APPENDIX G

Traffic Analysis Appendices

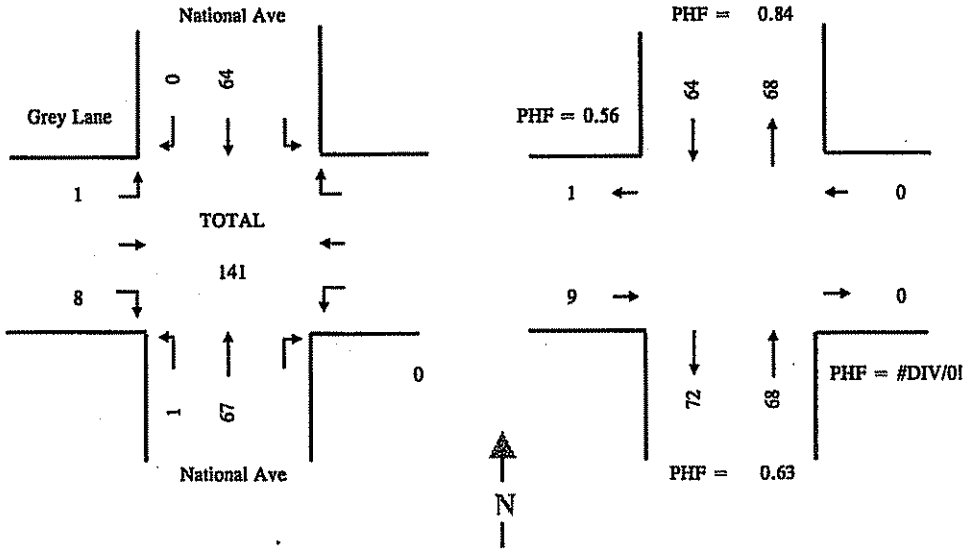
APPENDIX A

Intersection Turning Movement Counts

FEHR & PEERS ASSOCIATES, INC.
INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	National Ave./Grey Lane	TIME:	7:00 AM to 9:00 AM
JURISDICTION:		DATE:	8-22-03, Fri
PROJECT TITLE:		PROJECT NO:	

PEAK HOUR PERIOD: 7:45 AM to 8:45 AM
PEAK 15 MINUTE PERIOD: 7:45 AM to 8:00 AM



INTERSECTION
PEAK HOUR FACTOR: 0.73

RUNNING COUNTS	Grey Lane Eastbound Left	Thru	Right	Westbound Left	Thru	Right	National Ave Northbound Left	Thru	Right	National Ave Southbound Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	0		0				0	6			4	0	10
7:30 AM	0		0				0	22			16	0	38
7:45 AM	0		1				0	35			23	0	59
8:00 AM	1		4				0	62			40	0	107
8:15 AM	1		5				0	75			52	0	133
8:30 AM	1		8				1	91			71	0	172
8:45 AM	1		9				1	102			87	0	200
9:00 AM	1		10				1	122			99	0	233

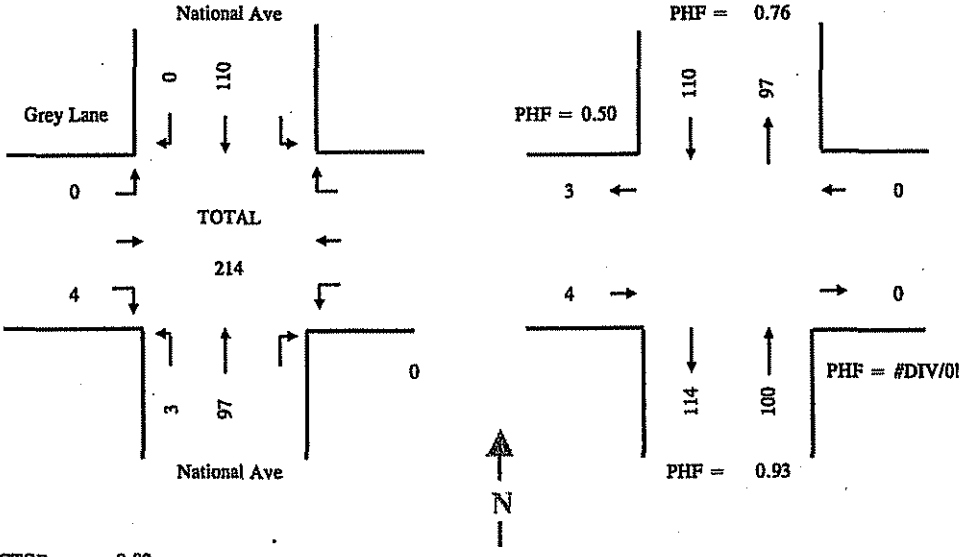
PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	0		0				0	6			4	0	10
7:30 AM	0		0				0	16			12	0	28
7:45 AM	0		1				0	13			7	0	21
8:00 AM	1		3				0	27			17	0	48
8:15 AM	0		1				0	13			12	0	26
8:30 AM	0		3				1	16			19	0	39
8:45 AM	0		1				0	11			16	0	28
9:00 AM	0		1				0	20			12	0	33

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:00 AM	1		4				0	62			40	0	107
7:15 AM	1		5				0	69			48	0	123
7:30 AM	1		8				1	69			55	0	134
7:45 AM	1		8				1	67			64	0	141
8:00 AM	0		6				1	60			59	0	126

FEHR & PEERS ASSOCIATES, INC.
INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	National Ave./Grey Lane	TIME:	4:00 PM to 6:00 PM
JURISDICTION:		DATE:	8-22-03, Fri
PROJECT TITLE:		PROJECT NO:	

PEAK HOUR PERIOD: 4:00 PM to 5:00 PM
PEAK 15 MINUTE PERIOD: 4:15 PM to 4:30 PM



INTERSECTION
PEAK HOUR FACTOR: 0.82

RUNNING COUNTS	Grey Lane Eastbound Left	Thru	Right	Westbound Left	Thru	Right	National Ave Northbound Left	Thru	Right	National Ave Southbound Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	0		2				0	26			35	0	63
4:30 PM	0		4				1	52			71	0	128
4:45 PM	0		4				1	76			94	0	175
5:00 PM	0		4				3	97			110	0	214
5:15 PM	0		5				4	124			143	0	276
5:30 PM	0		6				6	154			167	0	333
5:45 PM	0		8				6	182			182	0	378
6:00 PM	0		8				7	198			193	0	406

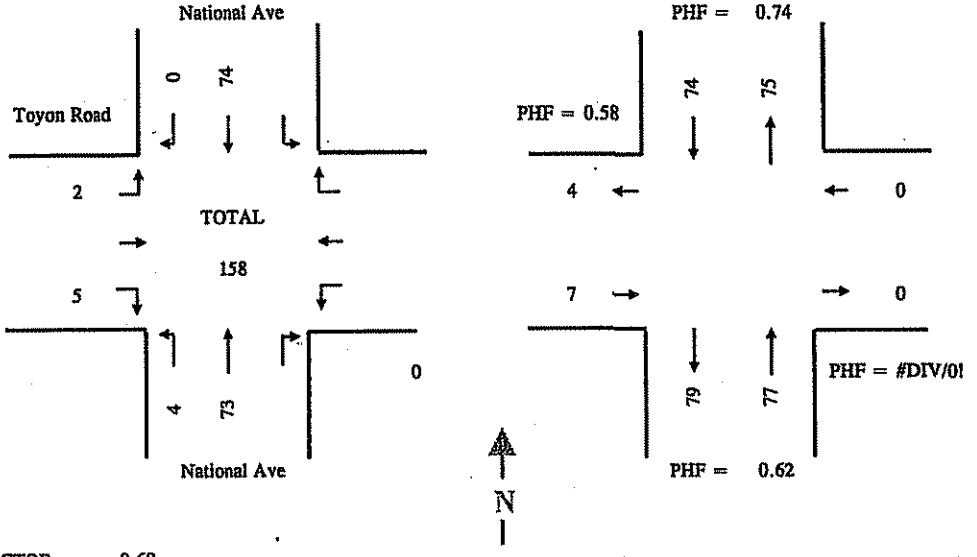
PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	0		2				0	26			35	0	63
4:30 PM	0		2				1	26			36	0	65
4:45 PM	0		0				0	24			23	0	47
5:00 PM	0		0				2	21			16	0	39
5:15 PM	0		1				1	27			33	0	62
5:30 PM	0		1				2	30			24	0	57
5:45 PM	0		2				0	28			15	0	45
6:00 PM	0		0				1	16			11	0	28

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:00 PM	0		4				3	97			110	0	214
4:15 PM	0		3				4	98			108	0	213
4:30 PM	0		2				5	102			96	0	205
4:45 PM	0		4				5	106			88	0	203
5:00 PM	0		4				4	101			83	0	192

FEHR & PEERS ASSOCIATES, INC.
INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	National Ave./Toyon Rd.	TIME:	7:00 AM to 9:00 AM
JURISDICTION:		DATE:	8-22-03, Fri
PROJECT TITLE:		PROJECT NO:	

PEAK HOUR PERIOD: 7:45 AM to 8:45 AM
PEAK 15 MINUTE PERIOD: 7:45 AM to 8:00 AM



INTERSECTION
PEAK HOUR FACTOR: 0.68

RUNNING COUNTS	Toyon Road Eastbound Left	Thru	Right	Westbound Left	Thru	Right	National Ave Northbound Left	Thru	Right	National Ave Southbound Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	0		1				0	4			6	0	11
7:30 AM	0		1				0	16			22	0	39
7:45 AM	0		2				0	24			35	0	61
8:00 AM	1		3				0	55			60	0	119
8:15 AM	2		5				2	72			71	0	152
8:30 AM	2		5				3	85			91	0	186
8:45 AM	2		7				4	97			109	0	219
9:00 AM	2		10				7	117			121	0	257

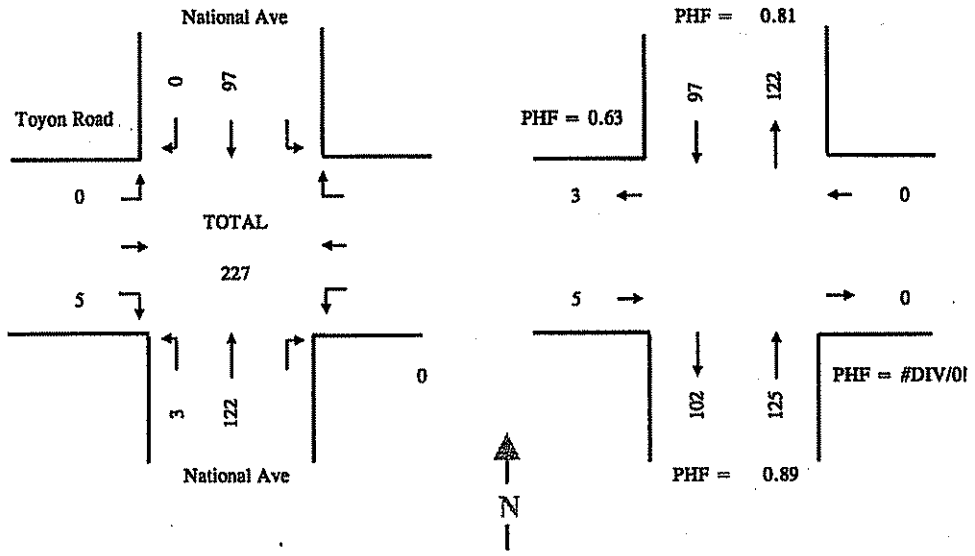
PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	0		1				0	4			6	0	11
7:30 AM	0		0				0	12			16	0	28
7:45 AM	0		1				0	8			13	0	22
8:00 AM	1		1				0	31			25	0	58
8:15 AM	1		2				2	17			11	0	33
8:30 AM	0		0				1	13			20	0	34
8:45 AM	0		2				1	12			18	0	33
9:00 AM	0		3				3	20			12	0	38

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:00 AM	1		3				0	55			60	0	119
7:15 AM	2		4				2	68			65	0	141
7:30 AM	2		4				3	69			69	0	147
7:45 AM	2		5				4	73			74	0	158
8:00 AM	1		7				7	62			61	0	138

FEHR & PEERS ASSOCIATES, INC.
INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	National Ave./Toyon Rd.	TIME:	4:00 PM to 5:45 PM
JURISDICTION:		DATE:	8-22-03, Fri
PROJECT TITLE:		PROJECT NO:	

PEAK HOUR PERIOD: 4:30 PM to 5:30 PM
PEAK 15 MINUTE PERIOD: 5:15 PM to 5:30 PM



INTERSECTION
PEAK HOUR FACTOR: 0.95

RUNNING COUNTS	Toyon Road Eastbound Left	Thru	Right	Westbound Left	Thru	Right	National Ave Northbound Left	Thru	Right	National Ave Southbound Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	0		0				1	13			24	1	39
4:30 PM	0		1				1	33			59	1	95
4:45 PM	0		2				2	67			79	1	151
5:00 PM	0		4				4	94			101	1	204
5:15 PM	0		6				4	120			131	1	262
5:30 PM	0		6				4	155			156	1	322
5:45 PM	0		8				5	177			177	1	368

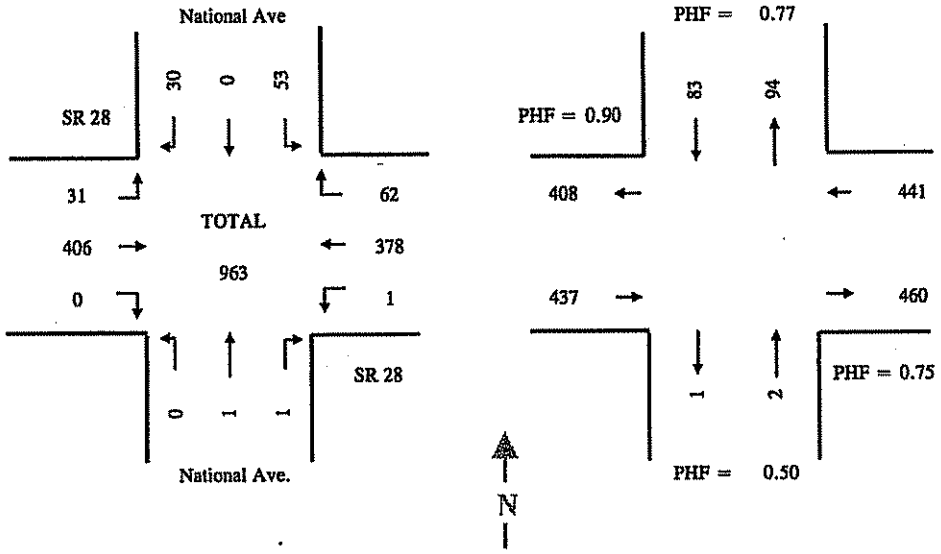
PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	0		0				1	13			24	1	39
4:30 PM	0		1				0	20			35	0	56
4:45 PM	0		1				1	34			20	0	56
5:00 PM	0		2				2	27			22	0	53
5:15 PM	0		2				0	26			30	0	58
5:30 PM	0		0				0	35			25	0	60
5:45 PM	0		2				1	22			21	0	46

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:00 PM	0		4				4	94			101	1	204
4:15 PM	0		6				3	107			107	0	223
4:30 PM	0		5				3	122			97	0	227
4:45 PM	0		6				3	110			98	0	217

FEHR & PEERS ASSOCIATES, INC.
INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	SR 28/National Ave	TIME:	7:15 AM to 9:00 AM
JURISDICTION:		DATE:	8-29-03, Fri
PROJECT TITLE:		PROJECT NO:	

PEAK HOUR PERIOD: 7:45 AM to 8:45 AM
PEAK 15 MINUTE PERIOD: 7:45 AM to 8:00 AM



INTERSECTION
PEAK HOUR FACTOR: 0.81

RUNNING COUNTS	SR 28 Eastbound Left	Thru	Right	SR 28 Westbound Left	Thru	Right	National Ave. Northbound Left	Thru	Right	National Ave Southbound Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:30 AM	4	67	0	0	89	10	0	0	0	8	1	5	184
7:45 AM	9	137	0	0	205	19	0	0	0	19	1	17	407
8:00 AM	20	247	0	1	327	43	0	0	1	33	1	30	703
8:15 AM	29	332	0	1	416	56	0	0	1	44	1	36	916
8:30 AM	33	443	0	1	500	67	0	1	1	54	1	42	1143
8:45 AM	40	543	0	1	583	81	0	1	1	72	1	47	1370
9:00 AM	45	630	0	1	684	91	0	1	1	88	1	53	1595

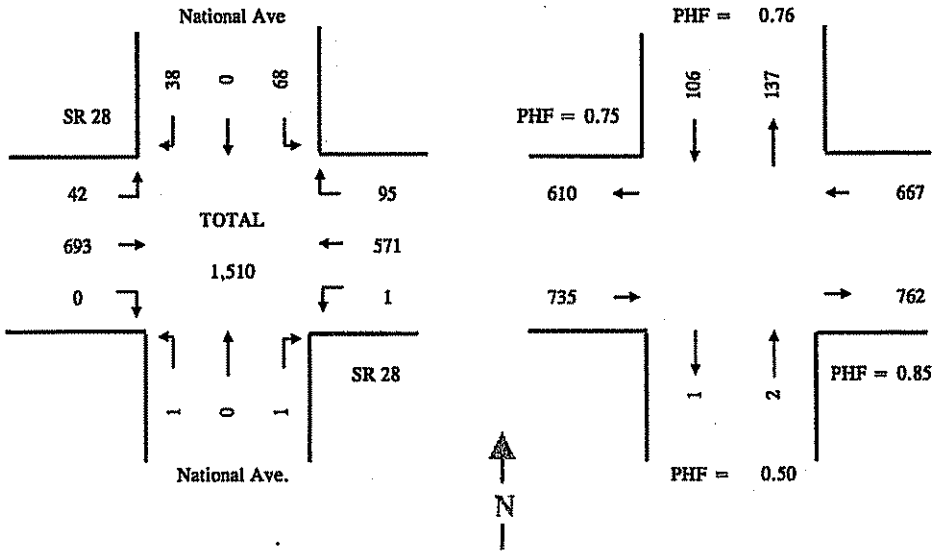
PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:30 AM	4	67	0	0	89	10	0	0	0	8	1	5	184
7:45 AM	5	70	0	0	116	9	0	0	0	11	0	12	223
8:00 AM	11	110	0	1	122	24	0	0	1	14	0	13	296
8:15 AM	9	85	0	0	89	13	0	0	0	11	0	6	213
8:30 AM	4	111	0	0	84	11	0	1	0	10	0	6	227
8:45 AM	7	100	0	0	83	14	0	0	0	18	0	5	227
9:00 AM	5	87	0	0	101	10	0	0	0	16	0	6	225

