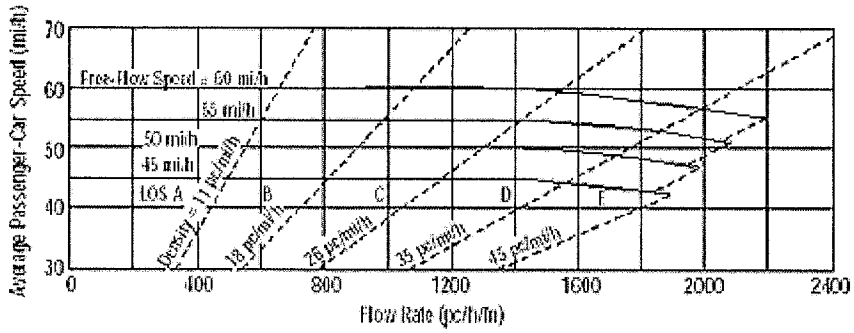
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKL
Agency or Company	MRO Engineers, Inc.
Date Performed	4/3/2007
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Foresthill Road - Mitigated
From/To	Bridge to Spring Garden Rd
Jurisdiction	Placer County
Analysis Year	Buildout With Forest Ranch

Project Description Foresthill Divide Community Plan

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1649	Peak-Hour Factor, PHF	0.88
AADT(veh/h)		%Trucks and Buses, P_T	1
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	2
Peak-Hour Direction Prop, D		General Terrain:	Grade
DDHV (veh/h)		Grade Length (mi)	4.00
Driver Type Adjustment	1.00	Up/Down %	3.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	3.0
E_T	3.0	f_{HV}	0.943

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	2
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	60.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.5
f_M (mi/h)	1.6
FFS (mi/h)	57.9

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	993
Speed, S (mi/h)	57.9
D (pc/mi/ln)	17.2
LOS	B

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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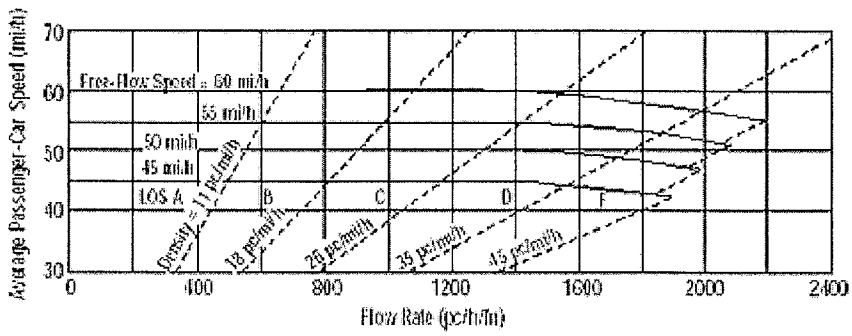
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKL
Agency or Company	MRO Engineers, Inc.
Date Performed	4/3/2007
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Foresthill Road - Mitigated
From/To	Bridge to Spring Garden Rd
Jurisdiction	Placer County
Analysis Year	Buildout With Forest Ranch

Project Description Foresthill Divide Community Plan

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1247	Peak-Hour Factor, PHF	0.76
AADT(veh/h)		%Trucks and Buses, P_T	4
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	2
Peak-Hour Direction Prop, D		General Terrain:	Grade
DDHV (veh/h)		Grade Length (mi)	4.00
Driver Type Adjustment	1.00	Up/Down %	-3.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.977

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	2
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	60.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.5
f_M (mi/h)	1.6
FFS (mi/h)	57.9

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	840
Speed, S (mi/h)	57.9
D (pc/mi/ln)	14.5
LOS	B

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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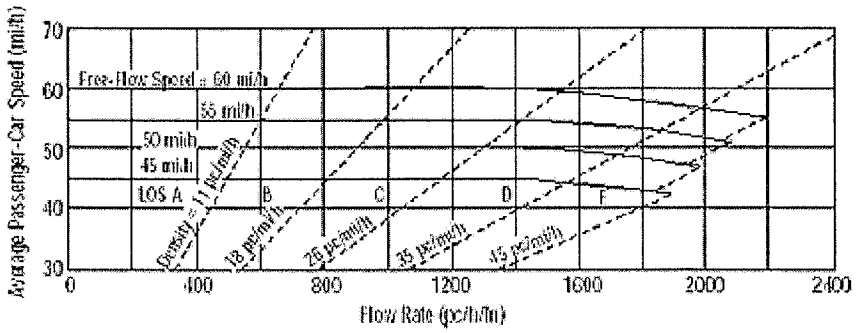
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKL
Agency or Company	MRO Engineers, Inc.
Date Performed	4/3/2007
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Foresthill Road - Mitigated
From/To	Spring Garden to Todd Valley W
Jurisdiction	Placer County
Analysis Year	Buildout With Forest Ranch

