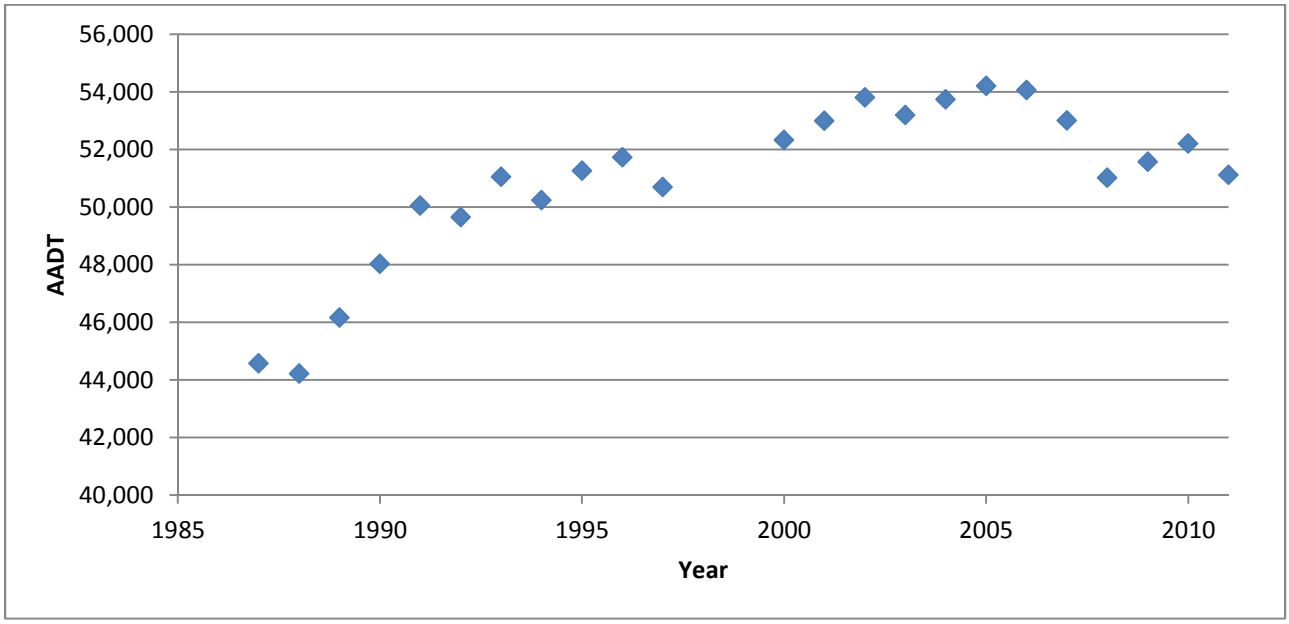
- Provides snow storage in 3.5 foot shoulders and the portion of sidewalks closest to the curb allowing adequate pedestrian connectivity and utilization of all three vehicular travel lanes during winter time conditions versus the 3 out of 4 currently utilized due to the lack of snow storage;
- Maintains long-term flexibility (i.e., conversion to a two-way street with on-street parking as part of the Seward Highway to Glenn Highway Connection project);
- Changes the pedestrian and vehicular environment to better match the needs of the business district, and allows additional aesthetic enhancements to occur along Gambell Street; and
- Provides sufficient space for pedestrians year round, addresses ADA deficiencies, eliminates splash conflicts with outside vehicular lanes, and reduces crossing distances and exposure for pedestrians, bicycles, and vehicles.

In order to ensure that a three-lane cross section also provides for adequate vehicular capacity on the corridor, an analysis was performed to assess the impacts on vehicular operations. The results are discussed in the following sections.

INTERSECTION OPERATIONS

The operations at the signalized and unsignalized study intersections on Gambell Street were assessed assuming a three-lane cross-section (see Appendix A for illustrations of this preferred lane geometry). A variety of data was utilized for the operations analysis, including existing traffic counts at several intersections on the corridor (at 4th, 6th,and 9th), as well as turning movement counts conducted during the PM peak hour on a typical mid-week day in early May 2013. Volumes were projected for 2035 based on an assessment of historical growth on the corridor and the 2035 Metropolitan Transportation Plan (MTP) model projections. Based on historical traffic volumes taken from the permanent traffic recorder located at Ingra Street and Gambell Street near Chester Creek (shown in Exhibit 3), traffic volumes grew about 0.6% annually between 1987 and 2011 . It should be noted that recent system improvements (e.g., C Street and Lake Otis Improvements) have actually resulted in an interim drop in traffic on the corridor. This trend will reverse in the future as those new improvements begin to approach capacity and motorist redistribute back onto the corridor with continue regional and local population and employment growth. The 2035 "no build" MTP model, which assumes no changes to the transportation network, shows a growth rate of approximately 1% per year over the corridor. Therefore, an annual growth rate of 1% was used to develop future traffic volumes.

Exhibit 3: Historical AADT data at Gambell St/Ingra St/15th ***[****Error! Reference source not found.****]***



The existing and future traffic volumes and operations are compared in Figures 1 and 2, respectively. The current cycle length (60 seconds) was not adjusted for existing operations. For the future scenario, the cycle length was extended (to 120 seconds). As seen in the figures, converting Gambell Street from four to three lanes has negligible impacts on operations, except at Gambell Street/15th Avenue. At this intersection, operations degrade to a LOS E during existing conditions and LOS F under future 2035 conditions with the elimination of one of the through lanes without the introduction of the Seward Highway to Glenn Highway Connection. Table 1 shows several scenarios for potential improvements at the Gambell Street/15th Avenue intersection.

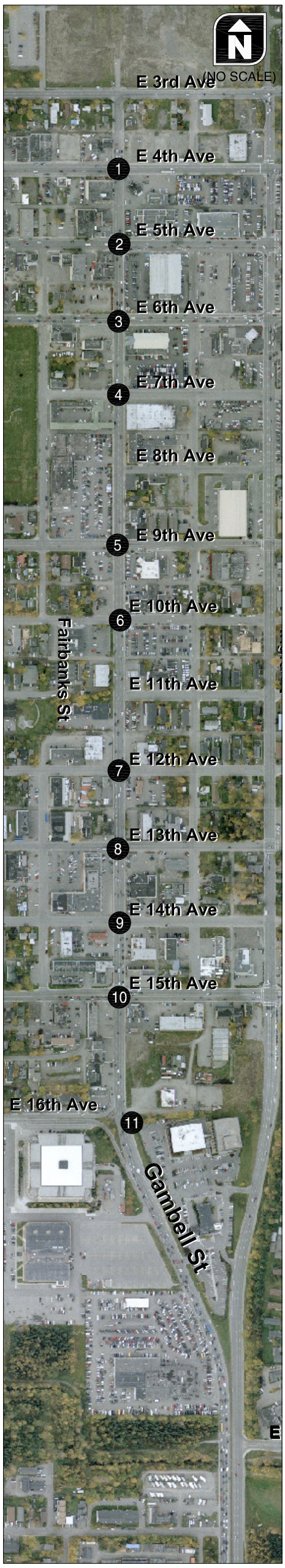
Table 1: Intersection Operations at Gambell Street/15th Avenue under 3-lane configuration

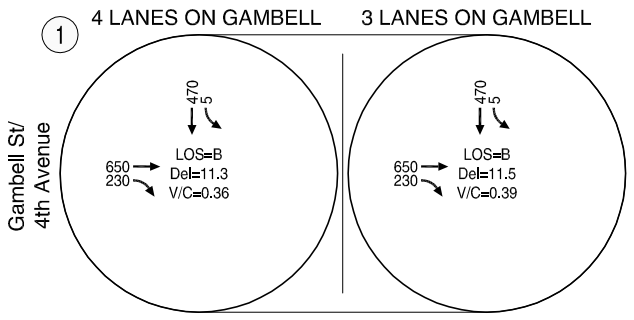
	Existing PM Peak Hour		2035 PM Peak Hour	
	LOS	v/c	LOS	v/c
4-Lane Section (Existing)	C	0.83	D	0.98
3-Lane Section	E	0.97	F	1.10
3-Lane Section with Southbound Left-Turn Lane	C	0.88	D	1.02
3-Lane Section with Southbound Left-Turn Lane and Dual Westbound Lefts	C	0.83	D	0.90

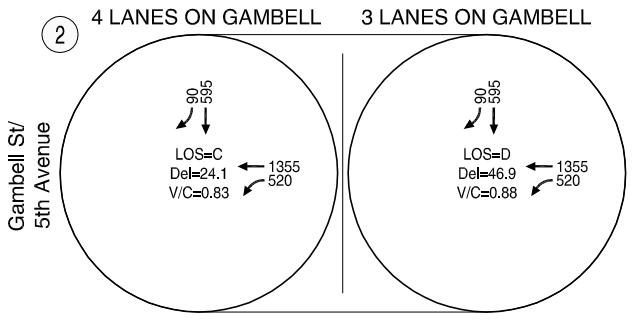
As seen in Table 1, operations at Gambell Street/15th Avenue can be mitigated with the addition of a southbound left-turn lane. Adding a second westbound left-turn lane further improves intersection operations. Therefore, with a three-lane section and the addition of an exclusive southbound left-turn lane at 15th Avenue, all intersections are projected to operate within standards under both existing and future conditions. A concept sketch of the Gambell Street/15th Avenue intersection with an exclusive left-turn lane is provided in Figure 3. Analysis sheets for all scenarios are provided in Appendix B.