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	29	332	0	1	416	56	0	0	1	44	1	36	916
7:30 AM	29	376	0	1	411	57	0	1	1	46	0	37	959
7:45 AM	31	406	0	1	378	62	0	1	1	53	0	30	963
8:00 AM	25	383	0	0	357	48	0	1	0	55	0	23	892

FEHR & PEERS ASSOCIATES, INC.
INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	SR 28/National Ave	TIME:	4:00 PM to 6:00 PM
JURISDICTION:		DATE:	8-29-03, Fri
PROJECT TITLE:		PROJECT NO:	

PEAK HOUR PERIOD: 4:15 PM to 5:15 PM
PEAK 15 MINUTE PERIOD: 5:00 PM to 5:15 PM



INTERSECTION
PEAK HOUR FACTOR: 0.79

RUNNING COUNTS	SR 28 Eastbound Left	Thru	Right	SR 28 Westbound Left	Thru	Right	National Ave. Northbound Left	Thru	Right	National Ave Southbound Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	5	67	0	0	57	7	0	0	0	9	0	4	149
4:30 PM	19	210	0	1	181	20	0	0	0	27	0	13	471
4:45 PM	25	344	0	1	320	42	1	0	0	41	0	23	797
5:00 PM	35	527	0	1	465	69	1	0	0	57	0	27	1182
5:15 PM	47	760	0	1	628	102	1	0	1	77	0	42	1659
5:30 PM	56	832	0	2	766	124	1	0	1	109	0	48	1939
5:45 PM	61	944	0	3	876	138	1	0	2	123	0	52	2200
6:00 PM	65	1052	0	3	971	145	1	0	2	133	0	57	2429

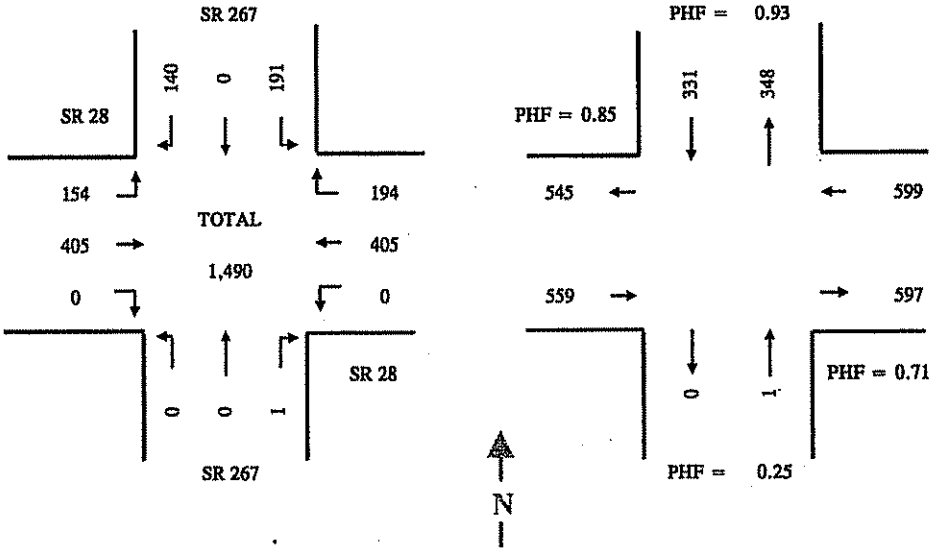
PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	5	67	0	0	57	7	0	0	0	9	0	4	149
4:30 PM	14	143	0	1	124	13	0	0	0	18	0	9	322
4:45 PM	6	134	0	0	139	22	1	0	0	14	0	10	326
5:00 PM	10	183	0	0	145	27	0	0	0	16	0	4	385
5:15 PM	12	233	0	0	163	33	0	0	1	20	0	15	477
5:30 PM	9	72	0	1	138	22	0	0	0	32	0	6	280
5:45 PM	5	112	0	1	110	14	0	0	1	14	0	4	261
6:00 PM	4	108	0	0	95	7	0	0	0	10	0	5	229

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:00 PM	35	527	0	1	465	69	1	0	0	57	0	27	1182
4:15 PM	42	693	0	1	571	95	1	0	1	68	0	38	1510
4:30 PM	37	622	0	1	585	104	1	0	1	82	0	35	1468
4:45 PM	36	600	0	2	556	96	0	0	2	82	0	29	1403
5:00 PM	30	525	0	2	506	76	0	0	2	76	0	30	1247

FEHR & PEERS ASSOCIATES, INC.
INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	SR 28/SR 267	TIME:	7:00 AM to 9:00 AM
JURISDICTION:		DATE:	8-15-03, Fri
PROJECT TITLE:		PROJECT NO:	

PEAK HOUR PERIOD: 7:45 AM to 8:45 AM
PEAK 15 MINUTE PERIOD: 8:30 AM to 8:45 AM



INTERSECTION
PEAK HOUR FACTOR: 0.81

RUNNING COUNTS	SR 28 Eastbound Left	Thru	Right	SR 28 Westbound Left	Thru	Right	SR 267 Northbound Left	Thru	Right	SR 267 Southbound Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	22	58	0	0	63	34	0	0	0	26	0	27	230
7:30 AM	41	128	0	1	135	68	0	0	0	58	0	51	482
7:45 AM	81	217	0	1	269	130	0	0	0	117	0	91	906
8:00 AM	126	313	0	1	372	175	0	0	0	170	0	127	1284
8:15 AM	160	419	0	1	468	218	0	0	1	214	0	168	1649
8:30 AM	192	501	0	1	542	244	0	0	1	254	0	199	1934
8:45 AM	235	622	0	1	674	324	0	0	1	308	0	231	2396
9:00 AM	269	701	0	1	789	367	2	0	2	358	0	255	2744

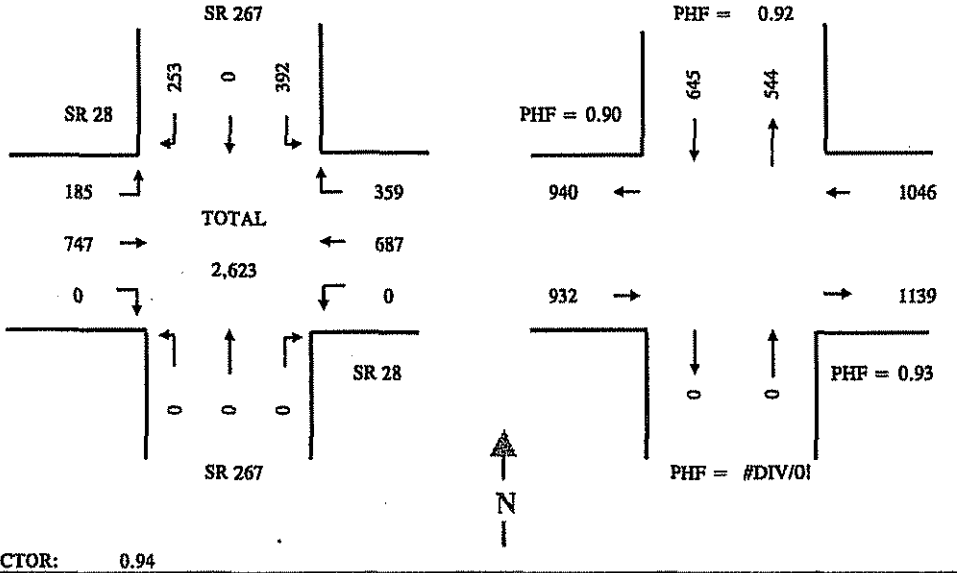
PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	22	58	0	0	63	34	0	0	0	26	0	27	230
7:30 AM	19	70	0	1	72	34	0	0	0	32	0	24	252
7:45 AM	40	89	0	0	134	62	0	0	0	59	0	40	424
8:00 AM	45	96	0	0	103	45	0	0	0	53	0	36	378
8:15 AM	34	106	0	0	96	43	0	0	1	44	0	41	365
8:30 AM	32	82	0	0	74	26	0	0	0	40	0	31	285
8:45 AM	43	121	0	0	132	80	0	0	0	54	0	32	462
9:00 AM	34	79	0	0	115	43	2	0	1	50	0	24	348

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:00 AM	126	313	0	1	372	175	0	0	0	170	0	127	1284
7:15 AM	138	361	0	1	405	184	0	0	1	188	0	141	1419
7:30 AM	151	373	0	0	407	176	0	0	1	196	0	148	1452
7:45 AM	154	405	0	0	405	194	0	0	1	191	0	140	1490
8:00 AM	143	388	0	0	417	192	2	0	2	188	0	128	1460

FEHR & PEERS ASSOCIATES, INC.
INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	SR 28/SR 267	TIME:	4:00 PM to 6:00 PM
JURISDICTION:		DATE:	8-15-03, Fri
PROJECT TITLE:		PROJECT NO:	

PEAK HOUR PERIOD: 4:30 PM to 5:30 PM
PEAK 15 MINUTE PERIOD: 5:00 PM to 5:15 PM



INTERSECTION
PEAK HOUR FACTOR: 0.94

RUNNING COUNTS	SR 28 Eastbound Left	Thru	Right	SR 28 Westbound Left	Thru	Right	SR 267 Northbound Left	Thru	Right	SR 267 Southbound Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	37	173	1	0	123	100	0	2	0	105	0	65	606
4:30 PM	85	335	1	0	278	176	0	2	0	186	0	127	1190
4:45 PM	141	518	1	0	451	246	0	2	0	271	0	188	1818
5:00 PM	175	701	1	0	610	346	0	2	0	370	0	264	2469
5:15 PM	229	907	1	0	807	429	0	2	0	474	0	317	3166
5:30 PM	270	1082	1	0	965	535	0	2	0	578	0	380	3813
5:45 PM	324	1258	1	0	1106	623	0	2	0	671	0	436	4421
6:00 PM	380	1442	1	0	1252	709	0	2	0	779	0	499	5064

PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	37	173	1	0	123	100	0	2	0	105	0	65	606
4:30 PM	48	162	0	0	155	76	0	0	0	81	0	62	584
4:45 PM	56	183	0	0	173	70	0	0	0	85	0	61	628
5:00 PM	34	183	0	0	159	100	0	0	0	99	0	76	651
5:15 PM	54	206	0	0	197	83	0	0	0	104	0	53	697
5:30 PM	41	175	0	0	158	106	0	0	0	104	0	63	647
5:45 PM	54	176	0	0	141	88	0	0	0	93	0	56	608
6:00 PM	56	184	0	0	146	86	0	0	0	108	0	63	643

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:00 PM	175	701	1	0	610	346	0	2	0	370	0	264	2469
4:15 PM	192	734	0	0	684	329	0	0	0	369	0	252	2560
4:30 PM	185	747	0	0	687	359	0	0	0	392	0	253	2623
4:45 PM	183	740	0	0	655	377	0	0	0	400	0	248	2603
5:00 PM	205	741	0	0	642	363	0	0	0	409	0	235	2595

APPENDIX B

Existing Conditions Intersection Technical Calculations

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	1	8	1	67	64	0
Peak Hour Factor	0.56	0.56	0.63	0.63	0.84	0.84
Hourly flow rate (vph)	2	14	2	106	76	0
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	186	76	76			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	186	76	76			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	803	985	1523			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	16	108	76
Volume Left	2	2	0
Volume Right	14	0	0
cSH	961	1523	1700
Volume to Capacity	0.02	0.00	0.04
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.8	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	14.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	4	3	97	110	0
Peak Hour Factor	0.50	0.50	0.93	0.93	0.76	0.76
Hourly flow rate (vph)	0	8	3	104	145	0
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	255	145	145			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	255	145	145			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	732	903	1438			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	108	145
Volume Left	0	3	0
Volume Right	8	0	0
cSH	903	1438	1700
Volume to Capacity	0.01	0.00	0.09
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.0	0.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	0.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	17.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	5	4	73	74	0
Peak Hour Factor	0.58	0.58	0.62	0.62	0.74	0.74
Hourly flow rate (vph)	3	9	6	118	100	0
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	231	100	100			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	231	100	100			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	754	956	1493			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	12	124	100
Volume Left	3	6	0
Volume Right	9	0	0
cSH	888	1493	1700
Volume to Capacity	0.01	0.00	0.06
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.1	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	0.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	17.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	5	3	122	0	97
Peak Hour Factor	0.63	0.63	0.89	0.89	0.81	0.81
Hourly flow rate (vph)	0	8	3	137	0	120
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	204	60	120			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	204	60	120			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	783	1006	1468			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	140	120
Volume Left	0	3	0
Volume Right	8	0	120
cSH	1006	1468	1700
Volume to Capacity	0.01	0.00	0.07
Queue Length 95th (ft)	*1*	*0*	*0*
Control Delay (s)	8.6	0.2	0.0
Lane LOS	A	A	
Approach Delay (s)	8.6	0.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	18.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	31	406	0	1	378	62	0	1	1	53	0	30
Peak Hour Factor	0.90	0.90	0.90	0.75	0.75	0.75	0.50	0.50	0.50	0.77	0.77	0.77
Hourly flow rate (vph)	34	451	0	1	504	83	0	2	2	69	0	39
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	587			451			814	1109	226	845	1068	293
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	587			451			814	1109	226	845	1068	293
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	97			100			100	99	100	72	100	94
cM capacity (veh/h)	984			1106			248	201	778	246	212	703

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	260	226	253	335	4	69	39
Volume Left	34	0	1	0	0	69	0
Volume Right	0	0	0	83	2	0	39
cSH	984	1700	1106	1700	319	246	703
Volume to Capacity	0.03	0.13	0.00	0.20	0.01	0.28	0.06
Queue Length 95th (ft)	3	0	0	0	1	28	4
Control Delay (s)	1.5	0.0	0.1	0.0	16.4	25.2	10.4
Lane LOS	A		A		C	D	B
Approach Delay (s)	0.8		0.0		16.4	19.9	
Approach LOS					C	C	

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

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)	42	693	0	1	571	95	1	0	1	68	0	38
Peak Hour Factor	0.75	0.75	0.75	0.85	0.85	0.85	0.50	0.50	0.50	0.76	0.76	0.76
Hourly flow rate (vph)	56	924	0	1	672	112	2	0	2	89	0	50
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	784			924			1424	1822	462	1306	1766	392
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	784			924			1424	1822	462	1306	1766	392
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	93			100			98	100	100	19	100	92
cM capacity (veh/h)	830			735			83	71	547	111	77	607

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	518	462	337	448	4	89	50
Volume Left	56	0	1	0	2	89	0
Volume Right	0	0	0	112	2	0	50
cSH	830	1700	735	1700	145	111	607
Volume to Capacity	0.07	0.27	0.00	0.26	0.03	0.81	0.08
Queue Length 95th (ft)	5	0	0	0	2	115	7
Control Delay (s)	1.8	0.0	0.1	0.0	30.6	111.0	11.5
Lane LOS	A		A		D	F	B
Approach Delay (s)	1.0		0.0		30.6	75.3	
Approach LOS					D	F	

