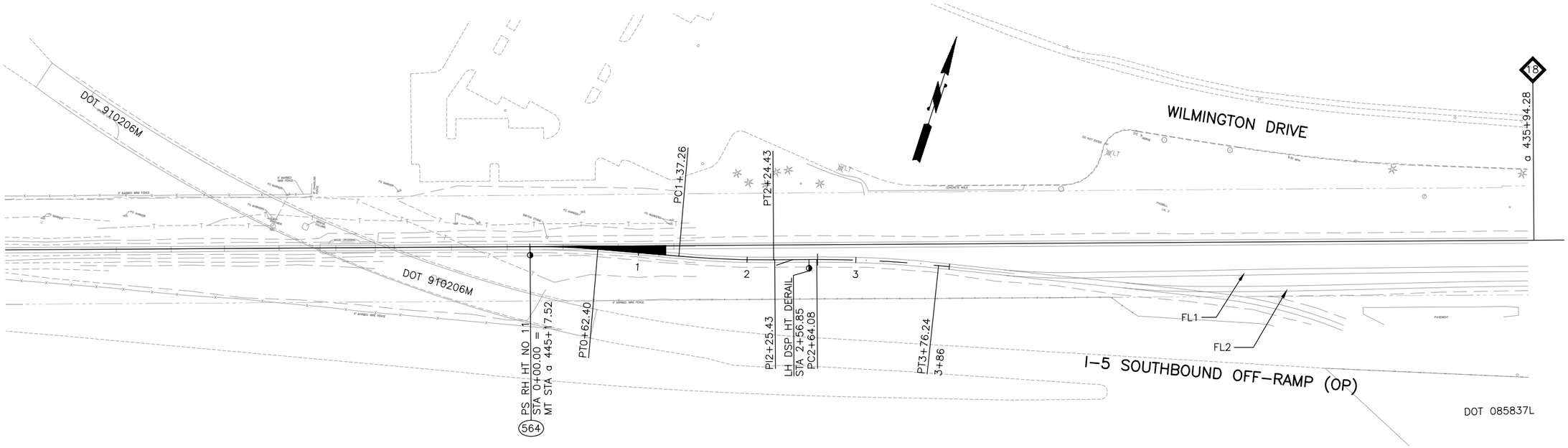

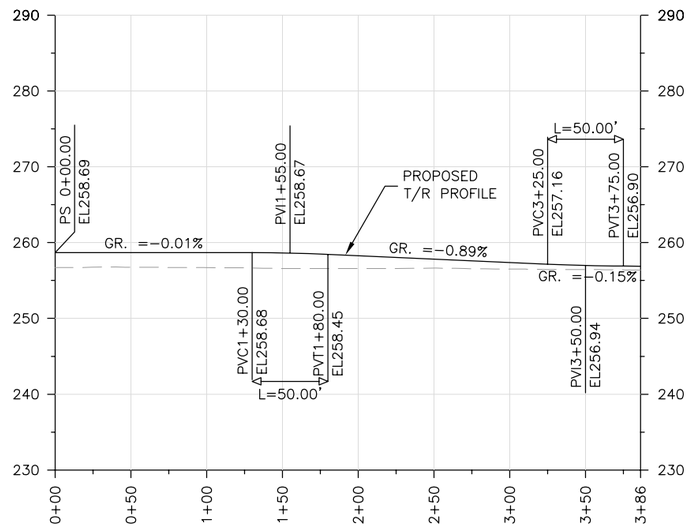

HORIZ. 50 0 50 100 Scale in Feet

FILE NAME	PD_TA108.dwg				REGION NO.	STATE	FED.AID PROJ.NO.
TIME	3:32pm				10	WASH	
DATE	Feb 26, 2007				JOB NUMBER		
PLOTTED BY	epeterso						
DESIGNED BY	XXX						
ENTERED BY	ETP						
CHECKED BY	XXX				CONTRACT NO.	LOCATION NO.	
PROJ. ENGR.	XXX				CON0010776		
REGIONAL ADM.	XXX	REVISION	DATE	BY			

EUGENE MILES BERGER — STATE OF WASHINGTON — 42263 — REGISTERED PROFESSIONAL ENGINEER — EXPIRES 11/09/

HDR ENGINEERING INC.

Washington State Department of Transportation

POINT DEFIANCE BYPASS PROJECT
60% PS&E SUBMITTAL
FORT LEWIS YARD
SOUTH CONNECTION

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SHEET OF X SHEETS

APPENDIX B

Level of Service Concept

LEVEL OF SERVICE CONCEPT

Because intersection capacity and traffic flow performance, or "level of service", are prime factors in the process of developing and evaluating alternatives, a brief description is presented here for the benefit of the lay reader.

The ratio of existing traffic volume to available capacity provides a measure of the intensity of traffic loading relative to the ability of the street intersection to accommodate the traffic. The number of lanes, presence of turn lanes, type of traffic control, signal phasing, etc., are important factors in determining capacity. As the volume-to-capacity (v/c) ratio approaches a value of 1.0 at signalized intersections, extreme congestion sets in, with long backups and several complete changes of the signal cycles occur before a motorist can proceed. Motorists at stop-sign controlled intersection approaches face extremely long delays when the v/c ratio approaches 1.0. As traffic queues lengthen, this congestion can also impede access to and from upstream abutting property.

The term "level of service" is used to describe traffic flow at intersections. For signalized intersections, the level of service is based on control delay per vehicle (see **table A-1**). Control delay is a measure of all the delay contributable to traffic control measures, such as a traffic signal. Control delay includes initial acceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Table A-1
Level of Service and Volume/Capacity Ratio Relationships for Signalized Intersections

Level of Service	General Description	Control Delay (seconds/vehicle)[1]	Intersection V/C Ratio[2]
A	Free flow	≤ 10.0	≤ 0.60
B	Stable flow (slight delays)	10.1 to 20.0	0.61 to 0.70
C	Stable flow (acceptable delays)	20.1 to 35.0	0.71 to 0.80
D	Approaching unstable flow (tolerable delay - occasionally wait through more than one signal cycle before proceeding)	35.1 to 55.0	0.81 to 0.90
E	Unstable flow (intolerable delay, intersection operating at capacity)	55.1 to 80.0	0.91 to 1.00
F	Forced flow (jammed)	> 80.0	> 1.00

1. For operational analysis method which requires detailed geometric, traffic, and signal information usually used for existing conditions analysis.
2. For planning-level analysis method. Planning-level analysis is used when there is less certainty in the input when default values are typically relied upon and future traffic forecasts are used.

Source: "Highway Capacity Manual", Transportation Research Board, 1997; and "Interim Materials on Highway Capacity", *Circular 212*, Transportation Research Board, 1980.

Level of service A is a condition of unimpeded flow, while level of service C is often used in the design of new urban streets as the lowest acceptable level for peak periods. Congestion begins to occur at level of service D (v/c from 0.81 to 0.90). Because of funding and/or environmental constraints for improvements, this level of service is being used by more and more cities as an adequate level, particularly for improvements to congested existing facilities. Increasingly unstable traffic flow with excessive delay and congestion occurs as level of service E (capacity) is approached (v/c = 0.91 to 1.00). For v/c > 1.00, level of service F (forced flow) is obtained, and the intersection is overloaded or is jammed due to traffic backups from overloaded downstream intersections.

It should be noted that equal v/c ratios at several locations do not necessarily indicate equal overall performance of intersections. One intersection may experience a high v/c ratio for a considerable period of the day while at another intersection the peak period lasts a short time. In addition, a low level of service is more tolerable at a low-volume intersection than a high-volume location.

The general level of service concept also holds for stop-sign controlled intersections, although the capacity of the stop-sign controlled approaches is less than that of the signalized intersection approach. **Table A-2** shows the level of service criteria for unsignalized intersections.

Table A-2
Level of Service Criteria for Unsignalized Intersections

Control Delay (d)[1]	Level of Service
$d \leq 10$	A
$10 < d \leq 15$	B
$15 < d \leq 25$	C
$25 < d \leq 35$	D
$35 < d \leq 50$	E
$d > 50$	F[2]

1. Control delay is measured in seconds per vehicle.
2. For level of service F, when demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvements to the intersection.

Source: "Highway Capacity Manual", Transportation Research Board, 1997.

Capacity analysis for two-way stop-sign controlled intersections is based on the assumption that major street traffic is not affected by the minor street movements, and that left-turns from the major streets to the minor streets are influenced only by opposing major street through flow. Therefore, the level of service calculated for two-way stop intersections is therefore based on delay experienced by only the minor street movements and the major street left-turn movement.

APPENDIX C

Existing LOS Calculation Reports

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	3	697	16	41	602	9	8	1	10	15	1	4
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.53	0.53	0.53	0.71	0.71	0.71
Hourly flow rate (vph)	3	758	17	46	676	10	15	2	19	21	1	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	687			775			1210	1551	388	1179	1555	343
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	687			775			1210	1551	388	1179	1555	343
tC, single (s)	4.2			4.3			8.2	7.2	7.6	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.9	4.4	3.7	3.5	4.0	3.3
p0 queue free %	100			94			85	98	96	84	99	99
cM capacity (veh/h)	877			780			97	76	522	128	102	644

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	3	505	270	46	451	236	36	28
Volume Left	3	0	0	46	0	0	15	21
Volume Right	0	0	17	0	0	10	19	6
cSH	877	1700	1700	780	1700	1700	166	150
Volume to Capacity	0.00	0.30	0.16	0.06	0.27	0.14	0.22	0.19
Queue Length 95th (ft)	0	0	0	5	0	0	20	17
Control Delay (s)	9.1	0.0	0.0	9.9	0.0	0.0	32.6	34.4
Lane LOS	A			A			D	D
Approach Delay (s)	0.0			0.6			32.6	34.4
Approach LOS							D	D

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	36.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1687	3300		1719	3371		1687	3374	1509	1641	3202	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1687	3300		1719	3371		1687	3374	1509	1641	3202	
Volume (vph)	82	585	99	156	493	74	144	549	63	37	250	49
Peak-hour factor, PHF	0.91	0.91	0.91	0.83	0.83	0.83	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	90	643	109	188	594	89	167	638	73	40	272	53
RTOR Reduction (vph)	0	19	0	0	17	0	0	0	51	0	23	0
Lane Group Flow (vph)	90	733	0	188	666	0	167	638	22	40	302	0
Heavy Vehicles (%)	7%	7%	7%	5%	5%	5%	7%	7%	7%	10%	10%	10%
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	5.0	17.0		8.0	20.0		7.0	20.0	20.0	5.0	18.0	
Effective Green, g (s)	6.0	18.0		9.0	21.0		8.0	21.0	21.0	6.0	19.0	
Actuated g/C Ratio	0.09	0.26		0.13	0.30		0.11	0.30	0.30	0.09	0.27	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	145	849		221	1011		193	1012	453	141	869	
v/s Ratio Prot	0.05	c0.22		c0.11	c0.20		c0.10	c0.19		0.02	0.09	
v/s Ratio Perm									0.01			
v/c Ratio	0.62	0.86		0.85	0.66		0.87	0.63	0.05	0.28	0.35	
Uniform Delay, d1	30.9	24.8		29.8	21.4		30.5	21.2	17.4	30.0	20.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	18.3	11.3		31.6	3.4		37.1	3.0	0.2	5.0	1.1	
Delay (s)	49.2	36.1		61.4	24.7		67.6	24.1	17.6	35.0	21.6	
Level of Service	D	D		E	C		E	C	B	C	C	
Approach Delay (s)		37.5			32.7			31.9			23.1	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	32.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3344		1703	3406	1641	1468
Flt Permitted	1.00		0.24	1.00	0.95	1.00
Satd. Flow (perm)	3344		430	3406	1641	1468
Volume (vph)	457	102	146	742	82	102
Peak-hour factor, PHF	0.87	0.87	0.85	0.85	0.82	0.82
Adj. Flow (vph)	525	117	172	873	100	124
RTOR Reduction (vph)	31	0	0	0	0	87
Lane Group Flow (vph)	611	0	172	873	100	37
Heavy Vehicles (%)	5%	5%	6%	6%	10%	10%
Turn Type			pm+pt			Perm
Protected Phases	4		3	8	2	
Permitted Phases			8			2
Actuated Green, G (s)	18.0		33.0	33.0	17.0	17.0
Effective Green, g (s)	19.0		34.0	34.0	18.0	18.0
Actuated g/C Ratio	0.32		0.57	0.57	0.30	0.30
Clearance Time (s)	5.0		4.0	5.0	5.0	5.0
Lane Grp Cap (vph)	1059		477	1930	492	440
v/s Ratio Prot	c0.18		0.07	c0.26	c0.06	
v/s Ratio Perm			0.14			0.03
v/c Ratio	0.58		0.36	0.45	0.20	0.08
Uniform Delay, d1	17.1		7.2	7.6	15.7	15.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3		2.1	0.8	0.9	0.4
Delay (s)	19.4		9.4	8.3	16.6	15.5
Level of Service	B		A	A	B	B
Approach Delay (s)	19.4			8.5	16.0	
Approach LOS	B			A	B	

Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	20	526	875	19	9	12
Peak Hour Factor	0.87	0.87	0.90	0.90	0.53	0.53
Hourly flow rate (vph)	23	605	972	21	17	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		836				
pX, platoon unblocked						
vC, conflicting volume	993				1331	497
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	993				1331	497
tC, single (s)	4.2				7.6	7.7
tC, 2 stage (s)						
tF (s)	2.3				3.9	3.7
p0 queue free %	97				84	95
cM capacity (veh/h)	662				103	434

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	23	302	302	648	345	40
Volume Left	23	0	0	0	0	17
Volume Right	0	0	0	0	21	23
cSH	662	1700	1700	1700	1700	183
Volume to Capacity	0.03	0.18	0.18	0.38	0.20	0.22
Queue Length 95th (ft)	3	0	0	0	0	20
Control Delay (s)	10.6	0.0	0.0	0.0	0.0	30.1
Lane LOS	B					D
Approach Delay (s)	0.4			0.0		30.1
Approach LOS						D

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1656	3299		1641	3156		1719	1810	1538	1456	1488	
Flt Permitted	0.95	1.00		0.95	1.00		0.69	1.00	1.00	0.69	1.00	
Satd. Flow (perm)	1656	3299		1641	3156		1255	1810	1538	1055	1488	
Volume (vph)	30	454	12	42	663	228	22	93	39	96	64	15
Peak-hour factor, PHF	0.91	0.91	0.91	0.89	0.89	0.89	0.88	0.88	0.88	0.81	0.81	0.81
Adj. Flow (vph)	33	499	13	47	745	256	25	106	44	119	79	19
RTOR Reduction (vph)	0	3	0	0	57	0	0	0	32	0	14	0
Lane Group Flow (vph)	33	509	0	47	944	0	25	106	12	119	84	0
Heavy Vehicles (%)	9%	9%	9%	10%	10%	10%	5%	5%	5%	24%	24%	24%
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		
Actuated Green, G (s)	5.0	24.0		5.0	24.0		16.0	16.0	16.0	16.0	16.0	
Effective Green, g (s)	6.0	25.0		6.0	25.0		17.0	17.0	17.0	17.0	17.0	
Actuated g/C Ratio	0.10	0.42		0.10	0.42		0.28	0.28	0.28	0.28	0.28	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	166	1375		164	1315		356	513	436	299	422	
v/s Ratio Prot	0.02	0.15		c0.03	c0.30			0.06			0.06	
v/s Ratio Perm							0.02		0.01	c0.11		
v/c Ratio	0.20	0.37		0.29	0.72		0.07	0.21	0.03	0.40	0.20	
Uniform Delay, d1	24.8	12.1		25.0	14.6		15.7	16.4	15.5	17.4	16.3	
Progression Factor	1.00	1.00		0.78	1.75		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.7	0.8		3.1	2.4		0.4	0.9	0.1	3.9	1.1	
Delay (s)	27.5	12.8		22.6	28.0		16.1	17.3	15.7	21.3	17.4	
Level of Service	C	B		C	C		B	B	B	C	B	
Approach Delay (s)		13.7			27.8			16.7			19.5	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	22.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1626	3252	3292		1687	1509
Flt Permitted	0.15	1.00	1.00		0.95	1.00
Satd. Flow (perm)	254	3252	3292		1687	1509
Volume (vph)	138	490	782	33	16	222
Peak-hour factor, PHF	0.89	0.89	0.84	0.84	0.78	0.78
Adj. Flow (vph)	155	551	931	39	21	285
RTOR Reduction (vph)	0	0	5	0	0	200
Lane Group Flow (vph)	155	551	965	0	21	86
Heavy Vehicles (%)	11%	11%	9%	9%	7%	7%
Turn Type	pm+pt					Perm
Protected Phases	7	4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)	33.0	33.0	22.0		17.0	17.0
Effective Green, g (s)	34.0	34.0	23.0		18.0	18.0
Actuated g/C Ratio	0.57	0.57	0.38		0.30	0.30
Clearance Time (s)	4.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	304	1843	1262		506	453
v/s Ratio Prot	c0.06	0.17	c0.29		0.01	
v/s Ratio Perm	0.23					c0.06
v/c Ratio	0.51	0.30	0.76		0.04	0.19
Uniform Delay, d1	8.7	6.8	16.1		14.9	15.6
Progression Factor	2.32	1.23	1.00		1.00	1.00
Incremental Delay, d2	5.8	0.4	4.4		0.2	0.9
Delay (s)	25.9	8.7	20.6		15.0	16.5
Level of Service	C	A	C		B	B
Approach Delay (s)		12.5	20.6		16.4	
Approach LOS		B	C		B	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.6%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.97		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1825		1770	1809		1752	1845	1568	1687	1708	
Flt Permitted	0.49	1.00		0.67	1.00		0.71	1.00	1.00	0.70	1.00	
Satd. Flow (perm)	891	1825		1257	1809		1302	1845	1568	1246	1708	
Volume (vph)	29	114	1	115	223	53	1	78	53	52	54	18
Peak-hour factor, PHF	0.90	0.90	0.90	0.81	0.81	0.81	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	32	127	1	142	275	65	1	85	58	57	59	20
RTOR Reduction (vph)	0	1	0	0	14	0	0	0	35	0	12	0
Lane Group Flow (vph)	32	127	0	142	326	0	1	85	23	57	67	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	3%	3%	3%	7%	7%	7%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	27.0	27.0		27.0	27.0		23.0	23.0	23.0	23.0	23.0	
Effective Green, g (s)	28.0	28.0		28.0	28.0		24.0	24.0	24.0	24.0	24.0	
Actuated g/C Ratio	0.47	0.47		0.47	0.47		0.40	0.40	0.40	0.40	0.40	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	416	852		587	844		521	738	627	498	683	
v/s Ratio Prot		0.07			c0.18			c0.05			0.04	
v/s Ratio Perm	0.04			0.11			0.00		0.01	0.05		
v/c Ratio	0.08	0.15		0.24	0.39		0.00	0.12	0.04	0.11	0.10	
Uniform Delay, d1	8.9	9.2		9.6	10.4		10.8	11.3	11.0	11.3	11.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.4		1.0	1.3		0.0	0.3	0.1	0.5	0.3	
Delay (s)	9.2	9.5		10.6	11.7		10.8	11.6	11.1	11.8	11.5	
Level of Service	A	A		B	B		B	B	B	B	B	
Approach Delay (s)		9.5			11.4			11.4			11.6	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.95		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1559	1565	1468		902		1570	3125		1703	3406	1524
Flt Permitted	0.95	0.95	1.00		0.95		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1559	1565	1468		902		1570	3125		1703	3406	1524
Volume (vph)	240	4	7	1	0	0	4	153	5	1	252	382
Peak-hour factor, PHF	0.78	0.78	0.78	0.25	0.25	0.25	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	308	5	9	4	0	0	4	166	5	1	283	429
RTOR Reduction (vph)	0	0	6	0	0	0	0	2	0	0	0	306
Lane Group Flow (vph)	154	159	3	0	4	0	4	169	0	1	283	123
Heavy Vehicles (%)	10%	10%	10%	100%	100%	100%	15%	15%	15%	6%	6%	6%
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Over
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4			8						
Actuated Green, G (s)	22.0	22.0	22.0		16.0		5.0	17.0		5.0	17.0	22.0
Effective Green, g (s)	23.0	23.0	23.0		17.0		6.0	18.0		6.0	18.0	23.0
Actuated g/C Ratio	0.29	0.29	0.29		0.21		0.08	0.22		0.08	0.22	0.29
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	448	450	422		192		118	703		128	766	438
v/s Ratio Prot	0.10	c0.10			c0.00		c0.00	0.05		0.00	c0.08	0.08
v/s Ratio Perm			0.00									
v/c Ratio	0.34	0.35	0.01		0.02		0.03	0.24		0.01	0.37	0.28
Uniform Delay, d1	22.5	22.6	20.3		24.9		34.3	25.4		34.2	26.2	22.1
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.1	2.2	0.0		0.2		0.5	0.8		0.1	1.4	1.6
Delay (s)	24.6	24.8	20.4		25.1		34.8	26.2		34.4	27.6	23.7
Level of Service	C	C	C		C		C	C		C	C	C
Approach Delay (s)		24.6			25.1			26.4			25.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	25.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	13	11	640	627	1
Peak Hour Factor	0.63	0.63	0.83	0.83	0.89	0.89
Hourly flow rate (vph)	3	22	14	840	768	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				1083		
pX, platoon unblocked	0.87					
vC, conflicting volume	1218	385	769			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1100	385	769			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	96	98			
cM capacity (veh/h)	179	619	822			

