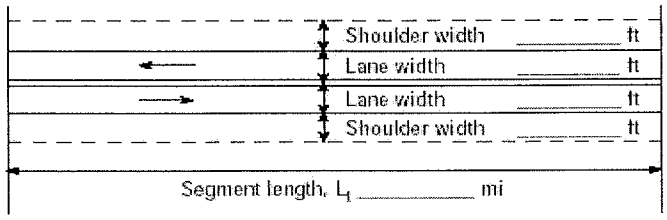
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*MKL*	Highway / Direction of Travel	*Foresthill Road - WB - Mitig.*
Agency or Company	*MRO Engineers, Inc.*	From/To	*Todd Valley W to Owl Hill Ct.*
Date Performed	*12/28/06*	Jurisdiction	*Placer County*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Year 2030 With Forest Ranch*

Project Description: *Foresthill Divide Community Plan*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☐ Level ☐ Rolling

Grade Length *1.20* mi Up/down *-3.0*

Peak-hour factor, PHF *0.88*

No-passing zone *50%*

% Trucks and Buses , P_T *4 %*

% Recreational vehicles, P_R *2%*

Access points/ *mi* *4*

Analysis direction vol., V_d *432*veh/h

Opposing direction vol., V_o *551*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*3.7*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.992*	*0.901*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*495*	*695*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*1.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.2 mi/h*	Free-flow speed, FFS_d $(FSS=BFFS-f_{LS}-f_A)$	*59.0 mi/h*
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*48.5 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.996*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*0.93*
Directional flow rate[2], v_i(pc/h)$=V_i/(PHF*f_{HV}*f_G)$	*493*	*670*
Base percent time-spent-following[4], $BPTSF(\%)=100(1-e^{av_d^b})$	*53.0*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*28.6*	
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{np}$	*65.2*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, $v/c=V_p/1{,}700$	*0.29*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)$=0.25L_t(V/PHF)$	*147*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)$=V*L_t$	*518*
Peak 15-min total travel time, TT_{15}(veh-h)$=VMT_{15}/ATS$	*3.0*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

Copyright © 2005 University of Florida, All Rights Reserved *HCS+™* Version 5.21 Generated: 4/3/2007 3:47 PM

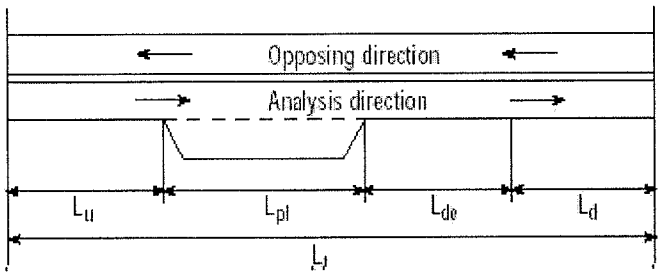
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET WITH PASSING LANE WORKSHEET

General Information		Site Information	
Analyst	*MKL*	Highway of Travel	*Foresthill Road - WB - Mitig.*
Agency or Company	*MRO Engineers, Inc.*	From/To	*Todd Valley W to Owl Hill Ct.*
Date Performed	*12/28/06*	Jurisdiction	*Placer County*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Year 2030 With Forest Ranch*