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frt		1.00			0.98			0.93			1.00	0.85
Flt Protected		1.00			1.00			1.00			0.95	1.00
Satd. Flow (prot)		3527			3464			1737			1770	1583
Flt Permitted		0.89			0.95			1.00			0.76	1.00
Satd. Flow (perm)		3163			3305			1737			1407	1583
Volume (vph)	31	406	0	1	378	62	0	1	1	53	0	30
Peak-hour factor, PHF	0.90	0.90	0.90	0.75	0.75	0.75	0.50	0.50	0.50	0.77	0.77	0.77
Adj. Flow (vph)	34	451	0	1	504	83	0	2	2	69	0	39
RTOR Reduction (vph)	0	0	0	0	24	0	0	1	0	0	0	28
Lane Group Flow (vph)	0	485	0	0	564	0	0	3	0	0	69	11
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		9.6			9.6			6.8			6.8	6.8
Effective Green, g (s)		9.6			9.6			6.8			6.8	6.8
Actuated g/C Ratio		0.39			0.39			0.28			0.28	0.28
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1244			1300			484			392	441
v/s Ratio Prot								0.00				
v/s Ratio Perm		0.15			c0.17						c0.05	0.01
v/c Ratio		0.39			0.43			0.01			0.18	0.02
Uniform Delay, d1		5.3			5.4			6.4			6.7	6.4
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.2			0.2			0.0			0.2	0.0
Delay (s)		5.5			5.6			6.4			6.9	6.4
Level of Service		A			A			A			A	A
Approach Delay (s)		5.5			5.6			6.4			6.7	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	24.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.2%	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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frt		1.00			0.98			0.93			1.00	0.85
Flt Protected		1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)		3529			3463			1695			1770	1583
Flt Permitted		0.88			0.95			0.88			0.76	1.00
Satd. Flow (perm)		3128			3304			1532			1407	1583
Volume (vph)	42	693	0	1	571	95	1	0	1	68	0	38
Peak-hour factor, PHF	0.75	0.75	0.75	0.85	0.85	0.85	0.50	0.50	0.50	0.76	0.76	0.76
Adj. Flow (vph)	56	924	0	1	672	112	2	0	2	89	0	50
RTOR Reduction (vph)	0	0	0	0	23	0	0	2	0	0	0	38
Lane Group Flow (vph)	0	980	0	0	762	0	0	2	0	0	89	12
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		16.6			16.6			7.8			7.8	7.8
Effective Green, g (s)		16.6			16.6			7.8			7.8	7.8
Actuated g/C Ratio		0.51			0.51			0.24			0.24	0.24
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1603			1693			369			339	381
v/s Ratio Prot												
v/s Ratio Perm		c0.31			0.23			0.00			c0.06	0.01
v/c Ratio		0.61			0.45			0.01			0.26	0.03
Uniform Delay, d1		5.6			5.0			9.4			10.0	9.4
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.7			0.2			0.0			0.4	0.0
Delay (s)		6.3			5.2			9.4			10.4	9.4
Level of Service		A			A			A			B	A
Approach Delay (s)		6.3			5.2			9.4			10.0	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	32.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.9%	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
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.95			0.86			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.95	1.00
Satd. Flow (prot)	1770	3539			3367			1611			1770	1583
Flt Permitted	0.95	1.00			1.00			1.00			0.76	1.00
Satd. Flow (perm)	1770	3539			3367			1611			1407	1583
Volume (vph)	154	405	0	0	405	194	0	0	1	191	0	140
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.25	0.25	0.25	0.93	0.93	0.93
Adj. Flow (vph)	181	476	0	0	570	273	0	0	4	205	0	151
RTOR Reduction (vph)	0	0	0	0	92	0	0	3	0	0	0	95
Lane Group Flow (vph)	181	476	0	0	751	0	0	1	0	0	205	56
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	7.8	29.2			17.4			21.9			21.9	21.9
Effective Green, g (s)	7.8	29.2			17.4			21.9			21.9	21.9
Actuated g/C Ratio	0.13	0.49			0.29			0.37			0.37	0.37
Clearance Time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	234	1749			991			597			521	587
v/s Ratio Prot	c0.10	0.13			c0.22			0.00				
v/s Ratio Perm											c0.15	0.04
v/c Ratio	0.77	0.27			0.76			0.00			0.39	0.10
Uniform Delay, d1	24.8	8.7			18.9			11.7			13.7	12.1
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	14.7	0.1			3.4			0.0			2.2	0.3
Delay (s)	39.4	8.8			22.3			11.7			15.9	12.5
Level of Service	D	A			C			B			B	B
Approach Delay (s)		17.3			22.3			11.7			14.5	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	59.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.2%	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
Lane Util. Factor	1.00	0.95			0.95						1.00	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	3539			3357						1770	1583
Flt Permitted	0.95	1.00			1.00						0.76	1.00
Satd. Flow (perm)	1770	3539			3357						1410	1583
Volume (vph)	185	747	0	0	687	359	0	0	0	392	0	253
Peak-hour factor, PHF	0.90	0.90	0.90	0.93	0.93	0.93	0.25	0.25	0.25	0.92	0.92	0.92
Adj. Flow (vph)	206	830	0	0	739	386	0	0	0	426	0	275
RTOR Reduction (vph)	0	0	0	0	103	0	0	0	0	0	0	106
Lane Group Flow (vph)	206	830	0	0	1022	0	0	0	0	0	426	169
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	10.4	35.3			20.9						21.0	21.0
Effective Green, g (s)	10.4	35.3			20.9						21.0	21.0
Actuated g/C Ratio	0.16	0.55			0.33						0.33	0.33
Clearance Time (s)	4.0	4.0			4.0						4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0						3.0	3.0
Lane Grp Cap (vph)	286	1943			1091						460	517
v/s Ratio Prot	c0.12	0.23			c0.30							
v/s Ratio Perm											c0.30	0.11
v/c Ratio	0.72	0.43			0.94						0.93	0.33
Uniform Delay, d1	25.6	8.5			21.1						20.9	16.3
Progression Factor	1.00	1.00			1.00						1.00	1.00
Incremental Delay, d2	8.6	0.2			14.4						27.0	1.7
Delay (s)	34.2	8.7			35.4						47.9	18.0
Level of Service	C	A			D						D	B
Approach Delay (s)		13.8			35.4			0.0			36.2	
Approach LOS		B			D			A			D	

Intersection Summary			
HCM Average Control Delay	27.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	64.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	TR	T	TR	LT	R
Maximum Queue (ft)	135	86	87	134	124	181	95
Average Queue (ft)	56	46	41	83	80	100	68
95th Queue (ft)	87	88	85	136	125	179	103
Link Distance (ft)		2962	2962	1473	1473	3853	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	175						50
Storage Blk Time (%)				0.26		0.23	0.05
Queuing Penalty (veh)				0		32	10

Intersection: 5: SR 28 & National Ave

Movement	EB	SB	SB
Directions Served	LT	LT	R
Maximum Queue (ft)	48	48	30
Average Queue (ft)	14	26	15
95th Queue (ft)	42	48	38
Link Distance (ft)	1838	1281	1281
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Grey Ln & National Ave

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 12: Toyon Rd & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	4
95th Queue (ft)	21
Link Distance (ft)	583
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 43

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	TR	T	TR	LT	R
Maximum Queue (ft)	157	165	88	344	346	1110	76
Average Queue (ft)	92	104	67	225	245	726	75
95th Queue (ft)	151	158	96	365	366	1198	76
Link Distance (ft)		2962	2962	1473	1473	3853	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	175						50
Storage Blk Time (%)	0.00	0.00		0.54		0.61	0.10
Queuing Penalty (veh)	0	0		0		155	39

Intersection: 5: SR 28 & National Ave

Movement	EB	SB	SB
Directions Served	LT	LT	R
Maximum Queue (ft)	88	70	31
Average Queue (ft)	33	46	21
95th Queue (ft)	82	75	43
Link Distance (ft)	1837	1279	1279
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Grey Ln & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	24
Average Queue (ft)	3
95th Queue (ft)	17
Link Distance (ft)	536
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Toyon Rd & National Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	29	26
Average Queue (ft)	8	4
95th Queue (ft)	30	19
Link Distance (ft)	583	1279
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Nework Summary

Network wide Queuing Penalty: 194

APPENDIX C

2025 Background Intersection Technical Calculations

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	3	10	2	81	77	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	11	2	88	84	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	177	85	86			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	177	85	86			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	811	974	1510			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	14	90	86
Volume Left	3	2	0
Volume Right	11	0	2
cSH	931	1510	1700
Volume to Capacity	0.02	0.00	0.05
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.9	0.2	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	0.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	5	4	117	133	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	5	4	127	145	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	282	146	147			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	282	146	147			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	706	901	1435			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	132	147
Volume Left	2	4	0
Volume Right	5	0	2
cSH	836	1435	1700
Volume to Capacity	0.01	0.00	0.09
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.3	0.3	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	0.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	19.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	6	5	88	90	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	5	96	98	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	205	99	100			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	205	99	100			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	780	957	1493			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	101	100
Volume Left	2	5	0
Volume Right	7	0	2
cSH	906	1493	1700
Volume to Capacity	0.01	0.00	0.06
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.0	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	0.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	18.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	6	4	148	117	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	4	161	127	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	298	128	129			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	298	128	129			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	691	922	1456			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	165	129
Volume Left	2	4	0
Volume Right	7	0	2
cSH	851	1456	1700
Volume to Capacity	0.01	0.00	0.08
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.3	0.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	0.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	21.0%	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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frt		1.00			0.98			0.95			1.00	0.85
Flt Protected		1.00			1.00			0.99			0.95	1.00
Satd. Flow (prot)		3525			3464			1747			1776	1583
Flt Permitted		0.89			0.95			0.93			0.73	1.00
Satd. Flow (perm)		3153			3301			1645			1354	1583
Volume (vph)	38	491	2	2	457	75	2	3	3	64	2	36
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)	41	534	2	2	497	82	2	3	3	70	2	39
RTOR Reduction (vph)	0	1	0	0	24	0	0	2	0	0	0	28
Lane Group Flow (vph)	0	576	0	0	557	0	0	6	0	0	72	11
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		10.0			10.0			6.8			6.8	6.8
Effective Green, g (s)		10.0			10.0			6.8			6.8	6.8
Actuated g/C Ratio		0.40			0.40			0.27			0.27	0.27
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1271			1331			451			371	434
v/s Ratio Prot												
v/s Ratio Perm		c0.18			0.17			0.00			c0.05	0.01
v/c Ratio		0.45			0.42			0.01			0.19	0.02
Uniform Delay, d1		5.4			5.3			6.6			6.9	6.6
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.3			0.2			0.0			0.3	0.0
Delay (s)		5.7			5.5			6.6			7.2	6.6
Level of Service		A			A			A			A	A
Approach Delay (s)		5.7			5.5			6.6			7.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	24.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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			1.00			1.00	1.00
Frt		1.00			0.98			0.95			1.00	0.85
Flt Protected		1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)		3528			3463			1736			1778	1583
Flt Permitted		0.88			0.95			0.90			0.73	1.00
Satd. Flow (perm)		3100			3302			1596			1359	1583
Volume (vph)	51	839	2	2	691	115	3	2	3	82	4	46
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)	55	912	2	2	751	125	3	2	3	89	4	50
RTOR Reduction (vph)	0	0	0	0	20	0	0	2	0	0	0	38
Lane Group Flow (vph)	0	969	0	0	858	0	0	6	0	0	93	12
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		16.5			16.5			7.8			7.8	7.8
Effective Green, g (s)		16.5			16.5			7.8			7.8	7.8
Actuated g/C Ratio		0.51			0.51			0.24			0.24	0.24
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1584			1687			385			328	382
v/s Ratio Prot												
v/s Ratio Perm		c0.31			0.26			0.00			c0.07	0.01
v/c Ratio		0.61			0.51			0.01			0.28	0.03
Uniform Delay, d1		5.6			5.2			9.3			10.0	9.4
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.7			0.2			0.0			0.5	0.0
Delay (s)		6.3			5.5			9.3			10.5	9.4
Level of Service		A			A			A			B	A
Approach Delay (s)		6.3			5.5			9.3			10.1	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	32.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.0%	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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.95			0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	1.00
Satd. Flow (prot)	1770	3537		1770	3367			1730			1775	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.95			0.72	1.00
Satd. Flow (perm)	1770	3537		1770	3367			1664			1347	1583
Volume (vph)	186	490	2	2	490	235	2	2	3	231	2	169
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)	202	533	2	2	533	255	2	2	3	251	2	184
RTOR Reduction (vph)	0	1	0	0	87	0	0	2	0	0	0	120
Lane Group Flow (vph)	202	534	0	2	701	0	0	5	0	0	253	64
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	10.6	29.7		0.8	19.9			22.2			22.2	22.2
Effective Green, g (s)	10.6	29.7		0.8	19.9			22.2			22.2	22.2
Actuated g/C Ratio	0.16	0.46		0.01	0.31			0.34			0.34	0.34
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	290	1624		22	1036			571			462	543
v/s Ratio Prot	c0.11	0.15		0.00	c0.21							
v/s Ratio Perm								0.00			c0.19	0.04
v/c Ratio	0.70	0.33		0.09	0.68			0.01			0.55	0.12
Uniform Delay, d1	25.5	11.2		31.6	19.6			14.0			17.2	14.5
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	7.1	0.1		1.8	1.8			0.0			4.6	0.4
Delay (s)	32.6	11.3		33.4	21.4			14.0			21.8	15.0
Level of Service	C	B		C	C			B			C	B
Approach Delay (s)		17.1			21.4			14.0			18.9	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.9%	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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.95			0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	3538		1770	3357			1750			1774	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.92			0.72	1.00
Satd. Flow (perm)	1770	3538		1770	3357			1644			1347	1583
Volume (vph)	224	904	2	2	831	434	2	2	2	474	2	306
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)	243	983	2	2	903	472	2	2	2	515	2	333
RTOR Reduction (vph)	0	0	0	0	72	0	0	1	0	0	0	79
Lane Group Flow (vph)	243	985	0	2	1303	0	0	5	0	0	517	254
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	12.0	47.4		0.8	36.2			33.0			33.0	33.0
Effective Green, g (s)	12.0	47.4		0.8	36.2			33.0			33.0	33.0
Actuated g/C Ratio	0.13	0.51		0.01	0.39			0.35			0.35	0.35
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	228	1799		15	1304			582			477	561
v/s Ratio Prot	c0.14	0.28		0.00	c0.39							
v/s Ratio Perm								0.00			c0.38	0.16
v/c Ratio	1.07	0.55		0.13	1.00			0.01			1.08	0.45
Uniform Delay, d1	40.6	15.6		45.9	28.5			19.5			30.1	23.2
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	78.1	0.3		4.0	24.5			0.0			65.7	2.6
Delay (s)	118.7	15.9		49.9	53.0			19.5			95.8	25.8
Level of Service	F	B		D	D			B			F	C
Approach Delay (s)		36.3			53.0			19.5			68.4	
Approach LOS		D			D			B			E	

Intersection Summary			
HCM Average Control Delay	50.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	158	113	108	27	177	202	31	224	76
Average Queue (ft)	96	85	70	4	131	121	4	120	51
95th Queue (ft)	148	125	110	20	172	194	22	173	98
Link Distance (ft)		2962	2962		1473	1473	166	3853	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	175			50					50
Storage Blk Time (%)	0.00				0.44			0.36	0.01
Queuing Penalty (veh)	0				1			61	2

Intersection: 5: SR 28 & National Ave

Movement	EB	EB	WB	WB	SB	SB
Directions Served	LT	TR	LT	TR	LT	R
Maximum Queue (ft)	128	43	74	109	48	31
Average Queue (ft)	68	21	31	49	11	17
95th Queue (ft)	111	40	67	79	40	41
Link Distance (ft)	1837	1837	2619	2619	1279	1279
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 9: Grey Ln & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	8
95th Queue (ft)	28
Link Distance (ft)	536
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Toyon Rd & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	4
95th Queue (ft)	21
Link Distance (ft)	583
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 64

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LT	R
Maximum Queue (ft)	194	176	216	26	347	474	28	1679	76
Average Queue (ft)	123	133	137	4	242	282	8	816	75
95th Queue (ft)	209	187	210	19	376	452	29	1587	76
Link Distance (ft)		2962	2962		1473	1473	166	3853	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	175			50					50
Storage Blk Time (%)	0.03	0.01			0.50			0.57	0.10
Queuing Penalty (veh)	11	2			1			174	45

Intersection: 5: SR 28 & National Ave

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LTR	LT	R
Maximum Queue (ft)	150	148	117	140	51	72	31
Average Queue (ft)	93	66	73	79	11	32	20
95th Queue (ft)	144	133	125	127	43	65	42
Link Distance (ft)	1837	1837	2619	2619	163	1279	1279
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 9: Grey Ln & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	24
Average Queue (ft)	0
95th Queue (ft)	0
Link Distance (ft)	536
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Toyon Rd & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	11
95th Queue (ft)	33
Link Distance (ft)	583
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 234

APPENDIX D

Proposed Project Alternative Intersection Technical Calculations

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	1	33	7	67	64	0
Peak Hour Factor	0.56	0.56	0.63	0.63	0.84	0.84
Hourly flow rate (vph)	2	59	11	106	76	0
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	205	76	76			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	205	76	76			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	94	99			
cM capacity (veh/h)	778	985	1523			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	61	117	76
Volume Left	2	11	0
Volume Right	59	0	0
cSH	977	1523	1700
Volume to Capacity	0.06	0.01	0.04
Queue Length 95th (ft)	5	1	0
Control Delay (s)	8.9	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	0.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	19.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	17	27	97	110	0
Peak Hour Factor	0.50	0.50	0.93	0.93	0.76	0.76
Hourly flow rate (vph)	0	34	29	104	145	0
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	307	145	145			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	307	145	145			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	98			
cM capacity (veh/h)	671	903	1438			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	34	133	145
Volume Left	0	29	0
Volume Right	34	0	0
cSH	903	1438	1700
Volume to Capacity	0.04	0.02	0.09
Queue Length 95th (ft)	3	2	0
Control Delay (s)	9.1	1.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	23.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	42	14	80	99	0
Peak Hour Factor	0.58	0.58	0.62	0.62	0.74	0.74
Hourly flow rate (vph)	3	72	23	129	134	0
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	308	134	134			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	308	134	134			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	92	98			
cM capacity (veh/h)	674	915	1451			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	76	152	134
Volume Left	3	23	0
Volume Right	72	0	0
cSH	901	1451	1700
Volume to Capacity	0.08	0.02	0.08
Queue Length 95th (ft)	7	1	0
Control Delay (s)	9.4	1.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	1.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	25	40	146	110	0
Peak Hour Factor	0.63	0.63	0.89	0.89	0.81	0.81
Hourly flow rate (vph)	0	40	45	164	136	0
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	390	136	136			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	390	136	136			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	97			
cM capacity (veh/h)	595	913	1448			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	40	209	136
Volume Left	0	45	0
Volume Right	40	0	0
cSH	913	1448	1700
Volume to Capacity	0.04	0.03	0.08
Queue Length 95th (ft)	3	2	0
Control Delay (s)	9.1	1.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	26.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	37	406	0	1	378	72	0	1	1	93	0	52
Peak Hour Factor	0.90	0.90	0.90	0.75	0.75	0.75	0.50	0.50	0.50	0.77	0.77	0.77
Hourly flow rate (vph)	41	451	0	1	504	96	0	2	2	121	0	68
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	600			451			856	1136	226	865	1088	300
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600			451			856	1136	226	865	1088	300
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	96			100			100	99	100	49	100	90
cM capacity (veh/h)	973			1106			220	192	778	237	205	696

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	267	226	253	348	4	121	68
Volume Left	41	0	1	0	0	121	0
Volume Right	0	0	0	96	2	0	68
cSH	973	1700	1106	1700	308	237	696
Volume to Capacity	0.04	0.13	0.00	0.20	0.01	0.51	0.10
Queue Length 95th (ft)	3	0	0	0	1	66	8
Control Delay (s)	1.7	0.0	0.1	0.0	16.8	35.1	10.7
Lane LOS	A		A		C	E	B
Approach Delay (s)	0.9		0.0		16.8	26.3	
Approach LOS					C	D	

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	63	693	0	1	571	135	1	0	1	89	0	50
Peak Hour Factor	0.75	0.75	0.75	0.85	0.85	0.85	0.50	0.50	0.50	0.76	0.76	0.76
Hourly flow rate (vph)	84	924	0	1	672	159	2	0	2	117	0	66
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	831			924			1496	1925	462	1386	1846	415
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	831			924			1496	1925	462	1386	1846	415
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	89			100			97	100	100	0	100	89
cM capacity (veh/h)	797			735			69	59	547	94	66	586

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	546	462	337	495	4	117	66
Volume Left	84	0	1	0	2	117	0
Volume Right	0	0	0	159	2	0	66
cSH	797	1700	735	1700	123	94	586
Volume to Capacity	0.11	0.27	0.00	0.29	0.03	1.25	0.11
Queue Length 95th (ft)	9	0	0	0	3	206	9
Control Delay (s)	2.8	0.0	0.1	0.0	35.3	256.3	11.9
Lane LOS	A		A		E	F	B
Approach Delay (s)	1.5		0.0		35.3	168.4	
Approach LOS					E	F	

