Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	524	141	15	430	92	4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	552	148	16	453	97	4
Pedestrians	10			10	10	
Lane Width (ft)	12.0			13.0	14.0	
Walking Speed (ft/s)	4.0			4.0	4.0	
Percent Blockage	1			1	1	
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			710		1130	646
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			710		1130	646
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			98		55	99
cM capacity (veh/h)			849		217	463

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	700	16	453	97	4
Volume Left	0	16	0	97	0
Volume Right	148	0	0	0	4
cSH	1700	849	1700	217	463
Volume to Capacity	0.41	0.02	0.27	0.45	0.01
Queue Length 95th (ft)	0	1	0	53	1
Control Delay (s)	0.0	9.3	0.0	34.3	12.8
Lane LOS		A		D	B
Approach Delay (s)	0.0	0.3		33.4	
Approach LOS				D	

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	7	143	24	1	102	33
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	7	151	25	1	107	35
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			158		134	83
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			158		134	83
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		87	96
cM capacity (veh/h)			1422		844	977

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	158	26	142
Volume Left	0	25	107
Volume Right	151	0	35
cSH	1700	1422	873
Volume to Capacity	0.09	0.02	0.16
Queue Length 95th (ft)	0	1	14
Control Delay (s)	0.0	7.3	9.9
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	9.9
Approach LOS			A

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

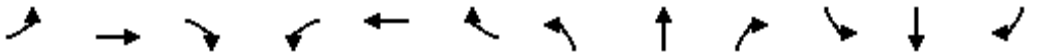
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	525	1	18	432	12	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	553	1	19	455	13	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			554		1046	553
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			554		1046	553
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			98		95	96
cM capacity (veh/h)			897		248	533

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	554	19	455	36
Volume Left	0	19	0	13
Volume Right	1	0	0	23
cSH	1700	897	1700	379
Volume to Capacity	0.33	0.02	0.27	0.09
Queue Length 95th (ft)	0	2	0	8
Control Delay (s)	0.0	9.1	0.0	15.5
Lane LOS		A		C
Approach Delay (s)	0.0	0.4		15.5
Approach LOS				C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

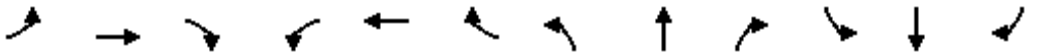
APPENDIX H

CUMULATIVE WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85		0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99			0.98	1.00
Satd. Flow (prot)	1770	3430		1770	3539	1583		1806			1821	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.87			0.56	1.00
Satd. Flow (perm)	1770	3430		1770	3539	1583		1594			1051	1583
Volume (vph)	273	234	61	44	521	266	45	150	36	139	161	458
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	287	246	64	46	548	280	47	158	38	146	169	482
RTOR Reduction (vph)	0	26	0	0	0	250	0	8	0	0	0	270
Lane Group Flow (vph)	287	284	0	46	548	30	0	235	0	0	315	212
Turn Type	Prot			Prot		Over	pm+pt			pm+pt		Over
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases							2			6		
Actuated Green, G (s)	17.5	32.8		2.8	18.1	7.3		16.9			29.6	17.5
Effective Green, g (s)	18.9	34.2		4.2	19.5	8.7		18.3			31.0	18.9
Actuated g/C Ratio	0.23	0.42		0.05	0.24	0.11		0.22			0.38	0.23
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	411	1441		91	848	169		358			483	368
v/s Ratio Prot	c0.16	0.08		0.03	c0.15	0.02					c0.07	0.13
v/s Ratio Perm								0.15			c0.18	
v/c Ratio	0.70	0.20		0.51	0.65	0.18		0.66			0.65	0.58
Uniform Delay, d1	28.6	14.9		37.6	27.8	33.1		28.7			20.8	27.7
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	5.1	0.1		4.4	1.7	0.5		4.3			3.2	2.2
Delay (s)	33.8	15.0		42.0	29.5	33.6		33.0			23.9	29.9
Level of Service	C	B		D	C	C		C			C	C
Approach Delay (s)		24.0			31.5			33.0			27.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	81.4	Sum of lost time (s)	12.0
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	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85		0.97			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.97			0.99	1.00
Satd. Flow (prot)	1770	3465		1770	3539	1583		1746			1850	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.80			0.98	1.00
Satd. Flow (perm)	1770	3465		1770	3539	1583		1452			1818	1583
Volume (vph)	8	337	55	17	529	1	114	12	35	3	18	26
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	355	58	18	557	1	120	13	37	3	19	27
RTOR Reduction (vph)	0	16	0	0	0	1	0	8	0	0	0	13
Lane Group Flow (vph)	8	397	0	18	557	0	0	162	0	0	22	14
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	1.0	13.9		1.2	14.1	14.1		29.3			29.3	29.3
Effective Green, g (s)	2.4	15.3		2.6	15.5	15.5		30.7			30.7	30.7
Actuated g/C Ratio	0.04	0.25		0.04	0.26	0.26		0.51			0.51	0.51
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	70	875		76	905	405		736			921	802
v/s Ratio Prot	0.00	0.11		c0.01	c0.16							
v/s Ratio Perm						0.00		c0.11			0.01	0.01
v/c Ratio	0.11	0.45		0.24	0.62	0.00		0.22			0.02	0.02
Uniform Delay, d1	28.1	19.1		28.0	19.9	16.8		8.3			7.5	7.4
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.7	0.4		1.6	1.3	0.0		0.7			0.0	0.0
Delay (s)	28.8	19.5		29.7	21.2	16.8		9.0			7.5	7.5
Level of Service	C	B		C	C	B		A			A	A
Approach Delay (s)		19.7			21.4			9.0			7.5	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #7 Lake Jennings Rd & El Monte Rd [NT AM PH + P]