Project Description: *Foresthill Divide Community Plan*

Input Data

☑ Class I highway ☐ Class II highway



Total length of analysis segment, L_t (*mi*)	*1.2*
Length of two-lane highway upstream of the passing lane, L_u (*mi*)	*0.3*
Length of passing lane including tapers , L_{pl} (*mi*)	*0.6*
Average travel speed, ATS_d (from Directional Two-Lane Highway Segment Worksheet)	*48.5*
Percent time-spent-following, $PTSF_d$ (from Directional Two-Lane Highway Segment Worksheet)	*65.2*
Level of service[1], LOS_d (from Directional Two-Lane Highway Segment Worksheet)	*D*
Average Travel Speed	
Downstream length of two-lane highway within effective length of passing lane for average travel speed, L_{de} (*mi*) (Exhibit 20-23)	*1.70*
Length of two-lane highway downstream of effective length of the passing lane for avg travel speed, L_d (*mi*) $L_d=L_t-(L_u+L_{pl}+L_{de})$	*-1.40*
Adj. factor for the effect of passing lane on average speed, f_{pl} (Exhibit 20-24)	*1.10*
Average travel speed including passing lane[2], $ATS_{pl} = (ATS_d * L_t) / (L_u+L_d+(L_{pl}/f_{pl})+(2L_{de}/(1+f_{pl}))$)	*52.0*
Percent Time-Spent-Following	
Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, L_{de} (*mi*)(Exhibit 20-23)	*7.36*
Length of two-lane highway downstream of effective length of the passing lane for percent-time-following, L_d (*mi*)$=L_t-(L_u+L_{pl}+L_{de})$	*-7.06*
Adj. factor for the effect of passing lane on percent time-spent-following, f_{pl} (Exhibit 20-24)	*0.61*
Percent time-spent-following including passing lane[3], $PTSF_{pl}$(%) $PTSF_{pl}= PTSF_d[L_u+L_d+f_{pl}L_{pl}+((1+f_{pl})/2)L_{de}]/L_t$	*46.2*
Level of Service and Other Performance Measures[4]	
Level of service including passing lane LOS_{pl} (Exhibit 20-3 or 20-4)	*B*
Peak 15-min total travel time, TT_{15}(veh-h) $TT_{15}= VMT_{15}/ATS_{pl}$	*2.8*

Notes

1. If LOS_d=F, passing lane analysis cannot be performed.
2. If L_d <0, use alternative Equation 20-22.
3. If L_d<0, use alternative Equation 20-20.
4. v/c, VMT_{15} and VMT_{60} are calculated on Directional Two-Lane Highway Segment Worksheet.

Copyright © 2005 University of Florida, All Rights Reserved

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
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95					1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.98					1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93					1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1525	1770	3253					1770	1863	1548
Flt Permitted	0.95	1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1525	1770	3253					1770	1863	1548
Volume (vph)	90	240	175	350	514	401	0	0	0	196	195	55
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	261	190	380	559	436	0	0	0	213	212	60
RTOR Reduction (vph)	0	0	122	0	87	0	0	0	0	0	0	51
Lane Group Flow (vph)	98	261	68	380	908	0	0	0	0	213	212	9
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Prot		Perm	Prot						Split		Perm
Protected Phases	7	4		3	8					6	6	
Permitted Phases			4									6
Actuated Green, G (s)	9.8	40.2	40.2	42.6	73.0					18.2	18.2	18.2
Effective Green, g (s)	8.8	39.2	39.2	41.6	72.0					17.2	17.2	17.2
Actuated g/C Ratio	0.08	0.36	0.36	0.38	0.65					0.16	0.16	0.16
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0					3.0	3.0	3.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)	142	664	543	669	2129					277	291	242
v/s Ratio Prot	c0.06	0.14		c0.21	c0.31					c0.12	0.11	
v/s Ratio Perm			0.12									0.04
v/c Ratio	0.69	0.39	0.12	0.57	0.43					0.77	0.73	0.04
Uniform Delay, d1	49.3	26.5	23.8	27.1	9.1					44.5	44.2	39.4
Progression Factor	1.00	1.00	1.00	0.71	0.72					1.00	1.00	1.00
Incremental Delay, d2	13.5	1.7	0.5	1.1	0.6					12.1	8.8	0.1
Delay (s)	62.8	28.2	24.3	20.3	7.1					56.6	53.0	39.4
Level of Service	E	C	C	C	A					E	D	D
Approach Delay (s)		33.0			10.7			0.0			52.9	
Approach LOS		C			B			A			D	