Intersection Summary			
Average Delay	16.0		
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frt		1.00			0.98			0.93			1.00	0.85
Flt Protected		1.00			1.00			1.00			0.95	1.00
Satd. Flow (prot)		3525			3454			1737			1770	1583
Flt Permitted		0.88			0.95			1.00			0.76	1.00
Satd. Flow (perm)		3113			3296			1737			1407	1583
Volume (vph)	37	406	0	1	378	72	0	1	1	93	0	52
Peak-hour factor, PHF	0.90	0.90	0.90	0.75	0.75	0.75	0.50	0.50	0.50	0.77	0.77	0.77
Adj. Flow (vph)	41	451	0	1	504	96	0	2	2	121	0	68
RTOR Reduction (vph)	0	0	0	0	29	0	0	1	0	0	0	48
Lane Group Flow (vph)	0	492	0	0	572	0	0	3	0	0	121	20
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		10.0			10.0			7.7			7.7	7.7
Effective Green, g (s)		10.0			10.0			7.7			7.7	7.7
Actuated g/C Ratio		0.39			0.39			0.30			0.30	0.30
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1211			1282			520			422	474
v/s Ratio Prot								0.00				
v/s Ratio Perm		0.16			c0.17						c0.09	0.01
v/c Ratio		0.41			0.45			0.00			0.29	0.04
Uniform Delay, d1		5.7			5.8			6.3			6.9	6.4
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.2			0.2			0.0			0.4	0.0
Delay (s)		5.9			6.1			6.3			7.3	6.4
Level of Service		A			A			A			A	A
Approach Delay (s)		5.9			6.1			6.3			7.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	25.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.9%	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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frt		1.00			0.97			0.93			1.00	0.85
Flt Protected		1.00			1.00			1.00			0.95	1.00
Satd. Flow (prot)		3525			3438			1737			1770	1583
Flt Permitted		0.83			0.95			1.00			0.76	1.00
Satd. Flow (perm)		2940			3281			1737			1407	1583
Volume (vph)	63	693	0	1	571	135	0	1	1	89	0	50
Peak-hour factor, PHF	0.90	0.90	0.90	0.75	0.75	0.75	0.50	0.50	0.50	0.77	0.77	0.77
Adj. Flow (vph)	70	770	0	1	761	180	0	2	2	116	0	65
RTOR Reduction (vph)	0	0	0	0	31	0	0	1	0	0	0	48
Lane Group Flow (vph)	0	840	0	0	911	0	0	3	0	0	116	17
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		16.0			16.0			8.3			8.3	8.3
Effective Green, g (s)		16.0			16.0			8.3			8.3	8.3
Actuated g/C Ratio		0.50			0.50			0.26			0.26	0.26
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1456			1625			446			362	407
v/s Ratio Prot								0.00				
v/s Ratio Perm		c0.29			0.28						c0.08	0.01
v/c Ratio		0.58			0.56			0.01			0.32	0.04
Uniform Delay, d1		5.8			5.7			8.9			9.7	9.0
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.6			0.4			0.0			0.5	0.0
Delay (s)		6.3			6.1			8.9			10.2	9.1
Level of Service		A			A			A			B	A
Approach Delay (s)		6.3			6.1			8.9			9.8	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	32.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.7%	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
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.95			0.86			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.95	1.00
Satd. Flow (prot)	1770	3539			3370			1611			1770	1583
Flt Permitted	0.95	1.00			1.00			1.00			0.76	1.00
Satd. Flow (perm)	1770	3539			3370			1611			1407	1583
Volume (vph)	163	436	0	0	413	194	0	0	1	191	0	142
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.25	0.25	0.25	0.93	0.93	0.93
Adj. Flow (vph)	192	513	0	0	582	273	0	0	4	205	0	153
RTOR Reduction (vph)	0	0	0	0	89	0	0	3	0	0	0	97
Lane Group Flow (vph)	192	513	0	0	766	0	0	1	0	0	205	56
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	7.9	29.5			17.6			21.9			21.9	21.9
Effective Green, g (s)	7.9	29.5			17.6			21.9			21.9	21.9
Actuated g/C Ratio	0.13	0.50			0.30			0.37			0.37	0.37
Clearance Time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	235	1758			999			594			519	584
v/s Ratio Prot	c0.11	0.14			c0.23			0.00				
v/s Ratio Perm											c0.15	0.04
v/c Ratio	0.82	0.29			0.77			0.00			0.39	0.10
Uniform Delay, d1	25.0	8.8			19.0			11.8			13.9	12.3
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	19.3	0.1			3.6			0.0			2.2	0.3
Delay (s)	44.3	8.9			22.6			11.9			16.1	12.6
Level of Service	D	A			C			B			B	B
Approach Delay (s)		18.5			22.6			11.9			14.6	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	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
Lane Util. Factor	1.00	0.95			0.95						1.00	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	3539			3362						1770	1583
Flt Permitted	0.95	1.00			1.00						0.76	1.00
Satd. Flow (perm)	1770	3539			3362						1410	1583
Volume (vph)	190	763	0	0	718	359	0	0	0	392	0	262
Peak-hour factor, PHF	0.90	0.90	0.90	0.93	0.93	0.93	0.25	0.25	0.25	0.92	0.92	0.92
Adj. Flow (vph)	211	848	0	0	772	386	0	0	0	426	0	285
RTOR Reduction (vph)	0	0	0	0	96	0	0	0	0	0	0	111
Lane Group Flow (vph)	211	848	0	0	1062	0	0	0	0	0	426	174
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	10.4	35.4			21.0						21.0	21.0
Effective Green, g (s)	10.4	35.4			21.0						21.0	21.0
Actuated g/C Ratio	0.16	0.55			0.33						0.33	0.33
Clearance Time (s)	4.0	4.0			4.0						4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0						3.0	3.0
Lane Grp Cap (vph)	286	1945			1096						460	516
v/s Ratio Prot	c0.12	0.24			c0.32							
v/s Ratio Perm											c0.30	0.11
v/c Ratio	0.74	0.44			0.97						0.93	0.34
Uniform Delay, d1	25.7	8.6			21.4						21.0	16.4
Progression Factor	1.00	1.00			1.00						1.00	1.00
Incremental Delay, d2	9.5	0.2			19.9						27.0	1.8
Delay (s)	35.2	8.7			41.3						48.0	18.2
Level of Service	D	A			D						D	B
Approach Delay (s)		14.0			41.3			0.0			36.1	
Approach LOS		B			D			A			D	

Intersection Summary			
HCM Average Control Delay	30.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	TR	T	TR	LT	R
Maximum Queue (ft)	91	80	83	196	199	159	76
Average Queue (ft)	65	42	32	106	90	120	60
95th Queue (ft)	92	79	74	177	169	168	93
Link Distance (ft)		2962	2962	1473	1473	3853	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	175						50
Storage Blk Time (%)				0.41		0.33	0.01
Queuing Penalty (veh)				0		47	2

Intersection: 5: SR 28 & National Ave

Movement	EB	NB	SB	SB
Directions Served	LT	LTR	LT	R
Maximum Queue (ft)	22	27	70	46
Average Queue (ft)	3	4	45	28
95th Queue (ft)	16	20	75	49
Link Distance (ft)	1837	163	1279	1279
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Grey Ln & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	28
95th Queue (ft)	31
Link Distance (ft)	536
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Toyon Rd & National Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	45	53
Average Queue (ft)	30	8
95th Queue (ft)	41	38
Link Distance (ft)	583	1279
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Nework Summary

Network wide Queuing Penalty: 49

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	TR	T	TR	LT	R
Maximum Queue (ft)	154	134	108	265	324	636	76
Average Queue (ft)	96	75	74	200	217	363	73
95th Queue (ft)	166	124	119	280	338	642	81
Link Distance (ft)		2962	2962	1473	1473	3853	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	175						50
Storage Blk Time (%)				0.51		0.50	0.06
Queuing Penalty (veh)				0		132	22

Intersection: 5: SR 28 & National Ave

Movement	EB	SB	SB
Directions Served	LT	LT	R
Maximum Queue (ft)	45	50	31
Average Queue (ft)	30	36	17
95th Queue (ft)	45	65	42
Link Distance (ft)	1837	1279	1279
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Grey Ln & National Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	29	32
Average Queue (ft)	11	5
95th Queue (ft)	33	23
Link Distance (ft)	536	208
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Toyon Rd & National Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	30	54
Average Queue (ft)	16	12
95th Queue (ft)	39	45
Link Distance (ft)	583	1279
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Nework Summary

Network wide Queuing Penalty: 154

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	3	35	8	81	77	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	38	9	88	84	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	190	85	86			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	190	85	86			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	99			
cM capacity (veh/h)	794	974	1510			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	41	97	86
Volume Left	3	9	0
Volume Right	38	0	2
cSH	957	1510	1700
Volume to Capacity	0.04	0.01	0.05
Queue Length 95th (ft)	3	0	0
Control Delay (s)	8.9	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	20.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	18	28	117	133	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	20	30	127	145	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	334	146	147			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	334	146	147			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	98			
cM capacity (veh/h)	647	901	1435			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	22	158	147
Volume Left	2	30	0
Volume Right	20	0	2
cSH	867	1435	1700
Volume to Capacity	0.03	0.02	0.09
Queue Length 95th (ft)	2	2	0
Control Delay (s)	9.3	1.6	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	1.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	43	15	94	130	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	47	16	102	141	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	277	142	143			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	277	142	143			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	99			
cM capacity (veh/h)	704	905	1439			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	49	118	143
Volume Left	2	16	0
Volume Right	47	0	2
cSH	894	1439	1700
Volume to Capacity	0.05	0.01	0.08
Queue Length 95th (ft)	4	1	0
Control Delay (s)	9.3	1.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	1.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	26	41	172	130	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	28	45	187	141	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	418	142	143			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	418	142	143			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	97			
cM capacity (veh/h)	573	905	1439			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	30	232	143
Volume Left	2	45	0
Volume Right	28	0	2
cSH	869	1439	1700
Volume to Capacity	0.04	0.03	0.08
Queue Length 95th (ft)	3	2	0
Control Delay (s)	9.3	1.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	1.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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			1.00			1.00	1.00
Frt		1.00			0.98			0.95			1.00	0.85
Flt Protected		1.00			1.00			0.99			0.95	1.00
Satd. Flow (prot)		3523			3456			1747			1776	1583
Flt Permitted		0.88			0.95			0.93			0.72	1.00
Satd. Flow (perm)		3110			3294			1644			1350	1583
Volume (vph)	44	491	2	2	457	85	2	3	3	104	2	58
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)	48	534	2	2	497	92	2	3	3	113	2	63
RTOR Reduction (vph)	0	1	0	0	28	0	0	2	0	0	0	44
Lane Group Flow (vph)	0	583	0	0	563	0	0	6	0	0	115	19
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		10.5			10.5			7.7			7.7	7.7
Effective Green, g (s)		10.5			10.5			7.7			7.7	7.7
Actuated g/C Ratio		0.40			0.40			0.29			0.29	0.29
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1246			1320			483			397	465
v/s Ratio Prot												
v/s Ratio Perm		c0.19			0.17			0.00			c0.09	0.01
v/c Ratio		0.47			0.43			0.01			0.29	0.04
Uniform Delay, d1		5.8			5.7			6.6			7.1	6.6
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.3			0.2			0.0			0.4	0.0
Delay (s)		6.1			5.9			6.6			7.5	6.6
Level of Service		A			A			A			A	A
Approach Delay (s)		6.1			5.9			6.6			7.2	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	26.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.8%	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			1.00			1.00	1.00
Frt		1.00			0.97			0.95			1.00	0.85
Flt Protected		1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)		3524			3442			1736			1776	1583
Flt Permitted		0.83			0.95			0.90			0.72	1.00
Satd. Flow (perm)		2947			3282			1600			1350	1583
Volume (vph)	72	839	2	2	691	155	3	2	3	103	2	58
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)	78	912	2	2	751	168	3	2	3	112	2	63
RTOR Reduction (vph)	0	0	0	0	33	0	0	2	0	0	0	48
Lane Group Flow (vph)	0	992	0	0	888	0	0	6	0	0	114	15
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		18.7			18.7			8.6			8.6	8.6
Effective Green, g (s)		18.7			18.7			8.6			8.6	8.6
Actuated g/C Ratio		0.53			0.53			0.24			0.24	0.24
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1561			1739			390			329	386
v/s Ratio Prot												
v/s Ratio Perm		c0.34			0.27			0.00			c0.08	0.01
v/c Ratio		0.64			0.51			0.01			0.35	0.04
Uniform Delay, d1		5.9			5.3			10.1			11.0	10.2
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.9			0.3			0.0			0.6	0.0
Delay (s)		6.7			5.6			10.1			11.7	10.2
Level of Service		A			A			B			B	B
Approach Delay (s)		6.7			5.6			10.1			11.2	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	35.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.9%	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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.95			0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	1.00
Satd. Flow (prot)	1770	3538		1770	3369			1730			1775	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.95			0.72	1.00
Satd. Flow (perm)	1770	3538		1770	3369			1661			1347	1583
Volume (vph)	195	591	2	2	498	235	2	2	3	231	2	171
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)	212	642	2	2	541	255	2	2	3	251	2	186
RTOR Reduction (vph)	0	1	0	0	84	0	0	2	0	0	0	121
Lane Group Flow (vph)	212	643	0	2	712	0	0	5	0	0	253	65
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	11.1	30.3		0.8	20.0			21.2			21.2	21.2
Effective Green, g (s)	11.1	30.3		0.8	20.0			21.2			21.2	21.2
Actuated g/C Ratio	0.17	0.47		0.01	0.31			0.33			0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	306	1667		22	1048			548			444	522
v/s Ratio Prot	c0.12	0.18		0.00	c0.21							
v/s Ratio Perm								0.00			c0.19	0.04
v/c Ratio	0.69	0.39		0.09	0.68			0.01			0.57	0.13
Uniform Delay, d1	25.0	11.0		31.4	19.3			14.5			17.8	15.1
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	6.6	0.1		1.8	1.8			0.0			5.2	0.5
Delay (s)	31.6	11.1		33.2	21.1			14.5			23.0	15.6
Level of Service	C	B		C	C			B			C	B
Approach Delay (s)		16.2			21.1			14.5			19.9	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	64.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.7%	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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.95			0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	3538		1770	3361			1750			1774	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.92			0.72	1.00
Satd. Flow (perm)	1770	3538		1770	3361			1644			1347	1583
Volume (vph)	229	920	2	2	862	434	2	2	2	474	2	315
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)	249	1000	2	2	937	472	2	2	2	515	2	342
RTOR Reduction (vph)	0	0	0	0	67	0	0	1	0	0	0	81
Lane Group Flow (vph)	249	1002	0	2	1342	0	0	5	0	0	517	261
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	12.0	47.4		0.8	36.2			33.0			33.0	33.0
Effective Green, g (s)	12.0	47.4		0.8	36.2			33.0			33.0	33.0
Actuated g/C Ratio	0.13	0.51		0.01	0.39			0.35			0.35	0.35
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	228	1799		15	1305			582			477	561
v/s Ratio Prot	c0.14	0.28		0.00	c0.40							
v/s Ratio Perm								0.00			c0.38	0.17
v/c Ratio	1.09	0.56		0.13	1.03			0.01			1.08	0.47
Uniform Delay, d1	40.6	15.7		45.9	28.5			19.5			30.1	23.3
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	86.4	0.4		4.0	32.4			0.0			65.7	2.8
Delay (s)	127.0	16.1		49.9	60.9			19.5			95.8	26.0
Level of Service	F	B		D	E			B			F	C
Approach Delay (s)		38.1			60.9			19.5			68.0	
Approach LOS		D			E			B			E	

Intersection Summary			
HCM Average Control Delay	54.5	HCM Level of Service	D
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	T	TR	LTR	LT	R
Maximum Queue (ft)	179	129	127	173	215	28	202	76
Average Queue (ft)	108	83	78	112	122	4	114	71
95th Queue (ft)	185	134	135	166	198	19	185	83
Link Distance (ft)		2962	2962	1473	1473	166	3853	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	175							50
Storage Blk Time (%)	0.01			0.40			0.23	0.04
Queuing Penalty (veh)	2			1			40	10

Intersection: 5: SR 28 & National Ave

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LTR	LT	R
Maximum Queue (ft)	82	62	69	72	27	67	31
Average Queue (ft)	55	23	37	46	8	39	23
95th Queue (ft)	82	51	71	70	28	64	39
Link Distance (ft)	1837	1837	2619	2619	163	1279	1279
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 9: Grey Ln & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	25
95th Queue (ft)	41
Link Distance (ft)	536
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Toyon Rd & National Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	30	32
Average Queue (ft)	20	5
95th Queue (ft)	42	23
Link Distance (ft)	583	1279
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Nework Summary

Network wide Queuing Penalty: 52

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	T	TR	LTR	LT	R
Maximum Queue (ft)	200	262	177	580	607	28	2998	76
Average Queue (ft)	147	168	128	520	549	0	1777	66
95th Queue (ft)	211	269	229	619	610	0	2907	94
Link Distance (ft)		2962	2962	1473	1473	166	3853	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	175							50
Storage Blk Time (%)	0.04	0.03		0.62			0.58	0.08
Queuing Penalty (veh)	20	7		1			183	37

Intersection: 5: SR 28 & National Ave

Movement	EB	EB	WB	WB	SB	SB
Directions Served	LT	TR	LT	TR	LT	R
Maximum Queue (ft)	131	117	114	114	49	53
Average Queue (ft)	96	69	64	73	29	30
95th Queue (ft)	131	107	111	112	54	56
Link Distance (ft)	1837	1837	2619	2619	1279	1279
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 9: Grey Ln & National Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	29	32
Average Queue (ft)	16	5
95th Queue (ft)	38	23
Link Distance (ft)	536	208
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Toyon Rd & National Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	29	53
Average Queue (ft)	8	16
95th Queue (ft)	30	50
Link Distance (ft)	583	1279
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Nework Summary