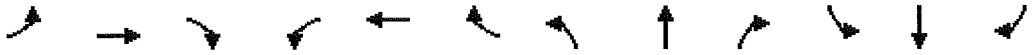
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	26	14	420	420	512	257
Volume Left	3	14	0	0	0	0
Volume Right	22	0	0	0	0	1
cSH	466	822	1700	1700	1700	1700
Volume to Capacity	0.06	0.02	0.25	0.25	0.30	0.15
Queue Length 95th (ft)	4	1	0	0	0	0
Control Delay (s)	13.2	9.5	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	13.2	0.2			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406	1524	1719	3384		1556	3112	1392	3155	3252	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406	1524	1719	3384		1556	3112	1392	3155	3252	1455
Volume (vph)	60	559	101	28	545	63	52	59	87	145	102	33
Peak-hour factor, PHF	0.81	0.81	0.81	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	81	752	136	33	646	75	62	70	103	178	125	40
RTOR Reduction (vph)	0	0	87	0	11	0	0	0	80	0	0	30
Lane Group Flow (vph)	81	752	49	33	710	0	62	70	23	178	125	10
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	16%	16%	16%	11%	11%	11%
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2						4			8
Actuated Green, G (s)	9.0	28.0	28.0	6.0	25.0		7.0	17.0	17.0	9.0	19.0	19.0
Effective Green, g (s)	10.0	29.0	29.0	7.0	26.0		8.0	18.0	18.0	10.0	20.0	20.0
Actuated g/C Ratio	0.12	0.36	0.36	0.09	0.32		0.10	0.22	0.22	0.12	0.25	0.25
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	213	1235	552	150	1100		156	700	313	394	813	364
v/s Ratio Prot	0.05	c0.22		0.02	c0.21		c0.04	0.02		c0.06	c0.04	
v/s Ratio Perm			0.03						0.02			0.01
v/c Ratio	0.38	0.61	0.09	0.22	0.65		0.40	0.10	0.07	0.45	0.15	0.03
Uniform Delay, d1	32.2	20.9	16.8	34.0	23.1		33.7	24.6	24.4	32.5	23.4	22.7
Progression Factor	1.22	0.28	0.13	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.7	1.6	0.2	3.4	2.9		7.4	0.3	0.5	3.7	0.4	0.1
Delay (s)	42.8	7.6	2.5	37.3	26.0		41.1	24.9	24.9	36.2	23.8	22.8
Level of Service	D	A	A	D	C		D	C	C	D	C	C
Approach Delay (s)		9.8			26.5			29.2			30.1	
Approach LOS		A			C			C			C	

Intersection Summary			
HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	43.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0			4.0			4.0	4.0
Lane Util. Factor				0.95	0.95			0.95			0.95	1.00
Frt				1.00	0.90			1.00			1.00	0.85
Flt Protected				0.95	0.98			0.99			1.00	1.00
Satd. Flow (prot)				1665	1553			3382			3312	1482
Flt Permitted				0.95	0.98			0.99			1.00	1.00
Satd. Flow (perm)				1665	1553			3382			3312	1482
Volume (vph)	0	0	0	402	1	207	81	489	0	0	567	368
Peak-hour factor, PHF	0.92	0.92	0.92	0.87	0.87	0.87	0.85	0.85	0.85	0.90	0.90	0.90
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	0	0	0	504	1	259	104	627	0	0	687	446
RTOR Reduction (vph)	0	0	0	0	86	0	0	0	0	0	0	329
Lane Group Flow (vph)	0	0	0	370	308	0	0	731	0	0	687	117
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	6%	6%	6%	9%	9%	9%
Turn Type				Perm			Split					Perm
Protected Phases					8		2	2			6	
Permitted Phases				8								6
Actuated Green, G (s)				24.0	24.0			23.0			21.0	21.0
Effective Green, g (s)				24.0	24.0			23.0			21.0	21.0
Actuated g/C Ratio				0.30	0.30			0.29			0.26	0.26
Clearance Time (s)				4.0	4.0			4.0			4.0	4.0
Lane Grp Cap (vph)				500	466			972			869	389
v/s Ratio Prot								c0.22			c0.21	
v/s Ratio Perm				c0.22	0.20							0.08
v/c Ratio				0.74	0.66			0.75			0.79	0.30
Uniform Delay, d1				25.2	24.4			25.9			27.5	23.6
Progression Factor				1.00	1.00			0.32			0.58	0.38
Incremental Delay, d2				9.5	7.2			4.5			6.6	1.8
Delay (s)				34.7	31.6			12.7			22.5	10.8
Level of Service				C	C			B			C	B
Approach Delay (s)		0.0			33.1			12.7			17.9	
Approach LOS		A			C			B			B	

Intersection Summary				
HCM Average Control Delay	20.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	71.2%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00		0.95	
Frt	1.00	1.00	0.85					1.00	0.85		1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00		0.99	
Satd. Flow (prot)	1618	1623	1524					3374	1509		3458	
Flt Permitted	0.95	0.95	1.00					1.00	1.00		0.99	
Satd. Flow (perm)	1618	1623	1524					3374	1509		3458	
Volume (vph)	349	2	201	0	0	0	0	231	212	271	721	0
Peak-hour factor, PHF	0.79	0.79	0.79	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	482	3	277	0	0	0	0	268	246	314	836	0
RTOR Reduction (vph)	0	0	215	0	0	0	0	0	194	0	0	0
Lane Group Flow (vph)	241	244	62	0	0	0	0	268	52	0	1150	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	7%	7%	7%	3%	3%	3%
Turn Type	Perm		Perm						Perm	Split		
Protected Phases		4						2		6	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	18.0	18.0	18.0					17.0	17.0		33.0	
Effective Green, g (s)	18.0	18.0	18.0					17.0	17.0		33.0	
Actuated g/C Ratio	0.22	0.22	0.22					0.21	0.21		0.41	
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0		4.0	
Lane Grp Cap (vph)	364	365	343					717	321		1426	
v/s Ratio Prot								c0.08			c0.33	
v/s Ratio Perm	0.15	0.15	0.04						0.03			
v/c Ratio	0.66	0.67	0.18					0.37	0.16		0.81	
Uniform Delay, d1	28.2	28.3	25.0					26.9	25.7		20.7	
Progression Factor	1.00	1.00	1.00					1.00	1.00		0.95	
Incremental Delay, d2	9.1	9.4	1.2					1.5	1.1		3.1	
Delay (s)	37.4	37.6	26.2					28.4	26.8		22.8	
Level of Service	D	D	C					C	C		C	
Approach Delay (s)		33.4			0.0			27.6			22.8	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM Average Control Delay	27.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	1	35	8	16	21	2
Peak Hour Factor	0.69	0.69	0.86	0.86	0.64	0.64
Hourly flow rate (vph)	1	51	9	19	33	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	28				72	19
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	28				72	19
tC, single (s)	4.1				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.4
p0 queue free %	100				96	100
cM capacity (veh/h)	1579				914	1040

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	52	28	36
Volume Left	1	0	33
Volume Right	0	19	3
cSH	1579	1700	924
Volume to Capacity	0.00	0.02	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.2	0.0	9.1
Lane LOS	A		A
Approach Delay (s)	0.2	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	42	1	8	1	1	1	8	124	1	1	157	16
Peak Hour Factor	0.75	0.75	0.75	0.38	0.38	0.38	0.85	0.85	0.85	0.91	0.91	0.91
Hourly flow rate (vph)	56	1	11	3	3	3	9	146	1	1	173	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	279	349	95	265	358	74	190			147		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	279	349	95	265	358	74	190			147		
tC, single (s)	7.7	6.7	7.1	7.5	6.5	6.9	4.5			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.4			2.3		
p0 queue free %	91	100	99	100	100	100	99			100		
cM capacity (veh/h)	623	551	918	658	567	980	1259			1362		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	68	8	9	97	50	1	115	75
Volume Left	56	3	9	0	0	1	0	0
Volume Right	11	3	0	0	1	0	0	18
cSH	654	697	1259	1700	1700	1362	1700	1700
Volume to Capacity	0.10	0.01	0.01	0.06	0.03	0.00	0.07	0.04
Queue Length 95th (ft)	9	1	1	0	0	0	0	0
Control Delay (s)	11.1	10.2	7.9	0.0	0.0	7.6	0.0	0.0
Lane LOS	B	B	A			A		
Approach Delay (s)	11.1	10.2	0.5			0.0		
Approach LOS	B	B						

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	19.5%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	59	1	145	40	1	99
Peak Hour Factor	0.88	0.88	0.70	0.70	0.67	0.67
Hourly flow rate (vph)	73	1	226	62	2	161
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				236		
pX, platoon unblocked						
vC, conflicting volume			74		588	74
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			74		588	74
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.4
p0 queue free %			85		100	84
cM capacity (veh/h)			1506		395	977

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	74	288	163
Volume Left	0	226	2
Volume Right	1	0	161
cSH	1700	1506	963
Volume to Capacity	0.04	0.15	0.17
Queue Length 95th (ft)	0	13	15
Control Delay (s)	0.0	6.4	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	6.4	9.5
Approach LOS			A

Intersection Summary			
Average Delay		6.4	
Intersection Capacity Utilization		31.1%	ICU Level of Service A
Analysis Period (min)		15	

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0						4.0	4.0
Lane Util. Factor		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		0.96						0.95	1.00
Satd. Flow (prot)		1776	1509		1686						1631	1455
Flt Permitted		1.00	1.00		0.96						0.95	1.00
Satd. Flow (perm)		1776	1509		1686						1631	1455
Volume (vph)	0	165	3	291	44	0	0	0	0	284	4	117
Peak-hour factor, PHF	0.78	0.78	0.78	0.79	0.79	0.79	0.92	0.92	0.92	0.73	0.73	0.73
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	0	231	4	402	61	0	0	0	0	424	6	175
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	0	0	0	113
Lane Group Flow (vph)	0	231	2	0	463	0	0	0	0	0	430	63
Heavy Vehicles (%)	7%	7%	7%	8%	8%	8%	2%	2%	2%	11%	11%	11%
Turn Type			Perm	Split						Perm		Perm
Protected Phases		6		2	2						8	
Permitted Phases			6							8		8
Actuated Green, G (s)		26.0	26.0		52.0						50.0	50.0
Effective Green, g (s)		26.0	26.0		52.0						50.0	50.0
Actuated g/C Ratio		0.19	0.19		0.37						0.36	0.36
Clearance Time (s)		4.0	4.0		4.0						4.0	4.0
Lane Grp Cap (vph)		330	280		626						583	520
v/s Ratio Prot		c0.13			c0.27							
v/s Ratio Perm			0.00								0.26	0.04
v/c Ratio		0.70	0.01		0.74						0.74	0.12
Uniform Delay, d1		53.3	46.5		38.1						39.3	30.2
Progression Factor		1.00	1.00		0.21						1.00	1.00
Incremental Delay, d2		11.7	0.1		5.6						8.1	0.5
Delay (s)		65.1	46.5		13.6						47.4	30.7
Level of Service		E	D		B						D	C
Approach Delay (s)		64.7			13.6			0.0			42.6	
Approach LOS		E			B			A			D	

Intersection Summary			
HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.99			1.00	1.00		0.98	1.00			
Satd. Flow (prot)		1734			1743	1482		1738	1509			
Flt Permitted		0.99			1.00	1.00		0.98	1.00			
Satd. Flow (perm)		1734			1743	1482		1738	1509			
Volume (vph)	138	341	0	0	325	199	2	3	115	0	0	0
Peak-hour factor, PHF	0.74	0.74	0.74	0.86	0.86	0.86	0.83	0.83	0.83	0.92	0.92	0.92
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	203	502	0	0	412	252	3	4	151	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	173	0	0	134	0	0	0
Lane Group Flow (vph)	0	705	0	0	412	79	0	7	17	0	0	0
Heavy Vehicles (%)	8%	8%	8%	9%	9%	9%	7%	7%	7%	2%	2%	2%
Turn Type	Split					Perm	Perm		Perm			
Protected Phases	6	6			2			4				
Permitted Phases						2	4		4			
Actuated Green, G (s)		69.0			43.0	43.0		16.0	16.0			
Effective Green, g (s)		69.0			43.0	43.0		16.0	16.0			
Actuated g/C Ratio		0.49			0.31	0.31		0.11	0.11			
Clearance Time (s)		4.0			4.0	4.0		4.0	4.0			
Lane Grp Cap (vph)		855			535	455		199	172			
v/s Ratio Prot		c0.41			c0.24							
v/s Ratio Perm						0.05		0.00	c0.01			
v/c Ratio		0.82			0.77	0.17		0.04	0.10			
Uniform Delay, d1		30.3			44.0	35.5		55.1	55.6			
Progression Factor		0.41			1.00	1.00		1.00	1.00			
Incremental Delay, d2		6.7			10.3	0.8		0.3	1.2			
Delay (s)		19.2			54.3	36.3		55.5	56.7			
Level of Service		B			D	D		E	E			
Approach Delay (s)		19.2			47.5			56.7			0.0	
Approach LOS		B			D			E			A	

Intersection Summary			
HCM Average Control Delay	35.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	
Satd. Flow (prot)	1719	1750		1719	1810	1538	1687	1776	1509	1545	1539	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.67	
Satd. Flow (perm)	1719	1750		1719	1810	1538	1687	1776	1509	1545	1067	
Volume (vph)	32	61	17	139	74	439	12	26	57	393	47	37
Peak-hour factor, PHF	0.89	0.89	0.89	0.80	0.80	0.80	0.88	0.88	0.88	0.89	0.89	0.89
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	39	75	21	189	101	598	15	32	71	481	58	45
RTOR Reduction (vph)	0	13	0	0	0	419	0	0	56	0	6	0
Lane Group Flow (vph)	39	83	0	189	101	179	15	32	15	291	288	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	7%	7%	7%	11%	11%	11%
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	4.0	16.0		12.0	24.0	24.0	4.0	17.0	17.0	19.0	40.0	
Effective Green, g (s)	4.0	16.0		12.0	24.0	24.0	4.0	17.0	17.0	19.0	40.0	
Actuated g/C Ratio	0.05	0.20		0.15	0.30	0.30	0.05	0.21	0.21	0.24	0.50	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	86	350		258	543	461	84	377	321	367	646	
v/s Ratio Prot	0.02	0.05		c0.11	0.06		0.01	0.02		c0.19	0.11	
v/s Ratio Perm						c0.12			0.01		c0.12	
v/c Ratio	0.45	0.24		0.73	0.19	0.39	0.18	0.08	0.05	0.79	0.45	
Uniform Delay, d1	36.9	26.9		32.5	20.8	22.2	36.4	25.3	25.1	28.7	12.9	
Progression Factor	1.00	1.00		0.90	1.08	2.88	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	16.3	1.6		14.9	0.7	2.2	4.6	0.4	0.3	16.0	2.2	
Delay (s)	53.2	28.5		44.1	23.1	66.0	41.0	25.7	25.3	44.7	15.1	
Level of Service	D	C		D	C	E	D	C	C	D	B	
Approach Delay (s)		35.6			56.5			27.4			29.8	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM Average Control Delay	43.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	4.0
Lane Util. Factor					1.00	1.00		1.00			0.95	1.00
Frt					1.00	0.85		1.00			1.00	0.85
Flt Protected					0.95	1.00		0.99			1.00	1.00
Satd. Flow (prot)					1741	1553		1816			3471	1553
Flt Permitted					0.95	1.00		0.93			1.00	1.00
Satd. Flow (perm)					1741	1553		1696			3471	1553
Volume (vph)	0	0	0	131	2	364	41	295	0	0	261	250
Peak-hour factor, PHF	0.92	0.92	0.92	0.79	0.79	0.79	0.95	0.95	0.95	0.93	0.93	0.93
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	0	0	0	181	3	502	47	338	0	0	306	293
RTOR Reduction (vph)	0	0	0	0	0	205	0	0	0	0	0	168
Lane Group Flow (vph)	0	0	0	0	184	297	0	385	0	0	306	125
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					8			2			6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)					38.0	38.0		34.0			34.0	34.0
Effective Green, g (s)					38.0	38.0		34.0			34.0	34.0
Actuated g/C Ratio					0.48	0.48		0.42			0.42	0.42
Clearance Time (s)					4.0	4.0		4.0			4.0	4.0
Lane Grp Cap (vph)					827	738		721			1475	660
v/s Ratio Prot											0.09	
v/s Ratio Perm					0.11	c0.19		c0.23				0.08
v/c Ratio					0.22	0.40		0.53			0.21	0.19
Uniform Delay, d1					12.3	13.6		17.1			14.5	14.4
Progression Factor					1.00	1.00		0.75			0.19	0.11
Incremental Delay, d2					0.6	1.6		2.7			0.2	0.5
Delay (s)					12.9	15.3		15.6			3.0	2.0
Level of Service					B	B		B			A	A
Approach Delay (s)		0.0			14.6			15.6			2.5	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	0.95	0.95	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1793	1599					1881	1599	1559	1641	
Flt Permitted		0.95	1.00					1.00	1.00	0.66	1.00	
Satd. Flow (perm)		1793	1599					1881	1599	1084	1641	
Volume (vph)	283	3	452	0	0	0	0	88	35	157	233	0
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.66	0.66	0.66	0.91	0.91	0.91
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	332	4	530	0	0	0	0	145	58	188	279	0
RTOR Reduction (vph)	0	0	222	0	0	0	0	0	35	0	0	0
Lane Group Flow (vph)	0	336	308	0	0	0	0	145	23	188	279	0
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	10%	10%	10%
Turn Type	Perm		Perm						Perm	Perm		
Protected Phases		4						2			6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		40.0	40.0					32.0	32.0	32.0	32.0	
Effective Green, g (s)		40.0	40.0					32.0	32.0	32.0	32.0	
Actuated g/C Ratio		0.50	0.50					0.40	0.40	0.40	0.40	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		897	800					752	640	434	656	
v/s Ratio Prot								0.08				
v/s Ratio Perm		0.19	c0.19						0.01	c0.17	0.17	
v/c Ratio		0.37	0.39					0.19	0.04	0.43	0.43	
Uniform Delay, d1		12.3	12.4					15.6	14.6	17.4	17.4	
Progression Factor		1.00	1.00					1.00	1.00	0.55	0.55	
Incremental Delay, d2		1.2	1.4					0.6	0.1	3.1	2.0	
Delay (s)		13.5	13.8					16.2	14.7	12.7	11.5	
Level of Service		B	B					B	B	B	B	
Approach Delay (s)		13.7			0.0			15.8			12.0	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

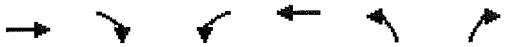
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	13	867	3	6	1070	27	18	0	38	21	0	15
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.52	0.52	0.52	0.75	0.75	0.75
Hourly flow rate (vph)	14	922	3	6	1138	29	35	0	73	28	0	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1167			926			1554	2131	463	1727	2119	584
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1167			926			1554	2131	463	1727	2119	584
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			52	100	87	41	100	96
cM capacity (veh/h)	589			728			72	47	546	48	48	453

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	14	615	311	6	759	408	108	48
Volume Left	14	0	0	6	0	0	35	28
Volume Right	0	0	3	0	0	29	73	20
cSH	589	1700	1700	728	1700	1700	175	76
Volume to Capacity	0.02	0.36	0.18	0.01	0.45	0.24	0.62	0.63
Queue Length 95th (ft)	2	0	0	1	0	0	86	71
Control Delay (s)	11.3	0.0	0.0	10.0	0.0	0.0	54.1	112.6
Lane LOS	B			A			F	F
Approach Delay (s)	0.2			0.1			54.1	112.6
Approach LOS							F	F

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	3383		1736	3428		1752	3505	1568	1770	3479	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1752	3383		1736	3428		1752	3505	1568	1770	3479	
Volume (vph)	133	678	204	163	719	64	195	686	230	133	779	100
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.95	0.95	0.95
Adj. Flow (vph)	145	737	222	185	817	73	232	817	274	140	820	105
RTOR Reduction (vph)	0	36	0	0	8	0	0	0	144	0	12	0
Lane Group Flow (vph)	145	923	0	185	882	0	232	817	131	140	913	0
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	6.0	21.0		8.0	23.0		10.0	23.0	23.0	8.0	21.0	
Effective Green, g (s)	7.0	22.0		9.0	24.0		11.0	24.0	24.0	9.0	22.0	
Actuated g/C Ratio	0.09	0.28		0.11	0.30		0.14	0.30	0.30	0.11	0.28	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	153	930		195	1028		241	1052	470	199	957	
v/s Ratio Prot	0.08	c0.27		c0.11	0.26		c0.13	0.23		0.08	c0.26	
v/s Ratio Perm									0.08			
v/c Ratio	0.95	0.99		0.95	0.86		0.96	0.78	0.28	0.70	0.95	
Uniform Delay, d1	36.3	28.9		35.3	26.4		34.3	25.6	21.4	34.2	28.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	60.0	27.9		52.3	9.2		49.1	5.6	1.5	18.8	19.8	
Delay (s)	96.4	56.8		87.6	35.6		83.4	31.2	22.8	53.0	48.3	
Level of Service	F	E		F	D		F	C	C	D	D	
Approach Delay (s)		62.0			44.5			38.6			49.0	
Approach LOS		E			D			D			D	