Intersection Summary			
HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.6%	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
Lane Util. Factor		1.00	0.91		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1863	5085		1770	1548
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1863	5085		1770	1548
Volume (vph)	0	451	1085	0	208	195
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	490	1179	0	226	212
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	490	1179	0	226	212
Confl. Peds. (#/hr)	5			5	5	5
Turn Type						Perm
Protected Phases		4	8		6	
Permitted Phases						6
Actuated Green, G (s)		84.1	84.1		18.9	18.9
Effective Green, g (s)		83.1	83.1		18.9	18.9
Actuated g/C Ratio		0.76	0.76		0.17	0.17
Clearance Time (s)		3.0	3.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1407	3841		304	266
v/s Ratio Prot		c0.26	0.23		0.13	
v/s Ratio Perm						0.14
v/c Ratio		0.35	0.31		0.74	0.80
Uniform Delay, d1		4.5	4.3		43.2	43.7
Progression Factor		0.95	0.49		1.00	1.00
Incremental Delay, d2		0.6	0.2		9.5	15.2
Delay (s)		4.9	2.2		52.7	58.9
Level of Service		A	A		D	E
Approach Delay (s)		4.9	2.2		55.7	
Approach LOS		A	A		E	

Intersection Summary			
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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			0.95			1.00	1.00			
Frpb, ped/bikes	1.00	1.00			0.99			1.00	0.96			
Flpb, ped/bikes	1.00	1.00			1.00			0.99	1.00			
Frt	1.00	1.00			0.96			1.00	0.85			
Flt Protected	0.95	1.00			1.00			0.95	1.00			
Satd. Flow (prot)	1770	1863			3358			1758	1525			
Flt Permitted	0.95	1.00			1.00			0.95	1.00			
Satd. Flow (perm)	1770	1863			3358			1758	1525			
Volume (vph)	140	479	0	0	880	335	190	5	257	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	521	0	0	957	364	207	5	279	0	0	0
RTOR Reduction (vph)	0	0	0	0	29	0	0	0	0	0	0	0
Lane Group Flow (vph)	152	521	0	0	1292	0	0	212	279	0	0	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Prot						Perm		Perm			
Protected Phases	7	4			8			2				
Permitted Phases							2		2			
Actuated Green, G (s)	13.3	79.8			63.5			24.2	24.2			
Effective Green, g (s)	12.3	78.8			62.5			23.2	23.2			
Actuated g/C Ratio	0.11	0.72			0.57			0.21	0.21			
Clearance Time (s)	3.0	3.0			3.0			3.0	3.0			
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)	198	1335			1908			371	322			
v/s Ratio Prot	c0.09	0.28			c0.39							
v/s Ratio Perm								0.12	0.18			
v/c Ratio	0.77	0.39			0.68			0.57	0.87			
Uniform Delay, d1	47.5	6.1			16.7			38.9	41.9			
Progression Factor	1.04	0.60			0.70			1.00	1.00			
Incremental Delay, d2	15.6	0.8			0.7			2.1	20.9			
Delay (s)	65.0	4.5			12.4			41.1	62.8			
Level of Service	E	A			B			D	E			
Approach Delay (s)		18.2			12.4			53.4			0.0	
Approach LOS		B			B			D			A	