Network wide Queuing Penalty: 248

APPENDIX E

Reduced Density Project Alternative Intersection Technical Calculations

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	1	40	9	73	86	0
Peak Hour Factor	0.56	0.56	0.63	0.63	0.84	0.84
Hourly flow rate (vph)	2	71	14	116	102	0
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	247	102	102			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	247	102	102			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	93	99			
cM capacity (veh/h)	734	953	1490			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	73	130	102
Volume Left	2	14	0
Volume Right	71	0	0
cSH	946	1490	1700
Volume to Capacity	0.08	0.01	0.06
Queue Length 95th (ft)	6	1	0
Control Delay (s)	9.1	0.9	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	0.9	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	21.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	21	35	118	122	0
Peak Hour Factor	0.50	0.50	0.93	0.93	0.76	0.76
Hourly flow rate (vph)	0	42	38	127	161	0
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	363	161	161			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	363	161	161			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	97			
cM capacity (veh/h)	620	885	1419			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	42	165	161
Volume Left	0	38	0
Volume Right	42	0	0
cSH	885	1419	1700
Volume to Capacity	0.05	0.03	0.09
Queue Length 95th (ft)	4	2	0
Control Delay (s)	9.3	1.9	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	1.9	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	27.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	5	4	87	128	0
Peak Hour Factor	0.58	0.58	0.62	0.62	0.74	0.74
Hourly flow rate (vph)	3	9	6	140	173	0
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	326	173	173			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	326	173	173			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	665	871	1404			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	12	147	173
Volume Left	3	6	0
Volume Right	9	0	0
cSH	800	1404	1700
Volume to Capacity	0.02	0.00	0.10
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.6	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	0.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	17.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	5	3	175	126	0
Peak Hour Factor	0.63	0.63	0.89	0.89	0.81	0.81
Hourly flow rate (vph)	0	8	3	197	156	0
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	359	156	156			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	359	156	156			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	638	890	1425			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	200	156
Volume Left	0	3	0
Volume Right	8	0	0
cSH	890	1425	1700
Volume to Capacity	0.01	0.00	0.09
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.1	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	21.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	36	406	0	1	378	71	0	1	1	88	0	49
Peak Hour Factor	0.90	0.90	0.90	0.75	0.75	0.75	0.50	0.50	0.50	0.77	0.77	0.77
Hourly flow rate (vph)	40	451	0	1	504	95	0	2	2	114	0	64
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	599			451			849	1132	226	863	1085	299
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	599			451			849	1132	226	863	1085	299
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	96			100			100	99	100	52	100	91
cM capacity (veh/h)	974			1106			223	193	778	238	206	697

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	266	226	253	347	4	114	64
Volume Left	40	0	1	0	0	114	0
Volume Right	0	0	0	95	2	0	64
cSH	974	1700	1106	1700	309	238	697
Volume to Capacity	0.04	0.13	0.00	0.20	0.01	0.48	0.09
Queue Length 95th (ft)	3	0	0	0	1	60	8
Control Delay (s)	1.7	0.0	0.1	0.0	16.8	33.3	10.7
Lane LOS	A		A		C	D	B
Approach Delay (s)	0.9		0.0		16.8	25.2	
Approach LOS					C	D	

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	61	693	0	1	571	129	1	0	1	87	0	48
Peak Hour Factor	0.75	0.75	0.75	0.85	0.85	0.85	0.50	0.50	0.50	0.76	0.76	0.76
Hourly flow rate (vph)	81	924	0	1	672	152	2	0	2	114	0	63
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	824			924			1488	1913	462	1377	1837	412
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	824			924			1488	1913	462	1377	1837	412
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	90			100			97	100	100	0	100	89
cM capacity (veh/h)	802			735			71	60	547	96	67	589

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	543	462	337	488	4	114	63
Volume Left	81	0	1	0	2	114	0
Volume Right	0	0	0	152	2	0	63
cSH	802	1700	735	1700	125	96	589
Volume to Capacity	0.10	0.27	0.00	0.29	0.03	1.20	0.11
Queue Length 95th (ft)	8	0	0	0	2	196	9
Control Delay (s)	2.7	0.0	0.1	0.0	34.7	236.5	11.8
Lane LOS	A		A		D	F	B
Approach Delay (s)	1.4		0.0		34.7	156.6	
Approach LOS					D	F	

Intersection Summary			
Average Delay	14.6		
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frt		1.00			0.98			0.93			1.00	0.85
Flt Protected		1.00			1.00			1.00			0.95	1.00
Satd. Flow (prot)		3525			3455			1737			1770	1583
Flt Permitted		0.88			0.95			1.00			0.76	1.00
Satd. Flow (perm)		3119			3297			1737			1407	1583
Volume (vph)	36	406	0	1	378	71	0	1	1	88	0	49
Peak-hour factor, PHF	0.90	0.90	0.90	0.75	0.75	0.75	0.50	0.50	0.50	0.77	0.77	0.77
Adj. Flow (vph)	40	451	0	1	504	95	0	2	2	114	0	64
RTOR Reduction (vph)	0	0	0	0	29	0	0	1	0	0	0	45
Lane Group Flow (vph)	0	491	0	0	571	0	0	3	0	0	114	19
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		9.9			9.9			7.6			7.6	7.6
Effective Green, g (s)		9.9			9.9			7.6			7.6	7.6
Actuated g/C Ratio		0.39			0.39			0.30			0.30	0.30
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1211			1280			518			419	472
v/s Ratio Prot								0.00				
v/s Ratio Perm		0.16			c0.17						c0.08	0.01
v/c Ratio		0.41			0.45			0.01			0.27	0.04
Uniform Delay, d1		5.7			5.8			6.3			6.8	6.4
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.2			0.2			0.0			0.4	0.0
Delay (s)		5.9			6.0			6.3			7.2	6.4
Level of Service		A			A			A			A	A
Approach Delay (s)		5.9			6.0			6.3			6.9	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	25.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.6%	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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frt		1.00			0.97			0.93			1.00	0.85
Flt Protected		1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)		3525			3441			1695			1770	1583
Flt Permitted		0.84			0.95			0.88			0.76	1.00
Satd. Flow (perm)		2977			3284			1536			1407	1583
Volume (vph)	61	693	0	1	571	129	1	0	1	87	0	48
Peak-hour factor, PHF	0.75	0.75	0.75	0.85	0.85	0.85	0.50	0.50	0.50	0.76	0.76	0.76
Adj. Flow (vph)	81	924	0	1	672	152	2	0	2	114	0	63
RTOR Reduction (vph)	0	0	0	0	34	0	0	2	0	0	0	48
Lane Group Flow (vph)	0	1005	0	0	791	0	0	2	0	0	114	15
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		18.7			18.7			8.6			8.6	8.6
Effective Green, g (s)		18.7			18.7			8.6			8.6	8.6
Actuated g/C Ratio		0.53			0.53			0.24			0.24	0.24
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1577			1740			374			343	386
v/s Ratio Prot												
v/s Ratio Perm		c0.34			0.24			0.00			c0.08	0.01
v/c Ratio		0.64			0.45			0.01			0.33	0.04
Uniform Delay, d1		5.9			5.1			10.1			11.0	10.2
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.9			0.2			0.0			0.6	0.0
Delay (s)		6.7			5.3			10.1			11.6	10.2
Level of Service		A			A			B			B	B
Approach Delay (s)		6.7			5.3			10.1			11.1	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	35.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.4%	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	4.0
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.95			0.86			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.95	1.00
Satd. Flow (prot)	1770	3539			3369			1611			1770	1583
Flt Permitted	0.95	1.00			1.00			1.00			0.76	1.00
Satd. Flow (perm)	1770	3539			3369			1611			1407	1583
Volume (vph)	162	432	0	0	412	194	0	0	1	191	0	142
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.25	0.25	0.25	0.93	0.93	0.93
Adj. Flow (vph)	191	508	0	0	580	273	0	0	4	205	0	153
RTOR Reduction (vph)	0	0	0	0	89	0	0	3	0	0	0	97
Lane Group Flow (vph)	191	508	0	0	764	0	0	1	0	0	205	56
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	7.9	29.5			17.6			21.9			21.9	21.9
Effective Green, g (s)	7.9	29.5			17.6			21.9			21.9	21.9
Actuated g/C Ratio	0.13	0.50			0.30			0.37			0.37	0.37
Clearance Time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	235	1758			998			594			519	584
v/s Ratio Prot	c0.11	0.14			c0.23			0.00				
v/s Ratio Perm											c0.15	0.04
v/c Ratio	0.81	0.29			0.77			0.00			0.39	0.10
Uniform Delay, d1	25.0	8.8			19.0			11.8			13.9	12.3
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	18.9	0.1			3.5			0.0			2.2	0.3
Delay (s)	43.9	8.9			22.6			11.9			16.1	12.6
Level of Service	D	A			C			B			B	B
Approach Delay (s)		18.5			22.6			11.9			14.6	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	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	0.95			0.95						1.00	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	3539			3361						1770	1583
Flt Permitted	0.95	1.00			1.00						0.76	1.00
Satd. Flow (perm)	1770	3539			3361						1410	1583
Volume (vph)	189	762	0	0	713	359	0	0	0	392	0	261
Peak-hour factor, PHF	0.90	0.90	0.90	0.93	0.93	0.93	0.25	0.25	0.25	0.92	0.92	0.92
Adj. Flow (vph)	210	847	0	0	767	386	0	0	0	426	0	284
RTOR Reduction (vph)	0	0	0	0	97	0	0	0	0	0	0	110
Lane Group Flow (vph)	210	847	0	0	1056	0	0	0	0	0	426	174
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	9.0	34.9			21.9						22.0	22.0
Effective Green, g (s)	9.0	34.9			21.9						22.0	22.0
Actuated g/C Ratio	0.14	0.54			0.34						0.34	0.34
Clearance Time (s)	4.0	4.0			4.0						4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0						3.0	3.0
Lane Grp Cap (vph)	245	1903			1134						478	537
v/s Ratio Prot	c0.12	0.24			c0.31							
v/s Ratio Perm											c0.30	0.11
v/c Ratio	0.86	0.45			0.93						0.89	0.32
Uniform Delay, d1	27.3	9.1			20.8						20.3	15.9
Progression Factor	1.00	1.00			1.00						1.00	1.00
Incremental Delay, d2	24.3	0.2			13.4						21.5	1.6
Delay (s)	51.6	9.3			34.1						41.8	17.5
Level of Service	D	A			C						D	B
Approach Delay (s)		17.7			34.1			0.0			32.1	
Approach LOS		B			C			A			C	

Intersection Summary			
HCM Average Control Delay	27.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	64.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	TR	T	TR	LT	R
Maximum Queue (ft)	90	108	87	136	198	204	95
Average Queue (ft)	72	55	49	83	100	113	70
95th Queue (ft)	91	118	90	125	180	192	101
Link Distance (ft)		2962	2962	1473	1473	3853	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	175						50
Storage Blk Time (%)				0.40		0.17	0.02
Queuing Penalty (veh)				0		24	4

Intersection: 5: SR 28 & National Ave

Movement	EB	SB	SB
Directions Served	LT	LT	R
Maximum Queue (ft)	24	51	31
Average Queue (ft)	7	33	25
95th Queue (ft)	25	51	43
Link Distance (ft)	1837	1279	1279
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Grey Ln & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	24
95th Queue (ft)	40
Link Distance (ft)	536
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Toyon Rd & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	4
95th Queue (ft)	21
Link Distance (ft)	583
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 28

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	TR	T	TR	LT	R
Maximum Queue (ft)	180	160	194	215	244	635	76
Average Queue (ft)	111	97	86	135	139	348	73
95th Queue (ft)	175	165	186	226	243	669	82
Link Distance (ft)		2962	2962	1473	1473	3853	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	175						50
Storage Blk Time (%)	0.01	0.00		0.47		0.44	0.12
Queuing Penalty (veh)	2	0		0		115	46

Intersection: 5: SR 28 & National Ave

Movement	EB	NB	SB	SB
Directions Served	LT	LR	LT	R
Maximum Queue (ft)	109	27	92	30
Average Queue (ft)	51	4	50	26
95th Queue (ft)	110	20	89	43
Link Distance (ft)	1837	163	1299	1299
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Grey Ln & National Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	27	31
Average Queue (ft)	8	4
95th Queue (ft)	27	23
Link Distance (ft)	536	208
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Toyon Rd & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	26
Average Queue (ft)	4
95th Queue (ft)	19
Link Distance (ft)	583
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 164

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	3	43	10	87	99	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	47	11	95	108	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	225	109	110			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	225	109	110			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	99			
cM capacity (veh/h)	758	945	1480			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	50	105	110
Volume Left	3	11	0
Volume Right	47	0	2
cSH	930	1480	1700
Volume to Capacity	0.05	0.01	0.06
Queue Length 95th (ft)	4	1	0
Control Delay (s)	9.1	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	0.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	21.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	6	36	138	145	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	39	150	158	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	387	159	160			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	159	160			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	97			
cM capacity (veh/h)	599	887	1419			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	189	160
Volume Left	2	39	0
Volume Right	7	0	2
cSH	792	1419	1700
Volume to Capacity	0.01	0.03	0.09
Queue Length 95th (ft)	1	2	0
Control Delay (s)	9.6	1.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	1.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	6	5	102	144	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	5	111	157	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	279	158	159			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	279	158	159			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	708	888	1421			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	116	159
Volume Left	2	5	0
Volume Right	7	0	2
cSH	835	1421	1700
Volume to Capacity	0.01	0.00	0.09
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.4	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	0.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	19.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	6	4	201	146	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	4	218	159	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	387	160	161			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	160	161			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	614	885	1418			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	223	161
Volume Left	2	4	0
Volume Right	7	0	2
cSH	797	1418	1700
Volume to Capacity	0.01	0.00	0.09
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.6	0.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	0.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	23.8%	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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frt		1.00			0.98			0.95			1.00	0.85
Flt Protected		1.00			1.00			0.99			0.95	1.00
Satd. Flow (prot)		3523			3457			1747			1776	1583
Flt Permitted		0.88			0.95			0.93			0.72	1.00
Satd. Flow (perm)		3116			3295			1644			1350	1583
Volume (vph)	43	491	2	2	457	84	2	3	3	99	2	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)	47	534	2	2	497	91	2	3	3	108	2	60
RTOR Reduction (vph)	0	1	0	0	28	0	0	2	0	0	0	43
Lane Group Flow (vph)	0	582	0	0	562	0	0	6	0	0	110	17
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		10.5			10.5			7.6			7.6	7.6
Effective Green, g (s)		10.5			10.5			7.6			7.6	7.6
Actuated g/C Ratio		0.40			0.40			0.29			0.29	0.29
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1254			1326			479			393	461
v/s Ratio Prot												
v/s Ratio Perm		c0.19			0.17			0.00			c0.08	0.01
v/c Ratio		0.46			0.42			0.01			0.28	0.04
Uniform Delay, d1		5.7			5.6			6.6			7.1	6.6
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.3			0.2			0.0			0.4	0.0
Delay (s)		6.0			5.8			6.6			7.5	6.7
Level of Service		A			A			A			A	A
Approach Delay (s)		6.0			5.8			6.6			7.2	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	26.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.5%	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			1.00			1.00	1.00
Frt		1.00			0.97			0.95			1.00	0.85
Flt Protected		1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)		3525			3445			1736			1776	1583
Flt Permitted		0.84			0.95			0.90			0.72	1.00
Satd. Flow (perm)		2962			3285			1599			1350	1583
Volume (vph)	70	839	2	2	691	149	3	2	3	101	2	56
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)	76	912	2	2	751	162	3	2	3	110	2	61
RTOR Reduction (vph)	0	0	0	0	32	0	0	2	0	0	0	46
Lane Group Flow (vph)	0	990	0	0	883	0	0	6	0	0	112	15
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		18.6			18.6			8.5			8.5	8.5
Effective Green, g (s)		18.6			18.6			8.5			8.5	8.5
Actuated g/C Ratio		0.53			0.53			0.24			0.24	0.24
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1570			1741			387			327	383
v/s Ratio Prot												
v/s Ratio Perm		c0.33			0.27			0.00			c0.08	0.01
v/c Ratio		0.63			0.51			0.01			0.34	0.04
Uniform Delay, d1		5.8			5.3			10.1			11.0	10.2
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.8			0.2			0.0			0.6	0.0
Delay (s)		6.7			5.5			10.1			11.6	10.2
Level of Service		A			A			B			B	B
Approach Delay (s)		6.7			5.5			10.1			11.1	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	6.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	35.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.95			0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	1.00
Satd. Flow (prot)	1770	3537		1770	3369			1730			1775	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.95			0.72	1.00
Satd. Flow (perm)	1770	3537		1770	3369			1661			1347	1583
Volume (vph)	194	517	2	2	497	235	2	2	3	231	2	171
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)	211	562	2	2	540	255	2	2	3	251	2	186
RTOR Reduction (vph)	0	1	0	0	84	0	0	2	0	0	0	121
Lane Group Flow (vph)	211	563	0	2	711	0	0	5	0	0	253	65
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	11.1	30.2		0.8	19.9			21.2			21.2	21.2
Effective Green, g (s)	11.1	30.2		0.8	19.9			21.2			21.2	21.2
Actuated g/C Ratio	0.17	0.47		0.01	0.31			0.33			0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	306	1664		22	1044			548			445	523
v/s Ratio Prot	c0.12	0.16		0.00	c0.21							
v/s Ratio Perm								0.00			c0.19	0.04
v/c Ratio	0.69	0.34		0.09	0.68			0.01			0.57	0.13
Uniform Delay, d1	24.9	10.7		31.3	19.4			14.4			17.7	15.0
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	6.3	0.1		1.8	1.8			0.0			5.2	0.5
Delay (s)	31.3	10.8		33.1	21.2			14.5			22.9	15.5
Level of Service	C	B		C	C			B			C	B
Approach Delay (s)		16.4			21.2			14.5			19.8	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	64.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.6%	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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.95			0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	3538		1770	3361			1750			1774	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.93			0.72	1.00
Satd. Flow (perm)	1770	3538		1770	3361			1648			1347	1583
Volume (vph)	228	919	2	2	857	434	2	2	2	474	2	314
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)	248	999	2	2	932	472	2	2	2	515	2	341
RTOR Reduction (vph)	0	0	0	0	56	0	0	1	0	0	0	66
Lane Group Flow (vph)	248	1001	0	2	1348	0	0	5	0	0	517	275
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	15.0	59.4		0.8	45.2			41.0			41.0	41.0
Effective Green, g (s)	15.0	59.4		0.8	45.2			41.0			41.0	41.0
Actuated g/C Ratio	0.13	0.52		0.01	0.40			0.36			0.36	0.36
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	235	1857		13	1342			597			488	573
v/s Ratio Prot	c0.14	0.28		0.00	c0.40							
v/s Ratio Perm								0.00			c0.38	0.17
v/c Ratio	1.06	0.54		0.15	1.00			0.01			1.06	0.48
Uniform Delay, d1	49.1	17.8		55.9	34.0			23.1			36.1	27.9
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	74.0	0.3		5.5	25.6			0.0			57.4	2.9
Delay (s)	123.1	18.1		61.3	59.6			23.1			93.5	30.7
Level of Service	F	B		E	E			C			F	C
Approach Delay (s)		39.0			59.6			23.1			68.6	
Approach LOS		D			E			C			E	