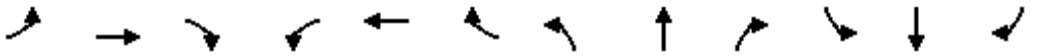
Cycle (sec):	100	Critical Vol./Cap.(X):	0.749
Loss Time (sec):	0	Average Delay (sec/veh):	16.0
Optimal Cycle:	0	Level Of Service:	C

Street Name:	Lake Jennings Rd						El Monte Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Ignore		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	1 1	0	0 1	0 0	1	0 1	0 0	1
Volume Module:												
Base Vol:	144	414	23	18	211	17	60	27	101	40	39	24
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	144	414	23	18	211	17	60	27	101	40	39	24
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00
PHF Volume:	152	436	24	19	222	18	63	28	106	42	41	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	152	436	24	19	222	18	63	28	106	42	41	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	152	436	24	19	222	18	63	28	106	42	41	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.95	0.05	1.00	1.85	0.15	0.69	0.31	1.00	0.51	0.49	1.00
Final Sat.:	558	582	32	469	940	76	324	146	543	231	225	514
Capacity Analysis Module:												
Vol/Sat:	0.27	0.75	0.75	0.04	0.24	0.23	0.20	0.20	0.20	0.18	0.18	0.00
Crit Moves:		****			****				****	****		
Delay/Veh:	11.3	23.1	23.1	10.4	11.5	11.4	11.6	11.6	10.3	11.5	11.5	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.3	23.1	23.1	10.4	11.5	11.4	11.6	11.6	10.3	11.5	11.5	0.0
LOS by Move:	B	C	C	B	B	B	B	B	B	B	B	*
ApproachDel:		20.2			11.4			10.9			11.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		20.2			11.4			10.9			11.5	
LOS by Appr:		C			B			B			B	
AllWayAvgQ:	0.4	2.5	2.5	0.0	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.0