Intersection Summary			
HCM Average Control Delay	22.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	0.97	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1548	1770	3408		1770	3321		1770	3539	1548
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1548	1770	3408		1770	3321		1770	3539	1548
Volume (vph)	160	271	240	169	710	197	415	175	87	63	85	125
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	295	261	184	772	214	451	190	95	68	92	136
RTOR Reduction (vph)	0	0	172	0	23	0	0	55	0	0	0	0
Lane Group Flow (vph)	174	295	89	184	963	0	451	230	0	68	92	136
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Split		Perm	Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	20.8	20.8	20.8	33.6	33.6		30.2	35.1		7.5	12.4	12.4
Effective Green, g (s)	20.8	20.8	20.8	32.6	32.6		29.2	34.1		6.5	11.4	11.4
Actuated g/C Ratio	0.19	0.19	0.19	0.30	0.30		0.27	0.31		0.06	0.10	0.10
Clearance Time (s)	4.0	4.0	4.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	649	352	293	525	1010		470	1030		105	367	160
v/s Ratio Prot	0.05	0.16		0.10	c0.29		c0.25	0.09		0.04	0.03	
v/s Ratio Perm			0.17									0.09
v/c Ratio	0.27	0.84	0.30	0.35	0.95		0.96	0.22		0.65	0.25	0.85
Uniform Delay, d1	38.1	43.0	38.4	30.4	38.0		39.8	28.1		50.6	45.4	48.5
Progression Factor	0.89	0.86	1.06	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.9	18.7	2.4	0.4	18.0		31.0	0.1		12.9	0.4	32.7
Delay (s)	34.8	55.8	43.1	30.8	56.0		70.8	28.2		63.6	45.7	81.1
Level of Service	C	E	D	C	E		E	C		E	D	F
Approach Delay (s)		46.2			52.0			54.3			66.1	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	52.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.8%	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
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95					1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98					1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93					1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1530	1770	3236					1770	1863	1551
Flt Permitted	0.95	1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1530	1770	3236					1770	1863	1551
Volume (vph)	125	490	240	276	531	474	0	0	0	295	155	65
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	533	261	300	577	515	0	0	0	321	168	71
RTOR Reduction (vph)	0	0	151	0	158	0	0	0	0	0	0	56
Lane Group Flow (vph)	136	533	110	300	934	0	0	0	0	321	168	15
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Prot		Perm	Prot						Split		Perm
Protected Phases	7	4		3	8					6	6	
Permitted Phases			4									6
Actuated Green, G (s)	11.5	39.0	39.0	22.0	49.5					20.0	20.0	20.0
Effective Green, g (s)	10.5	38.0	38.0	21.0	48.5					19.0	19.0	19.0
Actuated g/C Ratio	0.12	0.42	0.42	0.23	0.54					0.21	0.21	0.21
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0					3.0	3.0	3.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)	207	787	646	413	1744					374	393	327
v/s Ratio Prot	0.08	c0.29		c0.17	0.34					c0.18	0.09	
v/s Ratio Perm			0.17									0.05
v/c Ratio	0.66	0.68	0.17	0.73	0.54					0.86	0.43	0.05
Uniform Delay, d1	38.0	21.0	16.2	31.8	13.4					34.2	30.8	28.3