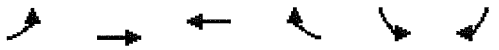
Intersection Summary			
HCM Average Control Delay	48.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3490		1770	3539	1770	1583
Flt Permitted	1.00		0.15	1.00	0.95	1.00
Satd. Flow (perm)	3490		276	3539	1770	1583
Volume (vph)	867	88	161	799	171	162
Peak-hour factor, PHF	0.88	0.88	0.89	0.89	0.91	0.91
Adj. Flow (vph)	985	100	181	898	188	178
RTOR Reduction (vph)	13	0	0	0	0	125
Lane Group Flow (vph)	1072	0	181	898	188	53
Turn Type			pm+pt			Perm
Protected Phases	4		3	8	2	
Permitted Phases			8			2
Actuated Green, G (s)	22.0		33.0	33.0	17.0	17.0
Effective Green, g (s)	23.0		34.0	34.0	18.0	18.0
Actuated g/C Ratio	0.38		0.57	0.57	0.30	0.30
Clearance Time (s)	5.0		4.0	5.0	5.0	5.0
Lane Grp Cap (vph)	1338		331	2005	531	475
v/s Ratio Prot	c0.31		c0.06	0.25	c0.11	
v/s Ratio Perm			0.25			0.03
v/c Ratio	0.80		0.55	0.45	0.35	0.11
Uniform Delay, d1	16.5		9.5	7.5	16.4	15.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	5.1		6.4	0.7	1.8	0.5
Delay (s)	21.6		15.9	8.3	18.3	15.7
Level of Service	C		B	A	B	B
Approach Delay (s)	21.6			9.5	17.0	
Approach LOS	C			A	B	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	30	1027	886	18	24	54
Peak Hour Factor	0.91	0.91	0.91	0.91	0.72	0.72
Hourly flow rate (vph)	33	1129	974	20	33	75
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		836				
pX, platoon unblocked					0.78	
vC, conflicting volume	993				1614	497
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	993				1502	497
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				60	86
cM capacity (veh/h)	692				84	521

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	33	564	564	649	344	108
Volume Left	33	0	0	0	0	33
Volume Right	0	0	0	0	20	75
cSH	692	1700	1700	1700	1700	200
Volume to Capacity	0.05	0.33	0.33	0.38	0.20	0.54
Queue Length 95th (ft)	4	0	0	0	0	71
Control Delay (s)	10.5	0.0	0.0	0.0	0.0	42.4
Lane LOS	B					E
Approach Delay (s)	0.3			0.0		42.4
Approach LOS						E

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	3480		1719	3370		1770	1863	1583	1736	1751	
Flt Permitted	0.95	1.00		0.95	1.00		0.58	1.00	1.00	0.69	1.00	
Satd. Flow (perm)	1752	3480		1719	3370		1075	1863	1583	1255	1751	
Volume (vph)	50	947	47	76	816	125	45	94	82	171	129	49
Peak-hour factor, PHF	0.95	0.95	0.95	0.90	0.90	0.90	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	53	997	49	84	907	139	52	109	95	199	150	57
RTOR Reduction (vph)	0	6	0	0	20	0	0	0	67	0	23	0
Lane Group Flow (vph)	53	1040	0	84	1026	0	52	109	29	199	184	0
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	2%	2%	2%	4%	4%	4%
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		
Actuated Green, G (s)	5.0	23.0		5.0	23.0		17.0	17.0	17.0	17.0	17.0	
Effective Green, g (s)	6.0	24.0		6.0	24.0		18.0	18.0	18.0	18.0	18.0	
Actuated g/C Ratio	0.10	0.40		0.10	0.40		0.30	0.30	0.30	0.30	0.30	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	175	1392		172	1348		323	559	475	377	525	
v/s Ratio Prot	0.03	0.30		c0.05	c0.30			0.06			0.10	
v/s Ratio Perm							0.05		0.02	c0.16		
v/c Ratio	0.30	0.75		0.49	0.76		0.16	0.19	0.06	0.53	0.35	
Uniform Delay, d1	25.1	15.4		25.5	15.5		15.4	15.6	15.0	17.5	16.4	
Progression Factor	1.00	1.00		0.74	1.84		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.4	3.7		6.4	2.7		1.1	0.8	0.2	5.2	1.8	
Delay (s)	29.5	19.1		25.2	31.3		16.5	16.4	15.2	22.7	18.3	
Level of Service	C	B		C	C		B	B	B	C	B	
Approach Delay (s)		19.6			30.9			16.0			20.4	
Approach LOS		B			C			B			C	

Intersection Summary			
HCM Average Control Delay	23.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	3440		1736	1553
Flt Permitted	0.19	1.00	1.00		0.95	1.00
Satd. Flow (perm)	351	3505	3440		1736	1553
Volume (vph)	344	869	734	47	24	358
Peak-hour factor, PHF	0.91	0.91	0.94	0.94	0.96	0.96
Adj. Flow (vph)	378	955	781	50	25	373
RTOR Reduction (vph)	0	0	8	0	0	261
Lane Group Flow (vph)	378	955	823	0	25	112
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Turn Type	pm+pt					Perm
Protected Phases	7	4	8		6	
Permitted Phases	4					6
Actuated Green, G (s)	33.0	33.0	16.0		17.0	17.0
Effective Green, g (s)	34.0	34.0	17.0		18.0	18.0
Actuated g/C Ratio	0.57	0.57	0.28		0.30	0.30
Clearance Time (s)	4.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	502	1986	975		521	466
v/s Ratio Prot	c0.16	0.27	0.24		0.01	
v/s Ratio Perm	c0.26					c0.07
v/c Ratio	0.75	0.48	0.84		0.05	0.24
Uniform Delay, d1	10.5	7.7	20.3		14.9	15.8
Progression Factor	1.94	1.97	1.00		1.00	1.00
Incremental Delay, d2	7.7	0.6	8.9		0.2	1.2
Delay (s)	28.1	15.9	29.1		15.1	17.1
Level of Service	C	B	C		B	B
Approach Delay (s)		19.3	29.1		16.9	
Approach LOS		B	C		B	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.2%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.98		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1860		1770	1824		1752	1845	1568	1770	1791	
Flt Permitted	0.41	1.00		0.43	1.00		0.64	1.00	1.00	0.69	1.00	
Satd. Flow (perm)	772	1860		808	1824		1181	1845	1568	1278	1791	
Volume (vph)	41	369	4	109	345	56	3	97	174	88	112	39
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.88	0.88	0.88	0.85	0.85	0.85
Adj. Flow (vph)	46	410	4	118	375	61	3	110	198	104	132	46
RTOR Reduction (vph)	0	1	0	0	10	0	0	0	125	0	21	0
Lane Group Flow (vph)	46	414	0	118	426	0	3	110	73	104	157	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	29.0	29.0		29.0	29.0		21.0	21.0	21.0	21.0	21.0	
Effective Green, g (s)	30.0	30.0		30.0	30.0		22.0	22.0	22.0	22.0	22.0	
Actuated g/C Ratio	0.50	0.50		0.50	0.50		0.37	0.37	0.37	0.37	0.37	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	386	930		404	912		433	677	575	469	657	
v/s Ratio Prot		0.22			c0.23			0.06			c0.09	
v/s Ratio Perm	0.06			0.15			0.00		0.05	0.08		
v/c Ratio	0.12	0.44		0.29	0.47		0.01	0.16	0.13	0.22	0.24	
Uniform Delay, d1	8.0	9.6		8.8	9.8		12.1	12.8	12.6	13.1	13.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	1.5		1.8	1.7		0.0	0.5	0.5	1.1	0.9	
Delay (s)	8.6	11.2		10.6	11.5		12.1	13.3	13.1	14.2	14.0	
Level of Service	A	B		B	B		B	B	B	B	B	
Approach Delay (s)		10.9			11.3			13.1			14.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.95		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1686	1583		1805		1752	3504		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.95		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1686	1583		1805		1752	3504		1770	3539	1583
Volume (vph)	597	3	34	1	0	0	17	536	1	1	375	453
Peak-hour factor, PHF	0.78	0.78	0.78	0.25	0.25	0.25	0.88	0.88	0.88	0.96	0.96	0.96
Adj. Flow (vph)	765	4	44	4	0	0	19	609	1	1	391	472
RTOR Reduction (vph)	0	0	16	0	0	0	0	0	0	0	0	336
Lane Group Flow (vph)	383	386	28	0	4	0	19	610	0	1	391	136
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	3%	3%	3%	2%	2%	2%
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Over
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4			8						
Actuated Green, G (s)	22.0	22.0	22.0		16.0		5.0	17.0		5.0	17.0	22.0
Effective Green, g (s)	23.0	23.0	23.0		17.0		6.0	18.0		6.0	18.0	23.0
Actuated g/C Ratio	0.29	0.29	0.29		0.21		0.08	0.22		0.08	0.22	0.29
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	483	485	455		384		131	788		133	796	455
v/s Ratio Prot	0.23	c0.23			c0.00		c0.01	c0.17		0.00	0.11	0.09
v/s Ratio Perm			0.02									
v/c Ratio	0.79	0.80	0.06		0.01		0.15	0.77		0.01	0.49	0.30
Uniform Delay, d1	26.3	26.3	20.7		24.9		34.6	29.1		34.2	27.0	22.2
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	12.6	12.7	0.3		0.0		2.3	7.3		0.1	2.2	1.7
Delay (s)	38.9	39.0	20.9		24.9		36.9	36.4		34.3	29.2	23.9
Level of Service	D	D	C		C		D	D		C	C	C
Approach Delay (s)		38.0			24.9			36.4			26.3	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM Average Control Delay	33.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	4	14	15	1283	1021	10
Peak Hour Factor	0.75	0.75	0.87	0.87	0.94	0.94
Hourly flow rate (vph)	5	19	17	1475	1086	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				1083		
pX, platoon unblocked	0.72					
vC, conflicting volume	1863	548	1097			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1810	548	1097			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	96	97			
cM capacity (veh/h)	50	485	638			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	24	17	737	737	724	373
Volume Left	5	17	0	0	0	0
Volume Right	19	0	0	0	0	11
cSH	166	638	1700	1700	1700	1700
Volume to Capacity	0.14	0.03	0.43	0.43	0.43	0.22
Queue Length 95th (ft)	12	2	0	0	0	0
Control Delay (s)	30.4	10.8	0.0	0.0	0.0	0.0
Lane LOS	D	B				
Approach Delay (s)	30.4	0.1			0.0	
Approach LOS	D					

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1787	3514		1752	3505	1568	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1787	3514		1752	3505	1568	3433	3539	1583
Volume (vph)	68	1016	276	72	792	100	116	150	112	198	129	75
Peak-hour factor, PHF	0.89	0.89	0.89	0.97	0.97	0.97	0.85	0.85	0.85	0.88	0.88	0.88
Adj. Flow (vph)	76	1142	310	74	816	103	136	176	132	225	147	85
RTOR Reduction (vph)	0	0	167	0	10	0	0	0	104	0	0	71
Lane Group Flow (vph)	76	1142	143	74	909	0	136	176	28	225	147	14
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	2%	2%	2%
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2						4			8
Actuated Green, G (s)	8.0	42.0	42.0	8.0	42.0		14.0	20.0	20.0	10.0	16.0	16.0
Effective Green, g (s)	9.0	43.0	43.0	9.0	43.0		15.0	21.0	21.0	11.0	17.0	17.0
Actuated g/C Ratio	0.09	0.43	0.43	0.09	0.43		0.15	0.21	0.21	0.11	0.17	0.17
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	159	1522	681	161	1511		263	736	329	378	602	269
v/s Ratio Prot	0.04	c0.32		0.04	c0.26		c0.08	c0.05		c0.07	0.04	
v/s Ratio Perm			0.09						0.02			0.01
v/c Ratio	0.48	0.75	0.21	0.46	0.60		0.52	0.24	0.08	0.60	0.24	0.05
Uniform Delay, d1	43.3	24.0	17.9	43.2	21.9		39.2	32.9	31.8	42.4	35.9	34.8
Progression Factor	1.18	0.36	0.05	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.3	0.1	9.2	1.8		7.1	0.8	0.5	6.8	1.0	0.4
Delay (s)	51.9	9.0	1.0	52.4	23.7		46.3	33.6	32.3	49.1	36.9	35.1
Level of Service	D	A	A	D	C		D	C	C	D	D	D
Approach Delay (s)		9.5			25.8			37.1			42.6	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0			4.0			4.0	4.0
Lane Util. Factor				0.95	0.95			0.95			0.95	1.00
Frt				1.00	0.86			1.00			1.00	0.85
Flt Protected				0.95	1.00			0.99			1.00	1.00
Satd. Flow (prot)				1681	1521			3519			3505	1568
Flt Permitted				0.95	1.00			0.99			1.00	1.00
Satd. Flow (perm)				1681	1521			3519			3505	1568
Volume (vph)	0	0	0	278	0	346	163	1274	0	0	734	472
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92	0.94	0.94	0.94
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	0	0	0	340	0	424	193	1509	0	0	851	547
RTOR Reduction (vph)	0	0	0	0	301	0	0	0	0	0	0	396
Lane Group Flow (vph)	0	0	0	299	164	0	0	1702	0	0	851	151
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type				Perm			Split					Perm
Protected Phases					8		2	2			6	
Permitted Phases				8								6
Actuated Green, G (s)				17.0	17.0			48.0			23.0	23.0
Effective Green, g (s)				17.0	17.0			48.0			23.0	23.0
Actuated g/C Ratio				0.17	0.17			0.48			0.23	0.23
Clearance Time (s)				4.0	4.0			4.0			4.0	4.0
Lane Grp Cap (vph)				286	259			1689			806	361
v/s Ratio Prot								c0.48			c0.24	
v/s Ratio Perm				c0.18	0.11							0.10
v/c Ratio				1.05	0.63			1.01			1.06	0.42
Uniform Delay, d1				41.5	38.6			26.0			38.5	32.8
Progression Factor				1.00	1.00			0.73			0.74	1.46
Incremental Delay, d2				65.6	11.2			21.1			45.8	3.2
Delay (s)				107.1	49.8			40.1			74.4	51.2
Level of Service				F	D			D			E	D
Approach Delay (s)		0.0			72.2			40.1			65.3	
Approach LOS		A			E			D			E	

Intersection Summary			
HCM Average Control Delay	55.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	105.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00		0.95	
Frt	1.00	1.00	0.85					1.00	0.85		1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00		0.98	
Satd. Flow (prot)	1665	1670	1568					3539	1583		3520	
Flt Permitted	0.95	0.95	1.00					1.00	1.00		0.98	
Satd. Flow (perm)	1665	1670	1568					3539	1583		3520	
Volume (vph)	378	2	134	0	0	0	0	732	463	323	728	0
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	468	2	166	0	0	0	0	867	549	383	863	0
RTOR Reduction (vph)	0	0	136	0	0	0	0	0	217	0	0	0
Lane Group Flow (vph)	234	236	30	0	0	0	0	867	332	0	1246	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Turn Type	Perm		Perm						Perm	Split		
Protected Phases		4						2		6	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	18.0	18.0	18.0					30.0	30.0		40.0	
Effective Green, g (s)	18.0	18.0	18.0					30.0	30.0		40.0	
Actuated g/C Ratio	0.18	0.18	0.18					0.30	0.30		0.40	
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0		4.0	
Lane Grp Cap (vph)	300	301	282					1062	475		1408	
v/s Ratio Prot								c0.24			c0.35	
v/s Ratio Perm	0.14	0.14	0.02						0.21			
v/c Ratio	0.78	0.78	0.11					0.82	0.70		0.88	
Uniform Delay, d1	39.1	39.1	34.3					32.4	31.0		27.9	
Progression Factor	1.00	1.00	1.00					1.00	1.00		0.66	
Incremental Delay, d2	18.0	18.3	0.8					7.0	8.3		2.1	
Delay (s)	57.1	57.4	35.0					39.4	39.3		20.5	
Level of Service	E	E	D					D	D		C	
Approach Delay (s)		51.5			0.0			39.4			20.5	
Approach LOS		D			A			D			C	

Intersection Summary			
HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	27	32	50	16	1
Peak Hour Factor	0.56	0.56	0.82	0.82	0.71	0.71
Hourly flow rate (vph)	0	48	39	61	23	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	100				118	70
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	100				118	70
tC, single (s)	4.1				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.4
p0 queue free %	100				97	100
cM capacity (veh/h)	1480				869	982

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	48	100	24
Volume Left	0	0	23
Volume Right	0	61	1
cSH	1480	1700	875
Volume to Capacity	0.00	0.06	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.0	9.2
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.2
Approach LOS			A

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	33	0	12	0	0	1	9	291	0	5	229	52
Peak Hour Factor	0.87	0.87	0.87	0.25	0.25	0.25	0.82	0.82	0.82	0.94	0.94	0.94
Hourly flow rate (vph)	38	0	14	0	0	4	11	355	0	5	244	55
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	485	659	149	523	686	177	299			355		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	485	659	149	523	686	177	299			355		
tC, single (s)	7.5	6.5	6.9	9.5	8.5	8.9	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.5	5.0	4.3	2.2			2.2		
p0 queue free %	92	100	98	100	100	99	99			100		
cM capacity (veh/h)	462	381	877	267	218	599	1259			1186		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	52	4	11	237	118	5	162	137
Volume Left	38	0	11	0	0	5	0	0
Volume Right	14	4	0	0	0	0	0	55
cSH	528	599	1259	1700	1700	1186	1700	1700
Volume to Capacity	0.10	0.01	0.01	0.14	0.07	0.00	0.10	0.08
Queue Length 95th (ft)	8	1	1	0	0	0	0	0
Control Delay (s)	12.6	11.0	7.9	0.0	0.0	8.0	0.0	0.0
Lane LOS	B	B	A			A		
Approach Delay (s)	12.6	11.0	0.2			0.1		
Approach LOS	B	B						

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	23.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	91	4	223	103	5	262
Peak Hour Factor	0.77	0.77	0.84	0.84	0.86	0.86
Hourly flow rate (vph)	129	6	289	134	6	332
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				236		
pX, platoon unblocked						
vC, conflicting volume			134		844	132
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			134		844	132
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			80		98	64
cM capacity (veh/h)			1444		267	918

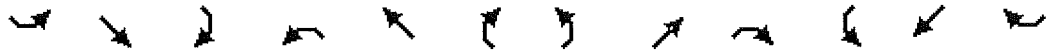
Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	134	423	338
Volume Left	0	289	6
Volume Right	6	0	332
cSH	1700	1444	878
Volume to Capacity	0.08	0.20	0.39
Queue Length 95th (ft)	0	19	46
Control Delay (s)	0.0	6.1	11.7
Lane LOS		A	B
Approach Delay (s)	0.0	6.1	11.7
Approach LOS			B

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0						4.0	4.0
Lane Util. Factor		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		0.97						0.95	1.00
Satd. Flow (prot)		1863	1583		1782						1740	1553
Flt Permitted		1.00	1.00		0.97						0.95	1.00
Satd. Flow (perm)		1863	1583		1782						1740	1553
Volume (vph)	0	348	7	168	71	0	0	0	0	311	1	247
Peak-hour factor, PHF	0.88	0.88	0.88	0.87	0.87	0.87	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	0	431	9	210	89	0	0	0	0	368	1	293
RTOR Reduction (vph)	0	0	2	0	0	0	0	0	0	0	0	203
Lane Group Flow (vph)	0	431	7	0	299	0	0	0	0	0	369	90
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	4%	4%	4%
Turn Type			Perm	Split						Perm		Perm
Protected Phases		6		2	2						8	
Permitted Phases			6							8		8
Actuated Green, G (s)		43.0	43.0		35.0						40.0	40.0
Effective Green, g (s)		43.0	43.0		35.0						40.0	40.0
Actuated g/C Ratio		0.33	0.33		0.27						0.31	0.31
Clearance Time (s)		4.0	4.0		4.0						4.0	4.0
Lane Grp Cap (vph)		616	524		480						535	478
v/s Ratio Prot		c0.23			c0.17							
v/s Ratio Perm			0.00								0.21	0.06
v/c Ratio		0.70	0.01		0.62						0.69	0.19
Uniform Delay, d1		37.9	29.2		41.7						39.5	33.1
Progression Factor		1.00	1.00		0.17						1.00	1.00
Incremental Delay, d2		6.5	0.0		4.9						7.1	0.9
Delay (s)		44.4	29.3		11.8						46.7	33.9
Level of Service		D	C		B						D	C
Approach Delay (s)		44.1			11.8			0.0			41.0	
Approach LOS		D			B			A			D	

Intersection Summary			
HCM Average Control Delay	35.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

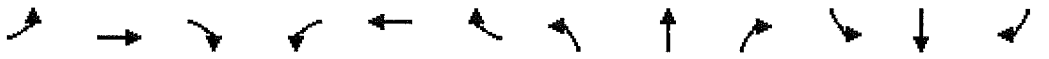
c Critical Lane Group



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.98			1.00	1.00		0.98	1.00			
Satd. Flow (prot)		1809			1881	1599		1765	1538			
Flt Permitted		0.98			1.00	1.00		0.98	1.00			
Satd. Flow (perm)		1809			1881	1599		1765	1538			
Volume (vph)	276	418	0	0	234	528	11	11	215	0	0	0
Peak-hour factor, PHF	0.91	0.91	0.91	0.85	0.85	0.85	0.80	0.80	0.80	0.92	0.92	0.92
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	331	501	0	0	300	677	15	15	293	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	420	0	0	257	0	0	0
Lane Group Flow (vph)	0	832	0	0	300	257	0	30	36	0	0	0
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	5%	5%	5%	2%	2%	2%
Turn Type	Split					Perm	Perm		Perm			
Protected Phases	6	6			2			4				
Permitted Phases						2	4		4			
Actuated Green, G (s)		68.0			34.0	34.0		16.0	16.0			
Effective Green, g (s)		68.0			34.0	34.0		16.0	16.0			
Actuated g/C Ratio		0.52			0.26	0.26		0.12	0.12			
Clearance Time (s)		4.0			4.0	4.0		4.0	4.0			
Lane Grp Cap (vph)		946			492	418		217	189			
v/s Ratio Prot		c0.46			0.16							
v/s Ratio Perm						c0.16		0.02	c0.02			
v/c Ratio		0.88			0.61	0.61		0.14	0.19			
Uniform Delay, d1		27.4			42.2	42.2		50.8	51.2			
Progression Factor		0.55			1.00	1.00		1.00	1.00			
Incremental Delay, d2		8.8			5.5	6.6		1.3	2.2			
Delay (s)		23.9			47.7	48.8		52.2	53.4			
Level of Service		C			D	D		D	D			
Approach Delay (s)		23.9			48.5			53.3			0.0	
Approach LOS		C			D			D			A	