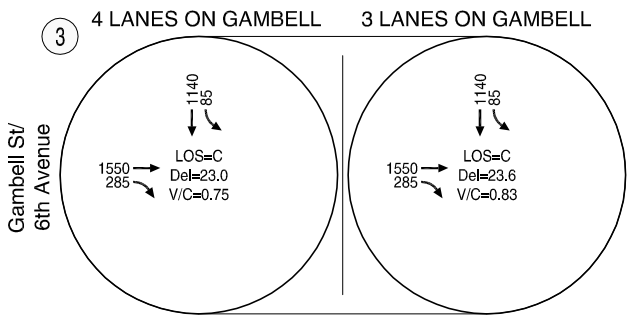
ROADWAY SPEEDS

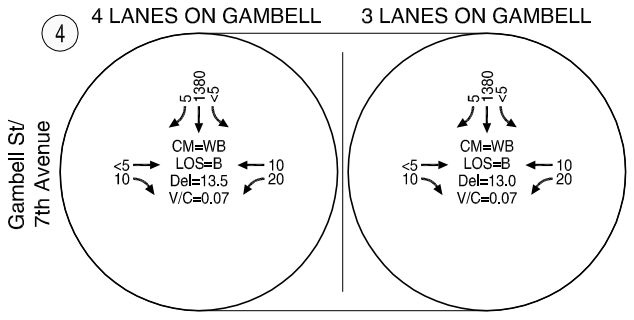
The posted speed limit on Gambell Street is 35 miles per hour. Based on speed data collected on the corridor during May 2013, existing 85th percentile speeds are generally between 30 and 35 miles per hour. The proposed cross-section eliminates a lane which will increase the volume of vehicles using each lane and therefore may slightly slow speeds. However, the cross-section also provides for wider lanes and more clearance space on both sides of the roadway. Therefore, speeds are not anticipated to change significantly with the proposed cross-section.

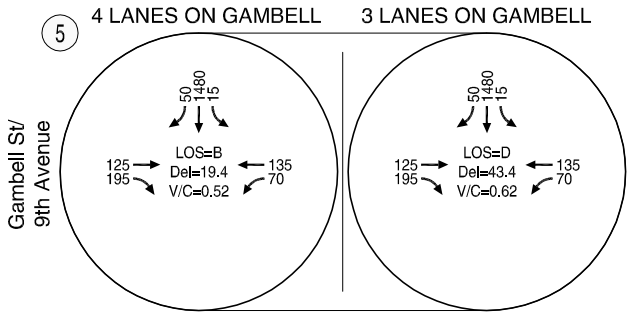


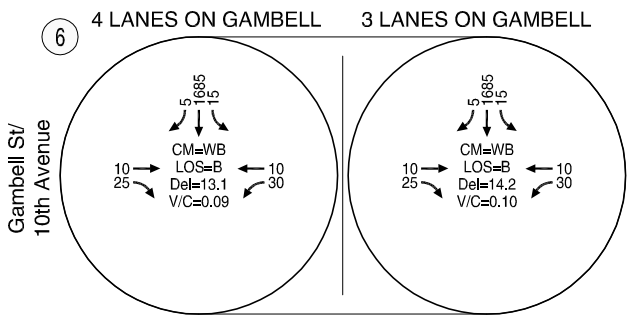


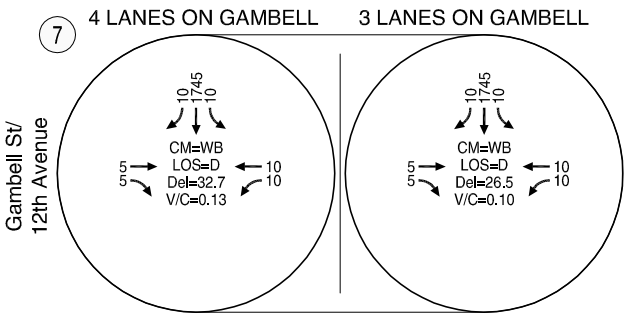


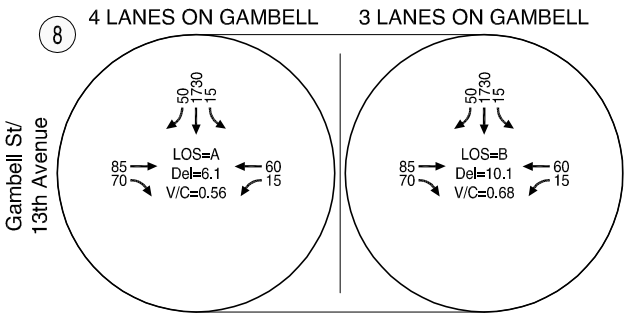


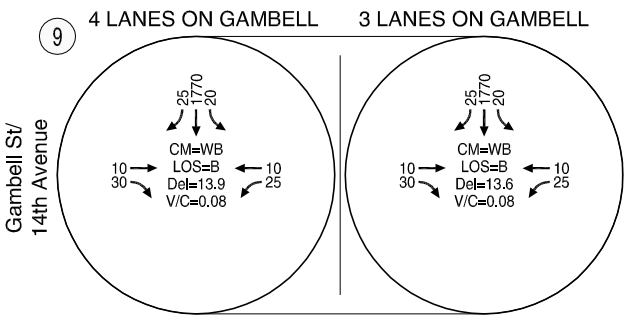


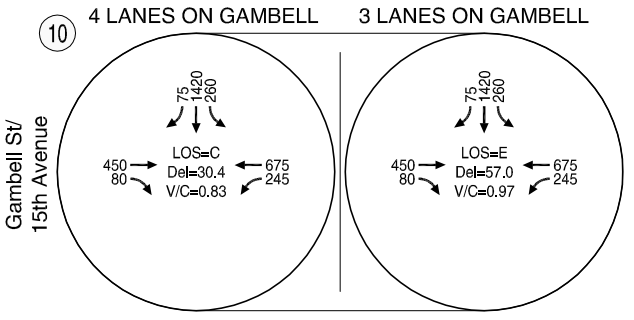


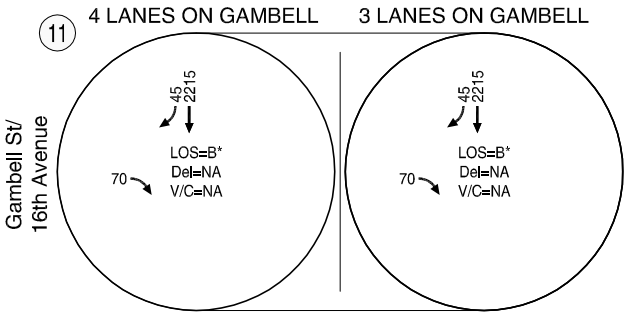












Legend

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/CRITICAL MOVEMENT CONTROL DELAY (UNSIGNALIZED)
V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
* ANALYSIS BASED ON 2010 MERGE METHODOLOGY

Existing Traffic Operations
Weekday PM Peak Hour
4 Lane versus 3 Lane Cross-Section

Source: Municipality of Anchorage and Traffic Counts Collected May 2013

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Figure 1

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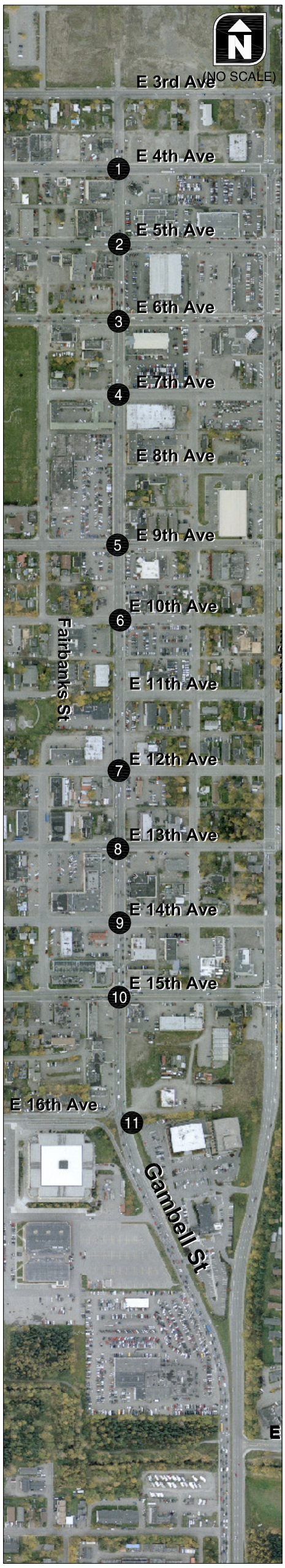