Intersection Summary			
HCM Average Control Delay	54.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	113.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	TR	T	TR	LT	R
Maximum Queue (ft)	198	110	107	184	198	265	95
Average Queue (ft)	83	46	56	110	124	142	68
95th Queue (ft)	163	104	116	169	202	271	99
Link Distance (ft)		2962	2962	1473	1473	3853	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	175						50
Storage Blk Time (%)	0.01			0.39		0.20	0.04
Queuing Penalty (veh)	3			1		35	10

Intersection: 5: SR 28 & National Ave

Movement	EB	EB	WB	WB	SB	SB
Directions Served	LT	TR	LT	TR	LT	R
Maximum Queue (ft)	87	43	71	84	70	50
Average Queue (ft)	60	28	48	49	35	28
95th Queue (ft)	85	48	89	81	61	50
Link Distance (ft)	1837	1837	2619	2619	1279	1279
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 9: Grey Ln & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	22
95th Queue (ft)	37
Link Distance (ft)	536
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Toyon Rd & National Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	29	24
Average Queue (ft)	0	3
95th Queue (ft)	0	17
Link Distance (ft)	583	1279
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Nework Summary

Network wide Queuing Penalty: 48

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	T	TR	LTR	LT	R
Maximum Queue (ft)	201	359	323	566	606	28	3700	92
Average Queue (ft)	173	196	183	485	526	10	2841	77
95th Queue (ft)	215	344	298	600	626	31	3670	87
Link Distance (ft)		2962	2962	1473	1473	166	3853	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	175							50
Storage Blk Time (%)	0.08	0.06		0.59			0.58	0.05
Queuing Penalty (veh)	37	13		1			183	26

Intersection: 5: SR 28 & National Ave

Movement	EB	EB	WB	WB	SB	SB
Directions Served	LT	TR	LT	TR	LT	R
Maximum Queue (ft)	151	113	116	113	115	31
Average Queue (ft)	94	56	78	91	64	19
95th Queue (ft)	138	93	119	135	107	39
Link Distance (ft)	1837	1837	2619	2619	1279	1279
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 9: Grey Ln & National Ave

Movement	NB
Directions Served	LT
Maximum Queue (ft)	31
Average Queue (ft)	9
95th Queue (ft)	32
Link Distance (ft)	208
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Toyon Rd & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	12
95th Queue (ft)	36
Link Distance (ft)	583
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 260

APPENDIX F

Increased Density Project Alternative Intersection Technical Calculations

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	1	74	17	67	64	0
Peak Hour Factor	0.56	0.56	0.63	0.63	0.84	0.84
Hourly flow rate (vph)	2	132	27	106	76	0
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	237	76	76			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	237	76	76			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	87	98			
cM capacity (veh/h)	738	985	1523			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	134	133	76
Volume Left	2	27	0
Volume Right	132	0	0
cSH	981	1523	1700
Volume to Capacity	0.14	0.02	0.04
Queue Length 95th (ft)	12	1	0
Control Delay (s)	9.3	1.6	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	1.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	22.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	39	67	97	110	0
Peak Hour Factor	0.50	0.50	0.93	0.93	0.76	0.76
Hourly flow rate (vph)	0	78	72	104	145	0
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	393	145	145			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	393	145	145			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	91	95			
cM capacity (veh/h)	581	903	1438			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	78	176	145
Volume Left	0	72	0
Volume Right	78	0	0
cSH	903	1438	1700
Volume to Capacity	0.09	0.05	0.09
Queue Length 95th (ft)	7	4	0
Control Delay (s)	9.4	3.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	3.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	5	4	89	140	0
Peak Hour Factor	0.58	0.58	0.62	0.62	0.74	0.74
Hourly flow rate (vph)	3	9	6	144	189	0
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	346	189	189			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	346	189	189			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	648	853	1385			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	12	150	189
Volume Left	3	6	0
Volume Right	9	0	0
cSH	782	1385	1700
Volume to Capacity	0.02	0.00	0.11
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.7	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.7	0.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	17.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	5	3	186	132	0
Peak Hour Factor	0.63	0.63	0.89	0.89	0.81	0.81
Hourly flow rate (vph)	0	8	3	209	163	0
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	379	163	163			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	379	163	163			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	622	882	1416			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	212	163
Volume Left	0	3	0
Volume Right	8	0	0
cSH	882	1416	1700
Volume to Capacity	0.01	0.00	0.10
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.1	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	22.2%	ICU Level of Service	A
Analysis Period (min)	15		

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)	37	406	0	1	378	72	0	1	1	96	0	53
Peak Hour Factor	0.90	0.90	0.90	0.75	0.75	0.75	0.50	0.50	0.50	0.77	0.77	0.77
Hourly flow rate (vph)	41	451	0	1	504	96	0	2	2	125	0	69
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	600			451			857	1136	226	865	1088	300
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600			451			857	1136	226	865	1088	300
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	96			100			100	99	100	47	100	90
cM capacity (veh/h)	973			1106			219	192	778	237	205	696

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	267	226	253	348	4	125	69
Volume Left	41	0	1	0	0	125	0
Volume Right	0	0	0	96	2	0	69
cSH	973	1700	1106	1700	308	237	696
Volume to Capacity	0.04	0.13	0.00	0.20	0.01	0.53	0.10
Queue Length 95th (ft)	3	0	0	0	1	70	8
Control Delay (s)	1.7	0.0	0.1	0.0	16.8	36.0	10.7
Lane LOS	A		A		C	E	B
Approach Delay (s)	0.9		0.0		16.8	27.0	
Approach LOS					C	D	

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

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)	64	693	0	1	571	137	1	0	1	91	0	50
Peak Hour Factor	0.75	0.75	0.75	0.85	0.85	0.85	0.50	0.50	0.50	0.76	0.76	0.76
Hourly flow rate (vph)	85	924	0	1	672	161	2	0	2	120	0	66
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	833			924			1499	1930	462	1389	1849	416
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	833			924			1499	1930	462	1389	1849	416
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	89			100			97	100	100	0	100	89
cM capacity (veh/h)	796			735			69	58	547	93	66	585

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	547	462	337	497	4	120	66
Volume Left	85	0	1	0	2	120	0
Volume Right	0	0	0	161	2	0	66
cSH	796	1700	735	1700	122	93	585
Volume to Capacity	0.11	0.27	0.00	0.29	0.03	1.29	0.11
Queue Length 95th (ft)	9	0	0	0	3	214	9
Control Delay (s)	2.8	0.0	0.1	0.0	35.5	271.2	11.9
Lane LOS	A		A		E	F	B
Approach Delay (s)	1.5		0.0		35.5	179.2	
Approach LOS					E	F	

Intersection Summary			
Average Delay	17.2		
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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			1.00			1.00	1.00
Frt		1.00			0.98			0.93			1.00	0.85
Flt Protected		1.00			1.00			1.00			0.95	1.00
Satd. Flow (prot)		3525			3454			1737			1770	1583
Flt Permitted		0.88			0.95			1.00			0.76	1.00
Satd. Flow (perm)		3113			3296			1737			1407	1583
Volume (vph)	37	406	0	1	378	72	0	1	1	96	0	53
Peak-hour factor, PHF	0.90	0.90	0.90	0.75	0.75	0.75	0.50	0.50	0.50	0.77	0.77	0.77
Adj. Flow (vph)	41	451	0	1	504	96	0	2	2	125	0	69
RTOR Reduction (vph)	0	0	0	0	29	0	0	1	0	0	0	48
Lane Group Flow (vph)	0	492	0	0	572	0	0	3	0	0	125	21
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		10.0			10.0			7.8			7.8	7.8
Effective Green, g (s)		10.0			10.0			7.8			7.8	7.8
Actuated g/C Ratio		0.39			0.39			0.30			0.30	0.30
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1207			1278			525			425	479
v/s Ratio Prot								0.00				
v/s Ratio Perm		0.16			c0.17						c0.09	0.01
v/c Ratio		0.41			0.45			0.00			0.29	0.04
Uniform Delay, d1		5.7			5.9			6.3			6.9	6.4
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.2			0.3			0.0			0.4	0.0
Delay (s)		6.0			6.1			6.3			7.3	6.4
Level of Service		A			A			A			A	A
Approach Delay (s)		6.0			6.1			6.3			7.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	25.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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			1.00			1.00	1.00
Frt		1.00			0.97			0.93			1.00	0.85
Flt Protected		1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)		3524			3437			1695			1770	1583
Flt Permitted		0.83			0.95			0.88			0.76	1.00
Satd. Flow (perm)		2950			3279			1537			1407	1583
Volume (vph)	64	693	0	1	571	137	1	0	1	91	0	50
Peak-hour factor, PHF	0.75	0.75	0.75	0.85	0.85	0.85	0.50	0.50	0.50	0.76	0.76	0.76
Adj. Flow (vph)	85	924	0	1	672	161	2	0	2	120	0	66
RTOR Reduction (vph)	0	0	0	0	37	0	0	2	0	0	0	50
Lane Group Flow (vph)	0	1009	0	0	797	0	0	2	0	0	120	16
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		19.1			19.1			8.8			8.8	8.8
Effective Green, g (s)		19.1			19.1			8.8			8.8	8.8
Actuated g/C Ratio		0.53			0.53			0.25			0.25	0.25
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1569			1745			377			345	388
v/s Ratio Prot												
v/s Ratio Perm		c0.34			0.24			0.00			c0.09	0.01
v/c Ratio		0.64			0.46			0.01			0.35	0.04
Uniform Delay, d1		6.0			5.2			10.2			11.2	10.3
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.9			0.2			0.0			0.6	0.0
Delay (s)		6.9			5.4			10.3			11.8	10.4
Level of Service		A			A			B			B	B
Approach Delay (s)		6.9			5.4			10.3			11.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	35.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.1%	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
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.95			0.86			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.95	1.00
Satd. Flow (prot)	1770	3539			3370			1611			1770	1583
Flt Permitted	0.95	1.00			1.00			1.00			0.76	1.00
Satd. Flow (perm)	1770	3539			3370			1611			1407	1583
Volume (vph)	164	438	0	0	413	194	0	0	1	191	0	142
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.25	0.25	0.25	0.93	0.93	0.93
Adj. Flow (vph)	193	515	0	0	582	273	0	0	4	205	0	153
RTOR Reduction (vph)	0	0	0	0	89	0	0	3	0	0	0	100
Lane Group Flow (vph)	193	515	0	0	766	0	0	1	0	0	205	53
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	9.9	32.1			18.2			21.2			21.2	21.2
Effective Green, g (s)	9.9	32.1			18.2			21.2			21.2	21.2
Actuated g/C Ratio	0.16	0.52			0.30			0.35			0.35	0.35
Clearance Time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	286	1853			1001			557			487	547
v/s Ratio Prot	c0.11	0.15			c0.23			0.00				
v/s Ratio Perm											c0.15	0.03
v/c Ratio	0.67	0.28			0.77			0.00			0.42	0.10
Uniform Delay, d1	24.2	8.1			19.6			13.1			15.4	13.6
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	6.2	0.1			3.5			0.0			2.7	0.4
Delay (s)	30.4	8.2			23.2			13.1			18.0	13.9
Level of Service	C	A			C			B			B	B
Approach Delay (s)		14.3			23.2			13.1			16.3	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	61.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.0%	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	0.95			0.95						1.00	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	3539			3362						1770	1583
Flt Permitted	0.95	1.00			1.00						0.76	1.00
Satd. Flow (perm)	1770	3539			3362						1410	1583
Volume (vph)	190	765	0	0	719	359	0	0	0	392	0	263
Peak-hour factor, PHF	0.90	0.90	0.90	0.93	0.93	0.93	0.25	0.25	0.25	0.92	0.92	0.92
Adj. Flow (vph)	211	850	0	0	773	386	0	0	0	426	0	286
RTOR Reduction (vph)	0	0	0	0	95	0	0	0	0	0	0	111
Lane Group Flow (vph)	211	850	0	0	1064	0	0	0	0	0	426	175
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	10.4	35.4			21.0						21.0	21.0
Effective Green, g (s)	10.4	35.4			21.0						21.0	21.0
Actuated g/C Ratio	0.16	0.55			0.33						0.33	0.33
Clearance Time (s)	4.0	4.0			4.0						4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0						3.0	3.0
Lane Grp Cap (vph)	286	1945			1096						460	516
v/s Ratio Prot	c0.12	0.24			c0.32							
v/s Ratio Perm											c0.30	0.11
v/c Ratio	0.74	0.44			0.97						0.93	0.34
Uniform Delay, d1	25.7	8.6			21.4						21.0	16.4
Progression Factor	1.00	1.00			1.00						1.00	1.00
Incremental Delay, d2	9.5	0.2			20.4						27.0	1.8
Delay (s)	35.2	8.8			41.8						48.0	18.2
Level of Service	D	A			D						D	B
Approach Delay (s)		14.0			41.8			0.0			36.0	
Approach LOS		B			D			A			D	

Intersection Summary			
HCM Average Control Delay	30.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	TR	T	TR	LT	R
Maximum Queue (ft)	114	170	159	133	175	201	76
Average Queue (ft)	84	79	72	90	104	97	53
95th Queue (ft)	128	145	139	137	173	200	88
Link Distance (ft)		2962	2962	1473	1473	3853	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	175						50
Storage Blk Time (%)		0.01		0.37		0.22	0.01
Queuing Penalty (veh)		1		0		32	2

Intersection: 5: SR 28 & National Ave

Movement	EB	SB	SB
Directions Served	LT	LT	R
Maximum Queue (ft)	43	110	31
Average Queue (ft)	16	75	26
95th Queue (ft)	42	106	43
Link Distance (ft)	1837	1279	1279
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Grey Ln & National Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	51	32
Average Queue (ft)	35	5
95th Queue (ft)	52	23
Link Distance (ft)	536	208
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Toyon Rd & National Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	24	31
Average Queue (ft)	3	0
95th Queue (ft)	17	0
Link Distance (ft)	583	1279
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Nework Summary

Network wide Queuing Penalty: 35

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	TR	T	TR	LT	R
Maximum Queue (ft)	198	111	104	332	328	818	76
Average Queue (ft)	124	60	59	192	209	659	72
95th Queue (ft)	215	115	110	258	289	830	81
Link Distance (ft)		2962	2962	1473	1473	3853	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	175						50
Storage Blk Time (%)	0.02			0.53		0.61	0.05
Queuing Penalty (veh)	6			0		162	21

Intersection: 5: SR 28 & National Ave

Movement	EB	WB	SB	SB
Directions Served	LT	TR	LT	R
Maximum Queue (ft)	133	17	68	30
Average Queue (ft)	52	2	42	19
95th Queue (ft)	134	12	68	39
Link Distance (ft)	1837	2619	1279	1279
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Grey Ln & National Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	26	30
Average Queue (ft)	7	4
95th Queue (ft)	25	21
Link Distance (ft)	536	208
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Toyon Rd & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	8
95th Queue (ft)	30
Link Distance (ft)	583
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 188