Intersection Summary			
HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.6%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	
Satd. Flow (prot)	1787	1793		1752	1845	1568	1687	1776	1509	1665	1653	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.64	
Satd. Flow (perm)	1787	1793		1752	1845	1568	1687	1776	1509	1665	1092	
Volume (vph)	25	76	35	99	96	450	16	52	151	406	36	39
Peak-hour factor, PHF	0.70	0.70	0.70	0.87	0.87	0.87	0.60	0.60	0.60	0.92	0.92	0.92
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	39	118	54	124	120	564	29	94	274	481	43	46
RTOR Reduction (vph)	0	24	0	0	0	419	0	0	207	0	6	0
Lane Group Flow (vph)	39	148	0	124	120	145	29	94	67	285	279	0
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	7%	7%	7%	3%	3%	3%
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	4.0	16.0		6.0	18.0	18.0	5.0	17.0	17.0	15.0	36.0	
Effective Green, g (s)	4.0	16.0		6.0	18.0	18.0	5.0	17.0	17.0	15.0	36.0	
Actuated g/C Ratio	0.06	0.23		0.09	0.26	0.26	0.07	0.24	0.24	0.21	0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	102	410		150	474	403	121	431	366	357	682	
v/s Ratio Prot	0.02	0.08		c0.07	0.07		0.02	0.05		c0.17	0.09	
v/s Ratio Perm						c0.09			0.04		c0.12	
v/c Ratio	0.38	0.36		0.83	0.25	0.36	0.24	0.22	0.18	0.80	0.41	
Uniform Delay, d1	31.8	22.7		31.5	20.7	21.3	30.7	21.2	21.0	26.1	10.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	10.5	2.5		38.4	1.3	2.5	4.6	1.2	1.1	16.8	1.8	
Delay (s)	42.3	25.2		69.9	21.9	23.8	35.3	22.3	22.1	42.9	12.3	
Level of Service	D	C		E	C	C	D	C	C	D	B	
Approach Delay (s)		28.3			30.6			23.1			27.6	
Approach LOS		C			C			C			C	

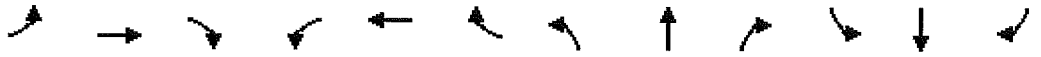
Intersection Summary			
HCM Average Control Delay	28.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	4.0
Lane Util. Factor					1.00	1.00		1.00			0.95	1.00
Frt					1.00	0.85		1.00			1.00	0.85
Flt Protected					0.96	1.00		0.98			1.00	1.00
Satd. Flow (prot)					1703	1509		1836			3505	1568
Flt Permitted					0.96	1.00		0.64			1.00	1.00
Satd. Flow (perm)					1703	1509		1211			3505	1568
Volume (vph)	0	0	0	14	2	191	428	448	0	0	318	319
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.98	0.98	0.98	0.86	0.86	0.86
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	0	0	0	18	3	242	476	498	0	0	403	404
RTOR Reduction (vph)	0	0	0	0	0	219	0	0	0	0	0	57
Lane Group Flow (vph)	0	0	0	0	21	23	0	974	0	0	403	347
Heavy Vehicles (%)	2%	2%	2%	7%	7%	7%	1%	1%	1%	3%	3%	3%
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					8			2			6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)					16.0	16.0		146.0			146.0	146.0
Effective Green, g (s)					16.0	16.0		146.0			146.0	146.0
Actuated g/C Ratio					0.09	0.09		0.86			0.86	0.86
Clearance Time (s)					4.0	4.0		4.0			4.0	4.0
Lane Grp Cap (vph)					160	142		1040			3010	1347
v/s Ratio Prot											0.11	
v/s Ratio Perm					0.01	c0.02		c0.80				0.22
v/c Ratio					0.13	0.16		0.94			0.13	0.26
Uniform Delay, d1					70.6	70.8		8.7			1.9	2.2
Progression Factor					1.00	1.00		0.93			1.00	1.00
Incremental Delay, d2					1.7	2.4		13.4			0.1	0.5
Delay (s)					72.3	73.2		21.5			2.0	2.6
Level of Service					E	E		C			A	A
Approach Delay (s)		0.0			73.2			21.5			2.3	
Approach LOS		A			E			C			A	

Intersection Summary			
HCM Average Control Delay	20.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.4%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	0.95	0.95	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	0.97	
Satd. Flow (prot)		1741	1553					1881	1599	1649	1682	
Flt Permitted		0.95	1.00					1.00	1.00	0.26	0.31	
Satd. Flow (perm)		1741	1553					1881	1599	452	540	
Volume (vph)	271	4	116	0	0	0	0	609	135	265	74	0
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.87	0.87	0.87	0.84	0.84	0.84
Growth Factor (vph)	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%	109%
Adj. Flow (vph)	332	5	142	0	0	0	0	763	169	344	96	0
RTOR Reduction (vph)	0	0	98	0	0	0	0	0	51	0	0	0
Lane Group Flow (vph)	0	337	44	0	0	0	0	763	118	172	268	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	1%	1%	1%	4%	4%	4%
Turn Type	Perm		Perm						Perm	Perm		
Protected Phases		4						2			6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		46.0	46.0					116.0	116.0	116.0	116.0	
Effective Green, g (s)		46.0	46.0					116.0	116.0	116.0	116.0	
Actuated g/C Ratio		0.27	0.27					0.68	0.68	0.68	0.68	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		471	420					1284	1091	308	368	
v/s Ratio Prot								0.41				
v/s Ratio Perm		0.19	0.03						0.07	0.38	c0.50	
v/c Ratio		0.72	0.10					0.59	0.11	0.56	0.73	
Uniform Delay, d1		56.1	46.5					14.4	9.3	13.9	17.0	
Progression Factor		1.00	1.00					1.00	1.00	1.26	1.39	
Incremental Delay, d2		9.0	0.5					2.0	0.2	7.1	11.9	
Delay (s)		65.1	47.0					16.5	9.5	24.6	35.6	
Level of Service		E	D					B	A	C	D	
Approach Delay (s)		59.7			0.0			15.2			31.3	
Approach LOS		E			A			B			C	

Intersection Summary			
HCM Average Control Delay	30.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

VISSIM EXISTING AM DELAY AND VOLUME

Intersection	Approach	Movement	Run 1			Run 2			Run 3			Run 4			Run 5			Average		
			Delay(s)	Volume	LOS	Delay(s)	Volume	LOS	Delay(s)	Volume	LOS	Delay(s)	Volume	LOS	Delay(s)	Volume	LOS	Delay(s)	Volume	LOS
Berkeley & Union	NB	Through	21.5	13		11	12		10.7	23		7.8	11		12.8	17				
		Right	9.6	45		18.6	49		6.7	33		6.3	44		12.4	56				
		Left	41.7	2		24.1	3		0	0		23.8	2		33.5	8				
		Total	13.2	60		17.4	64		8.3	56		7.2	57		14.6	81				
	EB	Left	28.3	7		48.3	5		20	17		12.6	4		33.9	12				
		Through	16.6	53		39.8	60		16.7	54		11.7	58		36.3	56				
		Right	13.2	10		47.2	19		19.4	17		14.3	12		17.3	22				
		Total	17.3	70		42	84		17.9	88		12.2	74		31.3	90				
	SB	Left	29.3	109		80.9	110		26.4	104		23	107		42.5	109				
		Through	14.5	46		22.7	51		13.6	38		14.7	37		16.4	39				
		Right	15.9	24		22.3	22		10.6	23		12.2	17		13.6	30				
		Total	23.7	179		57.6	183		21.2	165		20	161		31.9	178				
	WB	Right	4.7	87		5.3	100		4.2	89		4.9	104		5.1	87				
		Left	44.2	191		38.7	174		35.7	189		32.7	182		35.5	190				
		Through	43.9	50		41.9	45		37.2	28		33.4	21		37.9	53				
		Total	33.7	328		28.7	319		26.7	306		23.3	307		27.9	330				
	Total		27.2	637	C	37.4	650	D	22.3	615	C	19.5	599	B	27.8	679	C	27.0	636	C
Berkely & NB	NB	Right	6.6	511		4.6	533		4.8	550		5	528		4.3	504				
		Left	74.4	114		97.7	127		74.4	110		72.7	112		98.5	131				
		Total	19	625		22.5	660		16.4	660		16.8	640		23.7	635				
	EB	Through	14.8	770		7.2	594		7.5	581		18.2	654		17	696				
		Total	14.8	770		7.2	594		7.5	581		18.2	654		17	696				
	WB	Right	2.4	433		2.5	464		2.5	458		2.4	446		2.6	469				
		Through	96.3	89		69	111		57	82		55	105		65.8	85				
		Total	18.4	522		15.3	575		10.8	540		12.4	551		12.3	554				
	Total		17.1	1917	B	15.3	1829	B	11.8	1781	B	16	1845	B	17.9	1885	B	15.7	1851	B
Berkely & SB	EB	Through	68.4	142		77.6	154		71.7	124		64.7	125		73	145				
		Right	3.1	71		1.2	68		1.3	68		1.3	86		1.7	79				
		Total	46.6	213		54.2	222		46.8	192		38.9	211		47.9	224				
	SB	Left	59.6	632		100.6	441		93.7	459		76.7	522		75.1	558				
		Right	45.6	127		33.1	87		44.8	110		8.7	89		22.1	107				
		Total	57.3	759		89.5	528		84.2	569		66.8	611		66.6	665				
	WB	Through	109.1	199		59.1	234		45.4	195		26.6	217		49.8	222				
		Total	109.1	199		59.1	234		45.4	195		26.6	217		49.8	222				
	Total		64.2	1171	E	74.3	984	E	68.8	956	E	52.7	1039	D	59.5	1111	E	63.7	1052	E

VISSIM EXISTING NOON DELAY					
Intersection	**Approach**	**Movement**	**Average Delay**	**LOS**	**Queue Length**
Berkeley & Union	NB	LT	10.6		586.4
		TH	14.6		586.4
		RT	5.7		586.4
		Total	9.6		
	EB	LT	0		353.8
		TH	13.1		353.8
		RT	8.6		353.8
		Total	11.1		
	SB	LT	31.3		467
		TH	15.2		467
		RT	11.9		467
		Total	23.3		
	WB	LT	9.4		14.6
		TH	17.4		14.6
		RT	10		207.3
		Total	10.1		
	Total		13.5	**B**	
Berkely & NB	NB	LT	41.7		1290.2
		TH	65.3		1290.2
		RT	1.4		0
		Total	20.2		
	EB	LT	1.2		251.9
		TH	4.4		251.9
		Total	3.8		
	WB	TH	30.1		64.1
		RT	102.7		620.2
		Total	75.7		
	Total		59.4	**E**	
Berkely & SB	EB	TH	43.7		30.7
		RT	2.5		0
		Total	30.7		
	SB	LT	27.2		1244.6
		TH	22.7		1244.6
		RT	9.4		1244.6
		Total	23.5		
	WB	LT	6.9		284.8
		TH	6.3		284.8
		Total	5.6		
	Total		21.0	**C**	

VISSIM EXISTING PM DELAY AND VOLUME

Intersection	Approach	Movement	Run 1			Run 2			Run 3			Run 4			Run 5			Average		
			Delay(s)	Volume	LOS	Delay(s)	Volume	LOS	Delay(s)	Volume	LOS	Delay(s)	Volume	LOS	Delay(s)	Volume	LOS	Delay(s)	Volume	LOS
Berkeley & Union	NB	Through	15.2	84		18.4	79		33.3	78		19.8	82		14.9	64				
		Right	36.8	173		50.9	182		61.5	165		42.4	163		29	164				
		Left	19.8	12		30.9	14		43.1	17		22.6	10		17.4	20				
		Total	29.3	269		40.5	275		51.8	260		34.4	255		24.4	248				
	EB	Left	34.2	9		48.7	7		37.8	18		33.1	7		52.9	16				
		Through	41.1	78		53.9	93		37.9	85		26.2	76		57.4	91				
		Right	9.7	2		54.5	7		36.9	4		21.6	5		54.2	5				
		Total	39.7	89		53.6	107		37.8	107		26.5	88		56.6	112				
	SB	Left	240.3	164		349	129		274.8	158		203.8	162		285.7	154				
		Through	79.7	16		125.5	14		81.3	19		64.2	19		95.3	20				
		Right	74.5	23		118.3	15		83	19		61.2	24		101	15				
		Total	208.9	203		307.3	158		237.4	196		174.2	205		250.9	189				
	WB	Right	8.6	210		9.7	223		9.6	220		8.7	233		7.3	190				
		Left	30.6	32		20.7	27		29.9	39		19.8	38		23.8	24				
		Through	28.1	100		20.3	92		25.6	84		20.6	74		21	81				
		Total	16.4	342		13.4	342		15.8	343		12.5	345		12.4	295				
	Total		65.8	903	E	79.4	882	E	76.7	906	E	57.3	893	E	75.2	844	E	70.8	886	E
Berkely & NB	NB	Through	65.2	59		86.9	59		55.7	67		64.1	61		55.2	61				
		Right	0.9	11		0.8	6		0.7	11		0.7	7		0.7	3				
		Left	58.7	143		63.1	148		56.9	152		64.9	144		53.3	146				
		Total	57.5	213		67.9	213		53.9	230		62.6	212		53.1	210				
	EB	Left	1.1	156		1.3	171		0.9	141		1.1	152		0.9	139				
		Through	5	347		5.6	356		5.6	358		5.3	345		5.5	318				
		Total	3.8	503		4.2	527		4.3	499		4	497		4.1	457				
	WB	Right	19.8	1141		21.4	1161		21	1161		20.1	1166		22.4	1168				
		Through	44.2	426		48.8	453		40.2	439		43.6	462		41	405				
		Total	26.4	1567		29.1	1614		26.3	1600		26.8	1628		27.2	1573				
	Total		24.3	2283	C	27	2354	C	24.3	2329	C	25.2	2337	C	24.9	2240	C	25.1	2309	C
Berkely & SB	EB	Through	50.4	245		56.5	250		52	237		49.6	229		50.7	224				
		Right	5.8	170		4.3	157		5.2	170		7.7	174		5.6	182				
		Total	32.1	415		36.4	407		32.5	407		31.5	403		30.5	406				
	SB	Left	54.3	259		54.8	277		58.1	262		49.7	268		51.8	231				
		Through	3.1	2		49.9	1		60.5	1		0	0		68.9	3				
		Right	8	90		6.8	81		7.8	97		4.9	92		5.7	75				
		Total	42.1	351		44	359		44.6	360		38.3	360		40.8	309				
	WB	Left	4.2	326		3	346		3.4	343		3.8	357		3.8	333				
		Through	5.8	249		4.7	256		4.5	248		6.1	253		4	218				
		Total	4.9	575		3.7	602		3.9	591		4.8	610		3.9	551				
	Total		23.1	1341	C	24	1368	C	23.3	1358	C	21.4	1373	C	21.4	1266	C	22.7	1341	C

APPENDIX D

Derivation of Delay Calculation

TRAIN DELAY CONCEPT

The delay estimates account for both through trains and switching trains.

$$d_{train} = d_{through} + d_{switching}$$

Through trains are those that pass at a constant speed through the crossing. Switching train events are less frequent, but block the crossing longer due to slower train speed. Basic queuing theory equations from Traffic Flow Fundamentals (Adolf D. May, 1990) were used to estimate hourly delay due to through and switching trains. The equation is:

$$delay = f \times \frac{t^2 \times c \times V}{2(c - V)}$$

where,

delay	=	traffic delay (vehicle-hours/hour)
f	=	train frequency (trains/hour)
t	=	blockage time/train event (hours/train)
V	=	hourly traffic volume (vehicles/hour)
c	=	L*g/C*S*f_{hv}, traffic departure capacity (vehicles/hr)

where,

L	=	total number of departure lanes
g/C	=	percentage of green,

50% for signalized intersection downstream
80% for unsignalized intersection downstream

S	=	saturation flow rate, 1900 vehicles/hour/lane
f_{hv}	=	HCM factor, for 2% heavy vehicles, 0.98

APPENDIX E

Point Defiance Delay Table for All At-grade Crossings

Cumulative Delay (Sound Transit, Freight, and Amtrak Trains)
Point Defiance Delay Table for All At-grade Crossings

Crossing Location	2006 ADT[1]	2006 AM Peak Hour		2006 PM Peak Hour[2]		2020 ADT[1]	2020 AM Peak Hour[3]		2020PM Peak Hour[4]	
		Peak Volume	Average Delay Per Vehicle (seconds)	Peak Volume	Average Delay Per Vehicle (seconds)		Peak Volume	Average Delay Per Vehicle (seconds)	Peak Volume	Average Delay Per Vehicle (seconds)
South 74th Street [7]	21180	1452	No Train During AM Peak Hour	2118	3	29010	1988	1	2901	3
Steilacoom Blvd. SW [7]	20170	1447		2017	2	27640	1983	1	2764	2
100th Street SW [5,7]	23050	1632		2305	4	31580	2235	4	3158	20
108th Street SW [6,7]	11440	642		1144	4	15680	881	1	1568	25
Bridgeport Way SW	23330	1407		2333	3	35010	1938	No Train During AM Peak Hour.	3501	1
Clover Creek Drive SW	1270	81		127	1	1740	111		1740	1
North Thorne Lane SW [8]	7420	385		742	2	13950	723		1395	1
Berkeley Street SW	8340	625		834	2	11490	862		1149	1
41st Division Drive	13090	1113		1309	2	18020	1533		1802	1
Barksdale Avenue [8]	13990	1276		1399	2	26290	2399		2629	1

Notes:
[1]Average daily traffic estimated based on 10 times of peak hourly volume.
[2]One freight train during the peak hour with an estimated blockage time of 100 sec/train (including gates down and up).
[3]One *Sounder* commuter train during the peak hour with an average blockage time of 45 sec/train (including gates down & up).
[4]One Amtrak *Cascades* train during the peak hour with an average blockage time of 45 sec/train (including gates down & up).
[5]One additional equipment train during the AM peak hour and two additional equipment trains during the PM peak hour in 2020. The average blockage time is 80 sec/train (including gates down & up).
[6]Two additional equipment trains during the PM peak hour in 2020. The average blockage time is 80 sec/train (including gates down & up).
[7]Two additional commute trains during the PM peak hour in 2020 with an average blockage time of 45 sec/train (including gates down & up).
[8]A 4% annual growth rate was applied at this location to project traffic to 2020.

Sounder Only Delay Table for All At-grade Crossings

Crossing Location	2006 ADT[1]	2006 AM Peak Hour		2006 PM Peak Hour		2020 ADT[1]	2020 AM Peak Hour[2]		2020 PM Peak Hour[3]	
		Peak Volume	Average Delay Per Vehicle (seconds)	Peak Volume	Average Delay Per Vehicle (seconds)		Peak Volume	Average Delay Per Vehicle (seconds)	Peak Volume	Average Delay Per Vehicle (seconds)
South 74th Street	21180	1452	No Train During AM Peak Hour	2118	No Train During PM Peak Hour	29010	1988	1	2901	2
Steilacoom Blvd. SW	20170	1447		2017		27640	1983	1	2764	1
100th Street SW	23050	1632		2305		31580	2235	2	3158	8
108th Street SW	11440	642		1144		15680	881	1	1568	10
Bridgeport Way SW	23330	1407		2333		35010	1938	No Train During AM Peak Hour.	3501	No Train During PM Peak Hour
Clover Creek Drive SW	1270	81		127		1740	111		1740	
North Thorne Lane SW [4]	7420	385		742		13950	723		1395	
Berkeley Street SW	8340	625		834		11490	862		1149	
41st Division Drive	13090	1113		1309		18020	1533		1802	
Barksdale Avenue [4]	13990	1276		1399		26290	2399		2629	

Notes:
[1]Average daily traffic estimated based on 10 times of peak hourly volume.
[2]One *Sounder* commuter train during the peak hour with an average blockage time of 45 sec/train (including gates down & up).
[3]Two *Sounder* commuter trains during the peak hour with an average blockage time of 45 sec/train (including gates down & up).
[4]A 4% annual growth rate was applied at this location to project traffic to 2020.

Amtrak Only Delay Table for All At-grade Crossings

Crossing Location	2006 ADT[1]	2006 AM Peak Hour		2006 PM Peak Hour		2020 ADT[1]	2020 AM Peak Hour		2020PM Peak Hour[2]	
		Peak Volume	Average Delay Per Vehicle (seconds)	Peak Volume	Average Delay Per Vehicle (seconds)		Peak Volume	Average Delay Per Vehicle (seconds)	Peak Volume	Average Delay Per Vehicle (seconds)
South 74th Street	21180	1452	No Train During AM Peak Hour	2118	No Train During PM Peak Hour	29010	1988	No Train During AM Peak Hour	2901	1
Steilacoom Blvd. SW	20170	1447		2017		27640	1983		2764	1
100th Street SW	23050	1632		2305		31580	2235		3158	2
108th Street SW	11440	642		1144		15680	881		1568	3
Bridgeport Way SW	23330	1407		2333		35010	1938		3501	1
Clover Creek Drive SW	1270	81		127		1740	111		1740	1
North Thorne Lane SW [3]	7420	385		742		13950	723		1395	1
Berkeley Street SW	8340	625		834		11490	862		1149	1
41st Division Drive	13090	1113		1309		18020	1533		1802	1
Barksdale Avenue [3]	13990	1276		1399		26290	2399		2629	1

Notes:
[1]Average daily traffic estimated based on 10 times of peak hourly volume.
[2]One Amtrak *Cascades* train during the peak hour with an average blockage time of 45 sec/train (including gates down & up).
[3]A 4% annual growth rate was applied at this location to project traffic to 2020.