Project Description Foresthill Divide Community Plan

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1203	Peak-Hour Factor, PHF	0.88
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	2
Peak-Hour Direction Prop, D		General Terrain:	Grade
DDHV (veh/h)		Grade Length (mi)	1.70
Driver Type Adjustment	1.00	Up/Down %	3.40
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	3.0
E_T	4.0	f_{HV}	0.909

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	4
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	60.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	1.0
f_M (mi/h)	1.6
FFS (mi/h)	57.4

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	751
Speed, S (mi/h)	57.4
D (pc/mi/ln)	13.1
LOS	B

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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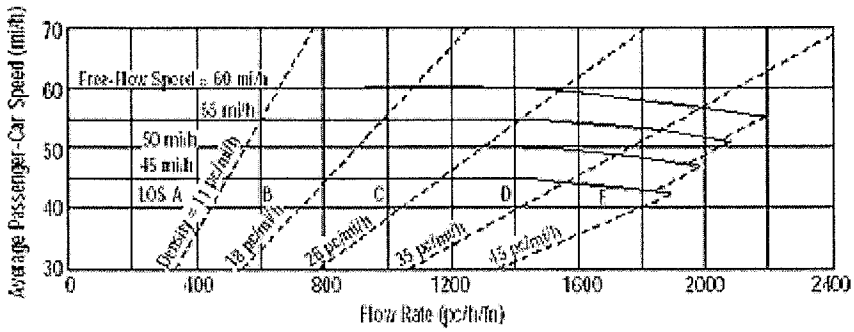
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKL
Agency or Company	MRO Engineers, Inc.
Date Performed	4/3/2007
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Foresthill Road - Mitigated
From/To	Spring Garden to Todd Valley W
Jurisdiction	Placer County
Analysis Year	Buildout With Forest Ranch

Project Description Foresthill Divide Community Plan

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1355	Peak-Hour Factor, PHF	0.88
AADT(veh/h)		%Trucks and Buses, P_T	3
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	2
Peak-Hour Direction Prop, D		General Terrain:	Grade
DDHV (veh/h)		Grade Length (mi)	1.70
Driver Type Adjustment	1.00	Up/Down %	-3.40
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.981

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	5
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	60.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	1.3
f_M (mi/h)	1.6
FFS (mi/h)	57.2

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	784
Speed, S (mi/h)	57.2
D (pc/mi/ln)	13.7
LOS	B

Design

Design (N)

Required Number of Lanes, N
Flow Rate, v_p (pc/h)
Max Service Flow Rate (pc/h/ln)
Design LOS

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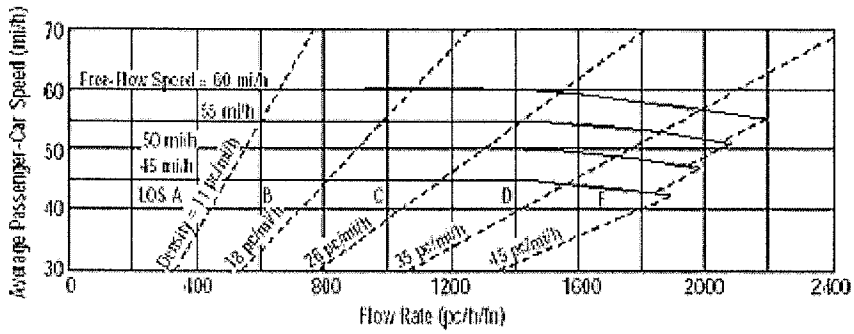
MULTILANE HIGHWAYS WORKSHEET(Direct 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKL
Agency or Company	MRO Engineers, Inc.
Date Performed	4/3/2007
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Foresthill Road - Mitigated
From/To	Todd Valley W to Owl Hill Ct
Jurisdiction	Placer County
Analysis Year	Buildout With Forest Ranch