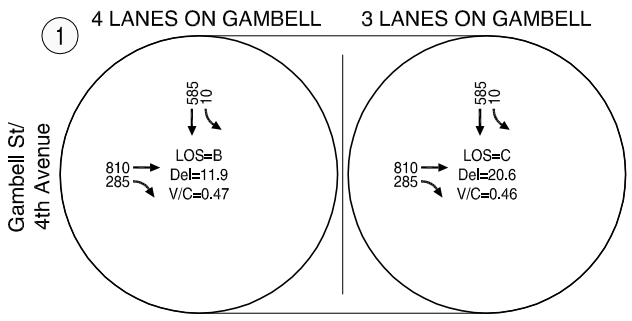

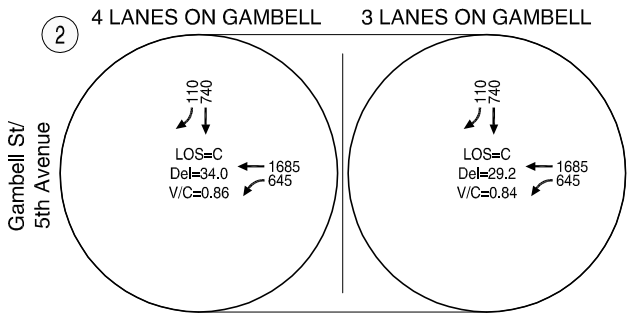

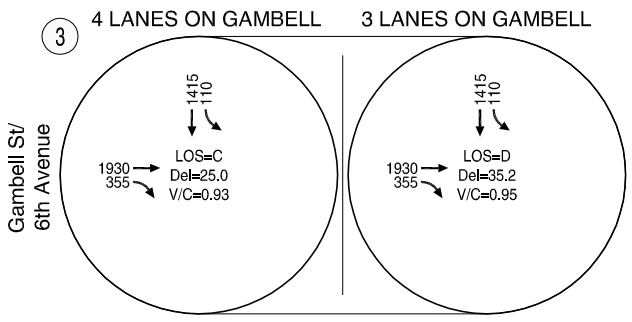

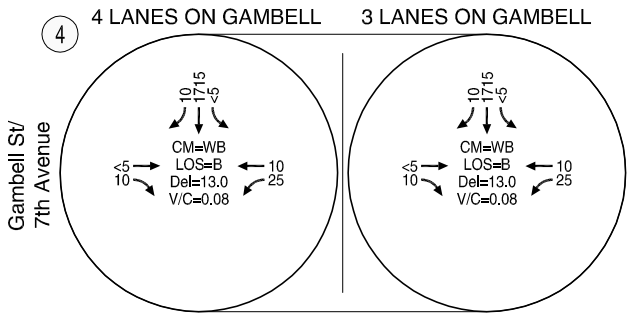

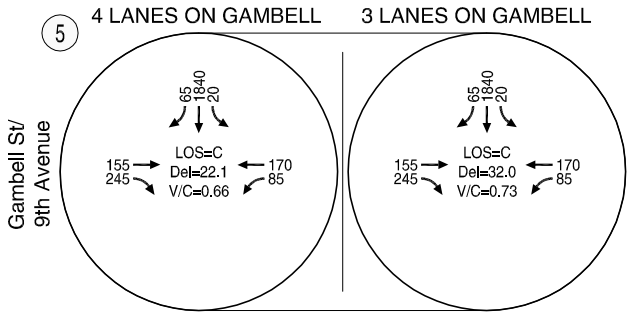

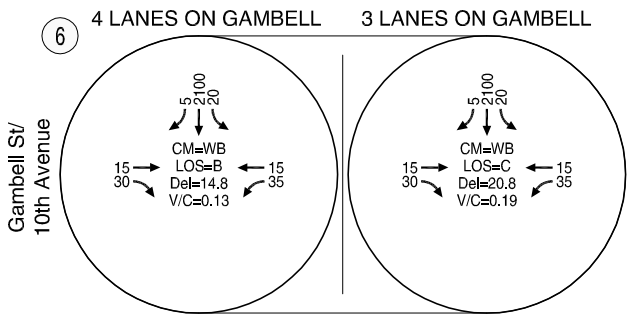

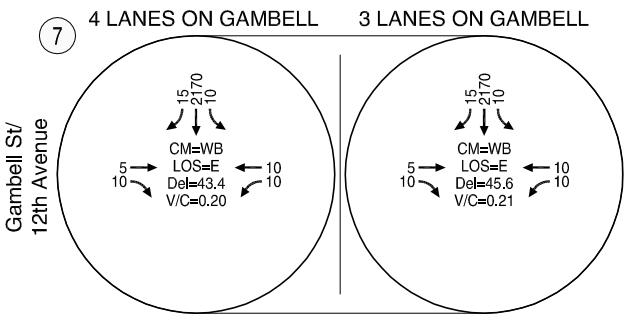

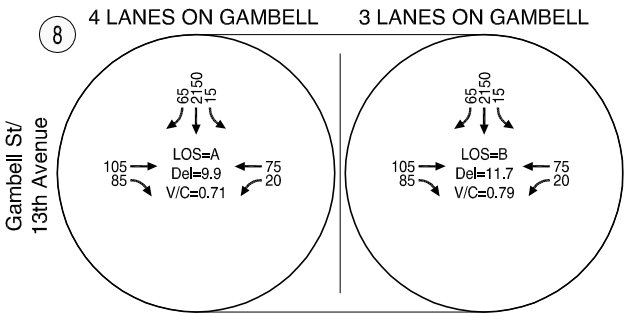

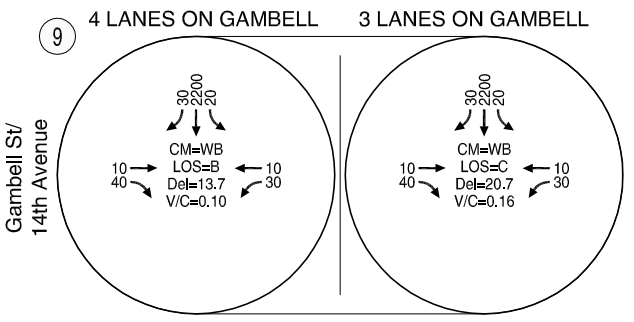

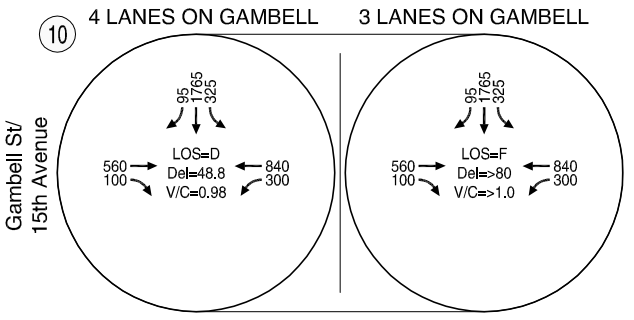

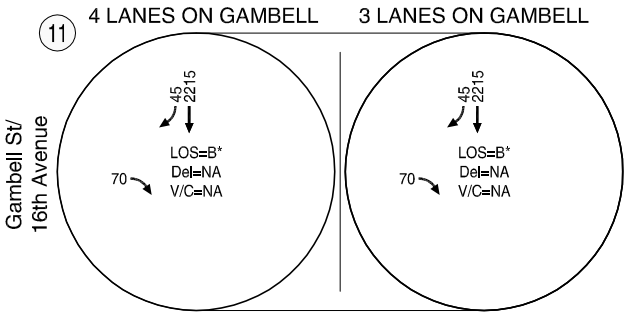

Legend

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* ANALYSIS BASED ON 2010 MERGE METHODOLOGY

Year 2035 Traffic Operations
Weekday PM Peak Hour
4 Lane versus 3 Lane Cross-Section