Progression Factor	1.00	1.00	1.00	1.01	1.07					1.00	1.00	1.00
Incremental Delay, d2	7.3	4.7	0.6	5.9	1.1					17.4	0.8	0.1
Delay (s)	45.3	25.7	16.8	38.1	15.5					51.6	31.5	28.3
Level of Service	D	C	B	D	B					D	C	C
Approach Delay (s)		26.1			20.4			0.0			42.6	
Approach LOS		C			C			A			D	

Intersection Summary			
HCM Average Control Delay	26.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.4%	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
Lane Util. Factor		1.00	0.91		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1863	5085		1770	1551
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1863	5085		1770	1551
Volume (vph)	0	780	1081	0	305	200
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	848	1175	0	332	217
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	848	1175	0	332	217
Confl. Peds. (#/hr)	5			5	5	5
Turn Type						Perm
Protected Phases		4	8		6	
Permitted Phases						6
Actuated Green, G (s)		62.0	62.0		21.0	21.0
Effective Green, g (s)		61.0	61.0		21.0	21.0
Actuated g/C Ratio		0.68	0.68		0.23	0.23
Clearance Time (s)		3.0	3.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1263	3447		413	362
v/s Ratio Prot		c0.46	0.23		c0.19	
v/s Ratio Perm						0.14
v/c Ratio		0.67	0.34		0.80	0.60
Uniform Delay, d1		8.6	6.1		32.6	30.8
Progression Factor		0.15	0.35		1.00	1.00
Incremental Delay, d2		2.0	0.1		10.8	2.7
Delay (s)		3.3	2.3		43.4	33.4
Level of Service		A	A		D	C
Approach Delay (s)		3.3	2.3		39.4	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	131.2%	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			
Lane Util. Factor	1.00	1.00			0.95			1.00	1.00			
Frpb, ped/bikes	1.00	1.00			0.99			1.00	0.97			
Flpb, ped/bikes	1.00	1.00			1.00			0.99	1.00			
Frt	1.00	1.00			0.95			1.00	0.85			
Flt Protected	0.95	1.00			1.00			0.95	1.00			
Satd. Flow (prot)	1770	1863			3306			1762	1530			
Flt Permitted	0.95	1.00			1.00			0.95	1.00			
Satd. Flow (perm)	1770	1863			3306			1762	1530			
Volume (vph)	250	790	0	0	721	409	360	10	686	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	272	859	0	0	784	445	391	11	746	0	0	0
RTOR Reduction (vph)	0	0	0	0	88	0	0	0	53	0	0	0
Lane Group Flow (vph)	272	859	0	0	1141	0	0	402	693	0	0	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Prot						Perm		Perm			
Protected Phases	7	4			8			2				
Permitted Phases							2		2			
Actuated Green, G (s)	14.0	46.0			29.0			38.0	38.0			
Effective Green, g (s)	13.0	45.0			28.0			37.0	37.0			
Actuated g/C Ratio	0.14	0.50			0.31			0.41	0.41			
Clearance Time (s)	3.0	3.0			3.0			3.0	3.0			
Vehicle Extension (s)	3.0	3.0			3.0			3.0	3.0			
Lane Grp Cap (vph)	256	932			1029			724	629			
v/s Ratio Prot	0.15	c0.46			c0.37							
v/s Ratio Perm								0.23	0.49			
v/c Ratio	1.06	0.92			1.11			0.56	1.10			
Uniform Delay, d1	38.5	20.9			31.0			20.2	26.5			
Progression Factor	0.98	0.95			0.86			1.00	1.00			
Incremental Delay, d2	65.9	12.4			50.5			0.9	67.0			
Delay (s)	103.5	32.3			77.1			21.1	93.5			
Level of Service	F	C			E			C	F			
Approach Delay (s)		49.4			77.1			68.1			0.0	
Approach LOS		D			E			E			A	