Project Description Foresthill Divide Community Plan

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1072	Peak-Hour Factor, PHF	0.85
AADT(veh/h)		%Trucks and Buses, P_T	2
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	2
Peak-Hour Direction Prop, D		General Terrain:	Grade
DDHV (veh/h)		Grade Length (mi)	1.20
Driver Type Adjustment	1.00	Up/Down %	3.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	3.0
E_T	2.5	f_{HV}	0.935

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	3
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	60.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.8
f_M (mi/h)	1.6
FFS (mi/h)	57.7

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	674
Speed, S (mi/h)	57.7
D (pc/mi/ln)	11.7
LOS	B

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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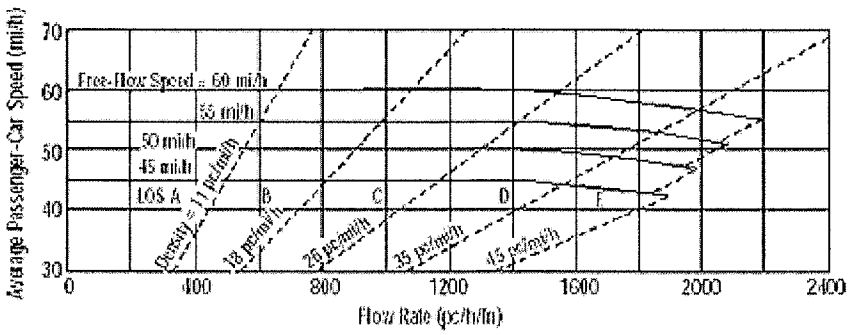
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	MKL
Agency or Company	MRO Engineers, Inc.
Date Performed	4/3/2007
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction to Travel	Foresthill Road - Mitigated
From/To	Todd Valley W to Owl Hill Ct
Jurisdiction	Placer County
Analysis Year	Buildout With Forest Ranch

Project Description Foresthill Divide Community Plan

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1211	Peak-Hour Factor, PHF	0.88
AADT(veh/h)		%Trucks and Buses, P_T	4
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	2
Peak-Hour Direction Prop, D		General Terrain:	Grade
DDHV (veh/h)		Grade Length (mi)	1.20
Driver Type Adjustment	1.00	Up/Down %	-3.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.977

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	4
Median Type, M	Undivided
FFS (measured)	
Base Free-Flow Speed, BFFS	60.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	1.0
f_M (mi/h)	1.6
FFS (mi/h)	57.4

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	704
Speed, S (mi/h)	57.4
D (pc/mi/ln)	12.3
LOS	B

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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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	3225					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	3225					1770	1863	1548
Volume (vph)	90	302	175	392	643	599	0	0	0	267	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	328	190	426	699	651	0	0	0	290	212	60
RTOR Reduction (vph)	0	0	126	0	123	0	0	0	0	0	0	48
Lane Group Flow (vph)	98	328	64	426	1227	0	0	0	0	290	212	12
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)	9.4	38.0	38.0	40.6	69.2					22.4	22.4	22.4
Effective Green, g (s)	8.4	37.0	37.0	39.6	68.2					21.4	21.4	21.4
Actuated g/C Ratio	0.08	0.34	0.34	0.36	0.62					0.19	0.19	0.19
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)	135	627	513	637	2000					344	362	301
v/s Ratio Prot	c0.06	0.18		0.24	c0.42					c0.16	0.11	
v/s Ratio Perm			0.12									0.04
v/c Ratio	0.73	0.52	0.12	0.67	0.61					0.84	0.59	0.04
Uniform Delay, d1	49.7	29.4	25.3	29.7	12.8					42.7	40.3	36.0
Progression Factor	1.00	1.00	1.00	1.22	1.45					1.00	1.00	1.00
Incremental Delay, d2	17.6	3.1	0.5	2.5	1.3					16.9	2.4	0.1
Delay (s)	67.2	32.5	25.8	38.6	19.9					59.6	42.7	36.0
Level of Service	E	C	C	D	B					E	D	D
Approach Delay (s)		36.0			24.4			0.0			50.7	
Approach LOS		D			C			A			D	