Source: Municipality of Anchorage and Traffic Counts Collected May 2013

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Figure 2

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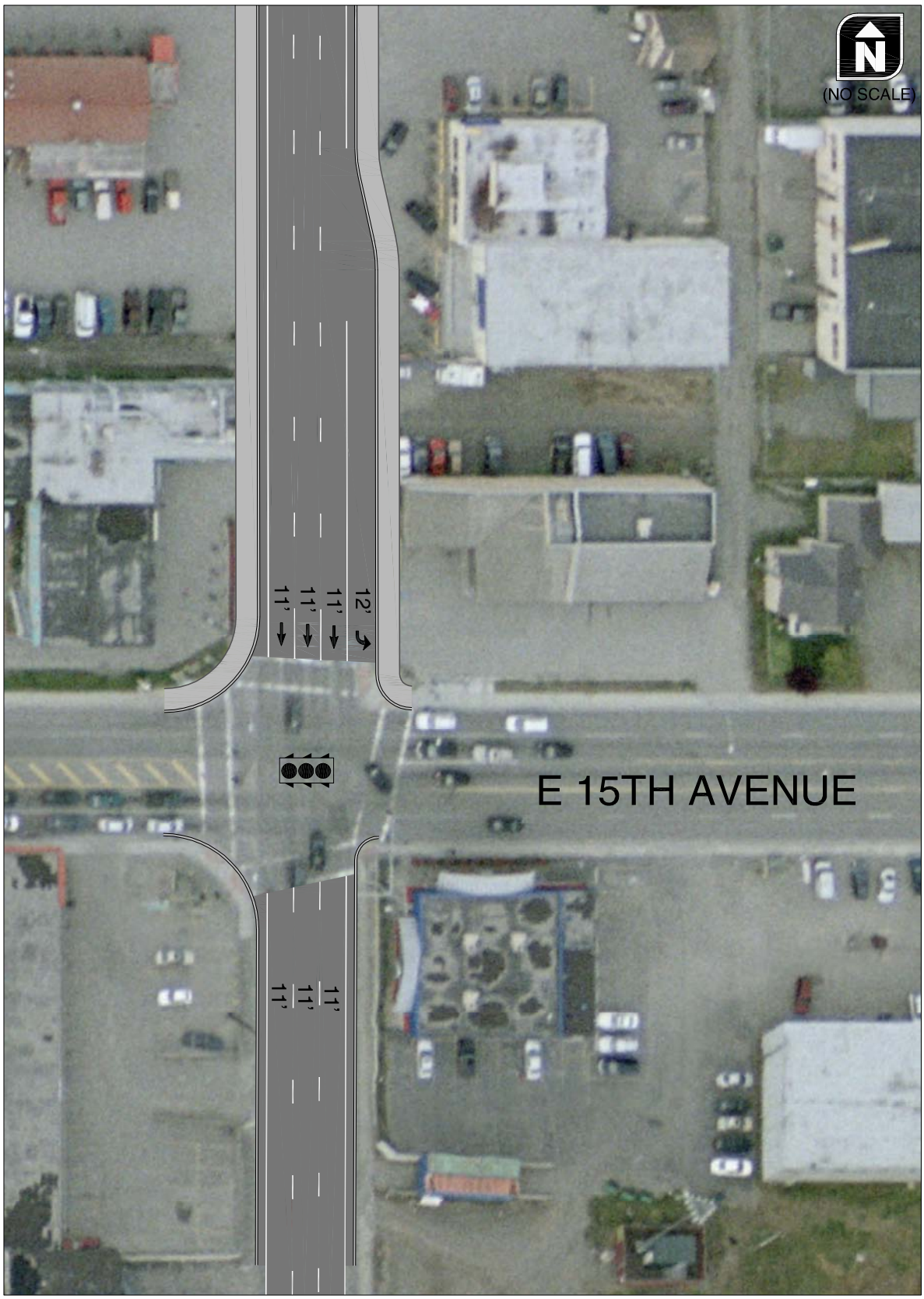

Gambell Street/15h Avenue
Southbound Left-Turn Lane Concept Sketch

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Figure 3

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LANE USAGE

Gambell Street does not currently have any turn lanes for accesses or cross-streets within the study area. Therefore, there is the potential for the outside lanes to be used mainly as turn lanes with the center two lanes considered through lanes. Concerns were raised by stakeholders at the Gambell Street Redevelopment and Implementation Project Charette that with conversion to a three-lane section, only one effective through lane may remain. In order to address this concern, further analysis was conducted with the following conclusions:

- *Existing turning volumes*: as seen in Figure 1, existing turn volumes are relatively low except at the 15th Avenue intersection where a turn lane is recommended. Therefore, the impact of turning vehicles on operations is likely not significant.
- *Existing lane usage*: video footage was taken at the study intersections during the PM peak hour and multiple site visits were conducted. These observations showed that through vehicles are currently using all four lanes. Trucks appear to generally utilize the interior lanes, but also use all four lanes. It can be expected that vehicles will utilize all three travel lanes with the reduced cross-section.
- *Accesses*: with the consolidation and improvement of accesses in the future (which can be done with the three-lane conversion), the influence of turning vehicles on lane usage should be reduced.
- *Lane width*: the recommended cross-section widens the travel lanes and provides additional clearance space, which is expected to improve lane usage.

ROADWAY CONSISTENCY

While Gambell Street is currently four-lanes between 3rd Avenue and Fireweed Lane, it is three lanes south of Fireweed lane. Therefore, the extra capacity from the fourth lane is ineffective and does not produce any net gains in operations on the roadway. The four lanes may serve to get vehicles to Fireweed Lane faster, but this intersection serves as a bottleneck that slows traffic through the transition to three lanes. On the approach to the intersection, the left-side travel lane on Gambell Street becomes an exclusive left-turn lane, creating a trap lane that generates friction and weaving movements on the approach to Fireweed Lane. As observed during several site visits to the corridor, the intersection generates significant southbound queues and delays.

Converting Gambell Street to three-lanes north of Fireweed Lane improves the consistency of the roadway. In addition, a left-turn lane can be added on the approach to the intersection, as shown in Exhibit 4, removing the trap-lane and improving operations on the approach.

Exhibit 4: Gambell Street Approach to Fireweed Lane (Southbound)

WINTER CONDITIONS (SNOW REMOVAL/STORAGE)

The current four-lane cross section on Gambell Street does not adequately provide for snow storage or removal. As expressed through meetings with the Project Management Team and stakeholders during the Charette, winter conditions are currently an issue on Gambell Street. The road effectively has three-lanes during the winter, as snow occupies a portion of the roadway and reduces the drivable cross-section. The proposed three-lane cross-section for Gambell Street provides 3.5-foot shoulders for snow storage, as well as wide, 9-foot sidewalks. In addition, the travel lanes are wider, further improving operations and safety on the roadway during snow conditions. This cross-section allows for adequate snow storage and should also reduce the splash exposure to pedestrians from the outside travel lanes as snow melts.

ACCESS MANAGEMENT

Technical Memorandum #2: Existing and Future Conditions, prepared for the Gambell Street Redevelopment Project, assessed existing accesses along the corridor. As noted in the report, there are currently areas along the corridor with poorly defined accesses or multiple access points to a single use. The proposed cross-section would require resetting of the curb line, which would provide the opportunity to consolidate or improve access management on the corridor. This would improve the efficiency of operations and also provide safety benefits along the corridor as well as improve on-site parking and circulation for businesses.

COMPARISON TO SIMILAR THREE-LANE ROADWAYS

There are several one-way streets in the vicinity of Gambell Street that have similar or higher traffic volumes than Gambell Street and are served by three lanes. A few examples are listed in Table 2.

Table 2: Three-Lane Roadways with Comparable AADTs to Gambell Street

Roadway	Section	2011 AADT	Number of Travel Lanes
Gambell Street	South of 9th Avenue	19,543	4
Gambell Street	South of 15th Avenue	23,603	4
5th Avenue	West of Ingra Street	28,787	3
6th Avenue	East of Ingra Street	22,749	3
C Street	South of Northern Lights Blvd	21,892	3

This further suggests that Gambell Street can operate effectively with three travel lanes.

CONCLUSIONS

Based on the above findings, the project team concludes that Gambell Street can operate effectively with a three-lane cross-section under both existing and future conditions, provided that an exclusive left-turn lane is provided at 15th Avenue. In addition, a three-lane cross-section provides enhanced pedestrian facilities, improved operations during snow conditions, an opportunity to improve access management, and safety benefits. The proposed cross-section also allows the street to potentially be converted from one-way to two-way traffic with on-street parking following the implementation of the Seward Highway to Glenn Highway Connection Project in the future.

Appendix A Preferred Alternative Layout

Legend

TRAFFIC SIGNAL

Preferred Alternative
Gambell Street
Anchorage, AK

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Figure 4-A

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Legend

TRAFFIC SIGNAL

Preferred Alternative
Gambell Street
Anchorage, AK

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Figure 4-B

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(1"=100')

E 12TH AVENUE

E 13TH AVENUE

E 14TH AVENUE

E 15TH AVENUE

11'
11'
11'

12'
11'
11'
11'

11'
11'
11'

Legend

TRAFFIC SIGNAL

Preferred Alternative
Gambell Street
Anchorage, AK

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Figure 4-C

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Legend

TRAFFIC SIGNAL

Preferred Alternative
Gambell Street
Anchorage, AK

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Figure 4-D

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(1"=100')

12'
11'
12'
11'

E FIREWEED LN

Legend

TRAFFIC SIGNAL

Preferred Alternative
Gambell Street
Anchorage, AK

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Figure 4-E

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Appendix B Synchro Analysis Sheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	650	231	0	0	0	0	0	0	7	469	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.1									4.2	
Lane Util. Factor		0.91									0.91	
Frpb, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		4213									4419	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		4213									4419	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	714	254	0	0	0	0	0	0	8	515	0
RTOR Reduction (vph)	0	53	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	915	0	0	0	0	0	0	0	0	520	0
Confl. Peds. (#/hr)	29		20	20		29	41		21	21		41
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		29.9									19.8	
Effective Green, g (s)		30.9									20.8	
Actuated g/C Ratio		0.51									0.35	
Clearance Time (s)		5.1									5.2	
Lane Grp Cap (vph)		2170									1532	
v/s Ratio Prot		c0.22									c0.12	
v/s Ratio Perm												
v/c Ratio		0.42									0.34	
Uniform Delay, d1		9.0									14.5	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.6									0.6	
Delay (s)		9.6									15.1	
Level of Service		A									B	
Approach Delay (s)		9.6			0.0			0.0			15.1	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.3
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