APPENDIX F

Point Defiance Queue Lengths for All At-grade Crossings

Cumulative (Sounder, Amtrak and Freight) Queue Table for All At-grade Crossings

Crossing Location		2006 AM Peak Hour		2006 PM Peak Hour[1]				2020 AM Peak Hour[2]				2020PM Peak Hour[3]			
		Peak Volume	Average Queue Length (feet)	Peak Volume	Blockage Time (seconds)	Average Number of Vehicles Stopped	Average Queue Length (feet)	Peak Volume	Blockage Time (seconds)	Average Number of Vehicles Stopped	Average Queue Length (feet)	Peak Volume	Blockage Time (seconds)	Average Number of Vehicles Stopped	Average Queue Length (feet)
South 74th Street [6]	EB	766		1015	100	29	580	1049	45	14	280	1390	45	18	360
	WB	686		1103	100	31	620	939	45	12	240	1511	45	19	380
Steilacoom Blvd. SW [6]	EB	559		1057	100	30	600	766	45	10	200	1448	45	19	380
	WB	888		960	100	27	540	1217	45	16	320	1316	45	17	340
100th Street SW [4,6]	EB	628		1213	100	34	680	860	63	16	320	1662	60	28	560
	WB	1004		1092	100	31	620	1375	63	25	500	1496	60	25	500
108th Street SW [5,6]	EB	251		634	100	18	360	344	45	5	100	869	60	15	300
	WB	391		510	100	15	300	537	45	7	140	699	60	12	240
Bridgeport Way SW	NB	710		710	100	20	400	977				1948	45	25	500
	SB	697	No Train During AM Peak Hour	697	100	20	400	961				1553	45	20	400
Clover Creek Drive SW	EB	56		45	100	2	40	77				61	45	1	20
	WB	25		82	100	3	60	34				113	45	2	40
North Thorne Lane SW [7]	EB	183		387	100	11	220	344				727	45	10	200
	WB	202		355	100	10	200	379				668	45	9	180
Berkeley Street SW	EB	222		485	100	14	280	306				668	45	9	180
	WB	403		349	100	10	200	556				481	45	7	140
41st Division Drive	NB	609		544	100	16	320	839				749	45	10	200
	SB	504		765	100	22	440	694				1053	45	14	280
Barksdale Avenue [7]	EB	557		695	100	20	400	1048				1306	45	17	340
	WB	719		704	100	20	400	1351				1323	45	17	340

No Train During AM Peak Hour.

Notes:

[1]One freight train during the peak hour with an estimated blockage time of 100 sec/train (including gates down and up).

[2]One *Sounder* commuter train during the peak hour with an average blockage time of 45 sec/train (including gates down & up).

[3]One Amtrak *Cascades* train during the peak hour with an average blockage time of 45 sec/train (including gates down & up).

[4]One additional equipment train during the AM peak hour and two additional equipment trains during the PM peak hour in 2020. The average blockage time is 80 sec/train (including gates down & up).

[5]Two additional equipment trains during the PM peak hour in 2020. The average blockage time is 80 sec/train (including gates down & up).

[6]Two additional commute trains during the PM peak hour in 2020 with an average blockage time of 45 sec/train (including gates down & up).

[7]A 4% annual growth rate was applied at this location to project traffic to 2020.

Sounder Only Queue Table for All At-grade Crossings

Crossing Location		2006 AM Peak Hour		2006 PM Peak Hour		2020 AM Peak Hour[1]				2020PM Peak Hour[2]			
		Peak Volume	Average Queue Length (feet)	Peak Volume	Average Queue Length (feet)	Peak Volume	Blockage Time (seconds)	Average Number of Vehicles Stopped	Average Queue Length (feet)	Peak Volume	Blockage Time (seconds)	Average Number of Vehicles Stopped	Average Queue Length (feet)
South 74th Street	EB	766	No Train During AM Peak Hour	1015	No Train During PM Peak Hour	1049	45	14	280	1390	45	18	360
	WB	686		1103		939	45	12	240	1511	45	19	380
Steilacoom Blvd. SW	EB	559		1057		766	45	10	200	1448	45	19	380
	WB	888		960		1217	45	16	320	1316	45	17	340
100th Street SW	EB	628		1213		860	45	11	220	1662	45	21	420
	WB	1004		1092		1375	45	18	360	1496	45	19	380
108th Street SW	EB	251		634		344	45	5	100	869	45	11	220
	WB	391		510		537	45	7	140	699	45	9	180
Bridgeport Way SW	NB	710		710		977	No Train During AM Peak Hour			1948	No Train During PM Peak Hour		
	SB	697		697		961				1553			
Clover Creek Drive SW	EB	56		45		77				61			
	WB	25		82		34				113			
North Thorne Lane SW [3]	EB	183		387		344				727			
	WB	202		355		379				668			
Berkeley Street SW	EB	222		485		306				668			
	WB	403		349		556				481			
41st Division Drive	NB	609		544		839				749			
	SB	504		765		694				1053			
Barksdale Avenue [3]	EB	557		695		1048				1306			
	WB	719		704		1351				1323			

Notes:
[1]One *Sounder* commuter train during the peak hour with an average blockage time of 45 sec/train (including gates down & up).
[2]Two *Sounder* commuter trains during the peak hour with an average blockage time of 45 sec/train (including gates down & up).
[3]A 4% annual growth rate was applied at this location to project traffic to 2020.

Amtrak Only Queue Table for All At-grade Crossings

Crossing Location		2006 AM Peak Hour		2006 PM Peak Hour		2020 AM Peak Hour		2020PM Peak Hour[1]			
		Peak Volume	Average Queue Length (feet)	Peak Volume	Average Queue Length (feet)	Peak Volume	Average Queue Length (feet)	Peak Volume	Blockage Time (seconds)	Average Number of Vehicles Stopped	Average Queue Length (feet)
South 74th Street	EB	766	No Train During AM Peak Hour	1015	No Train During PM Peak Hour	1049	No Train During AM Peak Hour	1390	45	18	360
	WB	686		1103		939		1511	45	19	380
Steilacoom Blvd. SW	EB	559		1057		766		1448	45	19	380
	WB	888		960		1217		1316	45	17	340
100th Street SW	EB	628		1213		860		1662	45	21	420
	WB	1004		1092		1375		1496	45	19	380
108th Street SW	EB	251		634		344		869	45	11	220
	WB	391		510		537		699	45	9	180
Bridgeport Way SW	NB	710		710		977		1948	45	25	500
	SB	697		697		961		1553	45	20	400
Clover Creek Drive SW	EB	56		45		77		61	45	1	20
	WB	25		82		34		113	45	2	40
North Thorne Lane SW [2]	EB	183		387		344		727	45	10	200
	WB	202		355		379		668	45	9	180
Berkeley Street SW	EB	222		485		306		668	45	9	180
	WB	403		349		556		481	45	7	140
41st Division Drive	NB	609		544		839		749	45	10	200
	SB	504		765		694		1053	45	14	280
Barksdale Avenue [2]	EB	557		695		1048		1306	45	17	340
	WB	719		704		1351		1323	45	17	340

Notes:
[1]One Amtrak *Cascades* train during the peak hour with an average blockage time of 45 sec/train (including gates down & up).
[2]A 4% annual growth rate was applied at this location to project traffic to 2020.

APPENDIX G

Proposed Passenger Train Schedule

Point Defiance Bypass Future Timetable by Grade Crossings

(Note: Times do not differentiate whether the train is traveling north or south)

	S 74th St	Steilacoom Blvd SW	100th St SW	108th St SW	Bridgeport Way SW	Clover Creek Dr SW	N Thorne Lane SW	Berkeley St SW	41st Division Drive	Barksdale Avenue
SE			4:37 AM	4:39AM						
S	4:51 AM	4:50 AM	4:49 AM	4:48 AM						
SE			5:17 AM	5:19 AM						
S	5:31 AM	5:30 AM	5:29 AM	5:28 AM						
SE			5:47 AM	5:49 AM						
S	6:01 AM	6:00 AM	5:59 AM	5:58 AM						
SE			6:17 AM	6:19 AM						
S	6:31 AM	6:30 AM	6:29 AM	6:28 AM						
SE			6:47 AM	6:49 AM						
S	7:01 AM	7:00 AM	6:59 AM	6:58 AM						
SE			7:17 AM	6:19 AM						
S	7:31 AM	7:30 AM	7:29 AM	7:28 AM						
AC	8:45 AM	8:44 AM	8:43 AM	8:42 AM	8:41 AM	8:40 AM	8:40 AM	8:39 AM	8:39 AM	8:38 AM
AC	10:25 AM	10:26 AM	10:27 AM	10:27 AM	10:28 AM	10:29 AM	10:30 AM	10:30 AM	10:31 AM	10:32 AM
AC	11:00 AM	10:59 AM	10:58 AM	10:58 AM	10:57 AM	10:56 AM	10:55 AM	10:55 AM	10:54 AM	10:53 AM
A	10:58 AM	10:59 AM	11:00 AM	11:01 AM	11:00 AM	11:01 AM	11:02 AM	11:02 AM	11:03 AM	11:04 AM
AC	12:15 PM	12:16 PM	12:17 PM	12:17 PM	12:18 PM	12:19 PM	12:20 PM	12:20 PM	12:21 PM	12:22 PM
AC	2:30 PM	2:29 PM	2:28 PM	2:28 PM	2:27 PM	2:26 PM	2:25 PM	2:25 PM	2:24 PM	2:23 PM
AC	3:15 PM	3:16 PM	3:17 PM	3:17 PM	3:18 PM	3:19 PM	3:20 PM	3:20 PM	3:21 PM	3:22 PM
S	4:25 PM	4:26 PM	4:27 PM	4:28 PM						
SE			4:40 PM	4:37 PM						
S	4:55 PM	4:56 PM	4:58 PM	4:59 PM						
AC	5:15 PM	5:14 PM	5:13 PM	5:13 PM	5:12 PM	5:11 PM	5:10 PM	5:10 PM	5:09 PM	5:08 PM
SE			5:10 PM	5:07 PM						
S	5:25 PM	5:26 PM	5:27 PM	5:28 PM						
SE			5:40 PM	5:37 PM						
S	5:50 PM	5:51 PM	5:52 PM	5:53 PM						
SE			6:05 PM	6:02 PM						
S	6:15 PM	6:16 PM	6:17 PM	6:18 PM						
AC	6:20 PM	6:21 PM	6:22 PM	6:22 PM	6:23 PM	6:24 PM	6:25 PM	6:25 PM	6:26 PM	6:27 PM
SE			6:30 PM	6:27 PM						
A	6:55 PM	6:54 PM	6:53 PM	6:53 PM	6:52 PM	6:51 PM	6:49 PM	6:49 PM	6:48 PM	6:47 PM
S	7:00 PM	7:01 PM	7:02 PM	7:03 PM						
SE			7:15 PM	7:12 PM						
AC	8:22 PM	8:23 PM	8:25 PM	8:29 PM	8:30 PM	8:34 PM	8:35 PM	8:35 PM	8:36 PM	8:37 PM
AC	8:30 PM	8:29 PM	8:28 PM	8:28 PM	8:27 PM	8:26 PM	8:25 PM	8:25 PM	8:24 PM	8:23 PM

Key: S = *Sounder* commuter SE = Sound Transit equipment AC = Amtrak *Cascades* A = Amtrak *Coast Starlight*

Freight trains do not operate on a specific schedule as passenger trains do. Tacoma Rail operates one train per day in pick up and delivery service. The train operates between the end of the Sound Transit service day (approximately 7:30 pm) and the beginning of the Sound Transit service day (approximately 4:30 am) making one round trip between Nisqually and a point north of the North project limit. The time at any point depends upon the number of pickups and deliveries to be made and the amount of time required for each. BNSF provides service to Fort Lewis occasionally as required by the US Army. These trains leave Nisqually, run to 108th Street (crossing 100th Street and possibly Steilacoom Boulevard), stop on these crossings for approximately five minutes while changing direction, then leave the crossings in the reverse direction, moving toward Yelm. Trains returning from Fort Lewis reverse this procedure.

APPENDIX H

2020 LOS Calculation Reports

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	3	697	16	41	602	9	8	1	10	15	1	4
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.53	0.53	0.53	0.71	0.71	0.71
Hourly flow rate (vph)	4	1038	24	63	927	14	21	3	26	29	2	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	941			1062			1657	2126	531	1615	2131	470
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	941			1062			1657	2126	531	1615	2131	470
tC, single (s)	4.2			4.3			8.2	7.2	7.6	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.9	4.4	3.7	3.5	4.0	3.3
p0 queue free %	99			90			47	91	94	46	95	99
cM capacity (veh/h)	700			601			39	28	412	54	42	532

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	692	370	63	618	323	49	39
Volume Left	4	0	0	63	0	0	21	29
Volume Right	0	0	24	0	0	14	26	8
cSH	700	1700	1700	601	1700	1700	72	64
Volume to Capacity	0.01	0.41	0.22	0.10	0.36	0.19	0.68	0.60
Queue Length 95th (ft)	0	0	0	9	0	0	77	63
Control Delay (s)	10.2	0.0	0.0	11.7	0.0	0.0	126.6	123.6
Lane LOS	B			B			F	F
Approach Delay (s)	0.0			0.7			126.6	123.6
Approach LOS							F	F

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1687	3301		1719	3371		1687	3374	1509	1641	3201	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1687	3301		1719	3371		1687	3374	1509	1641	3201	
Volume (vph)	82	585	99	156	493	74	144	549	63	37	250	49
Peak-hour factor, PHF	0.91	0.91	0.91	0.83	0.83	0.83	0.86	0.86	0.86	0.92	0.92	0.92
Growth Factor (vph)	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%
Adj. Flow (vph)	123	881	149	257	814	122	229	875	100	55	372	73
RTOR Reduction (vph)	0	15	0	0	13	0	0	0	43	0	18	0
Lane Group Flow (vph)	123	1015	0	257	923	0	229	875	57	55	427	0
Heavy Vehicles (%)	7%	7%	7%	5%	5%	5%	7%	7%	7%	10%	10%	10%
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	8.0	27.0		13.0	32.0		12.0	25.0	25.0	5.0	18.0	
Effective Green, g (s)	9.0	28.0		14.0	33.0		13.0	26.0	26.0	6.0	19.0	
Actuated g/C Ratio	0.10	0.31		0.16	0.37		0.14	0.29	0.29	0.07	0.21	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	169	1027		267	1236		244	975	436	109	676	
v/s Ratio Prot	0.07	c0.31		c0.15	0.27		c0.14	c0.26		0.03	0.13	
v/s Ratio Perm									0.04			
v/c Ratio	0.73	0.99		0.96	0.75		0.94	0.90	0.13	0.50	0.63	
Uniform Delay, d1	39.3	30.8		37.7	24.9		38.1	30.7	23.6	40.6	32.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	23.8	25.4		46.3	4.1		43.7	12.7	0.6	15.7	4.4	
Delay (s)	63.2	56.2		84.0	29.0		81.8	43.4	24.3	56.3	36.8	
Level of Service	E	E		F	C		F	D	C	E	D	
Approach Delay (s)		57.0			40.8			49.1			38.9	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM Average Control Delay	47.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3344		1703	3406	1641	1468
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3344		1703	3406	1641	1468
Volume (vph)	457	102	146	742	82	102
Peak-hour factor, PHF	0.87	0.87	0.85	0.85	0.82	0.82
Growth Factor (vph)	137%	137%	137%	137%	137%	137%
Adj. Flow (vph)	720	161	235	1196	137	170
RTOR Reduction (vph)	32	0	0	0	0	119
Lane Group Flow (vph)	849	0	235	1196	137	51
Heavy Vehicles (%)	5%	5%	6%	6%	10%	10%
Turn Type			Prot			Perm
Protected Phases	4		3	8	2	
Permitted Phases						2
Actuated Green, G (s)	17.0		12.0	33.0	17.0	17.0
Effective Green, g (s)	18.0		12.0	34.0	18.0	18.0
Actuated g/C Ratio	0.30		0.20	0.57	0.30	0.30
Clearance Time (s)	5.0		4.0	5.0	5.0	5.0
Lane Grp Cap (vph)	1003		341	1930	492	440
v/s Ratio Prot	c0.25		0.14	c0.35	c0.08	
v/s Ratio Perm						0.03
v/c Ratio	0.85		0.69	0.62	0.28	0.12
Uniform Delay, d1	19.7		22.3	8.7	16.0	15.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	8.8		10.9	1.5	1.4	0.5
Delay (s)	28.5		33.1	10.2	17.4	15.8
Level of Service	C		C	B	B	B
Approach Delay (s)	28.5			14.0	16.5	
Approach LOS	C			B	B	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	20	526	875	19	9	12
Peak Hour Factor	0.87	0.87	0.90	0.90	0.53	0.53
Hourly flow rate (vph)	31	828	1332	29	23	31
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		836				
pX, platoon unblocked					0.90	
vC, conflicting volume	1361				1824	680
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1361				1805	680
tC, single (s)	4.2				7.6	7.7
tC, 2 stage (s)						
tF (s)	2.3				3.9	3.7
p0 queue free %	93				42	90
cM capacity (veh/h)	476				40	319

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	31	414	414	888	473	54
Volume Left	31	0	0	0	0	23
Volume Right	0	0	0	0	29	31
cSH	476	1700	1700	1700	1700	80
Volume to Capacity	0.07	0.24	0.24	0.52	0.28	0.68
Queue Length 95th (ft)	5	0	0	0	0	79
Control Delay (s)	13.1	0.0	0.0	0.0	0.0	114.6
Lane LOS	B					F
Approach Delay (s)	0.5			0.0		114.6
Approach LOS						F

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.96		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1656	3299		1641	3156		1719	1810	1538	1456	1489	
Flt Permitted	0.95	1.00		0.95	1.00		0.65	1.00	1.00	0.63	1.00	
Satd. Flow (perm)	1656	3299		1641	3156		1181	1810	1538	968	1489	
Volume (vph)	30	454	12	42	663	228	22	93	39	96	64	15
Peak-hour factor, PHF	0.91	0.91	0.91	0.89	0.89	0.89	0.88	0.88	0.88	0.81	0.81	0.81
Growth Factor (vph)	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%
Adj. Flow (vph)	45	683	18	65	1021	351	34	145	61	162	108	25
RTOR Reduction (vph)	0	3	0	0	43	0	0	0	44	0	10	0
Lane Group Flow (vph)	45	698	0	65	1330	0	34	145	17	162	123	0
Heavy Vehicles (%)	9%	9%	9%	10%	10%	10%	5%	5%	5%	24%	24%	24%
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		
Actuated Green, G (s)	5.0	38.0		6.0	39.0		21.0	21.0	21.0	21.0	21.0	
Effective Green, g (s)	6.0	39.0		7.0	40.0		22.0	22.0	22.0	22.0	22.0	
Actuated g/C Ratio	0.08	0.49		0.09	0.50		0.28	0.28	0.28	0.28	0.28	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	124	1608		144	1578		325	498	423	266	409	
v/s Ratio Prot	0.03	c0.21		0.04	c0.42			0.08			0.08	
v/s Ratio Perm							0.03		0.01	c0.17		
v/c Ratio	0.36	0.43		0.45	0.84		0.10	0.29	0.04	0.61	0.30	
Uniform Delay, d1	35.2	13.3		34.7	17.3		21.6	22.9	21.3	25.3	22.9	
Progression Factor	1.00	1.00		0.57	0.15		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.0	0.9		5.1	3.0		0.6	1.5	0.2	10.0	1.9	
Delay (s)	43.2	14.2		24.8	5.5		22.3	24.3	21.4	35.2	24.8	
Level of Service	D	B		C	A		C	C	C	D	C	
Approach Delay (s)		15.9			6.4			23.3			30.5	
Approach LOS		B			A			C			C	