Intersection Summary			
HCM Average Control Delay	65.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	131.2%	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	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1551	1770	3398		1770	3260		1770	3539	1551
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1551	1770	3398		1770	3260		1770	3539	1551
Volume (vph)	420	726	310	82	385	119	490	345	266	197	195	255
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	457	789	337	89	418	129	533	375	289	214	212	277
RTOR Reduction (vph)	0	0	102	0	32	0	0	158	0	0	0	0
Lane Group Flow (vph)	457	789	235	89	515	0	533	506	0	214	212	277
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Split		Perm	Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	31.0	31.0	31.0	12.0	12.0		21.0	17.5		16.5	13.0	13.0
Effective Green, g (s)	31.0	31.0	31.0	11.0	11.0		20.0	16.5		15.5	12.0	12.0
Actuated g/C Ratio	0.34	0.34	0.34	0.12	0.12		0.22	0.18		0.17	0.13	0.13
Clearance Time (s)	4.0	4.0	4.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	1182	642	534	216	415		393	598		305	472	207
v/s Ratio Prot	0.13	c0.42		0.05	c0.16		c0.30	0.20		c0.12	0.06	
v/s Ratio Perm			0.22									0.18
v/c Ratio	0.39	1.23	0.44	0.41	1.24		1.36	0.85		0.70	0.45	1.34
Uniform Delay, d1	22.3	29.5	22.8	36.5	39.5		35.0	35.5		35.1	36.0	39.0
Progression Factor	1.01	1.00	1.05	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	104.4	0.2	1.3	127.0		176.2	10.7		7.1	0.7	181.1
Delay (s)	22.6	133.9	24.2	37.8	166.5		211.2	46.2		42.2	36.6	220.1
Level of Service	C	F	C	D	F		F	D		D	D	F
Approach Delay (s)		78.4			148.5			119.7			110.6	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM Average Control Delay	106.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	89.8%	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
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95					1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.98					1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93					1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1525	1770	3253					1770	1863	1548
Flt Permitted	0.95	1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1525	1770	3253					1770	1863	1548
Volume (vph)	90	240	175	350	514	401	0	0	0	196	195	55
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	261	190	380	559	436	0	0	0	213	212	60
RTOR Reduction (vph)	0	0	122	0	87	0	0	0	0	0	0	51
Lane Group Flow (vph)	98	261	68	380	908	0	0	0	0	213	212	9
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Prot		Perm	Prot						Split		Perm
Protected Phases	7	4		3	8					6	6	
Permitted Phases			4									6
Actuated Green, G (s)	9.8	40.2	40.2	42.6	73.0					18.2	18.2	18.2
Effective Green, g (s)	8.8	39.2	39.2	41.6	72.0					17.2	17.2	17.2
Actuated g/C Ratio	0.08	0.36	0.36	0.38	0.65					0.16	0.16	0.16
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0					3.0	3.0	3.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)	142	664	543	669	2129					277	291	242
v/s Ratio Prot	c0.06	0.14		c0.21	c0.31					c0.12	0.11	
v/s Ratio Perm			0.12									0.04
v/c Ratio	0.69	0.39	0.12	0.57	0.43					0.77	0.73	0.04
Uniform Delay, d1	49.3	26.5	23.8	27.1	9.1					44.5	44.2	39.4
Progression Factor	1.00	1.00	1.00	0.79	0.90					1.00	1.00	1.00
Incremental Delay, d2	13.5	1.7	0.5	1.1	0.6					12.1	8.8	0.1
Delay (s)	62.8	28.2	24.3	22.4	8.8					56.6	53.0	39.4
Level of Service	E	C	C	C	A					E	D	D
Approach Delay (s)		33.0			12.6			0.0			52.9	
Approach LOS		C			B			A			D	