Intersection Summary			
HCM Average Control Delay	31.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.0%	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	1548
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1863	5085		1770	1548
Volume (vph)	0	584	1454	0	301	195
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	635	1580	0	327	212
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	635	1580	0	327	212
Confl. Peds. (#/hr)	5			5	5	5
Turn Type						Perm
Protected Phases		4	8		6	
Permitted Phases						6
Actuated Green, G (s)		78.5	78.5		24.5	24.5
Effective Green, g (s)		77.5	77.5		24.5	24.5
Actuated g/C Ratio		0.70	0.70		0.22	0.22
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)		1313	3583		394	345
v/s Ratio Prot		c0.34	0.31		c0.18	
v/s Ratio Perm						0.14
v/c Ratio		0.48	0.44		0.83	0.61
Uniform Delay, d1		7.3	7.0		40.8	38.5
Progression Factor		0.13	0.16		1.00	1.00
Incremental Delay, d2		1.1	0.1		13.5	3.2
Delay (s)		2.0	1.2		54.3	41.7
Level of Service		A	A		D	D
Approach Delay (s)		2.0	1.2		49.3	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	123.6%	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	0.96			
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			3364			1758	1525			
Flt Permitted	0.95	1.00			1.00			0.95	1.00			
Satd. Flow (perm)	1770	1863			3364			1758	1525			
Volume (vph)	140	705	0	0	1249	456	190	5	475	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	766	0	0	1358	496	207	5	516	0	0	0
RTOR Reduction (vph)	0	0	0	0	34	0	0	0	0	0	0	0
Lane Group Flow (vph)	152	766	0	0	1820	0	0	212	516	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)	10.0	69.0			56.0			35.0	35.0			
Effective Green, g (s)	9.0	68.0			55.0			34.0	34.0			
Actuated g/C Ratio	0.08	0.62			0.50			0.31	0.31			
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)	145	1152			1682			543	471			
v/s Ratio Prot	c0.09	0.41			c0.55							
v/s Ratio Perm								0.12	0.34			
v/c Ratio	1.05	0.66			1.08			0.39	1.10			
Uniform Delay, d1	50.5	13.6			27.5			29.9	38.0			
Progression Factor	1.17	0.66			0.37			1.00	1.00			
Incremental Delay, d2	83.7	2.7			38.1			0.5	69.9			
Delay (s)	143.0	11.7			48.4			30.3	107.9			
Level of Service	F	B			D			C	F			
Approach Delay (s)		33.5			48.4			85.3			0.0	
Approach LOS		C			D			F			A	

Intersection Summary			
HCM Average Control Delay	52.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	123.6%	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	0.99		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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.90		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	3377		1770	3127		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	3377		1770	3127		1770	3539	1548
Volume (vph)	160	715	240	299	1200	437	415	175	305	180	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	777	261	325	1304	475	451	190	332	196	92	136
RTOR Reduction (vph)	0	0	66	0	34	0	0	286	0	0	0	0
Lane Group Flow (vph)	174	777	195	325	1745	0	451	236	0	196	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)	32.0	32.0	32.0	37.0	37.0		20.0	14.0		14.0	8.0	8.0
Effective Green, g (s)	32.0	32.0	32.0	36.0	36.0		19.0	13.0		13.0	7.0	7.0
Actuated g/C Ratio	0.29	0.29	0.29	0.33	0.33		0.17	0.12		0.12	0.06	0.06
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)	999	542	450	579	1105		306	370		209	225	99
v/s Ratio Prot	0.05	c0.42		0.18	c0.53		c0.25	c0.17		0.11	0.03	
v/s Ratio Perm			0.17									0.09
v/c Ratio	0.17	1.43	0.43	0.56	1.58		1.47	0.64		0.94	0.41	1.37
Uniform Delay, d1	29.1	39.0	31.6	30.5	37.0		45.5	46.3		48.1	49.5	51.5
Progression Factor	0.95	0.93	0.93	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	200.6	1.6	1.2	265.1		230.2	3.6		44.5	1.2	219.4
Delay (s)	27.9	237.0	31.0	31.7	302.1		275.7	49.9		92.6	50.7	270.9
Level of Service	C	F	C	C	F		F	D		F	D	F
Approach Delay (s)		162.6			260.4			154.5			140.7	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	202.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.48		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.4%	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	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	0.92					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	3216					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	3216					1770	1863	1551
Volume (vph)	125	539	240	318	658	667	0	0	0	355	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	586	261	346	715	725	0	0	0	386	168	71
RTOR Reduction (vph)	0	0	154	0	193	0	0	0	0	0	0	54
Lane Group Flow (vph)	136	586	107	346	1247	0	0	0	0	386	168	17
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)	10.3	37.8	37.8	20.7	48.2					22.5	22.5	22.5
Effective Green, g (s)	9.3	36.8	36.8	19.7	47.2					21.5	21.5	21.5
Actuated g/C Ratio	0.10	0.41	0.41	0.22	0.52					0.24	0.24	0.24
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)	183	762	626	387	1687					423	445	371
v/s Ratio Prot	0.08	0.31		c0.20	c0.45					c0.22	0.09	
v/s Ratio Perm			0.17									0.05
v/c Ratio	0.74	0.77	0.17	0.89	0.74					0.91	0.38	0.05
Uniform Delay, d1	39.2	22.9	16.9	34.1	16.6					33.3	28.7	26.4
Progression Factor	1.00	1.00	1.00	1.14	0.87					1.00	1.00	1.00
Incremental Delay, d2	15.0	7.3	0.6	20.2	2.6					23.7	0.5	0.1
Delay (s)	54.2	30.3	17.5	59.2	17.1					57.0	29.2	26.4
Level of Service	D	C	B	E	B					E	C	C
Approach Delay (s)		30.2			25.3			0.0			46.1	
Approach LOS		C			C			A			D	