Note: Queue reported is the number of cars per lane.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1738		1863	1583	1770	1863
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1738		1863	1583	1770	1863
Volume (vph)	106	32	568	44	18	397
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	112	34	598	46	19	418
RTOR Reduction (vph)	13	0	0	11	0	0
Lane Group Flow (vph)	133	0	598	35	19	418
Turn Type				pt+ov	Prot	
Protected Phases	8		2	2 8	1	6
Permitted Phases						
Actuated Green, G (s)	11.2		41.9	58.5	10.0	57.3
Effective Green, g (s)	12.6		43.3	59.9	11.4	58.7
Actuated g/C Ratio	0.16		0.55	0.76	0.14	0.74
Clearance Time (s)	5.4		5.4		5.4	5.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	276		1017	1196	254	1379
v/s Ratio Prot	c0.08		c0.32	0.02	0.01	c0.22
v/s Ratio Perm						
v/c Ratio	0.48		0.59	0.03	0.07	0.30
Uniform Delay, d1	30.4		12.0	2.4	29.4	3.4
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3		2.5	0.0	0.6	0.1
Delay (s)	31.7		14.5	2.4	30.0	3.6
Level of Service	C		B	A	C	A
Approach Delay (s)	31.7		13.7			4.7
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.97		1.00	0.98		1.00	1.00	0.85
Flt Protected		0.98	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1826	1583		1757		1770	1818		1770	1863	1583
Flt Permitted		0.98	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1826	1583		1757		1770	1818		1770	1863	1583
Volume (vph)	50	73	238	246	57	72	127	482	92	59	491	57
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	77	251	259	60	76	134	507	97	62	517	60
RTOR Reduction (vph)	0	0	210	0	9	0	0	8	0	0	0	18
Lane Group Flow (vph)	0	130	41	0	386	0	134	596	0	62	517	42
Turn Type	Split		Perm	Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		11.1	11.1		18.7		6.6	30.2		3.1	26.7	26.7
Effective Green, g (s)		12.5	12.5		20.1		8.0	31.6		4.5	28.1	28.1
Actuated g/C Ratio		0.15	0.15		0.24		0.09	0.37		0.05	0.33	0.33
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		269	234		417		167	678		94	618	525
v/s Ratio Prot		c0.07			c0.22		c0.08	c0.33		0.04	0.28	
v/s Ratio Perm			0.03									0.03
v/c Ratio		0.48	0.18		0.93		0.80	0.88		0.66	0.84	0.08
Uniform Delay, d1		33.1	31.6		31.6		37.6	24.8		39.3	26.2	19.4
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.4	0.4		26.2		23.5	12.5		15.5	9.6	0.1
Delay (s)		34.5	32.0		57.8		61.1	37.3		54.8	35.8	19.5
Level of Service		C	C		E		E	D		D	D	B
Approach Delay (s)		32.8			57.8			41.6			36.1	
Approach LOS		C			E			D			D	

Intersection Summary			
HCM Average Control Delay	41.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	84.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.0%	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												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	31	0	278	0	416	549	0	406	559
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	33	0	293	0	438	578	0	427	588
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						13						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											333	
pX, platoon unblocked												
vC, conflicting volume	1012	865	427	865	865	438	427			438		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1012	865	427	865	865	438	427			438		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	88	100	53	100			100		
cM capacity (veh/h)	115	292	627	274	292	619	1132			1122		

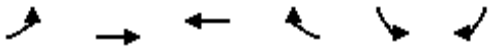
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	325	438	578	427	588
Volume Left	33	0	0	0	0
Volume Right	293	0	578	0	588
cSH	688	1700	1700	1700	1700
Volume to Capacity	0.47	0.26	0.34	0.25	0.35
Queue Length 95th (ft)	64	0	0	0	0
Control Delay (s)	16.3	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	16.3	0.0		0.0	
Approach LOS	C				

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	45.8%	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		Stop			Stop			Stop			Stop	
Volume (vph)	199	380	22	27	0	693	0	87	29	284	32	187
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	209	400	23	28	0	729	0	92	31	299	34	197

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	209	423	28	729	122	333	197
Volume Left (vph)	209	0	28	0	0	299	0
Volume Right (vph)	0	23	0	729	31	0	197
Hadj (s)	0.53	0.00	0.23	-0.57	-0.12	0.21	-0.57
Departure Headway (s)	6.5	5.9	6.7	3.2	6.1	6.0	3.2
Degree Utilization, x	0.38	0.70	0.05	0.65	0.21	0.55	0.17
Capacity (veh/h)	542	587	477	1119	547	579	1121
Control Delay (s)	12.2	20.3	10.0	11.9	10.6	16.1	6.9
Approach Delay (s)	17.6		11.8		10.6	12.6	
Approach LOS	C		B		B	B	

Intersection Summary			
Delay	13.8		
HCM Level of Service	B		
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	86	15	11	30	28	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	91	16	12	32	29	46