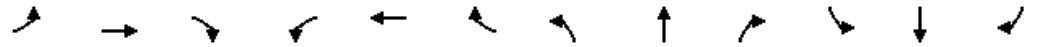
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	520	1355	0	0	0	0	0	595	88
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)				4.0	4.0						18.6	
Lane Util. Factor				0.86	0.86						0.91	
Frpb, ped/bikes				1.00	1.00						1.00	
Flpb, ped/bikes				1.00	1.00						1.00	
Frt				1.00	1.00						0.98	
Flt Protected				0.95	1.00						1.00	
Satd. Flow (prot)				1261	4007						4185	
Flt Permitted				0.95	1.00						1.00	
Satd. Flow (perm)				1261	4007						4185	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	553	1441	0	0	0	0	0	633	94
RTOR Reduction (vph)	0	0	0	1	1	0	0	0	0	0	16	0
Lane Group Flow (vph)	0	0	0	480	1512	0	0	0	0	0	711	0
Confl. Peds. (#/hr)	2					2	16		8	8		16
Confl. Bikes (#/hr)						3						1
Heavy Vehicles (%)	0%	0%	0%	5%	4%	0%	0%	0%	0%	0%	3%	5%
Turn Type				Split								
Protected Phases				2	2						1	
Permitted Phases												
Actuated Green, G (s)				28.0	28.0						7.4	
Effective Green, g (s)				29.0	29.0						8.4	
Actuated g/C Ratio				0.48	0.48						0.14	
Clearance Time (s)				5.0	5.0						19.6	
Lane Grp Cap (vph)				609	1937						586	
v/s Ratio Prot				c0.38	0.38						c0.17	
v/s Ratio Perm												
v/c Ratio				0.79	0.78						1.21	
Uniform Delay, d1				12.9	12.9						25.8	
Progression Factor				1.00	1.00						0.65	
Incremental Delay, d2				10.0	3.2						110.1	
Delay (s)				22.9	16.1						127.0	
Level of Service				C	B						F	
Approach Delay (s)		0.0			17.7			0.0			127.0	
Approach LOS		A			B			A			F	

Intersection Summary			
HCM Average Control Delay	46.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	22.6
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1550	284	0	0	0	0	0	0	87	1138	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.2	4.2								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frpb, ped/bikes		1.00	1.00								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								1.00	
Satd. Flow (prot)		4167	1184								4407	
Flt Permitted		1.00	1.00								1.00	
Satd. Flow (perm)		4167	1184								4407	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1685	309	0	0	0	0	0	0	95	1237	0
RTOR Reduction (vph)	0	3	13	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	1713	265	0	0	0	0	0	0	0	1330	0
Confl. Peds. (#/hr)	24		6	6		24	6		7	7		6
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type			Prot							Split		
Protected Phases		2	2							1	1	
Permitted Phases												
Actuated Green, G (s)		24.8	24.8								25.0	
Effective Green, g (s)		25.8	25.8								26.0	
Actuated g/C Ratio		0.43	0.43								0.43	
Clearance Time (s)		5.2	5.2								5.0	
Lane Grp Cap (vph)		1792	509								1910	
v/s Ratio Prot		c0.41	0.22								c0.30	
v/s Ratio Perm												
v/c Ratio		0.96	0.52								0.70	
Uniform Delay, d1		16.6	12.6								13.8	
Progression Factor		1.00	1.00								1.19	
Incremental Delay, d2		13.1	3.8								0.9	
Delay (s)		29.7	16.4								17.3	
Level of Service		C	B								B	
Approach Delay (s)		27.8			0.0			0.0			17.3	
Approach LOS		C			A			A			B	

Intersection Summary			
HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.2
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	2	8	21	9	0	0	0	0	0	1379	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	2	8	22	9	0	0	0	0	0	1452	7
Pedestrians		31			4			6			1	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		3			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								652			428	
pX, platoon unblocked	0.82	0.82	0.82	0.82	0.82		0.82					
vC, conflicting volume	1492	1490	525	503	1494	5	1490			4		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	811	809	0	0	814	5	809			4		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	99	97	96	100	100			100		
cM capacity (veh/h)	207	251	867	804	249	1078	656			1625		

Direction, Lane #	EB 1	WB 1	SB 1	SB 2	SB 3
Volume Total	11	32	363	726	370
Volume Left	0	22	0	0	0
Volume Right	8	0	0	0	7
cSH	581	482	1625	1700	1700
Volume to Capacity	0.02	0.07	0.00	0.43	0.22
Queue Length 95th (ft)	1	4	0	0	0
Control Delay (s)	11.3	13.0	0.0	0.0	0.0
Lane LOS	B	B			
Approach Delay (s)	11.3	13.0	0.0		
Approach LOS	B	B			

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	42.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	123	197	69	136	0	0	0	0	14	1478	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.1	4.1		4.1						4.1	
Lane Util. Factor		1.00	1.00		0.95						0.91	
Frpb, ped/bikes		1.00	1.00		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						0.99	
Flt Protected		1.00	1.00		0.98						1.00	
Satd. Flow (prot)		1617	1377		3026						4395	
Flt Permitted		0.99	1.00		0.85						1.00	
Satd. Flow (perm)		1608	1377		2614						4395	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	134	214	75	148	0	0	0	0	15	1607	57
RTOR Reduction (vph)	0	0	150	0	0	0	0	0	0	0	6	0
Lane Group Flow (vph)	0	137	64	0	223	0	0	0	0	0	1673	0
Confl. Peds. (#/hr)	27		2	2		27	9		7	7		9
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Prot	pm+pt						Split		
Protected Phases		6	6	5	2					8	8	
Permitted Phases	6			2								
Actuated Green, G (s)		16.9	16.9		28.9						20.9	
Effective Green, g (s)		17.9	17.9		29.9						21.9	
Actuated g/C Ratio		0.30	0.30		0.50						0.36	
Clearance Time (s)		5.1	5.1		5.1						5.1	
Lane Grp Cap (vph)		480	411		1357						1604	
v/s Ratio Prot			0.05		c0.02						c0.38	
v/s Ratio Perm		c0.09			0.06							
v/c Ratio		0.29	0.16		0.16						1.04	
Uniform Delay, d1		16.1	15.5		8.2						19.1	
Progression Factor		1.00	1.00		1.00						1.00	
Incremental Delay, d2		1.5	0.8		0.3						34.5	
Delay (s)		17.6	16.3		8.5						53.6	
Level of Service		B	B		A						D	
Approach Delay (s)		16.8			8.5			0.0			53.6	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM Average Control Delay	43.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	11	24	29	12	0	0	0	0	17	1686	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	12	26	31	13	0	0	0	0	18	1813	5
Pedestrians		31			10			3			4	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		3			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1142			298	
pX, platoon unblocked	0.67	0.67	0.67	0.67	0.67		0.67					
vC, conflicting volume	1894	1893	641	686	1896	14	1849			10		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	607	607	0	0	611	14	541			10		
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	100	96	96	95	95	100	100			99		
cM capacity (veh/h)	232	265	712	602	263	1056	677			1609		

Direction, Lane #	EB 1	WB 1	SB 1	SB 2	SB 3
Volume Total	38	44	472	906	459
Volume Left	0	31	18	0	0
Volume Right	26	0	0	0	5
cSH	465	437	1609	1700	1700
Volume to Capacity	0.08	0.10	0.01	0.53	0.27
Queue Length 95th (ft)	5	7	1	0	0
Control Delay (s)	13.4	14.2	0.4	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	13.4	14.2	0.1		
Approach LOS	B	B			

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	52.3%	ICU Level of Service	A	
Analysis Period (min)	15			

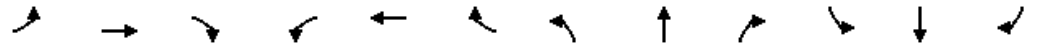
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	6	7	9	8	0	0	0	0	10	1744	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	7	8	10	9	0	0	0	0	11	1960	12
Pedestrians		73			21			2			23	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		6			2			0			2	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								413			1027	
pX, platoon unblocked	0.75	0.75	0.75	0.75	0.75		0.75					
vC, conflicting volume	2089	2082	734	710	2088	44	2045			21		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1291	1282	0	0	1291	44	1233			21		
tC, single (s)	7.5	6.5	6.9	7.5	6.7	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.1	3.3	2.2			2.2		
p0 queue free %	100	94	99	98	91	100	100			99		
cM capacity (veh/h)	74	115	770	672	103	986	404			1580		

Direction, Lane #	EB 1	WB 1	SB 1	SB 2	SB 3
Volume Total	15	19	501	980	502
Volume Left	0	10	11	0	0
Volume Right	8	0	0	0	12
cSH	212	186	1580	1700	1700
Volume to Capacity	0.07	0.10	0.01	0.58	0.30
Queue Length 95th (ft)	4	7	0	0	0
Control Delay (s)	23.3	26.5	0.2	0.0	0.0
Lane LOS	C	D	A		
Approach Delay (s)	23.3	26.5	0.1		
Approach LOS	C	D			