Intersection Summary			
HCM Average Control Delay	30.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.5%	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
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	889	1443	0	382	200
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	966	1568	0	415	217
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	966	1568	0	415	217
Confl. Peds. (#/hr)	5			5	5	5
Turn Type						Perm
Protected Phases		4	8		6	
Permitted Phases						6
Actuated Green, G (s)		58.7	58.7		24.3	24.3
Effective Green, g (s)		57.7	57.7		24.3	24.3
Actuated g/C Ratio		0.64	0.64		0.27	0.27
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)		1194	3260		478	419
v/s Ratio Prot		c0.52	0.31		c0.23	
v/s Ratio Perm						0.14
v/c Ratio		0.81	0.48		0.87	0.52
Uniform Delay, d1		12.0	8.4		31.3	27.9
Progression Factor		0.30	0.29		1.00	1.00
Incremental Delay, d2		3.5	0.0		15.3	1.1
Delay (s)		7.1	2.5		46.6	29.0
Level of Service		A	A		D	C
Approach Delay (s)		7.1	2.5		40.6	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	166.0%	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			3328			1762	1530			
Flt Permitted	0.95	1.00			1.00			0.95	1.00			
Satd. Flow (perm)	1770	1863			3328			1762	1530			
Volume (vph)	250	976	0	0	1083	527	360	10	865	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	1061	0	0	1177	573	391	11	940	0	0	0
RTOR Reduction (vph)	0	0	0	0	66	0	0	0	55	0	0	0
Lane Group Flow (vph)	272	1061	0	0	1684	0	0	402	885	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)	11.0	48.0			34.0			36.0	36.0			
Effective Green, g (s)	10.0	47.0			33.0			35.0	35.0			
Actuated g/C Ratio	0.11	0.52			0.37			0.39	0.39			
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)	197	973			1220			685	595			
v/s Ratio Prot	c0.15	0.57			c0.53							
v/s Ratio Perm								0.23	0.61			
v/c Ratio	1.38	1.09			1.38			0.59	1.49			
Uniform Delay, d1	40.0	21.5			28.5			21.8	27.5			
Progression Factor	0.97	0.94			1.14			1.00	1.00			
Incremental Delay, d2	188.5	50.9			171.7			1.3	228.2			
Delay (s)	227.3	71.2			204.2			23.1	255.7			
Level of Service	F	E			F			C	F			
Approach Delay (s)		103.0			204.2			186.0			0.0	
Approach LOS		F			F			F			A	