Intersection Summary			
HCM Average Control Delay	13.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1626	3252	3292		1687	1509
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1626	3252	3292		1687	1509
Volume (vph)	138	490	782	33	16	222
Peak-hour factor, PHF	0.89	0.89	0.84	0.84	0.78	0.78
Growth Factor (vph)	137%	137%	137%	137%	137%	137%
Adj. Flow (vph)	212	754	1275	54	28	390
RTOR Reduction (vph)	0	0	4	0	0	242
Lane Group Flow (vph)	212	754	1325	0	28	148
Heavy Vehicles (%)	11%	11%	9%	9%	7%	7%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	14.0	53.0	35.0		17.0	17.0
Effective Green, g (s)	14.0	54.0	36.0		18.0	18.0
Actuated g/C Ratio	0.18	0.68	0.45		0.22	0.22
Clearance Time (s)	4.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	285	2195	1481		380	340
v/s Ratio Prot	c0.13	0.23	c0.40		0.02	
v/s Ratio Perm						c0.10
v/c Ratio	0.74	0.34	0.89		0.07	0.44
Uniform Delay, d1	31.3	5.5	20.3		24.4	26.6
Progression Factor	0.73	0.49	1.00		1.00	1.00
Incremental Delay, d2	15.0	0.4	8.7		0.4	4.0
Delay (s)	38.0	3.1	29.0		24.8	30.7
Level of Service	D	A	C		C	C
Approach Delay (s)		10.7	29.0		30.3	
Approach LOS		B	C		C	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.97		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1736	1824		1770	1809		1752	1845	1568	1687	1709	
Flt Permitted	0.40	1.00		0.65	1.00		0.69	1.00	1.00	0.68	1.00	
Satd. Flow (perm)	727	1824		1204	1809		1268	1845	1568	1212	1709	
Volume (vph)	29	114	1	115	223	53	1	78	53	52	54	18
Peak-hour factor, PHF	0.90	0.90	0.90	0.81	0.81	0.81	0.92	0.92	0.92	0.91	0.91	0.91
Growth Factor (vph)	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%
Adj. Flow (vph)	44	174	2	195	377	90	1	116	79	78	81	27
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	51	0	15	0
Lane Group Flow (vph)	44	176	0	195	456	0	1	116	28	78	93	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	3%	3%	3%	7%	7%	7%
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	43.0	43.0		43.0	43.0		27.0	27.0	27.0	27.0	27.0	
Effective Green, g (s)	44.0	44.0		44.0	44.0		28.0	28.0	28.0	28.0	28.0	
Actuated g/C Ratio	0.55	0.55		0.55	0.55		0.35	0.35	0.35	0.35	0.35	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	400	1003		662	995		444	646	549	424	598	
v/s Ratio Prot		0.10			c0.25			0.06			0.05	
v/s Ratio Perm	0.06			0.16			0.00		0.02	c0.06		
v/c Ratio	0.11	0.18		0.29	0.46		0.00	0.18	0.05	0.18	0.16	
Uniform Delay, d1	8.6	9.0		9.7	10.8		16.9	18.0	17.2	18.1	17.9	
Progression Factor	1.00	1.00		0.88	0.91		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.4		0.9	1.2		0.0	0.6	0.2	1.0	0.6	
Delay (s)	9.2	9.3		9.4	11.1		16.9	18.6	17.4	19.0	18.4	
Level of Service	A	A		A	B		B	B	B	B	B	
Approach Delay (s)		9.3			10.6			18.1			18.7	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.95		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1559	1565	1468		902		1570	3125		1703	3406	1524
Flt Permitted	0.95	0.95	1.00		0.95		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1559	1565	1468		902		1570	3125		1703	3406	1524
Volume (vph)	240	4	7	1	0	0	4	153	5	1	252	382
Peak-hour factor, PHF	0.78	0.78	0.78	0.25	0.25	0.25	0.92	0.92	0.92	0.89	0.89	0.89
Growth Factor (vph)	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%
Adj. Flow (vph)	422	7	12	5	0	0	6	228	7	2	388	588
RTOR Reduction (vph)	0	0	8	0	0	0	0	2	0	0	0	412
Lane Group Flow (vph)	211	218	4	0	5	0	6	233	0	2	388	176
Heavy Vehicles (%)	10%	10%	10%	100%	100%	100%	15%	15%	15%	6%	6%	6%
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Over
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4			8						
Actuated Green, G (s)	23.0	23.0	23.0		16.0		5.0	16.0		5.0	16.0	23.0
Effective Green, g (s)	24.0	24.0	24.0		17.0		6.0	17.0		6.0	17.0	24.0
Actuated g/C Ratio	0.30	0.30	0.30		0.21		0.08	0.21		0.08	0.21	0.30
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	468	470	440		192		118	664		128	724	457
v/s Ratio Prot	0.14	c0.14			c0.01		0.00	c0.07		0.00	c0.11	0.12
v/s Ratio Perm			0.00									
v/c Ratio	0.45	0.46	0.01		0.03		0.05	0.35		0.02	0.54	0.39
Uniform Delay, d1	22.7	22.8	19.7		24.9		34.4	26.8		34.3	28.0	22.2
Progression Factor	0.86	0.86	0.82		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.1	3.3	0.0		0.3		0.8	1.5		0.2	2.8	2.5
Delay (s)	22.7	22.9	16.1		25.2		35.2	28.3		34.5	30.8	24.6
Level of Service	C	C	B		C		D	C		C	C	C
Approach Delay (s)		22.6			25.2			28.4			27.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	26.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	13	11	640	627	1
Peak Hour Factor	0.63	0.63	0.83	0.83	0.89	0.89
Hourly flow rate (vph)	5	31	20	1157	1057	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				1083		
pX, platoon unblocked	0.78					
vC, conflicting volume	1676	529	1058			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1585	529	1058			
tC, single (s)	6.8	6.9	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	94	97			
cM capacity (veh/h)	77	499	636			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	36	20	578	578	704	354
Volume Left	5	20	0	0	0	0
Volume Right	31	0	0	0	0	2
cSH	287	636	1700	1700	1700	1700
Volume to Capacity	0.12	0.03	0.34	0.34	0.41	0.21
Queue Length 95th (ft)	10	2	0	0	0	0
Control Delay (s)	19.3	10.8	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	19.3	0.2			0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1703	3406	1524	1719	3385		1556	3112	1392	3155	3252	1455
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1703	3406	1524	1719	3385		1556	3112	1392	3155	3252	1455
Volume (vph)	60	559	101	28	545	63	52	59	87	145	102	33
Peak-hour factor, PHF	0.81	0.81	0.81	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	111	1035	187	46	889	103	85	96	142	244	172	56
RTOR Reduction (vph)	0	0	99	0	9	0	0	0	118	0	0	45
Lane Group Flow (vph)	111	1035	88	46	983	0	85	96	24	244	172	11
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	16%	16%	16%	11%	11%	11%
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2						4			8
Actuated Green, G (s)	12.0	46.0	46.0	6.0	40.0		10.0	16.0	16.0	12.0	18.0	18.0
Effective Green, g (s)	13.0	47.0	47.0	7.0	41.0		11.0	17.0	17.0	13.0	19.0	19.0
Actuated g/C Ratio	0.13	0.47	0.47	0.07	0.41		0.11	0.17	0.17	0.13	0.19	0.19
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	221	1601	716	120	1388		171	529	237	410	618	276
v/s Ratio Prot	c0.07	c0.30		0.03	c0.29		0.05	0.03		c0.08	c0.05	
v/s Ratio Perm			0.06						0.02			0.01
v/c Ratio	0.50	0.65	0.12	0.38	0.71		0.50	0.18	0.10	0.60	0.28	0.04
Uniform Delay, d1	40.5	20.2	14.9	44.4	24.5		41.9	35.5	35.1	41.0	34.6	33.0
Progression Factor	1.28	0.25	0.09	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	0.8	0.1	9.0	3.1		10.0	0.8	0.9	6.2	1.1	0.3
Delay (s)	55.0	5.9	1.4	53.5	27.6		51.9	36.3	35.9	47.3	35.8	33.3
Level of Service	D	A	A	D	C		D	D	D	D	D	C
Approach Delay (s)		9.3			28.8			40.2			41.4	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.5%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0			4.0			4.0	4.0
Lane Util. Factor				0.95	0.95			0.95			0.95	1.00
Frt				1.00	0.90			1.00			1.00	0.85
Flt Protected				0.95	0.98			0.99			1.00	1.00
Satd. Flow (prot)				1665	1552			3382			3312	1482
Flt Permitted				0.95	0.98			0.99			1.00	1.00
Satd. Flow (perm)				1665	1552			3382			3312	1482
Volume (vph)	0	0	0	402	1	207	81	489	0	0	567	368
Peak-hour factor, PHF	0.92	0.92	0.92	0.87	0.87	0.87	0.85	0.85	0.85	0.90	0.90	0.90
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	0	0	0	693	2	357	143	863	0	0	945	613
RTOR Reduction (vph)	0	0	0	0	72	0	0	0	0	0	0	400
Lane Group Flow (vph)	0	0	0	516	464	0	0	1006	0	0	945	213
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	6%	6%	6%	9%	9%	9%
Turn Type				Perm			Split					Perm
Protected Phases					8		2	2			6	
Permitted Phases				8								6
Actuated Green, G (s)				30.0	30.0			30.0			28.0	28.0
Effective Green, g (s)				30.0	30.0			30.0			28.0	28.0
Actuated g/C Ratio				0.30	0.30			0.30			0.28	0.28
Clearance Time (s)				4.0	4.0			4.0			4.0	4.0
Lane Grp Cap (vph)				500	466			1015			927	415
v/s Ratio Prot								c0.30			c0.29	
v/s Ratio Perm				c0.31	0.30							0.14
v/c Ratio				1.03	1.00			0.99			1.02	0.51
Uniform Delay, d1				35.0	34.9			34.9			36.0	30.3
Progression Factor				1.00	1.00			0.28			0.75	1.56
Incremental Delay, d2				48.7	40.6			19.3			32.3	3.9
Delay (s)				83.7	75.5			29.1			59.1	50.9
Level of Service				F	E			C			E	D
Approach Delay (s)		0.0			79.5			29.1			55.9	
Approach LOS		A			E			C			E	

Intersection Summary			
HCM Average Control Delay	55.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00		0.95	
Frt	1.00	1.00	0.85					1.00	0.85		1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00		0.99	
Satd. Flow (prot)	1618	1623	1524					3374	1509		3458	
Flt Permitted	0.95	0.95	1.00					1.00	1.00		0.99	
Satd. Flow (perm)	1618	1623	1524					3374	1509		3458	
Volume (vph)	349	2	201	0	0	0	0	231	212	271	721	0
Peak-hour factor, PHF	0.79	0.79	0.79	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	663	4	382	0	0	0	0	369	338	432	1151	0
RTOR Reduction (vph)	0	0	244	0	0	0	0	0	281	0	0	0
Lane Group Flow (vph)	332	335	138	0	0	0	0	369	57	0	1583	0
Heavy Vehicles (%)	6%	6%	6%	2%	2%	2%	7%	7%	7%	3%	3%	3%
Turn Type	Perm		Perm						Perm	Split		
Protected Phases		4						2		6	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	23.0	23.0	23.0					17.0	17.0		48.0	
Effective Green, g (s)	23.0	23.0	23.0					17.0	17.0		48.0	
Actuated g/C Ratio	0.23	0.23	0.23					0.17	0.17		0.48	
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0		4.0	
Lane Grp Cap (vph)	372	373	351					574	257		1660	
v/s Ratio Prot								c0.11			c0.46	
v/s Ratio Perm	0.21	0.21	0.09						0.04			
v/c Ratio	0.89	0.90	0.39					0.64	0.22		0.95	
Uniform Delay, d1	37.3	37.4	32.6					38.7	35.8		24.9	
Progression Factor	1.00	1.00	1.00					1.00	1.00		0.87	
Incremental Delay, d2	26.1	26.8	3.3					5.5	2.0		1.8	
Delay (s)	63.4	64.2	35.9					44.1	37.8		23.5	
Level of Service	E	E	D					D	D		C	
Approach Delay (s)		53.6			0.0			41.1			23.5	
Approach LOS		D			A			D			C	

Intersection Summary			
HCM Average Control Delay	36.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	1	35	8	16	21	2
Peak Hour Factor	0.69	0.69	0.86	0.86	0.64	0.64
Hourly flow rate (vph)	2	69	13	25	45	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	38				99	25
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	38				99	25
tC, single (s)	4.1				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.4
p0 queue free %	100				95	100
cM capacity (veh/h)	1566				882	1031

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	71	38	49
Volume Left	2	0	45
Volume Right	0	25	4
cSH	1566	1700	893
Volume to Capacity	0.00	0.02	0.06
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.2	0.0	9.3
Lane LOS	A		A
Approach Delay (s)	0.2	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization		13.6%	ICU Level of Service A
Analysis Period (min)		15	

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	42	1	8	1	1	1	8	124	1	1	157	16
Peak Hour Factor	0.75	0.75	0.75	0.38	0.38	0.38	0.85	0.85	0.85	0.91	0.91	0.91
Hourly flow rate (vph)	77	2	15	4	4	4	13	200	2	2	236	24
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	383	479	130	363	490	101	260			201		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	383	479	130	363	490	101	260			201		
tC, single (s)	7.7	6.7	7.1	7.5	6.5	6.9	4.5			4.3		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.4			2.3		
p0 queue free %	85	100	98	99	99	100	99			100		
cM capacity (veh/h)	521	462	870	556	476	942	1180			1298		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	93	11	13	133	68	2	158	103
Volume Left	77	4	13	0	0	2	0	0
Volume Right	15	4	0	0	2	0	0	24
cSH	555	605	1180	1700	1700	1298	1700	1700
Volume to Capacity	0.17	0.02	0.01	0.08	0.04	0.00	0.09	0.06
Queue Length 95th (ft)	15	1	1	0	0	0	0	0
Control Delay (s)	12.8	11.1	8.1	0.0	0.0	7.8	0.0	0.0
Lane LOS	B	B	A			A		
Approach Delay (s)	12.8	11.1	0.5			0.0		
Approach LOS	B	B						

Intersection Summary				
Average Delay	2.5			
Intersection Capacity Utilization	24.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	59	1	145	40	1	99
Peak Hour Factor	0.88	0.88	0.70	0.70	0.67	0.67
Hourly flow rate (vph)	137	2	425	117	3	303
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				236		
pX, platoon unblocked						
vC, conflicting volume			140		1105	139
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			140		1105	139
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.4
p0 queue free %			70		98	66
cM capacity (veh/h)			1425		161	899

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	140	542	306
Volume Left	0	425	3
Volume Right	2	0	303
cSH	1700	1425	860
Volume to Capacity	0.08	0.30	0.36
Queue Length 95th (ft)	0	32	40
Control Delay (s)	0.0	7.3	11.5
Lane LOS		A	B
Approach Delay (s)	0.0	7.3	11.5
Approach LOS			B

Intersection Summary			
Average Delay	7.6		
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0						4.0	4.0
Lane Util. Factor		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		0.96						0.95	1.00
Satd. Flow (prot)		1776	1509		1686						1631	1455
Flt Permitted		1.00	1.00		0.96						0.95	1.00
Satd. Flow (perm)		1776	1509		1686						1631	1455
Volume (vph)	0	165	3	291	44	0	0	0	0	284	4	117
Peak-hour factor, PHF	0.78	0.78	0.78	0.79	0.79	0.79	0.92	0.92	0.92	0.73	0.73	0.73
Growth Factor (vph)	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%
Adj. Flow (vph)	0	434	8	755	114	0	0	0	0	798	11	329
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	0	0	0	89
Lane Group Flow (vph)	0	434	7	0	869	0	0	0	0	0	809	240
Heavy Vehicles (%)	7%	7%	7%	8%	8%	8%	2%	2%	2%	11%	11%	11%
Turn Type			Perm	Split						Perm		Perm
Protected Phases		6		2	2						8	
Permitted Phases			6							8		8
Actuated Green, G (s)		34.0	34.0		69.0						65.0	65.0
Effective Green, g (s)		34.0	34.0		69.0						65.0	65.0
Actuated g/C Ratio		0.19	0.19		0.38						0.36	0.36
Clearance Time (s)		4.0	4.0		4.0						4.0	4.0
Lane Grp Cap (vph)		335	285		646						589	525
v/s Ratio Prot		c0.24			c0.52							
v/s Ratio Perm			0.00								0.50	0.16
v/c Ratio		1.30	0.03		1.35						1.37	0.46
Uniform Delay, d1		73.0	59.5		55.5						57.5	44.0
Progression Factor		1.00	1.00		0.29						1.00	1.00
Incremental Delay, d2		153.4	0.2		156.3						178.7	2.8
Delay (s)		226.4	59.7		172.6						236.2	46.8
Level of Service		F	E		F						F	D
Approach Delay (s)		223.4			172.6			0.0			181.4	
Approach LOS		F			F			A			F	

Intersection Summary			
HCM Average Control Delay	185.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.99			1.00	1.00		0.98	1.00			
Satd. Flow (prot)		1734			1743	1482		1739	1509			
Flt Permitted		0.99			1.00	1.00		0.98	1.00			
Satd. Flow (perm)		1734			1743	1482		1739	1509			
Volume (vph)	138	341	0	0	325	199	2	3	115	0	0	0
Peak-hour factor, PHF	0.74	0.74	0.74	0.86	0.86	0.86	0.83	0.83	0.83	0.92	0.92	0.92
Growth Factor (vph)	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%
Adj. Flow (vph)	382	945	0	0	775	474	5	7	284	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	135	0	0	259	0	0	0
Lane Group Flow (vph)	0	1327	0	0	775	339	0	12	25	0	0	0
Heavy Vehicles (%)	8%	8%	8%	9%	9%	9%	7%	7%	7%	2%	2%	2%
Turn Type	Split					Perm	Perm		Perm			
Protected Phases	6	6			2			4				
Permitted Phases						2	4		4			
Actuated Green, G (s)		94.0			58.0	58.0		16.0	16.0			
Effective Green, g (s)		94.0			58.0	58.0		16.0	16.0			
Actuated g/C Ratio		0.52			0.32	0.32		0.09	0.09			
Clearance Time (s)		4.0			4.0	4.0		4.0	4.0			
Lane Grp Cap (vph)		906			562	478		155	134			
v/s Ratio Prot		c0.77			c0.44							
v/s Ratio Perm						0.23		0.01	c0.02			
v/c Ratio		1.46			1.38	0.71		0.08	0.19			
Uniform Delay, d1		43.0			61.0	53.6		75.2	76.0			
Progression Factor		0.53			1.00	1.00		1.00	1.00			
Incremental Delay, d2		209.7			181.5	8.6		1.0	3.1			
Delay (s)		232.4			242.5	62.2		76.2	79.1			
Level of Service		F			F	E		E	E			
Approach Delay (s)		232.4			174.1			79.0			0.0	
Approach LOS		F			F			E			A	

Intersection Summary			
HCM Average Control Delay	191.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)		1856			1845	1568		1787	1599			
Flt Permitted		0.94			1.00	1.00		0.95	1.00			
Satd. Flow (perm)		1756			1845	1568		1787	1599			
Volume (vph)	61	794	0	0	133	362	108	0	469	0	0	0
Peak-hour factor, PHF	0.86	0.86	0.86	0.72	0.72	0.72	0.83	0.83	0.83	0.92	0.92	0.92
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	106	1385	0	0	277	754	195	0	848	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	312	0	0	29	0	0	0
Lane Group Flow (vph)	0	1491	0	0	277	442	0	195	819	0	0	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	1%	1%	1%	2%	2%	2%
Turn Type	Perm					Perm	Perm		Perm			
Protected Phases		6			2			4				
Permitted Phases	6					2	4		4			
Actuated Green, G (s)		82.0			82.0	82.0		50.0	50.0			
Effective Green, g (s)		82.0			82.0	82.0		50.0	50.0			
Actuated g/C Ratio		0.59			0.59	0.59		0.36	0.36			
Clearance Time (s)		4.0			4.0	4.0		4.0	4.0			
Lane Grp Cap (vph)		1029			1081	918		638	571			
v/s Ratio Prot					0.15							
v/s Ratio Perm		c0.85				0.28		0.11	c0.51			
v/c Ratio		1.45			0.26	0.48		0.31	1.43			
Uniform Delay, d1		29.0			14.1	16.7		32.5	45.0			
Progression Factor		0.58			1.00	1.00		1.00	1.00			
Incremental Delay, d2		202.5			0.6	1.8		1.2	205.4			
Delay (s)		219.3			14.7	18.5		33.7	250.4			
Level of Service		F			B	B		C	F			
Approach Delay (s)		219.3			17.5			209.9			0.0	
Approach LOS		F			B			F			A	

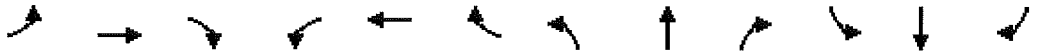
Intersection Summary			
HCM Average Control Delay	158.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.44		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	120.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	
Satd. Flow (prot)	1719	1751		1719	1810	1538	1687	1776	1509	1545	1538	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.62	
Satd. Flow (perm)	1719	1751		1719	1810	1538	1687	1776	1509	1545	987	
Volume (vph)	32	61	17	139	74	439	12	26	57	393	47	37
Peak-hour factor, PHF	0.89	0.89	0.89	0.80	0.80	0.80	0.88	0.88	0.88	0.89	0.89	0.89
Growth Factor (vph)	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%
Adj. Flow (vph)	74	141	39	356	190	1125	28	61	133	905	108	85
RTOR Reduction (vph)	0	8	0	0	0	571	0	0	116	0	4	0
Lane Group Flow (vph)	74	172	0	356	190	554	28	61	17	551	543	0
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	7%	7%	7%	11%	11%	11%
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	6.0	19.0		32.0	45.0	45.0	6.0	17.0	17.0	46.0	67.0	
Effective Green, g (s)	6.0	19.0		32.0	45.0	45.0	6.0	17.0	17.0	46.0	67.0	
Actuated g/C Ratio	0.05	0.15		0.25	0.35	0.35	0.05	0.13	0.13	0.35	0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	79	256		423	627	532	78	232	197	547	704	
v/s Ratio Prot	0.04	0.10		c0.21	0.10		0.02	0.03		c0.36	0.27	
v/s Ratio Perm						c0.36			0.01		c0.12	
v/c Ratio	0.94	0.67		0.84	0.30	1.04	0.36	0.26	0.09	1.01	0.77	
Uniform Delay, d1	61.8	52.6		46.6	31.0	42.5	60.1	50.9	49.7	42.0	25.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	84.8	13.3		18.0	1.2	49.9	12.4	2.7	0.9	40.3	8.0	
Delay (s)	146.6	65.8		64.6	32.3	92.4	72.5	53.6	50.6	82.3	33.3	
Level of Service	F	E		E	C	F	E	D	D	F	C	
Approach Delay (s)		89.4			79.7			54.2			57.9	
Approach LOS		F			E			D			E	