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	54.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	83	68	17	59	0	0	0	0	13	1728	52
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frpb, ped/bikes		0.97			1.00						1.00	
Flpb, ped/bikes		1.00			0.99						1.00	
Frt		0.94			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1465			1545						4259	
Flt Permitted		1.00			0.93						1.00	
Satd. Flow (perm)		1464			1451						4259	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	1	93	76	19	66	0	0	0	0	15	1942	58
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	167	0	0	85	0	0	0	0	0	2010	0
Confl. Peds. (#/hr)	21		45	45		21	64		4	4		64
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	0%	2%	0%	6%	2%	0%	0%	0%	0%	0%	3%	4%
Turn Type	Perm			Perm						Split		
Protected Phases		6			2					8	8	
Permitted Phases	6			2								
Actuated Green, G (s)		20.0			20.0						30.0	
Effective Green, g (s)		21.0			21.0						31.0	
Actuated g/C Ratio		0.35			0.35						0.52	
Clearance Time (s)		5.0			5.0						5.0	
Lane Grp Cap (vph)		512			508						2200	
v/s Ratio Prot											c0.47	
v/s Ratio Perm		c0.11			0.06							
v/c Ratio		0.33			0.17						0.91	
Uniform Delay, d1		14.3			13.5						13.3	
Progression Factor		1.00			1.00						0.39	
Incremental Delay, d2		1.7			0.7						4.2	
Delay (s)		16.0			14.2						9.4	
Level of Service		B			B						A	
Approach Delay (s)		16.0			14.2			0.0			9.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	10	31	23	10	0	0	0	0	18	1768	25
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	11	34	25	11	0	0	0	0	20	1943	27
Pedestrians		17			3			1			8	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								361			359	
pX, platoon unblocked	0.60	0.60	0.60	0.60	0.60		0.60					
vC, conflicting volume	2027	2016	679	731	2030	11	1987			3		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	381	363	0	0	386	11	315			3		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	97	95	95	97	100	100			99		
cM capacity (veh/h)	312	331	646	556	321	1064	744			1628		

Direction, Lane #	EB 1	WB 1	SB 1	SB 2	SB 3
Volume Total	45	36	505	971	513
Volume Left	0	25	20	0	0
Volume Right	34	0	0	0	27
cSH	524	456	1628	1700	1700
Volume to Capacity	0.09	0.08	0.01	0.57	0.30
Queue Length 95th (ft)	6	5	1	0	0
Control Delay (s)	12.5	13.6	0.4	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	12.5	13.6	0.1		
Approach LOS	B	B			

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	54.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	451	80	243	673	0	0	0	0	261	1419	76
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.1		4.1	4.1						4.0	
Lane Util. Factor		0.95		1.00	0.95						0.91	
Frpb, ped/bikes		1.00		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		1.00	1.00						1.00	
Frt		0.98		1.00	1.00						0.99	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		2973		1480	3018						4248	
Flt Permitted		1.00		0.23	1.00						0.99	
Satd. Flow (perm)		2973		364	3018						4248	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	501	89	270	748	0	0	0	0	290	1577	84
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	566	0	270	748	0	0	0	0	0	1943	0
Confl. Peds. (#/hr)	6					6	1					1
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	0%	1%	1%	4%	2%	0%	0%	0%	0%	1%	3%	1%
Turn Type				pm+pt						Split		
Protected Phases		8		7	4					6	6	
Permitted Phases				4								
Actuated Green, G (s)		15.0		27.1	27.1						22.4	
Effective Green, g (s)		16.0		28.1	28.1						23.8	
Actuated g/C Ratio		0.27		0.47	0.47						0.40	
Clearance Time (s)		5.1		5.1	5.1						5.4	
Vehicle Extension (s)		0.2		1.5	0.2						0.2	
Lane Grp Cap (vph)		793		319	1413						1685	
v/s Ratio Prot		0.19		c0.11	0.25						c0.46	
v/s Ratio Perm				c0.28								
v/c Ratio		0.71		0.85	0.53						1.15	
Uniform Delay, d1		19.9		11.5	11.3						18.1	
Progression Factor		1.00		1.00	1.00						0.81	
Incremental Delay, d2		5.4		17.6	1.4						72.7	
Delay (s)		25.3		29.2	12.7						87.3	
Level of Service		C		C	B						F	
Approach Delay (s)		25.3			17.1			0.0			87.3	
Approach LOS		C			B			A			F	

Intersection Summary			
HCM Average Control Delay	57.0	HCM Level of Service	E
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.1
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	451	80	243	673	0	0	0	0	261	1419	76
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.1		4.1	4.1					4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95					1.00	0.91	
Frpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Frt		0.98		1.00	1.00					1.00	0.99	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		2973		1480	3018					1524	4263	
Flt Permitted		1.00		0.23	1.00					0.95	1.00	
Satd. Flow (perm)		2973		364	3018					1524	4263	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	501	89	270	748	0	0	0	0	290	1577	84
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	566	0	270	748	0	0	0	0	290	1651	0
Confl. Peds. (#/hr)	6					6	1					1
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	0%	1%	1%	4%	2%	0%	0%	0%	0%	1%	3%	1%
Turn Type				pm+pt						Split		
Protected Phases		8		7	4					6	6	
Permitted Phases				4								
Actuated Green, G (s)		15.0		27.2	27.2					22.3	22.3	
Effective Green, g (s)		16.0		28.2	28.2					23.7	23.7	
Actuated g/C Ratio		0.27		0.47	0.47					0.39	0.39	
Clearance Time (s)		5.1		5.1	5.1					5.4	5.4	
Vehicle Extension (s)		0.2		1.5	0.2					0.2	0.2	
Lane Grp Cap (vph)		793		322	1418					602	1684	
v/s Ratio Prot		0.19		c0.11	0.25					0.19	c0.39	
v/s Ratio Perm				c0.28								
v/c Ratio		0.71		0.84	0.53					0.48	0.98	
Uniform Delay, d1		19.9		11.5	11.2					13.6	17.9	
Progression Factor		1.00		1.00	1.00					0.97	0.84	
Incremental Delay, d2		5.4		16.4	1.4					1.3	11.4	
Delay (s)		25.3		27.9	12.6					14.5	26.4	
Level of Service		C		C	B					B	C	
Approach Delay (s)		25.3			16.7			0.0			24.7	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.1
Intersection Capacity Utilization	77.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	451	80	243	673	0	0	0	0	261	1419	76
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.1		4.1	4.1					4.0	4.0	
Lane Util. Factor		0.95		0.97	0.95					1.00	0.91	
Frpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Frt		0.98		1.00	1.00					1.00	0.99	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		2973		2871	3018					1524	4263	
Flt Permitted		1.00		0.23	1.00					0.95	1.00	
Satd. Flow (perm)		2973		705	3018					1524	4263	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	501	89	270	748	0	0	0	0	290	1577	84
RTOR Reduction (vph)	0	24	0	0	0	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	566	0	270	748	0	0	0	0	290	1651	0
Confl. Peds. (#/hr)	6					6	1					1
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	0%	1%	1%	4%	2%	0%	0%	0%	0%	1%	3%	1%
Turn Type				pm+pt						Split		
Protected Phases		8		7	4					6	6	
Permitted Phases				4								
Actuated Green, G (s)		15.0		27.1	27.1					22.4	22.4	
Effective Green, g (s)		16.0		28.1	28.1					23.8	23.8	
Actuated g/C Ratio		0.27		0.47	0.47					0.40	0.40	
Clearance Time (s)		5.1		5.1	5.1					5.4	5.4	
Vehicle Extension (s)		0.2		1.5	0.2					0.2	0.2	
Lane Grp Cap (vph)		793		619	1413					605	1691	
v/s Ratio Prot		c0.19		0.06	c0.25					0.19	c0.39	
v/s Ratio Perm				0.15								
v/c Ratio		0.71		0.44	0.53					0.48	0.98	
Uniform Delay, d1		19.9		10.2	11.3					13.5	17.8	
Progression Factor		1.00		1.00	1.00					0.97	0.83	
Incremental Delay, d2		5.4		0.2	1.4					1.3	10.7	
Delay (s)		25.3		10.4	12.7					14.3	25.6	
Level of Service		C		B	B					B	C	
Approach Delay (s)		25.3			12.1			0.0			23.9	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	808	287	0	0	0	0	0	0	9	584	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.1									4.2	
Lane Util. Factor		0.91									0.91	
Frpb, ped/bikes		0.99									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		4192									4419	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		4192									4419	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	888	315	0	0	0	0	0	0	10	642	0
RTOR Reduction (vph)	0	26	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	1177	0	0	0	0	0	0	0	0	651	0
Confl. Peds. (#/hr)	29		20	20		29	41		21	21		41
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type										Split		
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		69.9									39.8	
Effective Green, g (s)		70.9									40.8	
Actuated g/C Ratio		0.59									0.34	
Clearance Time (s)		5.1									5.2	
Lane Grp Cap (vph)		2477									1502	
v/s Ratio Prot		c0.28									c0.15	
v/s Ratio Perm												
v/c Ratio		0.48									0.43	
Uniform Delay, d1		14.0									30.7	
Progression Factor		1.00									1.00	
Incremental Delay, d2		0.7									0.9	
Delay (s)		14.6									31.6	
Level of Service		B									C	
Approach Delay (s)		14.6			0.0			0.0			31.6	
Approach LOS		B			A			A			C	