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	3	76	18	81	77	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	83	20	88	84	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	212	85	86			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	212	85	86			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	99			
cM capacity (veh/h)	766	974	1510			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	86	108	86
Volume Left	3	20	0
Volume Right	83	0	2
cSH	964	1510	1700
Volume to Capacity	0.09	0.01	0.05
Queue Length 95th (ft)	7	1	0
Control Delay (s)	9.1	1.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	40	68	117	133	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	43	74	127	145	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	421	146	147			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	421	146	147			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	95			
cM capacity (veh/h)	559	901	1435			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	46	201	147
Volume Left	2	74	0
Volume Right	43	0	2
cSH	876	1435	1700
Volume to Capacity	0.05	0.05	0.09
Queue Length 95th (ft)	4	4	0
Control Delay (s)	9.3	3.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	3.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	6	5	104	156	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	5	113	170	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	295	171	172			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	295	171	172			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	694	873	1405			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	118	172
Volume Left	2	5	0
Volume Right	7	0	2
cSH	820	1405	1700
Volume to Capacity	0.01	0.00	0.10
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.4	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	0.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	19.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	6	4	212	152	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	4	230	165	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	405	166	167			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	405	166	167			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	600	878	1410			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	235	167
Volume Left	2	4	0
Volume Right	7	0	2
cSH	787	1410	1700
Volume to Capacity	0.01	0.00	0.10
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.6	0.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	0.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	24.4%	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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frt		1.00			0.98			0.95			1.00	0.85
Flt Protected		1.00			1.00			0.99			0.95	1.00
Satd. Flow (prot)		3523			3456			1747			1776	1583
Flt Permitted		0.88			0.95			0.93			0.72	1.00
Satd. Flow (perm)		3110			3294			1644			1350	1583
Volume (vph)	44	491	2	2	457	85	2	3	3	105	2	58
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)	48	534	2	2	497	92	2	3	3	114	2	63
RTOR Reduction (vph)	0	1	0	0	28	0	0	2	0	0	0	44
Lane Group Flow (vph)	0	583	0	0	563	0	0	6	0	0	116	19
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		10.5			10.5			7.7			7.7	7.7
Effective Green, g (s)		10.5			10.5			7.7			7.7	7.7
Actuated g/C Ratio		0.40			0.40			0.29			0.29	0.29
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1246			1320			483			397	465
v/s Ratio Prot												
v/s Ratio Perm		c0.19			0.17			0.00			c0.09	0.01
v/c Ratio		0.47			0.43			0.01			0.29	0.04
Uniform Delay, d1		5.8			5.7			6.6			7.1	6.6
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.3			0.2			0.0			0.4	0.0
Delay (s)		6.1			5.9			6.6			7.6	6.6
Level of Service		A			A			A			A	A
Approach Delay (s)		6.1			5.9			6.6			7.2	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	26.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.9%	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
Lane Util. Factor		0.95			0.95			1.00			1.00	1.00
Frt		1.00			0.97			0.95			1.00	0.85
Flt Protected		1.00			1.00			0.98			0.95	1.00
Satd. Flow (prot)		3524			3441			1736			1776	1583
Flt Permitted		0.83			0.95			0.91			0.72	1.00
Satd. Flow (perm)		2939			3281			1601			1350	1583
Volume (vph)	73	839	2	2	691	157	3	2	3	105	2	58
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)	79	912	2	2	751	171	3	2	3	114	2	63
RTOR Reduction (vph)	0	0	0	0	34	0	0	2	0	0	0	48
Lane Group Flow (vph)	0	993	0	0	890	0	0	6	0	0	116	15
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)		18.9			18.9			8.7			8.7	8.7
Effective Green, g (s)		18.9			18.9			8.7			8.7	8.7
Actuated g/C Ratio		0.53			0.53			0.24			0.24	0.24
Clearance Time (s)		4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)		3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)		1560			1742			391			330	387
v/s Ratio Prot												
v/s Ratio Perm		c0.34			0.27			0.00			c0.09	0.01
v/c Ratio		0.64			0.51			0.01			0.35	0.04
Uniform Delay, d1		5.9			5.4			10.2			11.1	10.3
Progression Factor		1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2		0.9			0.3			0.0			0.6	0.0
Delay (s)		6.8			5.6			10.2			11.8	10.3
Level of Service		A			A			B			B	B
Approach Delay (s)		6.8			5.6			10.2			11.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	35.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.1%	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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.95			0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	1.00
Satd. Flow (prot)	1770	3537		1770	3369			1730			1775	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.95			0.72	1.00
Satd. Flow (perm)	1770	3537		1770	3369			1661			1347	1583
Volume (vph)	196	523	2	2	498	235	2	2	3	231	2	171
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)	213	568	2	2	541	255	2	2	3	251	2	186
RTOR Reduction (vph)	0	1	0	0	84	0	0	2	0	0	0	121
Lane Group Flow (vph)	213	569	0	2	712	0	0	5	0	0	253	65
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	11.1	30.3		0.8	20.0			21.2			21.2	21.2
Effective Green, g (s)	11.1	30.3		0.8	20.0			21.2			21.2	21.2
Actuated g/C Ratio	0.17	0.47		0.01	0.31			0.33			0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	306	1667		22	1048			548			444	522
v/s Ratio Prot	c0.12	0.16		0.00	c0.21							
v/s Ratio Perm								0.00			c0.19	0.04
v/c Ratio	0.70	0.34		0.09	0.68			0.01			0.57	0.13
Uniform Delay, d1	25.0	10.7		31.4	19.3			14.5			17.8	15.1
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	6.7	0.1		1.8	1.8			0.0			5.2	0.5
Delay (s)	31.7	10.8		33.2	21.1			14.5			23.0	15.6
Level of Service	C	B		C	C			B			C	B
Approach Delay (s)		16.5			21.1			14.5			19.9	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	64.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.7%	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
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.95			0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	3538		1770	3362			1750			1774	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.92			0.72	1.00
Satd. Flow (perm)	1770	3538		1770	3362			1644			1347	1583
Volume (vph)	229	920	2	2	863	434	2	2	2	474	2	316
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)	249	1000	2	2	938	472	2	2	2	515	2	343
RTOR Reduction (vph)	0	0	0	0	67	0	0	1	0	0	0	81
Lane Group Flow (vph)	249	1002	0	2	1343	0	0	5	0	0	517	262
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	12.0	47.4		0.8	36.2			33.0			33.0	33.0
Effective Green, g (s)	12.0	47.4		0.8	36.2			33.0			33.0	33.0
Actuated g/C Ratio	0.13	0.51		0.01	0.39			0.35			0.35	0.35
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	228	1799		15	1306			582			477	561
v/s Ratio Prot	c0.14	0.28		0.00	c0.40							
v/s Ratio Perm								0.00			c0.38	0.17
v/c Ratio	1.09	0.56		0.13	1.03			0.01			1.08	0.47
Uniform Delay, d1	40.6	15.7		45.9	28.5			19.5			30.1	23.3
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	86.4	0.4		4.0	32.4			0.0			65.7	2.8
Delay (s)	127.0	16.1		49.9	60.9			19.5			95.8	26.1
Level of Service	F	B		D	E			B			F	C
Approach Delay (s)		38.1			60.8			19.5			68.0	
Approach LOS		D			E			B			E	

Intersection Summary			
HCM Average Control Delay	54.5	HCM Level of Service	D
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	T	TR	LTR	LT	R
Maximum Queue (ft)	178	70	90	154	154	26	226	76
Average Queue (ft)	103	42	49	95	108	4	155	63
95th Queue (ft)	168	79	83	134	155	19	248	90
Link Distance (ft)		2962	2962	1473	1473	166	3853	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	175							50
Storage Blk Time (%)	0.02			0.46			0.24	0.02
Queuing Penalty (veh)	5			1			41	5

Intersection: 5: SR 28 & National Ave

Movement	EB	EB	WB	WB	SB	SB
Directions Served	LT	TR	LT	TR	LT	R
Maximum Queue (ft)	84	44	94	91	91	31
Average Queue (ft)	60	20	49	44	42	24
95th Queue (ft)	82	40	89	90	84	41
Link Distance (ft)	1837	1837	2619	2619	1279	1279
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 9: Grey Ln & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	52
Average Queue (ft)	34
95th Queue (ft)	50
Link Distance (ft)	536
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Toyon Rd & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	29
Average Queue (ft)	0
95th Queue (ft)	0
Link Distance (ft)	583
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 52

Intersection: 1: SR 28 & SR 267

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	T	TR	T	TR	LTR	LT	R
Maximum Queue (ft)	219	477	452	1029	1016	28	3734	76
Average Queue (ft)	203	406	375	870	859	4	2786	58
95th Queue (ft)	214	479	448	1041	1026	20	3331	105
Link Distance (ft)		2962	2962	1473	1473	166	3853	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	175							50
Storage Blk Time (%)	0.83	0.00		0.62			0.62	0.03
Queuing Penalty (veh)	380	1		1			196	12

Intersection: 5: SR 28 & National Ave

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LTR	LT	R
Maximum Queue (ft)	111	86	224	131	27	91	31
Average Queue (ft)	84	48	79	63	11	55	23
95th Queue (ft)	119	88	183	126	32	94	39
Link Distance (ft)	1837	1837	2619	2619	163	1279	1279
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 9: Grey Ln & National Ave

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	27	54
Average Queue (ft)	24	8
95th Queue (ft)	27	39
Link Distance (ft)	536	208
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Toyon Rd & National Ave

Movement	EB
Directions Served	LR
Maximum Queue (ft)	27
Average Queue (ft)	8
95th Queue (ft)	28
Link Distance (ft)	583
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	-
Queuing Penalty (veh)	

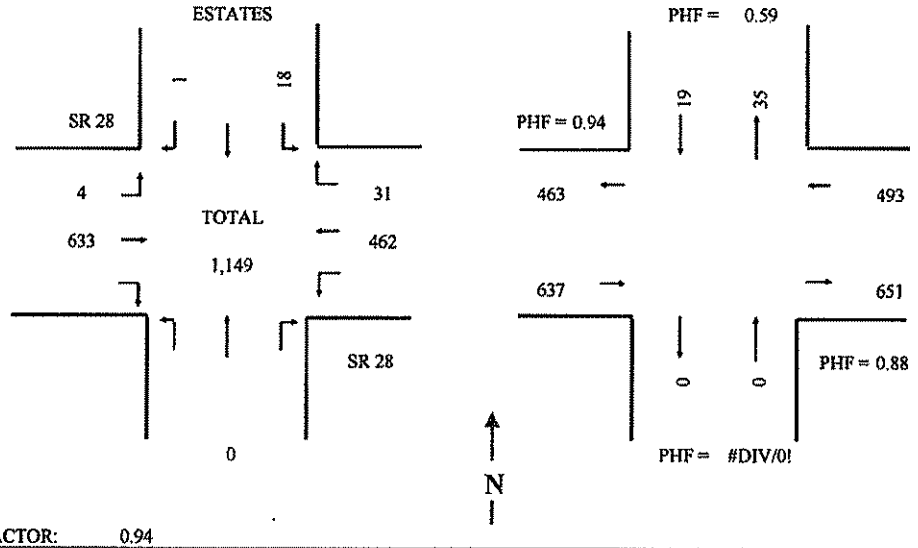
Nework Summary

Network wide Queuing Penalty: 591

FEHR & PEERS ASSOCIATES, INC.
INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	SR 28 / ESTATES	TIME:	4:00 PM to 6:00 PM
JURISDICTION:	TAHOE VISTA	DATE:	THURSDAY 9/1/2005
PROJECT TITLE:		PROJECT NO:	RN03-105

PEAK HOUR PERIOD: 4:30 PM to 5:30 PM
PEAK 15 MINUTE PERIOD: 4:45 PM to 5:00 PM



INTERSECTION
PEAK HOUR FACTOR: 0.94

RUNNING COUNTS	SR 28 Eastbound Left	Thru	Right	SR 28 Westbound Left	Thru	Right	Northbound Left	Thru	Right	ESTATES Southbound Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	0	113			71	3				3		0	190
4:30 PM	1	255			176	8				7		1	448
4:45 PM	1	416			293	14				12		2	738
5:00 PM	2	577			422	25				16		2	1044
5:15 PM	3	746			536	31				17		2	1335
5:30 PM	5	888			638	39				25		2	1597
5:45 PM	5	1022			748	46				26		3	1850
6:00 PM	8	1145			852	55				34		5	2099

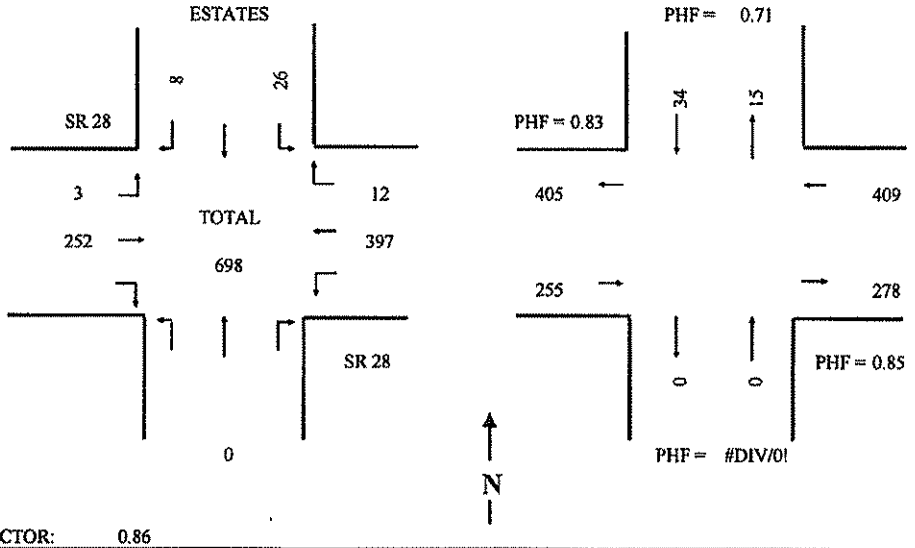
PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:15 PM	0	113			71	3				3		0	190
4:30 PM	1	142			105	5				4		1	258
4:45 PM	0	161			117	6				5		1	290
5:00 PM	1	161			129	11				4		0	306
5:15 PM	1	169			114	6				1		0	291
5:30 PM	2	142			102	8				8		0	262
5:45 PM	0	134			110	7				1		1	253
6:00 PM	3	123			104	9				8		2	249

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
4:00 PM	2	577			422	25				16		2	1044
4:15 PM	3	633			465	28				14		2	1145
4:30 PM	4	633			462	31				18		1	1149
4:45 PM	4	606			455	32				14		1	1112
5:00 PM	6	568			430	30				18		3	1055

FEHR & PEERS ASSOCIATES, INC.
INTERSECTION TURNING MOVEMENT SUMMARY

INTERSECTION:	SR 28 / ESTATES	TIME:	7:00 AM to 9:00 AM
JURISDICTION:	TAHOE VISTA	DATE:	THURSDAY 9/1/2005
PROJECT TITLE:		PROJECT NO:	RN03-105

PEAK HOUR PERIOD: 7:30 AM to 8:30 AM
PEAK 15 MINUTE PERIOD: 7:45 AM to 8:00 AM



INTERSECTION
PEAK HOUR FACTOR: 0.86

RUNNING COUNTS	SR 28 Eastbound Left	Thru	Right	SR 28 Westbound Left	Thru	Right	Northbound Left	Thru	Right	ESTATES Southbound Left	Thru	Right	
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	2	40			75	0				4		0	121
7:30 AM	3	93			170	1				7		3	277
7:45 AM	4	142			273	4				18		4	445
8:00 AM	5	218			391	6				24		4	648
8:15 AM	5	284			474	9				31		5	808
8:30 AM	6	345			567	13				33		11	975
8:45 AM	6	409			669	13				34		12	1143
9:00 AM	7	476			747	16				37		13	1296

PERIOD COUNTS													
Period End	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:15 AM	2	40			75	0				4		0	121
7:30 AM	1	53			95	1				3		3	156
7:45 AM	1	49			103	3				11		1	168
8:00 AM	1	76			118	2				6		0	203
8:15 AM	0	66			83	3				7		1	160
8:30 AM	1	61			93	4				2		6	167
8:45 AM	0	64			102	0				1		1	168
9:00 AM	1	67			78	3				3		1	153

HOURLY TOTALS													
Beginning At	A	B	C	D	E	F	G	H	I	J	K	L	TOTAL
7:00 AM	5	218			391	6				24		4	648
7:15 AM	3	244			399	9				27		5	687
7:30 AM	3	252			397	12				26		8	698
7:45 AM	2	267			396	9				16		8	698
8:00 AM	2	258			356	10				13		9	648

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	3	252	397	12	26	8
Peak Hour Factor	0.83	0.83	0.85	0.85	0.71	0.71
Hourly flow rate (vph)	4	304	467	14	37	11
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	481				785	474
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	481				785	474
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				90	98
cM capacity (veh/h)	1081				360	590

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	307	481	48
Volume Left	4	0	37
Volume Right	0	14	11
cSH	1081	1700	397
Volume to Capacity	0.00	0.28	0.12
Queue Length 95th (ft)	0	0	10
Control Delay (s)	0.1	0.0	15.3
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	15.3
Approach LOS			C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	4	633	462	31	18	1
Peak Hour Factor	0.94	0.94	0.88	0.88	0.59	0.59
Hourly flow rate (vph)	4	673	525	35	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	560				1225	543
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	560				1225	543
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				84	100
cM capacity (veh/h)	1011				197	540

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	678	560	32
Volume Left	4	0	31
Volume Right	0	35	2
cSH	1011	1700	204
Volume to Capacity	0.00	0.33	0.16
Queue Length 95th (ft)	0	0	14
Control Delay (s)	0.1	0.0	26.0
Lane LOS	A		D
Approach Delay (s)	0.1	0.0	26.0
Approach LOS			D

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	46.5%	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
Lane Util. Factor	1.00	0.95			0.95			1.00			1.00	1.00
Frt	1.00	1.00			0.95			0.86			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.95	1.00
Satd. Flow (prot)	1770	3539			3370			1611			1770	1583
Flt Permitted	0.95	1.00			1.00			1.00			0.76	1.00
Satd. Flow (perm)	1770	3539			3370			1611			1407	1583
Volume (vph)	164	438	0	0	413	194	0	0	1	191	0	142
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.25	0.25	0.25	0.93	0.93	0.93
Adj. Flow (vph)	193	515	0	0	582	273	0	0	4	205	0	153
RTOR Reduction (vph)	0	0	0	0	96	0	0	3	0	0	0	105
Lane Group Flow (vph)	193	515	0	0	759	0	0	1	0	0	205	48
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	8.2	28.7			16.5			16.9			16.9	16.9
Effective Green, g (s)	8.2	28.7			16.5			16.9			16.9	16.9
Actuated g/C Ratio	0.15	0.54			0.31			0.32			0.32	0.32
Clearance Time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	271	1895			1037			508			444	499
v/s Ratio Prot	c0.11	0.15			c0.23			0.00				
v/s Ratio Perm											c0.15	0.03
v/c Ratio	0.71	0.27			0.73			0.00			0.46	0.10
Uniform Delay, d1	21.6	6.8			16.6			12.6			14.7	13.0
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	8.5	0.1			2.7			0.0			3.4	0.4
Delay (s)	30.1	6.8			19.3			12.6			18.1	13.3
Level of Service	C	A			B			B			B	B
Approach Delay (s)		13.2			19.3			12.6			16.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	53.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.0%	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)	4	257	414	12	26	14
Peak Hour Factor	0.83	0.83	0.85	0.85	0.71	0.71
Hourly flow rate (vph)	5	310	487	14	37	20
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	501				813	494
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	501				813	494
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				89	97
cM capacity (veh/h)	1063				346	575