Intersection Summary			
HCM Average Control Delay	71.3	HCM Level of Service	E
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

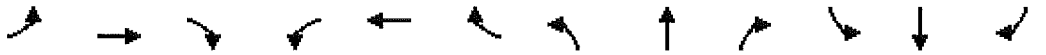
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	4.0
Lane Util. Factor					1.00	1.00		1.00			0.95	1.00
Frt					1.00	0.85		1.00			1.00	0.85
Flt Protected					0.95	1.00		0.99			1.00	1.00
Satd. Flow (prot)					1741	1553		1816			3471	1553
Flt Permitted					0.95	1.00		0.87			1.00	1.00
Satd. Flow (perm)					1741	1553		1584			3471	1553
Volume (vph)	0	0	0	131	2	364	41	295	0	0	261	250
Peak-hour factor, PHF	0.92	0.92	0.92	0.79	0.79	0.79	0.95	0.95	0.95	0.93	0.93	0.93
Growth Factor (vph)	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%
Adj. Flow (vph)	0	0	0	340	5	945	88	637	0	0	575	551
RTOR Reduction (vph)	0	0	0	0	0	76	0	0	0	0	0	323
Lane Group Flow (vph)	0	0	0	0	345	869	0	725	0	0	575	228
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type				Perm		Perm	Perm					Perm
Protected Phases					8			2			6	
Permitted Phases				8		8	2					6
Actuated Green, G (s)					33.0	33.0		29.0			29.0	29.0
Effective Green, g (s)					33.0	33.0		29.0			29.0	29.0
Actuated g/C Ratio					0.47	0.47		0.41			0.41	0.41
Clearance Time (s)					4.0	4.0		4.0			4.0	4.0
Lane Grp Cap (vph)					821	732		656			1438	643
v/s Ratio Prot											0.17	
v/s Ratio Perm					0.20	c0.56		c0.46				0.15
v/c Ratio					0.42	1.19		1.11			0.40	0.36
Uniform Delay, d1					12.2	18.5		20.5			14.4	14.1
Progression Factor					1.00	1.00		0.92			1.00	1.00
Incremental Delay, d2					1.6	97.6		64.5			0.8	1.5
Delay (s)					13.8	116.1		83.4			15.2	15.6
Level of Service					B	F		F			B	B
Approach Delay (s)		0.0			88.7			83.4			15.4	
Approach LOS		A			F			F			B	

Intersection Summary			
HCM Average Control Delay	61.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.3%	ICU Level of Service	F
Analysis Period (min)	15		

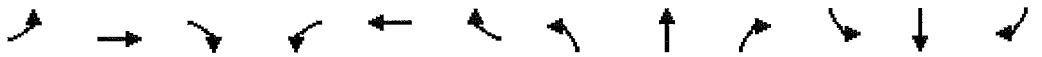
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	0.95	0.95	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	0.99	
Satd. Flow (prot)		1793	1599					1881	1599	1559	1632	
Flt Permitted		0.95	1.00					1.00	1.00	0.50	0.94	
Satd. Flow (perm)		1793	1599					1881	1599	813	1538	
Volume (vph)	283	3	452	0	0	0	0	88	35	157	233	0
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.66	0.66	0.66	0.91	0.91	0.91
Growth Factor (vph)	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%
Adj. Flow (vph)	624	7	996	0	0	0	0	273	109	354	525	0
RTOR Reduction (vph)	0	0	74	0	0	0	0	0	70	0	0	0
Lane Group Flow (vph)	0	631	922	0	0	0	0	273	39	292	587	0
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	1%	1%	1%	10%	10%	10%
Turn Type	Perm		Perm						Perm	Perm		
Protected Phases		4						2			6	
Permitted Phases	4		4						2	6		
Actuated Green, G (s)		37.0	37.0					25.0	25.0	25.0	25.0	
Effective Green, g (s)		37.0	37.0					25.0	25.0	25.0	25.0	
Actuated g/C Ratio		0.53	0.53					0.36	0.36	0.36	0.36	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		948	845					672	571	290	549	
v/s Ratio Prot								0.15				
v/s Ratio Perm		0.35	c0.58						0.02	0.36	c0.38	
v/c Ratio		0.67	1.09					0.41	0.07	1.01	1.07	
Uniform Delay, d1		12.0	16.5					16.9	14.8	22.5	22.5	
Progression Factor		1.00	1.00					1.00	1.00	0.85	0.84	
Incremental Delay, d2		3.7	58.6					1.8	0.2	52.7	56.9	
Delay (s)		15.7	75.1					18.7	15.1	71.8	75.9	
Level of Service		B	E					B	B	E	E	
Approach Delay (s)		52.1			0.0			17.7			74.5	
Approach LOS		D			A			B			E	

Intersection Summary			
HCM Average Control Delay	54.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
Analysis Period (min)	15		

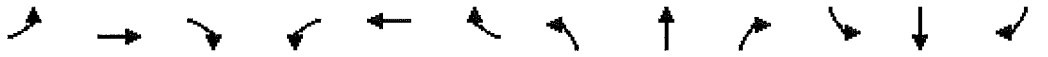
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	13	867	3	6	1070	27	18	0	38	21	0	15
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.52	0.52	0.52	0.75	0.75	0.75
Hourly flow rate (vph)	19	1264	4	9	1559	39	47	0	100	38	0	27
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1599			1268			2128	2920	634	2366	2903	799
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1599			1268			2128	2920	634	2366	2903	799
tC, single (s)	4.2			4.2			7.5	6.5	6.9	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			98			0	100	76	0	100	92
cM capacity (veh/h)	401			538			25	14	422	13	14	326

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	19	842	426	9	1040	559	148	66
Volume Left	19	0	0	9	0	0	47	38
Volume Right	0	0	4	0	0	39	100	27
cSH	401	1700	1700	538	1700	1700	68	22
Volume to Capacity	0.05	0.50	0.25	0.02	0.61	0.33	2.17	2.98
Queue Length 95th (ft)	4	0	0	1	0	0	348	210
Control Delay (s)	14.4	0.0	0.0	11.8	0.0	0.0	667.5	1260.8
Lane LOS	B			B			F	F
Approach Delay (s)	0.2			0.1			667.5	1260.8
Approach LOS							F	F

Intersection Summary				
Average Delay	58.5			
Intersection Capacity Utilization	53.4%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	3383		1736	3428		1752	3505	1568	1770	3479	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1752	3383		1736	3428		1752	3505	1568	1770	3479	
Volume (vph)	133	678	204	163	719	64	195	686	230	133	779	100
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.95	0.95	0.95
Growth Factor (vph)	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%
Adj. Flow (vph)	198	1010	304	254	1119	100	318	1119	375	192	1123	144
RTOR Reduction (vph)	0	20	0	0	5	0	0	0	82	0	7	0
Lane Group Flow (vph)	198	1294	0	254	1214	0	318	1119	293	192	1260	0
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	14.0	43.0		16.0	45.0		19.0	46.0	46.0	15.0	42.0	
Effective Green, g (s)	15.0	44.0		17.0	46.0		20.0	47.0	47.0	16.0	43.0	
Actuated g/C Ratio	0.11	0.31		0.12	0.33		0.14	0.34	0.34	0.11	0.31	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	188	1063		211	1126		250	1177	526	202	1069	
v/s Ratio Prot	0.11	c0.38		c0.15	0.35		c0.18	c0.32		0.11	c0.36	
v/s Ratio Perm									0.19			
v/c Ratio	1.05	1.22		1.20	1.08		1.27	0.95	0.56	0.95	1.18	
Uniform Delay, d1	62.5	48.0		61.5	47.0		60.0	45.4	38.0	61.6	48.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	80.4	106.5		127.9	50.6		149.9	16.8	4.2	51.6	90.3	
Delay (s)	142.9	154.5		189.4	97.6		209.9	62.2	42.2	113.2	138.8	
Level of Service	F	F		F	F		F	E	D	F	F	
Approach Delay (s)		153.0			113.4			84.0			135.4	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	119.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	109.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3490		1770	3539	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	3490		1770	3539	1770	1583
Volume (vph)	867	88	161	799	171	162
Peak-hour factor, PHF	0.88	0.88	0.89	0.89	0.91	0.91
Growth Factor (vph)	137%	137%	137%	137%	137%	137%
Adj. Flow (vph)	1350	137	248	1230	257	244
RTOR Reduction (vph)	9	0	0	0	0	189
Lane Group Flow (vph)	1478	0	248	1230	257	55
Turn Type			Prot			Perm
Protected Phases	4		3	8	2	
Permitted Phases						2
Actuated Green, G (s)	35.0		14.0	53.0	17.0	17.0
Effective Green, g (s)	36.0		14.0	54.0	18.0	18.0
Actuated g/C Ratio	0.45		0.18	0.68	0.22	0.22
Clearance Time (s)	5.0		4.0	5.0	5.0	5.0
Lane Grp Cap (vph)	1571		310	2389	398	356
v/s Ratio Prot	c0.42		c0.14	0.35	c0.15	
v/s Ratio Perm						0.03
v/c Ratio	0.94		0.80	0.51	0.65	0.15
Uniform Delay, d1	21.0		31.7	6.5	28.1	24.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	12.4		19.2	0.8	7.9	0.9
Delay (s)	33.4		50.8	7.3	36.0	25.8
Level of Service	C		D	A	D	C
Approach Delay (s)	33.4			14.6	31.0	
Approach LOS	C			B	C	

Intersection Summary			
HCM Average Control Delay	25.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	30	1027	886	18	24	54
Peak Hour Factor	0.91	0.91	0.91	0.91	0.72	0.72
Hourly flow rate (vph)	45	1546	1334	27	46	103
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		836				
pX, platoon unblocked					0.63	
vC, conflicting volume	1361				2211	680
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1361				2337	680
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	91				0	74
cM capacity (veh/h)	501				18	396

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	45	773	773	889	472	148
Volume Left	45	0	0	0	0	46
Volume Right	0	0	0	0	27	103
cSH	501	1700	1700	1700	1700	52
Volume to Capacity	0.09	0.45	0.45	0.52	0.28	2.84
Queue Length 95th (ft)	7	0	0	0	0	390
Control Delay (s)	12.9	0.0	0.0	0.0	0.0	998.5
Lane LOS	B					F
Approach Delay (s)	0.4			0.0		998.5
Approach LOS						F

Intersection Summary			
Average Delay	48.0		
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1752	3480		1719	3370		1770	1863	1583	1736	1752	
Flt Permitted	0.95	1.00		0.95	1.00		0.43	1.00	1.00	0.62	1.00	
Satd. Flow (perm)	1752	3480		1719	3370		808	1863	1583	1132	1752	
Volume (vph)	50	947	47	76	816	125	45	94	82	171	129	49
Peak-hour factor, PHF	0.95	0.95	0.95	0.90	0.90	0.90	0.86	0.86	0.86	0.86	0.86	0.86
Growth Factor (vph)	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%
Adj. Flow (vph)	72	1366	68	116	1242	190	72	150	131	272	206	78
RTOR Reduction (vph)	0	4	0	0	12	0	0	0	88	0	13	0
Lane Group Flow (vph)	72	1430	0	116	1420	0	72	150	43	272	271	0
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	2%	2%	2%	4%	4%	4%
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		
Actuated Green, G (s)	5.0	45.0		8.0	48.0		32.0	32.0	32.0	32.0	32.0	
Effective Green, g (s)	6.0	46.0		9.0	49.0		33.0	33.0	33.0	33.0	33.0	
Actuated g/C Ratio	0.06	0.46		0.09	0.49		0.33	0.33	0.33	0.33	0.33	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	105	1601		155	1651		267	615	522	374	578	
v/s Ratio Prot	0.04	c0.41		0.07	c0.42			0.08			0.15	
v/s Ratio Perm							0.09		0.03	c0.24		
v/c Ratio	0.69	0.89		0.75	0.86		0.27	0.24	0.08	0.73	0.47	
Uniform Delay, d1	46.1	24.8		44.4	22.5		24.6	24.4	23.1	29.5	26.5	
Progression Factor	1.00	1.00		1.37	0.31		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	30.7	8.1		14.9	3.1		2.5	0.9	0.3	11.7	2.7	
Delay (s)	76.8	32.8		75.7	10.2		27.1	25.4	23.4	41.2	29.3	
Level of Service	E	C		E	B		C	C	C	D	C	
Approach Delay (s)		34.9			15.1			25.0			35.1	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM Average Control Delay	26.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	3440		1736	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1752	3505	3440		1736	1553
Volume (vph)	344	869	734	47	24	358
Peak-hour factor, PHF	0.91	0.91	0.94	0.94	0.96	0.96
Growth Factor (vph)	137%	137%	137%	137%	137%	137%
Adj. Flow (vph)	518	1308	1070	68	34	511
RTOR Reduction (vph)	0	0	4	0	0	419
Lane Group Flow (vph)	518	1308	1134	0	34	92
Heavy Vehicles (%)	3%	3%	4%	4%	4%	4%
Turn Type	Prot					Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	34.0	73.0	35.0		17.0	17.0
Effective Green, g (s)	34.0	74.0	36.0		18.0	18.0
Actuated g/C Ratio	0.34	0.74	0.36		0.18	0.18
Clearance Time (s)	4.0	5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	596	2594	1238		312	280
v/s Ratio Prot	c0.30	0.37	c0.33		0.02	
v/s Ratio Perm						c0.06
v/c Ratio	0.87	0.50	0.92		0.11	0.33
Uniform Delay, d1	30.9	5.4	30.5		34.3	35.7
Progression Factor	0.64	0.78	1.00		1.00	1.00
Incremental Delay, d2	10.0	0.4	12.0		0.7	3.1
Delay (s)	29.7	4.6	42.5		35.0	38.8
Level of Service	C	A	D		C	D
Approach Delay (s)		11.7	42.5		38.6	
Approach LOS		B	D		D	

Intersection Summary			
HCM Average Control Delay	25.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.3%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.98		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1860		1770	1824		1752	1845	1568	1770	1791	
Flt Permitted	0.95	1.00		0.95	1.00		0.40	1.00	1.00	0.57	1.00	
Satd. Flow (perm)	1770	1860		1770	1824		746	1845	1568	1067	1791	
Volume (vph)	41	369	4	109	345	56	3	97	174	88	112	39
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.88	0.88	0.88	0.85	0.85	0.85
Growth Factor (vph)	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%
Adj. Flow (vph)	62	562	6	162	514	83	5	151	271	142	181	63
RTOR Reduction (vph)	0	1	0	0	5	0	0	0	204	0	11	0
Lane Group Flow (vph)	62	567	0	162	592	0	5	151	67	142	233	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	2%	2%	2%
Turn Type	Prot			Prot			Perm		Perm	Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		
Actuated Green, G (s)	12.0	49.0		21.0	58.0		26.0	26.0	26.0	26.0	26.0	
Effective Green, g (s)	12.0	50.0		21.0	59.0		27.0	27.0	27.0	27.0	27.0	
Actuated g/C Ratio	0.11	0.45		0.19	0.54		0.25	0.25	0.25	0.25	0.25	
Clearance Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lane Grp Cap (vph)	193	845		338	978		183	453	385	262	440	
v/s Ratio Prot	0.04	c0.31		c0.09	c0.32			0.08			0.13	
v/s Ratio Perm							0.01		0.04	c0.13		
v/c Ratio	0.32	0.67		0.48	0.61		0.03	0.33	0.17	0.54	0.53	
Uniform Delay, d1	45.2	23.6		39.6	17.5		31.5	34.1	32.7	36.1	36.0	
Progression Factor	1.00	1.00		1.04	0.99		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.4	4.2		4.0	2.3		0.3	2.0	1.0	7.8	4.5	
Delay (s)	49.6	27.8		45.0	19.6		31.8	36.1	33.7	44.0	40.5	
Level of Service	D	C		D	B		C	D	C	D	D	
Approach Delay (s)		29.9			25.0			34.5			41.8	
Approach LOS		C			C			C			D	

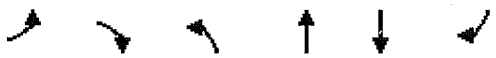
Intersection Summary			
HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	0.95	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.95	1.00		0.95		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1686	1583		1805		1752	3504		1770	3539	1583
Flt Permitted	0.95	0.95	1.00		0.95		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1686	1583		1805		1752	3504		1770	3539	1583
Volume (vph)	597	3	34	1	0	0	17	536	1	1	375	453
Peak-hour factor, PHF	0.78	0.78	0.78	0.25	0.25	0.25	0.88	0.88	0.88	0.96	0.96	0.96
Growth Factor (vph)	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%	137%
Adj. Flow (vph)	1049	5	60	5	0	0	26	834	2	1	535	646
RTOR Reduction (vph)	0	0	11	0	0	0	0	0	0	0	0	411
Lane Group Flow (vph)	525	529	49	0	5	0	26	836	0	1	535	235
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	3%	3%	3%	2%	2%	2%
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Over
Protected Phases	4	4		8	8		5	2		1	6	4
Permitted Phases			4			8						
Actuated Green, G (s)	39.0	39.0	39.0		16.0		5.0	30.0		5.0	30.0	39.0
Effective Green, g (s)	40.0	40.0	40.0		17.0		6.0	31.0		6.0	31.0	40.0
Actuated g/C Ratio	0.36	0.36	0.36		0.15		0.05	0.28		0.05	0.28	0.36
Clearance Time (s)	5.0	5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lane Grp Cap (vph)	611	613	576		279		96	987		97	997	576
v/s Ratio Prot	0.31	c0.31			c0.00		c0.01	c0.24		0.00	0.15	0.15
v/s Ratio Perm			0.03									
v/c Ratio	0.86	0.86	0.09		0.02		0.27	0.85		0.01	0.54	0.41
Uniform Delay, d1	32.4	32.5	23.0		39.4		49.9	37.3		49.2	33.4	26.2
Progression Factor	0.66	0.66	0.51		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	12.9	13.2	0.3		0.1		6.8	8.9		0.2	2.1	2.1
Delay (s)	34.3	34.7	12.1		39.5		56.7	46.2		49.4	35.5	28.3
Level of Service	C	C	B		D		E	D		D	D	C
Approach Delay (s)		33.3			39.5			46.5			31.6	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	4	14	15	1283	1021	10
Peak Hour Factor	0.75	0.75	0.87	0.87	0.94	0.94
Hourly flow rate (vph)	8	28	26	2212	1629	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				1083		
pX, platoon unblocked	0.54					
vC, conflicting volume	2795	823	1645			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3468	823	1645			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	91	93			
cM capacity (veh/h)	3	321	394			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	36	26	1106	1106	1086	559
Volume Left	8	26	0	0	0	0
Volume Right	28	0	0	0	0	16
cSH	11	394	1700	1700	1700	1700
Volume to Capacity	3.17	0.07	0.65	0.65	0.64	0.33
Queue Length 95th (ft)	Err	5	0	0	0	0
Control Delay (s)	Err	14.8	0.0	0.0	0.0	0.0
Lane LOS	F	B				
Approach Delay (s)	Err	0.2			0.0	
Approach LOS	F					

Intersection Summary			
Average Delay	91.9		
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1787	3514		1752	3505	1568	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1787	3514		1752	3505	1568	3433	3539	1583
Volume (vph)	68	1016	276	72	792	100	116	150	112	198	129	75
Peak-hour factor, PHF	0.89	0.89	0.89	0.97	0.97	0.97	0.85	0.85	0.85	0.88	0.88	0.88
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	115	1712	465	111	1225	155	205	265	198	338	220	128
RTOR Reduction (vph)	0	0	167	0	10	0	0	0	96	0	0	96
Lane Group Flow (vph)	115	1712	298	111	1370	0	205	265	102	338	220	32
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	3%	3%	3%	2%	2%	2%
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2						4			8
Actuated Green, G (s)	8.0	48.0	48.0	5.0	45.0		11.0	16.0	16.0	11.0	16.0	16.0
Effective Green, g (s)	9.0	49.0	49.0	6.0	46.0		12.0	17.0	17.0	12.0	17.0	17.0
Actuated g/C Ratio	0.09	0.49	0.49	0.06	0.46		0.12	0.17	0.17	0.12	0.17	0.17
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lane Grp Cap (vph)	159	1734	776	107	1616		210	596	267	412	602	269
v/s Ratio Prot	c0.06	c0.48		c0.06	0.39		c0.12	c0.08		c0.10	0.06	
v/s Ratio Perm			0.19						0.06			0.02
v/c Ratio	0.72	0.99	0.38	1.04	0.85		0.98	0.44	0.38	0.82	0.37	0.12
Uniform Delay, d1	44.3	25.2	16.0	47.0	23.9		43.9	37.3	36.8	42.9	36.7	35.1
Progression Factor	0.70	0.18	0.01	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	4.2	0.1	97.4	5.7		56.2	2.4	4.1	16.6	1.7	0.9
Delay (s)	33.7	8.7	0.3	144.4	29.6		100.1	39.7	40.9	59.5	38.4	36.0
Level of Service	C	A	A	F	C		F	D	D	E	D	D
Approach Delay (s)		8.2			38.2			58.6			48.4	
Approach LOS		A			D			E			D	