Intersection Summary			
HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.3
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	647	1687	0	0	0	0	0	741	110
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)				4.0	4.0						18.6	
Lane Util. Factor				0.86	0.86						0.91	
Frpb, ped/bikes				1.00	1.00						0.99	
Flpb, ped/bikes				1.00	1.00						1.00	
Frt				1.00	1.00						0.98	
Flt Protected				0.95	1.00						1.00	
Satd. Flow (prot)				1261	4008						4178	
Flt Permitted				0.95	1.00						1.00	
Satd. Flow (perm)				1261	4008						4178	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	688	1795	0	0	0	0	0	788	117
RTOR Reduction (vph)	0	0	0	6	4	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	0	0	593	1880	0	0	0	0	0	895	0
Confl. Peds. (#/hr)	2					2	16		8	8		16
Confl. Bikes (#/hr)						3						1
Heavy Vehicles (%)	0%	0%	0%	5%	4%	0%	0%	0%	0%	0%	3%	5%
Turn Type				Split								
Protected Phases				2	2						1	
Permitted Phases												
Actuated Green, G (s)				66.0	66.0						29.4	
Effective Green, g (s)				67.0	67.0						30.4	
Actuated g/C Ratio				0.56	0.56						0.25	
Clearance Time (s)				5.0	5.0						19.6	
Lane Grp Cap (vph)				704	2238						1058	
v/s Ratio Prot				c0.47	0.47						c0.21	
v/s Ratio Perm												
v/c Ratio				0.84	0.84						0.85	
Uniform Delay, d1				22.1	22.0						42.6	
Progression Factor				1.00	1.00						0.59	
Incremental Delay, d2				11.7	4.0						7.7	
Delay (s)				33.8	26.0						32.6	
Level of Service				C	C						C	
Approach Delay (s)		0.0			27.9			0.0			32.6	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM Average Control Delay	29.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.6
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱								↰↑↑	
Volume (vph)	0	1930	354	0	0	0	0	0	0	109	1416	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.2	4.2								4.0	
Lane Util. Factor		0.86	0.86								0.91	
Frpb, ped/bikes		1.00	1.00								1.00	
Flpb, ped/bikes		1.00	1.00								1.00	
Frt		1.00	0.85								1.00	
Flt Protected		1.00	1.00								1.00	
Satd. Flow (prot)		4166	1184								4407	
Flt Permitted		1.00	1.00								1.00	
Satd. Flow (perm)		4166	1184								4407	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2098	385	0	0	0	0	0	0	118	1539	0
RTOR Reduction (vph)	0	1	2	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	2136	344	0	0	0	0	0	0	0	1655	0
Confl. Peds. (#/hr)	24		6	6		24	6		7	7		6
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type			Prot							Split		
Protected Phases		2	2							1	1	
Permitted Phases												
Actuated Green, G (s)		63.8	63.8								46.0	
Effective Green, g (s)		64.8	64.8								47.0	
Actuated g/C Ratio		0.54	0.54								0.39	
Clearance Time (s)		5.2	5.2								5.0	
Lane Grp Cap (vph)		2250	639								1726	
v/s Ratio Prot		c0.51	0.29								c0.38	
v/s Ratio Perm												
v/c Ratio		0.95	0.54								0.96	
Uniform Delay, d1		26.0	17.9								35.6	
Progression Factor		1.00	1.00								0.75	
Incremental Delay, d2		10.3	3.2								10.0	
Delay (s)		36.3	21.1								36.8	
Level of Service		D	C								D	
Approach Delay (s)		34.2			0.0			0.0			36.8	
Approach LOS		C			A			A			D	

Intersection Summary			
HCM Average Control Delay	35.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.2
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	2	10	26	11	0	0	0	0	0	1716	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	2	11	27	12	0	0	0	0	0	1806	9
Pedestrians		31			4			6			1	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		3			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								652			428	
pX, platoon unblocked	0.66	0.66	0.66	0.66	0.66		0.66					
vC, conflicting volume	1849	1846	644	624	1851	5	1847			4		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	494	490	0	0	497	5	491			4		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	99	96	96	100	100			100		
cM capacity (veh/h)	283	310	703	650	307	1078	698			1625		

Direction, Lane #	EB 1	WB 1	SB 1	SB 2	SB 3
Volume Total	13	39	452	903	461
Volume Left	0	27	0	0	0
Volume Right	11	0	0	0	9
cSH	580	488	1625	1700	1700
Volume to Capacity	0.02	0.08	0.00	0.53	0.27
Queue Length 95th (ft)	1	5	0	0	0
Control Delay (s)	11.3	13.0	0.0	0.0	0.0
Lane LOS	B	B			
Approach Delay (s)	11.3	13.0	0.0		
Approach LOS	B	B			

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	49.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	153	245	86	169	0	0	0	0	18	1839	65
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.1	4.1		4.1						4.1	
Lane Util. Factor		1.00	1.00		0.95						0.91	
Frpb, ped/bikes		1.00	1.00		1.00						1.00	
Flpb, ped/bikes		1.00	1.00		1.00						1.00	
Frt		1.00	0.85		1.00						0.99	
Flt Protected		1.00	1.00		0.98						1.00	
Satd. Flow (prot)		1617	1377		3025						4394	
Flt Permitted		0.99	1.00		0.72						1.00	
Satd. Flow (perm)		1610	1377		2212						4394	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	166	266	93	184	0	0	0	0	20	1999	71
RTOR Reduction (vph)	0	0	41	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	169	225	0	277	0	0	0	0	0	2087	0
Confl. Peds. (#/hr)	27		2	2		27	9		7	7		9
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Prot	pm+pt						Split		
Protected Phases		6	6	5	2					8	8	
Permitted Phases	6			2								
Actuated Green, G (s)		31.9	31.9		42.0						67.8	
Effective Green, g (s)		32.9	32.9		43.0						68.8	
Actuated g/C Ratio		0.27	0.27		0.36						0.57	
Clearance Time (s)		5.1	5.1		5.1						5.1	
Lane Grp Cap (vph)		441	378		833						2519	
v/s Ratio Prot			c0.16		c0.02						c0.48	
v/s Ratio Perm		0.10			0.10							
v/c Ratio		0.38	0.59		0.33						0.83	
Uniform Delay, d1		35.3	37.8		28.0						20.8	
Progression Factor		1.00	1.00		1.00						1.35	
Incremental Delay, d2		2.5	6.7		1.1						2.1	
Delay (s)		37.8	44.5		29.1						30.3	
Level of Service		D	D		C						C	
Approach Delay (s)		41.9			29.1			0.0			30.3	
Approach LOS		D			C			A			C	

Intersection Summary			
HCM Average Control Delay	32.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	14	30	36	15	0	0	0	0	21	2099	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	15	32	39	16	0	0	0	0	23	2257	6
Pedestrians		31			10			3			4	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		3			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1142			298	
pX, platoon unblocked	0.63	0.63	0.63	0.63	0.63		0.63					
vC, conflicting volume	2348	2346	790	850	2350	14	2294			10		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1063	1059	0	0	1064	14	976			10		
tC, single (s)	7.5	6.5	6.9	7.6	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	100	89	95	93	88	100	100			99		
cM capacity (veh/h)	96	135	665	525	134	1056	436			1609		

Direction, Lane #	EB 1	WB 1	SB 1	SB 2	SB 3
Volume Total	47	55	587	1128	571
Volume Left	0	39	23	0	0
Volume Right	32	0	0	0	6
cSH	295	282	1609	1700	1700
Volume to Capacity	0.16	0.19	0.01	0.66	0.34
Queue Length 95th (ft)	11	14	1	0	0
Control Delay (s)	19.5	20.8	0.4	0.0	0.0
Lane LOS	C	C	A		
Approach Delay (s)	19.5	20.8	0.1		
Approach LOS	C	C			

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	61.1%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	7	9	11	10	0	0	0	0	12	2171	14
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	8	10	12	11	0	0	0	0	13	2439	16
Pedestrians		73			21			2			23	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		6			2			0			2	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								413			1027	
pX, platoon unblocked	0.66	0.66	0.66	0.66	0.66		0.66					
vC, conflicting volume	2576	2568	896	877	2576	44	2528			21		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1575	1563	0	0	1575	44	1502			21		
tC, single (s)	7.5	6.5	6.9	7.5	6.7	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.1	3.3	2.2			2.2		
p0 queue free %	100	88	98	98	81	100	100			99		
cM capacity (veh/h)	37	68	674	559	59	986	279			1580		

Direction, Lane #	EB 1	WB 1	SB 1	SB 2	SB 3
Volume Total	18	24	623	1220	626
Volume Left	0	12	13	0	0
Volume Right	10	0	0	0	16
cSH	137	112	1580	1700	1700
Volume to Capacity	0.13	0.21	0.01	0.72	0.37
Queue Length 95th (ft)	9	15	1	0	0
Control Delay (s)	35.1	45.6	0.3	0.0	0.0
Lane LOS	E	E	A		
Approach Delay (s)	35.1	45.6	0.1		
Approach LOS	E	E			