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total (vph)	106	43	76
Volume Left (vph)	91	0	29
Volume Right (vph)	0	32	46
Hadj (s)	0.20	-0.41	-0.25
Departure Headway (s)	4.3	3.8	4.0
Degree Utilization, x	0.13	0.05	0.08
Capacity (veh/h)	817	928	868
Control Delay (s)	7.9	6.9	7.3
Approach Delay (s)	7.9	6.9	7.3
Approach LOS	A	A	A

Intersection Summary			
Delay	7.5		
HCM Level of Service	A		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	599	31	0	715	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	631	33	0	753	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				364		
pX, platoon unblocked					0.87	
vC, conflicting volume			663		1023	332
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			663		877	332
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			922		250	664

Direction, Lane #	EB 1	EB 2	WB 1	WB 2
Volume Total	420	243	376	376
Volume Left	0	0	0	0
Volume Right	0	33	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.25	0.14	0.22	0.22
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

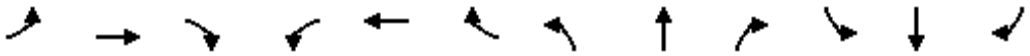
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00	0.97		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.98	1.00		1.00	
Frt	1.00	0.96		1.00	1.00			1.00	0.85		0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3352		1770	3538			1737	1535		1628	
Flt Permitted	0.95	1.00		0.95	1.00			0.75	1.00		0.99	
Satd. Flow (perm)	1770	3352		1770	3538			1373	1535		1618	
Volume (vph)	20	413	166	42	565	1	149	0	22	1	0	9
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	435	175	44	595	1	157	0	23	1	0	9
RTOR Reduction (vph)	0	45	0	0	0	0	0	0	12	0	5	0
Lane Group Flow (vph)	21	565	0	44	596	0	0	157	11	0	5	0
Confl. Peds. (#/hr)			10	10			10		10			
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	3.1	29.5		6.5	32.9			47.8	47.8		47.8	
Effective Green, g (s)	4.5	30.9		7.9	34.3			49.2	49.2		49.2	
Actuated g/C Ratio	0.04	0.31		0.08	0.34			0.49	0.49		0.49	
Clearance Time (s)	5.4	5.4		5.4	5.4			5.4	5.4		5.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	80	1036		140	1214			676	755		796	
v/s Ratio Prot	0.01	c0.17		0.02	c0.17							
v/s Ratio Perm								c0.11	0.01		0.00	
v/c Ratio	0.26	0.55		0.31	0.49			0.23	0.01		0.01	
Uniform Delay, d1	46.1	28.7		43.5	26.0			14.6	13.0		12.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.8	2.1		1.3	0.3			0.2	0.0		0.0	
Delay (s)	47.9	30.8		44.8	26.3			14.7	13.0		13.0	
Level of Service	D	C		D	C			B	B		B	
Approach Delay (s)		31.3			27.5			14.5			13.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	424	12	0	608	0	9
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	446	13	0	640	0	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	205					
pX, platoon unblocked			0.87		0.87	0.87
vC, conflicting volume			459		1093	229
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			228		957	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1163		222	943

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	298	161	640	9
Volume Left	0	0	0	0
Volume Right	0	13	0	9
cSH	1700	1700	1700	943
Volume to Capacity	0.18	0.09	0.38	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	8.9
Lane LOS				A
Approach Delay (s)	0.0		0.0	8.9
Approach LOS				A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	366	67	12	480	1	127	0	34	1	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	385	71	13	505	1	134	0	36	1	0	1

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	194	263	13	506	169	1	1
Volume Left (vph)	1	0	13	0	134	1	0
Volume Right (vph)	0	71	0	1	36	0	1
Hadj (s)	0.04	-0.15	0.53	0.03	0.07	0.53	-0.67
Departure Headway (s)	5.7	5.6	6.2	5.7	6.8	7.9	6.6
Degree Utilization, x	0.31	0.41	0.02	0.80	0.32	0.00	0.00
Capacity (veh/h)	600	630	561	620	497	413	481
Control Delay (s)	10.1	11.1	8.1	26.2	12.9	9.7	8.5
Approach Delay (s)	10.7		25.8		12.9	9.1	
Approach LOS	B		D		B	A	

Intersection Summary				
Delay	17.8			
HCM Level of Service	C			
Intersection Capacity Utilization	48.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	390	5	5	481	0	5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	411	5	5	506	0	5
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			416		930	413
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			416		930	413
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			941		295	639