Intersection Summary			
HCM Average Control Delay	168.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	166.0%	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	0.99		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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.92		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	3365		1770	3178		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	3365		1770	3178		1770	3539	1551
Volume (vph)	420	1091	310	208	865	355	490	345	445	293	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	1186	337	226	940	386	533	375	484	318	212	277
RTOR Reduction (vph)	0	0	68	0	50	0	0	258	0	0	0	0
Lane Group Flow (vph)	457	1186	269	226	1276	0	533	601	0	318	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	19.0	19.0		16.0	16.0		11.0	11.0	11.0
Effective Green, g (s)	31.0	31.0	31.0	18.0	18.0		15.0	15.0		10.0	10.0	10.0
Actuated g/C Ratio	0.34	0.34	0.34	0.20	0.20		0.17	0.17		0.11	0.11	0.11
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	354	673		295	530		197	393	172
v/s Ratio Prot	0.13	c0.64		0.13	c0.39		c0.30	c0.27		0.18	0.06	
v/s Ratio Perm			0.22									0.18
v/c Ratio	0.39	1.85	0.50	0.64	1.90		1.81	1.13		1.61	0.54	1.61
Uniform Delay, d1	22.3	29.5	23.4	33.0	36.0		37.5	37.5		40.0	37.8	40.0
Progression Factor	1.01	0.99	1.02	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	381.9	0.3	3.8	409.0		376.2	81.3		298.6	1.4	300.0
Delay (s)	22.7	411.2	24.1	36.8	445.0		413.7	118.8		338.6	39.3	340.0
Level of Service	C	F	C	D	F		F	F		F	D	F
Approach Delay (s)		255.6			385.6			231.7			260.4	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	285.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.80		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	122.7%	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	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	3225					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	3225					1770	1863	1548
Volume (vph)	90	302	175	392	643	599	0	0	0	267	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	328	190	426	699	651	0	0	0	290	212	60
RTOR Reduction (vph)	0	0	126	0	123	0	0	0	0	0	0	48
Lane Group Flow (vph)	98	328	64	426	1227	0	0	0	0	290	212	12
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)	9.4	38.0	38.0	40.6	69.2					22.4	22.4	22.4
Effective Green, g (s)	8.4	37.0	37.0	39.6	68.2					21.4	21.4	21.4
Actuated g/C Ratio	0.08	0.34	0.34	0.36	0.62					0.19	0.19	0.19
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)	135	627	513	637	2000					344	362	301
v/s Ratio Prot	c0.06	0.18		0.24	c0.42					c0.16	0.11	
v/s Ratio Perm			0.12									0.04
v/c Ratio	0.73	0.52	0.12	0.67	0.61					0.84	0.59	0.04
Uniform Delay, d1	49.7	29.4	25.3	29.7	12.8					42.7	40.3	36.0
Progression Factor	1.00	1.00	1.00	1.31	1.71					1.00	1.00	1.00
Incremental Delay, d2	17.6	3.1	0.5	2.5	1.3					16.9	2.4	0.1
Delay (s)	67.2	32.5	25.8	41.3	23.2					59.6	42.7	36.0
Level of Service	E	C	C	D	C					E	D	D
Approach Delay (s)		36.0			27.5			0.0			50.7	
Approach LOS		D			C			A			D	

Intersection Summary			
HCM Average Control Delay	33.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.0%	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	1548
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1863	5085		1770	1548
Volume (vph)	0	584	1454	0	301	195
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	635	1580	0	327	212
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	635	1580	0	327	212
Confl. Peds. (#/hr)	5			5	5	5
Turn Type						Perm
Protected Phases		4	8		6	
Permitted Phases						6
Actuated Green, G (s)		78.5	78.5		24.5	24.5
Effective Green, g (s)		77.5	77.5		24.5	24.5
Actuated g/C Ratio		0.70	0.70		0.22	0.22
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)		1313	3583		394	345
v/s Ratio Prot		c0.34	0.31		c0.18	
v/s Ratio Perm						0.14
v/c Ratio		0.48	0.44		0.83	0.61
Uniform Delay, d1		7.3	7.0		40.8	38.5
Progression Factor		0.13	0.13		1.00	1.00
Incremental Delay, d2		1.1	0.3		13.5	3.2
Delay (s)		2.0	1.2		54.3	41.7
Level of Service		A	A		D	D
Approach Delay (s)		2.0	1.2		49.3	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	96.1%	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			0.95	1.00		1.00	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.96		1.00	0.96			
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	2684			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1863			3539	1525		1758	2684			
Volume (vph)	140	705	0	0	1249	456	190	5	475	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	766	0	0	1358	496	207	5	516	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	86	0	0	0	0	0	0
Lane Group Flow (vph)	152	766	0	0	1358	410	0	212	516	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)	15.4	77.5			59.1	59.1		26.5	26.5			
Effective Green, g (s)	14.4	76.5			58.1	58.1		25.5	25.5			
Actuated g/C Ratio	0.13	0.70			0.53	0.53		0.23	0.23			
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)	232	1296			1869	805		408	622			
v/s Ratio Prot	c0.09	0.41			c0.38							
v/s Ratio Perm						0.33		0.12	0.19			
v/c Ratio	0.66	0.59			0.73	0.51		0.52	0.83			
Uniform Delay, d1	45.4	8.7			19.9	16.8		36.9	40.2			
Progression Factor	1.23	0.75			0.27	0.10		1.00	1.00			
Incremental Delay, d2	5.8	1.8			0.2	0.2		1.1	9.0			
Delay (s)	61.9	8.3			5.6	1.9		38.0	49.2			
Level of Service	E	A			A	A		D	D			
Approach Delay (s)		17.2			4.6			45.9			0.0	
Approach LOS		B			A			D			A	

Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	96.1%	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	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	0.90		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	3387		1770	3539	1548	3433	3157		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	3387		1770	3539	1548	3433	3157		1770	3539	1548
Volume (vph)	160	715	240	299	1200	437	415	175	305	180	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	777	261	325	1304	475	451	190	332	196	92	136
RTOR Reduction (vph)	0	30	0	0	0	159	0	286	0	0	0	0
Lane Group Flow (vph)	174	1008	0	325	1304	316	451	236	0	196	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)	32.0	32.0		37.0	37.0	37.0	18.3	14.0		14.0	9.7	9.7
Effective Green, g (s)	32.0	32.0		36.0	36.0	36.0	17.3	13.0		13.0	8.7	8.7
Actuated g/C Ratio	0.29	0.29		0.33	0.33	0.33	0.16	0.12		0.12	0.08	0.08
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)	999	985		579	1158	507	540	373		209	280	122
v/s Ratio Prot	0.05	c0.31		0.18	c0.37		0.13	c0.17		c0.11	0.03	
v/s Ratio Perm						0.31						0.09
v/c Ratio	0.17	1.02		0.56	1.13	0.62	0.84	0.63		0.94	0.33	1.11
Uniform Delay, d1	29.1	39.0		30.5	37.0	31.3	45.0	46.2		48.1	47.9	50.6
Progression Factor	0.86	0.87		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	31.8		1.2	68.3	2.4	10.7	3.5		44.5	0.7	115.6
Delay (s)	25.5	65.7		31.7	105.3	33.7	55.7	49.7		92.6	48.6	166.3
Level of Service	C	E		C	F	C	E	D		F	D	F
Approach Delay (s)		60.0			77.7			52.5			106.7	
Approach LOS		E			E			D			F	

Intersection Summary			
HCM Average Control Delay	70.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	82.4%	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	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	0.92					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	3216					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	3216					1770	1863	1551
Volume (vph)	125	539	240	318	658	667	0	0	0	355	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	586	261	346	715	725	0	0	0	386	168	71
RTOR Reduction (vph)	0	0	154	0	193	0	0	0	0	0	0	54
Lane Group Flow (vph)	136	586	107	346	1247	0	0	0	0	386	168	17
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)	10.3	37.8	37.8	20.7	48.2					22.5	22.5	22.5
Effective Green, g (s)	9.3	36.8	36.8	19.7	47.2					21.5	21.5	21.5
Actuated g/C Ratio	0.10	0.41	0.41	0.22	0.52					0.24	0.24	0.24
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)	183	762	626	387	1687					423	445	371
v/s Ratio Prot	0.08	0.31		c0.20	c0.45					c0.22	0.09	
v/s Ratio Perm			0.17									0.05
v/c Ratio	0.74	0.77	0.17	0.89	0.74					0.91	0.38	0.05
Uniform Delay, d1	39.2	22.9	16.9	34.1	16.6					33.3	28.7	26.4
Progression Factor	1.00	1.00	1.00	1.15	0.88					1.00	1.00	1.00
Incremental Delay, d2	15.0	7.3	0.6	20.2	2.6					23.7	0.5	0.1
Delay (s)	54.2	30.3	17.5	59.4	17.2					57.0	29.2	26.4
Level of Service	D	C	B	E	B					E	C	C
Approach Delay (s)		30.2			25.4			0.0			46.1	
Approach LOS		C			C			A			D	