Intersection Summary			
HCM Average Control Delay	25.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.6%	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
Lane Util. Factor		1.00	0.91		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1863	5085		1770	1548
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1863	5085		1770	1548
Volume (vph)	0	451	1085	0	208	195
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	490	1179	0	226	212
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	490	1179	0	226	212
Confl. Peds. (#/hr)	5			5	5	5
Turn Type						Perm
Protected Phases		4	8		6	
Permitted Phases						6
Actuated Green, G (s)		84.1	84.1		18.9	18.9
Effective Green, g (s)		83.1	83.1		18.9	18.9
Actuated g/C Ratio		0.76	0.76		0.17	0.17
Clearance Time (s)		3.0	3.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1407	3841		304	266
v/s Ratio Prot		c0.26	0.23		0.13	
v/s Ratio Perm						0.14
v/c Ratio		0.35	0.31		0.74	0.80
Uniform Delay, d1		4.5	4.3		43.2	43.7
Progression Factor		0.95	0.27		1.00	1.00
Incremental Delay, d2		0.6	0.2		9.5	15.2
Delay (s)		4.9	1.3		52.7	58.9
Level of Service		A	A		D	E
Approach Delay (s)		4.9	1.3		55.7	
Approach LOS		A	A		E	

Intersection Summary			
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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			0.95	1.00		1.00	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.96		1.00	0.98			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.99	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	1863			3539	1525		1758	1548			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1863			3539	1525		1758	1548			
Volume (vph)	140	479	0	0	880	335	190	5	257	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	152	521	0	0	957	364	207	5	279	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	77	0	0	0	0	0	0
Lane Group Flow (vph)	152	521	0	0	957	287	0	212	279	0	0	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Prot					Perm	Perm		Perm			
Protected Phases	7	4			8			2				
Permitted Phases						8	2		2			
Actuated Green, G (s)	13.3	80.1			63.8	63.8		23.9	23.9			
Effective Green, g (s)	12.3	79.1			62.8	62.8		22.9	22.9			
Actuated g/C Ratio	0.11	0.72			0.57	0.57		0.21	0.21			
Clearance Time (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	198	1340			2020	871		366	322			
v/s Ratio Prot	c0.09	0.28			c0.27							
v/s Ratio Perm						0.24		0.12	0.18			
v/c Ratio	0.77	0.39			0.47	0.33		0.58	0.87			
Uniform Delay, d1	47.5	6.0			13.9	12.5		39.2	42.1			
Progression Factor	1.05	0.59			0.41	0.27		1.00	1.00			
Incremental Delay, d2	15.6	0.8			0.6	0.8		2.2	20.9			
Delay (s)	65.2	4.4			6.3	4.1		41.4	63.0			
Level of Service	E	A			A	A		D	E			
Approach Delay (s)		18.1			5.7			53.7			0.0	
Approach LOS		B			A			D			A	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.3%	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	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3256		1770	3539	1548	3433	3337		1770	3539	1548
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3256		1770	3539	1548	3433	3337		1770	3539	1548
Volume (vph)	160	271	240	169	710	197	415	175	87	63	85	125
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	295	261	184	772	214	451	190	95	68	92	136
RTOR Reduction (vph)	0	127	0	0	0	127	0	60	0	0	0	0
Lane Group Flow (vph)	174	429	0	184	772	87	451	225	0	68	92	136
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8						6
Actuated Green, G (s)	31.1	31.1		30.1	30.1	30.1	19.0	28.3		7.5	16.8	16.8
Effective Green, g (s)	31.1	31.1		29.1	29.1	29.1	18.0	27.3		6.5	15.8	15.8
Actuated g/C Ratio	0.28	0.28		0.26	0.26	0.26	0.16	0.25		0.06	0.14	0.14
Clearance Time (s)	4.0	4.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	971	921		468	936	410	562	828		105	508	222
v/s Ratio Prot	0.05	c0.17		0.10	c0.22		c0.13	0.09		0.04	0.03	
v/s Ratio Perm						0.14						0.09
v/c Ratio	0.18	0.47		0.39	0.82	0.21	0.80	0.27		0.65	0.18	0.61
Uniform Delay, d1	29.8	32.6		33.2	38.1	31.5	44.3	33.3		50.6	41.4	44.2
Progression Factor	0.91	0.86		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	1.5		0.5	6.0	0.3	8.1	0.2		12.9	0.2	4.9
Delay (s)	27.5	29.4		33.7	44.0	31.8	52.4	33.5		63.6	41.6	49.2
Level of Service	C	C		C	D	C	D	C		E	D	D
Approach Delay (s)		28.9			40.2			45.1			50.1	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	54.9%	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
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95					1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98					1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.93					1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1530	1770	3236					1770	1863	1551
Flt Permitted	0.95	1.00	1.00	0.95	1.00					0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1530	1770	3236					1770	1863	1551
Volume (vph)	125	490	240	276	531	474	0	0	0	295	155	65
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	136	533	261	300	577	515	0	0	0	321	168	71
RTOR Reduction (vph)	0	0	151	0	158	0	0	0	0	0	0	56
Lane Group Flow (vph)	136	533	110	300	934	0	0	0	0	321	168	15
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Prot		Perm	Prot						Split		Perm
Protected Phases	7	4		3	8					6	6	
Permitted Phases			4									6
Actuated Green, G (s)	11.5	39.0	39.0	22.0	49.5					20.0	20.0	20.0
Effective Green, g (s)	10.5	38.0	38.0	21.0	48.5					19.0	19.0	19.0
Actuated g/C Ratio	0.12	0.42	0.42	0.23	0.54					0.21	0.21	0.21
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0					3.0	3.0	3.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)	207	787	646	413	1744					374	393	327
v/s Ratio Prot	0.08	c0.29		c0.17	0.34					c0.18	0.09	
v/s Ratio Perm			0.17									0.05
v/c Ratio	0.66	0.68	0.17	0.73	0.54					0.86	0.43	0.05
Uniform Delay, d1	38.0	21.0	16.2	31.8	13.4					34.2	30.8	28.3
Progression Factor	1.00	1.00	1.00	1.01	1.07					1.00	1.00	1.00
Incremental Delay, d2	7.3	4.7	0.6	5.9	1.1					17.4	0.8	0.1
Delay (s)	45.3	25.7	16.8	38.1	15.6					51.6	31.5	28.3
Level of Service	D	C	B	D	B					D	C	C
Approach Delay (s)		26.1			20.4			0.0			42.6	
Approach LOS		C			C			A			D	