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	63.3%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	103	85	21	73	0	0	0	0	16	2151	65
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						0.91	
Frpb, ped/bikes		0.95			1.00						0.99	
Flpb, ped/bikes		1.00			0.99						1.00	
Frt		0.94			1.00						1.00	
Flt Protected		1.00			0.99						1.00	
Satd. Flow (prot)		1432			1541						4246	
Flt Permitted		1.00			0.91						1.00	
Satd. Flow (perm)		1432			1414						4246	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	1	116	96	24	82	0	0	0	0	18	2417	73
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	208	0	0	106	0	0	0	0	0	2506	0
Confl. Peds. (#/hr)	21		45	45		21	64		4	4		64
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	0%	2%	0%	6%	2%	0%	0%	0%	0%	0%	3%	4%
Turn Type	Perm			Perm						Split		
Protected Phases		6			2					8	8	
Permitted Phases	6			2								
Actuated Green, G (s)		28.0			28.0						82.0	
Effective Green, g (s)		29.0			29.0						83.0	
Actuated g/C Ratio		0.24			0.24						0.69	
Clearance Time (s)		5.0			5.0						5.0	
Lane Grp Cap (vph)		346			342						2937	
v/s Ratio Prot											c0.59	
v/s Ratio Perm		0.15			0.07							
v/c Ratio		0.60			0.31						0.85	
Uniform Delay, d1		40.4			37.3						13.9	
Progression Factor		1.00			1.00						0.36	
Incremental Delay, d2		7.5			2.3						2.4	
Delay (s)		47.9			39.6						7.5	
Level of Service		D			D						A	
Approach Delay (s)		47.9			39.6			0.0			7.5	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	12	39	29	12	0	0	0	0	22	2201	31
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	13	43	32	13	0	0	0	0	24	2419	34
Pedestrians		17			3			1			8	
Lane Width (ft)		12.0			12.0			0.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								361			359	
pX, platoon unblocked	0.57	0.57	0.57	0.57	0.57		0.57					
vC, conflicting volume	2516	2504	841	908	2521	11	2470			3		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	996	975	0	0	1006	11	915			3		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	91	93	93	90	100	100			99		
cM capacity (veh/h)	101	139	609	489	133	1064	421			1628		

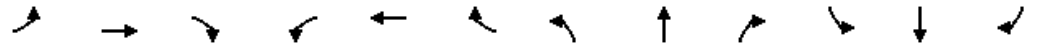
Direction, Lane #	EB 1	WB 1	SB 1	SB 2	SB 3
Volume Total	56	45	629	1209	639
Volume Left	0	32	24	0	0
Volume Right	43	0	0	0	34
cSH	339	275	1628	1700	1700
Volume to Capacity	0.17	0.16	0.01	0.71	0.38
Queue Length 95th (ft)	12	12	1	0	0
Control Delay (s)	17.7	20.7	0.4	0.0	0.0
Lane LOS	C	C	A		
Approach Delay (s)	17.7	20.7	0.1		
Approach LOS	C	C			

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	63.7%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	561	100	302	838	0	0	0	0	325	1766	95
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.1		4.1	4.1						4.0	
Lane Util. Factor		0.95		1.00	0.95						0.91	
Frpb, ped/bikes		1.00		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		1.00	1.00						1.00	
Frt		0.98		1.00	1.00						0.99	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		2973		1480	3018						4248	
Flt Permitted		1.00		0.13	1.00						0.99	
Satd. Flow (perm)		2973		208	3018						4248	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	623	111	336	931	0	0	0	0	361	1962	106
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	722	0	336	931	0	0	0	0	0	2425	0
Confl. Peds. (#/hr)	6					6	1					1
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	0%	1%	1%	4%	2%	0%	0%	0%	0%	1%	3%	1%
Turn Type				pm+pt						Split		
Protected Phases		8		7	4					6	6	
Permitted Phases				4								
Actuated Green, G (s)		24.9		48.9	48.9						60.6	
Effective Green, g (s)		25.9		49.9	49.9						62.0	
Actuated g/C Ratio		0.22		0.42	0.42						0.52	
Clearance Time (s)		5.1		5.1	5.1						5.4	
Vehicle Extension (s)		0.2		1.5	0.2						0.2	
Lane Grp Cap (vph)		642		297	1255						2195	
v/s Ratio Prot		0.24		c0.19	0.31						c0.57	
v/s Ratio Perm				c0.28								
v/c Ratio		1.12		1.13	0.74						1.10	
Uniform Delay, d1		47.0		35.7	29.6						29.0	
Progression Factor		1.00		1.00	1.00						1.04	
Incremental Delay, d2		75.1		92.5	4.0						51.6	
Delay (s)		122.2		128.1	33.6						81.9	
Level of Service		F		F	C						F	
Approach Delay (s)		122.2			58.7			0.0			81.9	
Approach LOS		F			E			A			F	

Intersection Summary			
HCM Average Control Delay	81.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.1
Intersection Capacity Utilization	102.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	561	100	302	838	0	0	0	0	325	1766	95
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.1		4.1	4.1					4.0	4.0	
Lane Util. Factor		0.95		1.00	0.95					1.00	0.91	
Frpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Frt		0.98		1.00	1.00					1.00	0.99	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		2973		1480	3018					1524	4262	
Flt Permitted		1.00		0.12	1.00					0.95	1.00	
Satd. Flow (perm)		2973		192	3018					1524	4262	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	623	111	336	931	0	0	0	0	361	1962	106
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	722	0	336	931	0	0	0	0	361	2063	0
Confl. Peds. (#/hr)	6					6	1					1
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	0%	1%	1%	4%	2%	0%	0%	0%	0%	1%	3%	1%
Turn Type				pm+pt						Split		
Protected Phases		8		7	4					6	6	
Permitted Phases				4								
Actuated Green, G (s)		27.3		52.9	52.9					56.6	56.6	
Effective Green, g (s)		28.3		53.9	53.9					58.0	58.0	
Actuated g/C Ratio		0.24		0.45	0.45					0.48	0.48	
Clearance Time (s)		5.1		5.1	5.1					5.4	5.4	
Vehicle Extension (s)		0.2		1.5	0.2					0.2	0.2	
Lane Grp Cap (vph)		701		317	1356					737	2060	
v/s Ratio Prot		0.24		c0.19	0.31					0.24	c0.48	
v/s Ratio Perm				c0.29								
v/c Ratio		1.03		1.06	0.69					0.49	1.00	
Uniform Delay, d1		45.9		36.1	26.3					21.0	31.0	
Progression Factor		1.00		1.00	1.00					1.22	1.13	
Incremental Delay, d2		41.8		67.2	2.9					1.3	15.2	
Delay (s)		87.6		103.3	29.2					26.9	50.2	
Level of Service		F		F	C					C	D	
Approach Delay (s)		87.6			48.8			0.0			46.7	
Approach LOS		F			D			A			D	

Intersection Summary			
HCM Average Control Delay	54.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.1
Intersection Capacity Utilization	94.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	561	100	302	838	0	0	0	0	325	1766	95
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		4.1		4.1	4.1					4.0	4.0	
Lane Util. Factor		0.95		0.97	0.95					1.00	0.91	
Frpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00					1.00	1.00	
Frt		0.98		1.00	1.00					1.00	0.99	
Flt Protected		1.00		0.95	1.00					0.95	1.00	
Satd. Flow (prot)		2973		2871	3018					1524	4262	
Flt Permitted		1.00		0.13	1.00					0.95	1.00	
Satd. Flow (perm)		2973		405	3018					1524	4262	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	623	111	336	931	0	0	0	0	361	1962	106
RTOR Reduction (vph)	0	9	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	725	0	336	931	0	0	0	0	361	2063	0
Confl. Peds. (#/hr)	6					6	1					1
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	0%	1%	1%	4%	2%	0%	0%	0%	0%	1%	3%	1%
Turn Type				pm+pt						Split		
Protected Phases		8		7	4					6	6	
Permitted Phases				4								
Actuated Green, G (s)		32.0		47.9	47.9					61.6	61.6	
Effective Green, g (s)		33.0		48.9	48.9					63.0	63.0	
Actuated g/C Ratio		0.28		0.41	0.41					0.52	0.52	
Clearance Time (s)		5.1		5.1	5.1					5.4	5.4	
Vehicle Extension (s)		0.2		1.5	0.2					0.2	0.2	
Lane Grp Cap (vph)		818		408	1230					800	2238	
v/s Ratio Prot		c0.24		0.08	c0.31					0.24	c0.48	
v/s Ratio Perm				0.26								
v/c Ratio		0.89		0.82	0.76					0.45	0.92	
Uniform Delay, d1		41.7		27.2	30.5					17.7	26.2	
Progression Factor		1.00		1.00	1.00					1.17	1.05	
Incremental Delay, d2		13.6		12.1	4.4					1.0	4.7	
Delay (s)		55.3		39.3	34.8					21.8	32.1	
Level of Service		E		D	C					C	C	
Approach Delay (s)		55.3			36.0			0.0			30.6	
Approach LOS		E			D			A			C	

Intersection Summary			
HCM Average Control Delay	36.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group