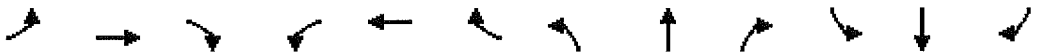
Intersection Summary			
HCM Average Control Delay	28.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0			4.0			4.0	4.0
Lane Util. Factor				0.95	0.95			0.95			0.95	1.00
Frt				1.00	0.87			1.00			1.00	0.85
Flt Protected				0.95	0.99			0.99			1.00	1.00
Satd. Flow (prot)				1681	1529			3519			3505	1568
Flt Permitted				0.95	0.99			0.99			1.00	1.00
Satd. Flow (perm)				1681	1529			3519			3505	1568
Volume (vph)	0	0	0	278	0	346	163	1274	0	0	734	472
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92	0.94	0.94	0.94
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	0	0	0	469	0	583	266	2077	0	0	1171	753
RTOR Reduction (vph)	0	0	0	0	233	0	0	0	0	0	0	396
Lane Group Flow (vph)	0	0	0	379	440	0	0	2343	0	0	1171	357
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type				Perm			Split					Perm
Protected Phases					8		2	2			6	
Permitted Phases				8								6
Actuated Green, G (s)				21.0	21.0			43.0			24.0	24.0
Effective Green, g (s)				21.0	21.0			43.0			24.0	24.0
Actuated g/C Ratio				0.21	0.21			0.43			0.24	0.24
Clearance Time (s)				4.0	4.0			4.0			4.0	4.0
Lane Grp Cap (vph)				353	321			1513			841	376
v/s Ratio Prot								c0.67			c0.33	
v/s Ratio Perm				0.23	0.29							0.23
v/c Ratio				1.07	1.37			1.55			1.39	0.95
Uniform Delay, d1				39.5	39.5			28.5			38.0	37.4
Progression Factor				1.00	1.00			0.86			0.94	1.74
Incremental Delay, d2				68.9	185.4			248.4			181.4	26.9
Delay (s)				108.4	224.9			273.0			217.0	92.1
Level of Service				F	F			F			F	F
Approach Delay (s)		0.0			182.9			273.0			168.1	
Approach LOS		A			F			F			F	

Intersection Summary			
HCM Average Control Delay	217.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	141.2%	ICU Level of Service	H
Analysis Period (min)	15		

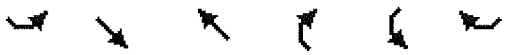
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0	4.0		4.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00		0.95	
Frt	1.00	1.00	0.85					1.00	0.85		1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00		0.98	
Satd. Flow (prot)	1665	1670	1568					3539	1583		3520	
Flt Permitted	0.95	0.95	1.00					1.00	1.00		0.98	
Satd. Flow (perm)	1665	1670	1568					3539	1583		3520	
Volume (vph)	378	2	134	0	0	0	0	732	463	323	728	0
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%	150%
Adj. Flow (vph)	644	3	228	0	0	0	0	1193	755	527	1187	0
RTOR Reduction (vph)	0	0	189	0	0	0	0	0	217	0	0	0
Lane Group Flow (vph)	322	325	39	0	0	0	0	1193	538	0	1714	0
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Turn Type	Perm		Perm						Perm	Split		
Protected Phases		4						2		6	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	17.0	17.0	17.0					31.0	31.0		40.0	
Effective Green, g (s)	17.0	17.0	17.0					31.0	31.0		40.0	
Actuated g/C Ratio	0.17	0.17	0.17					0.31	0.31		0.40	
Clearance Time (s)	4.0	4.0	4.0					4.0	4.0		4.0	
Lane Grp Cap (vph)	283	284	267					1097	491		1408	
v/s Ratio Prot								0.34			c0.49	
v/s Ratio Perm	0.19	0.19	0.02						c0.34			
v/c Ratio	1.14	1.14	0.15					1.09	1.10		1.22	
Uniform Delay, d1	41.5	41.5	35.3					34.5	34.5		30.0	
Progression Factor	1.00	1.00	1.00					1.00	1.00		0.58	
Incremental Delay, d2	96.0	98.2	1.1					54.2	69.4		98.4	
Delay (s)	137.5	139.7	36.5					88.7	103.9		116.0	
Level of Service	F	F	D					F	F		F	
Approach Delay (s)		112.0			0.0			94.6			116.0	
Approach LOS		F			A			F			F	

Intersection Summary			
HCM Average Control Delay	106.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	113.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	0	27	32	50	16	1
Peak Hour Factor	0.56	0.56	0.82	0.82	0.71	0.71
Hourly flow rate (vph)	0	66	53	84	31	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	137				161	95
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	137				161	95
tC, single (s)	4.1				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.4
p0 queue free %	100				96	100
cM capacity (veh/h)	1435				820	950

Direction, Lane #	SE 1	NW 1	SW 1
Volume Total	66	137	33
Volume Left	0	0	31
Volume Right	0	84	2
cSH	1435	1700	827
Volume to Capacity	0.00	0.08	0.04
Queue Length 95th (ft)	0	0	3
Control Delay (s)	0.0	0.0	9.5
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.5
Approach LOS			A

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	16.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	33	0	12	0	0	1	9	291	0	5	229	52
Peak Hour Factor	0.87	0.87	0.87	0.25	0.25	0.25	0.82	0.82	0.82	0.94	0.94	0.94
Hourly flow rate (vph)	52	0	19	0	0	5	15	486	0	7	334	76
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	665	902	205	717	940	243	410			486		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	665	902	205	717	940	243	410			486		
tC, single (s)	7.5	6.5	6.9	9.5	8.5	8.9	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.5	5.0	4.3	2.2			2.2		
p0 queue free %	85	100	98	100	100	99	99			99		
cM capacity (veh/h)	341	274	808	176	137	529	1146			1059		

Direction, Lane #	SE 1	NW 1	NE 1	NE 2	NE 3	SW 1	SW 2	SW 3
Volume Total	71	5	15	324	162	7	223	187
Volume Left	52	0	15	0	0	7	0	0
Volume Right	19	5	0	0	0	0	0	76
cSH	403	529	1146	1700	1700	1059	1700	1700
Volume to Capacity	0.18	0.01	0.01	0.19	0.10	0.01	0.13	0.11
Queue Length 95th (ft)	16	1	1	0	0	1	0	0
Control Delay (s)	15.8	11.9	8.2	0.0	0.0	8.4	0.0	0.0
Lane LOS	C	B	A			A		
Approach Delay (s)	15.8	11.9	0.2			0.1		
Approach LOS	C	B						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	91	4	223	103	5	262
Peak Hour Factor	0.77	0.77	0.84	0.84	0.86	0.86
Hourly flow rate (vph)	242	11	544	251	12	625
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				236		
pX, platoon unblocked						
vC, conflicting volume			253		1587	248
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			253		1587	248
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			58		83	21
cM capacity (veh/h)			1306		69	791

Direction, Lane #	SE 1	NW 1	NE 1
Volume Total	253	796	636
Volume Left	0	544	12
Volume Right	11	0	625
cSH	1700	1306	662
Volume to Capacity	0.15	0.42	0.96
Queue Length 95th (ft)	0	52	348
Control Delay (s)	0.0	8.1	51.0
Lane LOS		A	F
Approach Delay (s)	0.0	8.1	51.0
Approach LOS			F

Intersection Summary			
Average Delay	23.1		
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0						4.0	4.0
Lane Util. Factor		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		0.97						0.95	1.00
Satd. Flow (prot)		1863	1583		1782						1740	1553
Flt Permitted		1.00	1.00		0.97						0.95	1.00
Satd. Flow (perm)		1863	1583		1782						1740	1553
Volume (vph)	0	348	7	168	71	0	0	0	0	311	1	247
Peak-hour factor, PHF	0.88	0.88	0.88	0.87	0.87	0.87	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%
Adj. Flow (vph)	0	811	16	396	167	0	0	0	0	693	2	550
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	0	0	0	174
Lane Group Flow (vph)	0	811	15	0	563	0	0	0	0	0	695	376
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	4%	4%	4%
Turn Type			Perm	Split						Perm		Perm
Protected Phases		6		2	2						8	
Permitted Phases			6							8		8
Actuated Green, G (s)		63.0	63.0		47.0						58.0	58.0
Effective Green, g (s)		63.0	63.0		47.0						58.0	58.0
Actuated g/C Ratio		0.35	0.35		0.26						0.32	0.32
Clearance Time (s)		4.0	4.0		4.0						4.0	4.0
Lane Grp Cap (vph)		652	554		465						561	500
v/s Ratio Prot		c0.44			c0.32							
v/s Ratio Perm			0.01								0.40	0.24
v/c Ratio		1.24	0.03		1.21						1.24	0.75
Uniform Delay, d1		58.5	38.4		66.5						61.0	54.6
Progression Factor		1.00	1.00		0.22						1.00	1.00
Incremental Delay, d2		122.4	0.1		105.7						122.1	10.0
Delay (s)		180.9	38.5		120.6						183.1	64.6
Level of Service		F	D		F						F	E
Approach Delay (s)		178.1			120.6			0.0			130.7	
Approach LOS		F			F			A			F	

Intersection Summary			
HCM Average Control Delay	143.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	109.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0			
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.98			1.00	1.00		0.98	1.00			
Satd. Flow (prot)		1809			1881	1599		1765	1538			
Flt Permitted		0.98			1.00	1.00		0.98	1.00			
Satd. Flow (perm)		1809			1881	1599		1765	1538			
Volume (vph)	276	418	0	0	234	528	11	11	215	0	0	0
Peak-hour factor, PHF	0.91	0.91	0.91	0.85	0.85	0.85	0.80	0.80	0.80	0.92	0.92	0.92
Growth Factor (vph)	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%
Adj. Flow (vph)	622	942	0	0	564	1273	28	28	551	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	185	0	0	463	0	0	0
Lane Group Flow (vph)	0	1564	0	0	564	1088	0	56	88	0	0	0
Heavy Vehicles (%)	3%	3%	3%	1%	1%	1%	5%	5%	5%	2%	2%	2%
Turn Type	Split					Perm	Perm		Perm			
Protected Phases	6	6			2			4				
Permitted Phases						2	4		4			
Actuated Green, G (s)		88.0			64.0	64.0		16.0	16.0			
Effective Green, g (s)		88.0			64.0	64.0		16.0	16.0			
Actuated g/C Ratio		0.49			0.36	0.36		0.09	0.09			
Clearance Time (s)		4.0			4.0	4.0		4.0	4.0			
Lane Grp Cap (vph)		884			669	569		157	137			
v/s Ratio Prot		c0.86			0.30							
v/s Ratio Perm						c0.68		0.03	c0.06			
v/c Ratio		1.77			0.84	1.91		0.36	0.64			
Uniform Delay, d1		46.0			53.4	58.0		77.2	79.2			
Progression Factor		0.89			1.00	1.00		1.00	1.00			
Incremental Delay, d2		346.6			12.3	417.0		6.2	21.0			
Delay (s)		387.6			65.7	475.0		83.4	100.2			
Level of Service		F			E	F		F	F			
Approach Delay (s)		387.6			349.3			98.7			0.0	
Approach LOS		F			F			F			A	

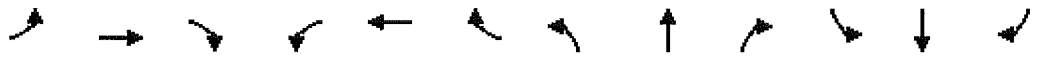
Intersection Summary			
HCM Average Control Delay	326.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.72		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	156.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	
Satd. Flow (prot)	1787	1793		1752	1845	1568	1687	1776	1509	1665	1653	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.39	
Satd. Flow (perm)	1787	1793		1752	1845	1568	1687	1776	1509	1665	665	
Volume (vph)	25	76	35	99	96	450	16	52	151	406	36	39
Peak-hour factor, PHF	0.70	0.70	0.70	0.87	0.87	0.87	0.60	0.60	0.60	0.92	0.92	0.92
Growth Factor (vph)	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%
Adj. Flow (vph)	73	223	102	233	226	1060	55	178	516	905	80	87
RTOR Reduction (vph)	0	12	0	0	0	483	0	0	278	0	3	0
Lane Group Flow (vph)	73	313	0	233	226	577	55	178	238	542	527	0
Heavy Vehicles (%)	1%	1%	1%	3%	3%	3%	7%	7%	7%	3%	3%	3%
Turn Type	Prot			Prot		Perm	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)	6.0	31.0		23.0	48.0	48.0	10.0	25.0	25.0	45.0	74.0	
Effective Green, g (s)	6.0	31.0		23.0	48.0	48.0	10.0	25.0	25.0	45.0	74.0	
Actuated g/C Ratio	0.04	0.22		0.16	0.34	0.34	0.07	0.18	0.18	0.32	0.53	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	77	397		288	633	538	121	317	269	535	669	
v/s Ratio Prot	0.04	0.17		c0.13	0.12		0.03	0.10		c0.33	0.25	
v/s Ratio Perm						c0.37			c0.16		0.16	
v/c Ratio	0.95	0.79		0.81	0.36	1.07	0.45	0.56	0.88	1.01	0.79	
Uniform Delay, d1	66.8	51.4		56.4	34.4	46.0	62.4	52.5	56.1	47.5	26.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	88.9	14.7		21.2	1.6	59.7	11.8	7.0	31.6	42.2	9.1	
Delay (s)	155.7	66.1		77.6	36.0	105.7	74.2	59.5	87.6	89.7	35.7	
Level of Service	F	E		E	D	F	E	E	F	F	D	
Approach Delay (s)		82.5			91.0			80.0			63.0	
Approach LOS		F			F			E			E	

Intersection Summary			
HCM Average Control Delay	79.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.1%	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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	4.0
Lane Util. Factor					1.00	1.00		1.00			0.95	1.00
Frt					1.00	0.85		1.00			1.00	0.85
Flt Protected					0.96	1.00		0.98			1.00	1.00
Satd. Flow (prot)					1702	1509		1836			3505	1568
Flt Permitted					0.96	1.00		0.31			1.00	1.00
Satd. Flow (perm)					1702	1509		592			3505	1568
Volume (vph)	0	0	0	14	2	191	428	448	0	0	318	319
Peak-hour factor, PHF	0.92	0.92	0.92	0.86	0.86	0.86	0.98	0.98	0.98	0.86	0.86	0.86
Growth Factor (vph)	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%
Adj. Flow (vph)	0	0	0	33	5	455	895	937	0	0	758	760
RTOR Reduction (vph)	0	0	0	0	0	319	0	0	0	0	0	456
Lane Group Flow (vph)	0	0	0	0	38	137	0	1832	0	0	758	304
Heavy Vehicles (%)	2%	2%	2%	7%	7%	7%	1%	1%	1%	3%	3%	3%
Turn Type				Prot		Perm	Prot					Perm
Protected Phases				3	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)					18.0	18.0		34.0			24.0	24.0
Effective Green, g (s)					18.0	18.0		34.0			24.0	24.0
Actuated g/C Ratio					0.30	0.30		0.57			0.40	0.40
Clearance Time (s)					4.0	4.0		4.0			4.0	4.0
Lane Grp Cap (vph)					511	453		460			1402	627
v/s Ratio Prot					0.02			c0.40			0.22	
v/s Ratio Perm						c0.09		c1.86				0.19
v/c Ratio					0.07	0.30		3.98			0.54	0.48
Uniform Delay, d1					15.0	16.2		13.0			13.8	13.4
Progression Factor					1.00	1.00		0.82			1.00	1.00
Incremental Delay, d2					0.3	1.7		1342.6			1.5	2.7
Delay (s)					15.3	17.9		1353.3			15.3	16.1
Level of Service					B	B		F			B	B
Approach Delay (s)		0.0			17.7			1353.3			15.7	
Approach LOS		A			B			F			B	

Intersection Summary			
HCM Average Control Delay	653.6	HCM Level of Service	F
HCM Volume to Capacity ratio	2.63		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	150.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					1.00	1.00	0.95	0.95	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	0.97	
Satd. Flow (prot)		1741	1553					1881	1599	1649	1687	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	0.11	
Satd. Flow (perm)		1741	1553					1881	1599	1649	189	
Volume (vph)	271	4	116	0	0	0	0	609	135	265	74	0
Peak-hour factor, PHF	0.89	0.89	0.89	0.92	0.92	0.92	0.87	0.87	0.87	0.84	0.84	0.84
Growth Factor (vph)	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%	205%
Adj. Flow (vph)	624	9	267	0	0	0	0	1435	318	647	181	0
RTOR Reduction (vph)	0	0	196	0	0	0	0	0	146	0	0	0
Lane Group Flow (vph)	0	633	71	0	0	0	0	1435	172	402	426	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	1%	1%	1%	4%	4%	4%
Turn Type	Prot		Perm						Perm	Prot		
Protected Phases	7	4						2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)		16.0	16.0					25.0	25.0	7.0	36.0	
Effective Green, g (s)		16.0	16.0					25.0	25.0	7.0	36.0	
Actuated g/C Ratio		0.27	0.27					0.42	0.42	0.12	0.60	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)		464	414					784	666	192	288	
v/s Ratio Prot		c0.36						c0.76		c0.24	0.17	
v/s Ratio Perm			0.05						0.11		0.72	
v/c Ratio		1.36	0.17					1.83	0.26	2.09	1.48	
Uniform Delay, d1		22.0	16.9					17.5	11.4	26.5	12.0	
Progression Factor		1.00	1.00					1.00	1.00	0.54	0.54	
Incremental Delay, d2		177.3	0.9					378.7	0.9	507.5	231.4	
Delay (s)		199.3	17.8					396.2	12.4	521.8	237.9	
Level of Service		F	B					F	B	F	F	
Approach Delay (s)		145.5			0.0			326.5			375.8	
Approach LOS		F			A			F			F	

Intersection Summary			
HCM Average Control Delay	291.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.71		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	125.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

VISSIM 2020 PM PEAK HOUR DELAY					
Intersection	**Approach**	**Movement**	**Average Delay**	**LOS**	**Queue Length**
Berkeley & Union	NB	LT	105.1		581.9
		TH	76.4		581.9
		RT	171.0		581.9
		Total	147.7		
	EB	LT	253.7		361.5
		TH	220.9		361.5
		RT	225.0		361.5
		Total	224.8		
	SB	LT	407.1		451
		TH	153.0		451
		RT	168.1		451
		Total	358.3		
	WB	LT	19.5		241.1
		TH	20.6		241.1
		RT	11.1		241.1
		Total	14.2		
	Total		128.6	**F**	
Berkely & NB	NB	LT	224.0		1295.8
		TH	247.6		1295.8
		RT	0.7		0
		Total	222.1		
	EB	LT	1.4		125.1
		TH	3.6		125.1
		Total	3.1		
	WB	TH	158.8		64.7
		RT	49.7		620.9
		Total	73.2		
	Total		71.0	**E**	
Berkely & SB	EB	TH	68.0		226.2
		RT	3.5		0
		Total	43.1		
	SB	LT	50.1		1237.4
		TH	3.1		1237.4
		RT	8.9		1237.4
		Total	41.2		
	WB	LT	6.1		282.6
		TH	7.3		282.6
		Total	6.7		
	Total		29.6	**C**	

VISSIM 2020 AM PEAK HOUR DELAY					
Intersection	**Approach**	**Movement**	**Average Delay**	**LOS**	**Queue Length**
Berkeley & Union	NB	LT	10.3		478.5
		TH	13.5		478.5
		RT	68.7		478.5
		Total	55.7		
	EB	LT	506.9		361.6
		TH	516.0		361.6
		RT	549.2		361.6
		Total	521.5		
	SB	LT	558.9		451.7
		TH	204.6		451.7
		RT	163.5		451.7
		Total	426.6		
	WB	LT	32.2		19.1
		TH	29.6		19.1
		RT	5.0		236.2
		Total	23.9		
	Total		162.9	**F**	
Berkely & NB	NB	LT	293.5		1299.9
		TH	0.0		1299.9
		RT	37.1		1197.3
		Total	84.0		
	EB	LT	3.5		303.6
		TH	30.9		303.6
		Total	28.0		
	WB	TH	340.1		65.6
		RT	37.4		618.6
		Total	111.3		
	Total		74.2	**E**	
Berkely & SB	EB	TH	142.0		227.2
		RT	3.3		0
		Total	96.7		
	SB	LT	72.4		1248.2
		TH	0.0		1243.3
		RT	22.1		1248.2
		Total	64.3		
	WB	LT	81.9		284.1
		TH	51.3		284.1
		Total	58.3		
	Total		68.3	**E**	

VISSIM 2020 NOON PEAK HOUR DELAY					
Intersection	**Approach**	**Movement**	**Average Delay**	**LOS**	**Queue Length**
Berkeley & Union	NB	LT	27.6		593.7
		TH	18.6		593.7
		RT	49.5		593.7
		Total	37.1		
	EB	LT	392.4		362.1
		TH	382.0		362.1
		RT	367.9		362.1
		Total	381.3		
	SB	LT	353.2		451
		TH	130.4		451
		RT	160.5		451
		Total	301.9		
	WB	LT	16.9		18.6
		TH	11.6		18.6
		RT	15.5		234.6
		Total	15.2		
	Total		91.1	**F**	
Berkely & NB	NB	LT	101.0		1303.3
		TH	93.7		1303.3
		RT	1.9		0
		Total	59.2		
	EB	LT	1.2		299
		TH	4.7		299
		Total	4.0		
	WB	TH	181.0		63.7
		RT	69.8		620
		Total	100.7		
	Total		62.5	**E**	
Berkely & SB	EB	TH	73.3		226.9
		RT	3.1		0
		Total	55.0		
	SB	LT	39.3		1249.4
		TH	57.6		1249.4
		RT	17.6		1249.4
		Total	33.5		
	WB	LT	34.0		284.2
		TH	23.5		284.2
		Total	26.1		
	Total		35.1	**D**	