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	314	501	56
Volume Left	5	0	37
Volume Right	0	14	20
cSH	1063	1700	402
Volume to Capacity	0.00	0.29	0.14
Queue Length 95th (ft)	0	0	12
Control Delay (s)	0.2	0.0	15.4
Lane LOS	A		C
Approach Delay (s)	0.2	0.0	15.4
Approach LOS			C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	32.5%	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
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.98			0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.95	1.00
Satd. Flow (prot)	1770	1863		1770	3454			1737			1770	1583
Flt Permitted	0.43	1.00		0.44	1.00			1.00			0.76	1.00
Satd. Flow (perm)	792	1863		829	3454			1737			1407	1583
Volume (vph)	36	406	0	1	378	72	0	1	1	96	0	47
Peak-hour factor, PHF	0.90	0.90	0.90	0.75	0.75	0.75	0.50	0.50	0.50	0.77	0.77	0.77
Adj. Flow (vph)	40	451	0	1	504	96	0	2	2	125	0	61
RTOR Reduction (vph)	0	0	0	0	31	0	0	1	0	0	0	44
Lane Group Flow (vph)	40	451	0	1	569	0	0	3	0	0	125	17
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	12.4	12.4		12.4	12.4			8.2			8.2	8.2
Effective Green, g (s)	12.4	12.4		12.4	12.4			8.2			8.2	8.2
Actuated g/C Ratio	0.43	0.43		0.43	0.43			0.29			0.29	0.29
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	343	808		359	1498			498			403	454
v/s Ratio Prot		c0.24			0.16			0.00				
v/s Ratio Perm	0.05			0.00							c0.09	0.01
v/c Ratio	0.12	0.56		0.00	0.38			0.01			0.31	0.04
Uniform Delay, d1	4.8	6.1		4.6	5.5			7.3			8.0	7.4
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.2	0.8		0.0	0.2			0.0			0.4	0.0
Delay (s)	5.0	6.9		4.6	5.7			7.3			8.4	7.4
Level of Service	A	A		A	A			A			A	A
Approach Delay (s)		6.7			5.7			7.3			8.1	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	28.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.7%	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)	1	68	16	67	64	0
Peak Hour Factor	0.56	0.56	0.63	0.63	0.84	0.84
Hourly flow rate (vph)	2	121	25	106	76	0
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	233	76	76			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	233	76	76			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	88	98			
cM capacity (veh/h)	742	985	1523			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	123	132	76
Volume Left	2	25	0
Volume Right	121	0	0
cSH	980	1523	1700
Volume to Capacity	0.13	0.02	0.04
Queue Length 95th (ft)	11	1	0
Control Delay (s)	9.2	1.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.2	1.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	22.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	5	4	88	134	0
Peak Hour Factor	0.58	0.58	0.62	0.62	0.74	0.74
Hourly flow rate (vph)	3	9	6	142	181	0
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	336	181	181			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	336	181	181			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	656	862	1394			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	12	148	181
Volume Left	3	6	0
Volume Right	9	0	0
cSH	791	1394	1700
Volume to Capacity	0.02	0.00	0.11
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.6	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	0.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	17.9%	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
Lane Util. Factor	1.00	0.95			0.95						1.00	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	3539			3362						1770	1583
Flt Permitted	0.95	1.00			1.00						0.76	1.00
Satd. Flow (perm)	1770	3539			3362						1410	1583
Volume (vph)	190	765	0	0	719	359	0	0	0	392	0	263
Peak-hour factor, PHF	0.90	0.90	0.90	0.93	0.93	0.93	0.25	0.25	0.25	0.92	0.92	0.92
Adj. Flow (vph)	211	850	0	0	773	386	0	0	0	426	0	286
RTOR Reduction (vph)	0	0	0	0	95	0	0	0	0	0	0	112
Lane Group Flow (vph)	211	850	0	0	1064	0	0	0	0	0	426	174
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	9.0	35.0			22.0						22.0	22.0
Effective Green, g (s)	9.0	35.0			22.0						22.0	22.0
Actuated g/C Ratio	0.14	0.54			0.34						0.34	0.34
Clearance Time (s)	4.0	4.0			4.0						4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0						3.0	3.0
Lane Grp Cap (vph)	245	1906			1138						477	536
v/s Ratio Prot	c0.12	0.24			c0.32							
v/s Ratio Perm											c0.30	0.11
v/c Ratio	0.86	0.45			0.93						0.89	0.32
Uniform Delay, d1	27.4	9.1			20.8						20.4	16.0
Progression Factor	1.00	1.00			1.00						1.00	1.00
Incremental Delay, d2	25.2	0.2			13.7						21.7	1.6
Delay (s)	52.6	9.3			34.5						42.1	17.6
Level of Service	D	A			C						D	B
Approach Delay (s)		17.9			34.5			0.0			32.3	
Approach LOS		B			C			A			C	

Intersection Summary			
HCM Average Control Delay	28.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
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)	10	776	471	31	18	4
Peak Hour Factor	0.94	0.94	0.88	0.88	0.59	0.59
Hourly flow rate (vph)	11	826	535	35	31	7
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	570				1400	553
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	570				1400	553
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				80	99
cM capacity (veh/h)	1002				153	533

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	836	570	37
Volume Left	11	0	31
Volume Right	0	35	7
cSH	1002	1700	176
Volume to Capacity	0.01	0.34	0.21
Queue Length 95th (ft)	1	0	19
Control Delay (s)	0.3	0.0	30.9
Lane LOS	A		D
Approach Delay (s)	0.3	0.0	30.9
Approach LOS			D

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
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
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	1863		1770	3437			1695			1770	1583
Flt Permitted	0.32	1.00		0.15	1.00			0.89			0.76	1.00
Satd. Flow (perm)	592	1863		282	3437			1544			1407	1583
Volume (vph)	58	693	0	1	571	137	1	0	1	91	0	47
Peak-hour factor, PHF	0.75	0.75	0.75	0.85	0.85	0.85	0.50	0.50	0.50	0.76	0.76	0.76
Adj. Flow (vph)	77	924	0	1	672	161	2	0	2	120	0	62
RTOR Reduction (vph)	0	0	0	0	35	0	0	2	0	0	0	49
Lane Group Flow (vph)	77	924	0	1	798	0	0	2	0	0	120	13
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	26.4	26.4		26.4	26.4			9.4			9.4	9.4
Effective Green, g (s)	26.4	26.4		26.4	26.4			9.4			9.4	9.4
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.21			0.21	0.21
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	357	1123		170	2072			331			302	340
v/s Ratio Prot		c0.50			0.23							
v/s Ratio Perm	0.13			0.00				0.00			c0.09	0.01
v/c Ratio	0.22	0.82		0.01	0.39			0.01			0.40	0.04
Uniform Delay, d1	4.0	6.9		3.5	4.5			13.5			14.8	13.6
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.3	5.0		0.0	0.1			0.0			0.9	0.0
Delay (s)	4.3	11.8		3.5	4.6			13.5			15.6	13.7
Level of Service	A	B		A	A			B			B	B
Approach Delay (s)		11.3			4.6			13.5			15.0	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.7%	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)	0	36	61	97	110	0
Peak Hour Factor	0.50	0.50	0.93	0.93	0.76	0.76
Hourly flow rate (vph)	0	72	66	104	145	0
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	380	145	145			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	380	145	145			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	95			
cM capacity (veh/h)	594	903	1438			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	72	170	145
Volume Left	0	66	0
Volume Right	72	0	0
cSH	903	1438	1700
Volume to Capacity	0.08	0.05	0.09
Queue Length 95th (ft)	6	4	0
Control Delay (s)	9.3	3.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	3.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	5	3	180	129	0
Peak Hour Factor	0.63	0.63	0.89	0.89	0.81	0.81
Hourly flow rate (vph)	0	8	3	202	159	0
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	368	159	159			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	368	159	159			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	630	886	1420			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	206	159
Volume Left	0	3	0
Volume Right	8	0	0
cSH	886	1420	1700
Volume to Capacity	0.01	0.00	0.09
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.1	0.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	0.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	21.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	58	693	0	1	571	137	1	0	1	91	0	47
Peak Hour Factor	0.75	0.75	0.75	0.85	0.85	0.85	0.50	0.50	0.50	0.76	0.76	0.76
Hourly flow rate (vph)	77	924	0	1	672	161	2	0	2	120	0	62
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	833			924			1479	1914	924	1835	1833	416
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	833			924			1479	1914	924	1835	1833	416
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	90			100			97	100	99	0	100	89
cM capacity (veh/h)	796			735			72	60	271	43	68	585

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	77	924	1	448	385	4	120	62
Volume Left	77	0	1	0	0	2	120	0
Volume Right	0	0	0	0	161	2	0	62
cSH	796	1700	735	1700	1700	114	43	585
Volume to Capacity	0.10	0.54	0.00	0.26	0.23	0.04	2.77	0.11
Queue Length 95th (ft)	8	0	0	0	0	3	325	9
Control Delay (s)	10.0	0.0	9.9	0.0	0.0	37.7	998.4	11.9
Lane LOS	B		A			E	F	B
Approach Delay (s)	0.8		0.0			37.7	662.4	
Approach LOS						E	F	

Intersection Summary			
Average Delay	60.0		
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	36	406	0	1	378	72	0	1	1	96	0	47
Peak Hour Factor	0.90	0.90	0.90	0.75	0.75	0.75	0.50	0.50	0.50	0.77	0.77	0.77
Hourly flow rate (vph)	40	451	0	1	504	96	0	2	2	125	0	61
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	600			451			847	1134	451	1089	1086	300
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	600			451			847	1134	451	1089	1086	300
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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 %	96			100			100	99	100	23	100	91
cM capacity (veh/h)	973			1106			225	193	556	163	206	696

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	40	451	1	336	264	4	125	61
Volume Left	40	0	1	0	0	0	125	0
Volume Right	0	0	0	0	96	2	0	61
cSH	973	1700	1106	1700	1700	286	163	696
Volume to Capacity	0.04	0.27	0.00	0.20	0.16	0.01	0.77	0.09
Queue Length 95th (ft)	3	0	0	0	0	1	122	7
Control Delay (s)	8.9	0.0	8.3	0.0	0.0	17.8	76.7	10.7
Lane LOS	A		A			C	F	B
Approach Delay (s)	0.7		0.0			17.8	55.0	
Approach LOS						C	F	

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	3	302	476	14	31	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	328	517	15	34	11
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	533				860	525
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	533				860	525
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				90	98
cM capacity (veh/h)	1035				325	552

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	332	533	45
Volume Left	3	0	34
Volume Right	0	15	11
cSH	1035	1700	362
Volume to Capacity	0.00	0.31	0.12
Queue Length 95th (ft)	0	0	10
Control Delay (s)	0.1	0.0	16.3
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	16.3
Approach LOS			C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	760	554	37	22	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	826	602	40	24	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	642				1459	622
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	642				1459	622
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				83	100
cM capacity (veh/h)	942				142	487

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	832	642	25
Volume Left	5	0	24
Volume Right	0	40	1
cSH	942	1700	146
Volume to Capacity	0.01	0.38	0.17
Queue Length 95th (ft)	0	0	15
Control Delay (s)	0.2	0.0	34.7
Lane LOS	A		D
Approach Delay (s)	0.2	0.0	34.7
Approach LOS			D

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	3	70	17	81	77	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	76	18	88	84	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	210	85	86			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	210	85	86			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	99			
cM capacity (veh/h)	769	974	1510			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	79	107	86
Volume Left	3	18	0
Volume Right	76	0	2
cSH	964	1510	1700
Volume to Capacity	0.08	0.01	0.05
Queue Length 95th (ft)	7	1	0
Control Delay (s)	9.1	1.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	6	5	103	150	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	5	112	163	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	287	164	165			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	287	164	165			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	701	880	1413			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	117	165
Volume Left	2	5	0
Volume Right	7	0	2
cSH	827	1413	1700
Volume to Capacity	0.01	0.00	0.10
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.4	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	0.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	19.5%	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
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.98			0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.95	1.00
Satd. Flow (prot)	1770	1862		1770	3456			1747			1775	1583
Flt Permitted	0.43	1.00		0.37	1.00			0.93			0.72	1.00
Satd. Flow (perm)	800	1862		688	3456			1651			1349	1583
Volume (vph)	43	491	2	2	457	85	2	3	3	107	2	53
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)	47	534	2	2	497	92	2	3	3	116	2	58
RTOR Reduction (vph)	0	0	0	0	28	0	0	2	0	0	0	42
Lane Group Flow (vph)	47	536	0	2	561	0	0	6	0	0	118	16
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	14.4	14.4		14.4	14.4			8.4			8.4	8.4
Effective Green, g (s)	14.4	14.4		14.4	14.4			8.4			8.4	8.4
Actuated g/C Ratio	0.47	0.47		0.47	0.47			0.27			0.27	0.27
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	374	871		322	1616			450			368	432
v/s Ratio Prot		c0.29			0.16							
v/s Ratio Perm	0.06			0.00				0.00			c0.09	0.01
v/c Ratio	0.13	0.62		0.01	0.35			0.01			0.32	0.04
Uniform Delay, d1	4.6	6.1		4.4	5.2			8.2			8.9	8.2
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.2	1.3		0.0	0.1			0.0			0.5	0.0
Delay (s)	4.8	7.4		4.4	5.3			8.2			9.4	8.3
Level of Service	A	A		A	A			A			A	A
Approach Delay (s)		7.2			5.3			8.2			9.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	30.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.0%	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			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.95			0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	3537		1770	3369			1750			1775	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.93			0.72	1.00
Satd. Flow (perm)	1770	3537		1770	3369			1662			1349	1583
Volume (vph)	196	523	2	2	498	235	2	2	2	231	2	171
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)	213	568	2	2	541	255	2	2	2	251	2	186
RTOR Reduction (vph)	0	1	0	0	99	0	0	1	0	0	0	126
Lane Group Flow (vph)	213	569	0	2	697	0	0	5	0	0	253	60
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	8.7	25.6		0.8	17.7			18.1			18.1	18.1
Effective Green, g (s)	8.7	25.6		0.8	17.7			18.1			18.1	18.1
Actuated g/C Ratio	0.15	0.45		0.01	0.31			0.32			0.32	0.32
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	273	1603		25	1055			532			432	507
v/s Ratio Prot	c0.12	0.16		0.00	c0.21							
v/s Ratio Perm								0.00			c0.19	0.04
v/c Ratio	0.78	0.36		0.08	0.66			0.01			0.59	0.12
Uniform Delay, d1	23.0	10.1		27.5	16.8			13.1			16.1	13.6
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	13.4	0.1		1.4	1.6			0.0			5.7	0.5
Delay (s)	36.4	10.2		28.9	18.4			13.1			21.8	14.0
Level of Service	D	B		C	B			B			C	B
Approach Delay (s)		17.3			18.4			13.1			18.5	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	18.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	56.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.7%	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)	5	307	563	14	31	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	334	612	15	34	17
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	627				964	620
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	627				964	620
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				88	96
cM capacity (veh/h)	955				281	488

Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	339	627	51			
Volume Left	5	0	34			
Volume Right	0	15	17			
cSH	955	1700	329			
Volume to Capacity	0.01	0.37	0.16			
Queue Length 95th (ft)	0	0	14			
Control Delay (s)	0.2	0.0	17.9			
Lane LOS	A		C			
Approach Delay (s)	0.2	0.0	17.9			
Approach LOS			C			

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	37	62	117	133	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	40	67	127	145	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	408	146	147			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	408	146	147			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	95			
cM capacity (veh/h)	572	901	1435			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	42	195	147
Volume Left	2	67	0
Volume Right	40	0	2
cSH	876	1435	1700
Volume to Capacity	0.05	0.05	0.09
Queue Length 95th (ft)	4	4	0
Control Delay (s)	9.3	2.9	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	2.9	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	30.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	2	6	4	206	154	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	7	4	224	167	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	401	168	170			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	401	168	170			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	603	876	1408			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	9	228	170
Volume Left	2	4	0
Volume Right	7	0	2
cSH	787	1408	1700
Volume to Capacity	0.01	0.00	0.10
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.6	0.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	0.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	24.0%	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
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.97			0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	1862		1770	3441			1736			1776	1583
Flt Permitted	0.28	1.00		0.15	1.00			0.91			0.72	1.00
Satd. Flow (perm)	523	1862		285	3441			1608			1350	1583
Volume (vph)	67	839	2	2	691	157	3	2	3	105	2	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)	73	912	2	2	751	171	3	2	3	114	2	60
RTOR Reduction (vph)	0	0	0	0	33	0	0	2	0	0	0	47
Lane Group Flow (vph)	73	914	0	2	889	0	0	6	0	0	116	13
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	26.1	26.1		26.1	26.1			9.4			9.4	9.4
Effective Green, g (s)	26.1	26.1		26.1	26.1			9.4			9.4	9.4
Actuated g/C Ratio	0.60	0.60		0.60	0.60			0.22			0.22	0.22
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	314	1117		171	2065			347			292	342
v/s Ratio Prot		c0.49			0.26							
v/s Ratio Perm	0.14			0.01				0.00			c0.09	0.01
v/c Ratio	0.23	0.82		0.01	0.43			0.02			0.40	0.04
Uniform Delay, d1	4.0	6.8		3.5	4.7			13.4			14.6	13.5
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.4	4.8		0.0	0.1			0.0			0.9	0.0
Delay (s)	4.4	11.6		3.5	4.8			13.4			15.5	13.5
Level of Service	A	B		A	A			B			B	B
Approach Delay (s)		11.1			4.8			13.4			14.8	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	43.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.2%	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	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.95			0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.95	1.00
Satd. Flow (prot)	1770	3538		1770	3362			1750			1774	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.93			0.72	1.00
Satd. Flow (perm)	1770	3538		1770	3362			1648			1347	1583
Volume (vph)	229	922	2	2	863	434	2	2	2	474	2	316
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)	249	1002	2	2	938	472	2	2	2	515	2	343
RTOR Reduction (vph)	0	0	0	0	56	0	0	1	0	0	0	66
Lane Group Flow (vph)	249	1004	0	2	1354	0	0	5	0	0	517	277
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	15.0	59.4		0.8	45.2			41.0			41.0	41.0
Effective Green, g (s)	15.0	59.4		0.8	45.2			41.0			41.0	41.0
Actuated g/C Ratio	0.13	0.52		0.01	0.40			0.36			0.36	0.36
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	235	1857		13	1342			597			488	573
v/s Ratio Prot	c0.14	0.28		0.00	c0.40							
v/s Ratio Perm								0.00			c0.38	0.17
v/c Ratio	1.06	0.54		0.15	1.01			0.01			1.06	0.48
Uniform Delay, d1	49.1	17.8		55.9	34.0			23.1			36.1	27.9
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	75.3	0.3		5.5	26.8			0.0			57.4	2.9
Delay (s)	124.4	18.2		61.3	60.8			23.1			93.5	30.8
Level of Service	F	B		E	E			C			F	C
Approach Delay (s)		39.3			60.8			23.1			68.5	
Approach LOS		D			E			C			E	

Intersection Summary			
HCM Average Control Delay	55.0	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	113.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
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)	11	776	563	37	22	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	843	612	40	24	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	652				1499	632
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	652				1499	632
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				82	99
cM capacity (veh/h)	934				133	480

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	855	652	28
Volume Left	12	0	24
Volume Right	0	40	4
cSH	934	1700	149
Volume to Capacity	0.01	0.38	0.19
Queue Length 95th (ft)	1	0	17
Control Delay (s)	0.3	0.0	34.6
Lane LOS	A		D
Approach Delay (s)	0.3	0.0	34.6
Approach LOS			D

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		