Intersection Summary			
HCM Average Control Delay	26.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.4%	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
Lane Util. Factor		1.00	0.91		1.00	1.00
Frpb, ped/bikes		1.00	1.00		1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1863	5085		1770	1551
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1863	5085		1770	1551
Volume (vph)	0	780	1081	0	305	200
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	848	1175	0	332	217
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	848	1175	0	332	217
Confl. Peds. (#/hr)	5			5	5	5
Turn Type						Perm
Protected Phases		4	8		6	
Permitted Phases						6
Actuated Green, G (s)		62.0	62.0		21.0	21.0
Effective Green, g (s)		61.0	61.0		21.0	21.0
Actuated g/C Ratio		0.68	0.68		0.23	0.23
Clearance Time (s)		3.0	3.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1263	3447		413	362
v/s Ratio Prot		c0.46	0.23		c0.19	
v/s Ratio Perm						0.14
v/c Ratio		0.67	0.34		0.80	0.60
Uniform Delay, d1		8.6	6.1		32.6	30.8
Progression Factor		0.15	0.36		1.00	1.00
Incremental Delay, d2		2.0	0.1		10.8	2.7
Delay (s)		3.3	2.3		43.4	33.4
Level of Service		A	A		D	C
Approach Delay (s)		3.3	2.3		39.4	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	10.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	131.2%	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	1.00	1.00			0.95	1.00		1.00	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.97		1.00	0.98			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.99	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	1863			3539	1530		1762	1551			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1863			3539	1530		1762	1551			
Volume (vph)	250	790	0	0	721	409	360	10	686	0	0	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	272	859	0	0	784	445	391	11	746	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	172	0	0	53	0	0	0
Lane Group Flow (vph)	272	859	0	0	784	273	0	402	693	0	0	0
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Prot					Perm	Perm		Perm			
Protected Phases	7	4			8			2				
Permitted Phases						8	2		2			
Actuated Green, G (s)	14.0	46.0			29.0	29.0		38.0	38.0			
Effective Green, g (s)	13.0	45.0			28.0	28.0		37.0	37.0			
Actuated g/C Ratio	0.14	0.50			0.31	0.31		0.41	0.41			
Clearance Time (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	256	932			1101	476		724	638			
v/s Ratio Prot	0.15	c0.46			0.22							
v/s Ratio Perm						0.29		0.23	0.48			
v/c Ratio	1.06	0.92			0.71	0.57		0.56	1.09			
Uniform Delay, d1	38.5	20.9			27.4	26.0		20.2	26.5			
Progression Factor	0.98	0.95			0.66	0.53		1.00	1.00			
Incremental Delay, d2	65.9	12.4			1.8	2.3		0.9	61.3			
Delay (s)	103.5	32.3			19.9	16.0		21.1	87.8			
Level of Service	F	C			B	B		C	F			
Approach Delay (s)		49.4			18.5			64.5			0.0	
Approach LOS		D			B			E			A	

Intersection Summary			
HCM Average Control Delay	43.5	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	123.8%	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	0.97	0.95		1.00	0.95	1.00	0.97	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3360		1770	3539	1551	3433	3279		1770	3539	1551
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	3360		1770	3539	1551	3433	3279		1770	3539	1551
Volume (vph)	420	726	310	82	385	119	490	345	266	197	195	255
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	457	789	337	89	418	129	533	375	289	214	212	277
RTOR Reduction (vph)	0	52	0	0	0	113	0	158	0	0	0	0
Lane Group Flow (vph)	457	1074	0	89	418	16	533	506	0	214	212	277
Confl. Peds. (#/hr)	5		5	5		5	5		5	5		5
Turn Type	Split			Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases						8						6
Actuated Green, G (s)	31.0	31.0		12.0	12.0	12.0	18.3	17.5		16.5	15.7	15.7
Effective Green, g (s)	31.0	31.0		11.0	11.0	11.0	17.3	16.5		15.5	14.7	14.7
Actuated g/C Ratio	0.34	0.34		0.12	0.12	0.12	0.19	0.18		0.17	0.16	0.16
Clearance Time (s)	4.0	4.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	1182	1157		216	433	190	660	601		305	578	253
v/s Ratio Prot	0.13	c0.34		0.05	c0.12		0.16	c0.20		0.12	0.06	
v/s Ratio Perm						0.08						0.18
v/c Ratio	0.39	0.93		0.41	0.97	0.08	0.81	0.84		0.70	0.37	1.09
Uniform Delay, d1	22.3	28.4		36.5	39.3	35.0	34.8	35.5		35.1	33.5	37.6
Progression Factor	1.01	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	1.7		1.3	34.1	0.2	7.2	10.4		7.1	0.4	84.3
Delay (s)	22.6	30.2		37.8	73.4	35.2	41.9	45.9		42.2	33.9	121.9
Level of Service	C	C		D	E	D	D	D		D	C	F
Approach Delay (s)		28.0			60.6			44.1			71.1	
Approach LOS		C			E			D			E	

Intersection Summary			
HCM Average Control Delay	45.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group