Intersection Summary			
HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.5%	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
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	889	1443	0	382	200
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	966	1568	0	415	217
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	966	1568	0	415	217
Confl. Peds. (#/hr)	5			5	5	5
Turn Type						Perm
Protected Phases		4	8		6	
Permitted Phases						6
Actuated Green, G (s)		58.7	58.7		24.3	24.3
Effective Green, g (s)		57.7	57.7		24.3	24.3
Actuated g/C Ratio		0.64	0.64		0.27	0.27
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)		1194	3260		478	419
v/s Ratio Prot		c0.52	0.31		c0.23	
v/s Ratio Perm						0.14
v/c Ratio		0.81	0.48		0.87	0.52
Uniform Delay, d1		12.0	8.4		31.3	27.9
Progression Factor		0.30	0.23		1.00	1.00
Incremental Delay, d2		3.5	0.3		15.3	1.1
Delay (s)		7.1	2.2		46.6	29.0
Level of Service		A	A		D	C
Approach Delay (s)		7.1	2.2		40.6	
Approach LOS		A	A		D	

Intersection Summary			
HCM Average Control Delay	11.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	128.9%	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	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.97		1.00	0.97			
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	2693			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1863			3539	1530		1762	2693			
Volume (vph)	250	976	0	0	1083	527	360	10	865	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	1061	0	0	1177	573	391	11	940	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	148	0	0	57	0	0	0
Lane Group Flow (vph)	272	1061	0	0	1177	425	0	402	883	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	50.3			34.0	34.0		33.7	33.7			
Effective Green, g (s)	12.3	49.3			33.0	33.0		32.7	32.7			
Actuated g/C Ratio	0.14	0.55			0.37	0.37		0.36	0.36			
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)	242	1021			1298	561		640	978			
v/s Ratio Prot	0.15	c0.57			0.33							
v/s Ratio Perm						0.37		0.23	0.35			
v/c Ratio	1.12	1.04			0.91	0.76		0.63	0.90			
Uniform Delay, d1	38.8	20.4			27.0	25.0		23.6	27.1			
Progression Factor	0.97	0.94			1.15	1.52		1.00	1.00			
Incremental Delay, d2	82.0	32.2			1.2	0.9		1.9	11.4			
Delay (s)	119.7	51.4			32.4	38.8		25.6	38.5			
Level of Service	F	D			C	D		C	D			
Approach Delay (s)		65.4			34.5			34.6			0.0	
Approach LOS		E			C			C			A	

Intersection Summary			
HCM Average Control Delay	43.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	128.9%	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	1.00		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	0.97		1.00	1.00	0.85	1.00	0.92		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	3406		1770	3539	1551	3433	3203		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	3406		1770	3539	1551	3433	3203		1770	3539	1551
Volume (vph)	420	1091	310	208	865	355	490	345	445	293	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	1186	337	226	940	386	533	375	484	318	212	277
RTOR Reduction (vph)	0	29	0	0	0	218	0	258	0	0	0	0
Lane Group Flow (vph)	457	1494	0	226	940	168	533	601	0	318	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		19.0	19.0	19.0	16.0	16.0		11.0	11.0	11.0
Effective Green, g (s)	31.0	31.0		18.0	18.0	18.0	15.0	15.0		10.0	10.0	10.0
Actuated g/C Ratio	0.34	0.34		0.20	0.20	0.20	0.17	0.17		0.11	0.11	0.11
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	1173		354	708	310	572	534		197	393	172
v/s Ratio Prot	0.13	c0.45		0.13	c0.27		0.16	c0.27		c0.18	0.06	
v/s Ratio Perm						0.25						0.18
v/c Ratio	0.39	1.27		0.64	1.33	0.54	0.93	1.12		1.61	0.54	1.61
Uniform Delay, d1	22.3	29.5		33.0	36.0	32.3	37.0	37.5		40.0	37.8	40.0
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	0.3	125.4		3.8	157.1	1.9	22.2	78.0		298.6	1.4	300.0
Delay (s)	22.9	154.8		36.8	193.1	34.2	59.2	115.5		338.6	39.3	340.0
Level of Service	C	F		D	F	C	E	F		F	D	F
Approach Delay (s)		124.4			130.8			94.0			260.4	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	137.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	105.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group