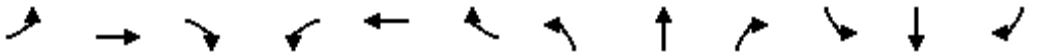
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	416	512	5
Volume Left	0	5	0
Volume Right	5	0	5
cSH	1700	941	639
Volume to Capacity	0.24	0.01	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.2	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	10.7
Approach LOS			B

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	10	0	161	5	0	79
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	0	169	5	0	83
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	172			175	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	255	172			175	
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	100			100	
cM capacity (veh/h)	733	872			1402	

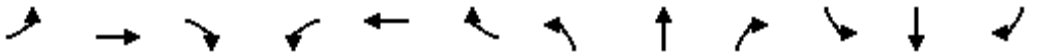
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	175	83
Volume Left	11	0	0
Volume Right	0	5	0
cSH	733	1700	1402
Volume to Capacity	0.01	0.10	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	10.0	0.0	0.0
Approach LOS	A		

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												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85		0.95			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00			0.97	1.00
Satd. Flow (prot)	1770	3484		1770	3539	1583		1766			1809	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.94			0.44	1.00
Satd. Flow (perm)	1770	3484		1770	3539	1583		1668			818	1583
Volume (vph)	394	528	62	48	315	156	18	125	80	257	179	374
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	415	556	65	51	332	164	19	132	84	271	188	394
RTOR Reduction (vph)	0	10	0	0	0	147	0	23	0	0	0	143
Lane Group Flow (vph)	415	611	0	51	332	17	0	212	0	0	459	251
Turn Type	Prot			Prot		Over	pm+pt			pm+pt		Over
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases							2			6		
Actuated Green, G (s)	21.2	33.3		2.9	15.0	7.1		16.8			29.3	21.2
Effective Green, g (s)	22.6	34.7		4.3	16.4	8.5		18.2			30.7	22.6
Actuated g/C Ratio	0.28	0.42		0.05	0.20	0.10		0.22			0.38	0.28
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	490	1480		93	710	165		372			410	438
v/s Ratio Prot	c0.23	c0.18		0.03	0.09	0.01					c0.12	0.16
v/s Ratio Perm								0.13			c0.30	
v/c Ratio	0.85	0.41		0.55	0.47	0.10		0.57			1.12	0.57
Uniform Delay, d1	27.9	16.4		37.8	28.8	33.1		28.3			25.5	25.4
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	12.8	0.2		6.5	0.5	0.3		2.0			81.1	1.8
Delay (s)	40.7	16.6		44.2	29.3	33.4		30.3			106.6	27.2
Level of Service	D	B		D	C	C		C			F	C
Approach Delay (s)		26.2			31.9			30.3			69.9	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM Average Control Delay	41.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	81.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00		1.00			1.00	1.00
Frt	1.00	0.97		1.00	1.00	0.85		0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.98			0.99	1.00
Satd. Flow (prot)	1770	3448		1770	3539	1583		1774			1838	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.87			0.95	1.00
Satd. Flow (perm)	1770	3448		1770	3539	1583		1586			1768	1583
Volume (vph)	29	584	122	16	362	14	56	37	20	8	21	20
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	31	615	128	17	381	15	59	39	21	8	22	21
RTOR Reduction (vph)	0	21	0	0	0	11	0	7	0	0	0	11
Lane Group Flow (vph)	31	722	0	17	381	4	0	112	0	0	30	10
Turn Type	Prot			Prot		Perm	Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2			6		6
Actuated Green, G (s)	2.7	19.1		1.2	17.6	17.6		29.5			29.5	29.5
Effective Green, g (s)	4.1	20.5		2.6	19.0	19.0		30.9			30.9	30.9
Actuated g/C Ratio	0.06	0.31		0.04	0.29	0.29		0.47			0.47	0.47
Clearance Time (s)	5.4	5.4		5.4	5.4	5.4		5.4			5.4	5.4
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	110	1071		70	1019	456		743			828	741
v/s Ratio Prot	c0.02	c0.21		0.01	0.11							
v/s Ratio Perm						0.00		c0.07			0.02	0.01
v/c Ratio	0.28	0.67		0.24	0.37	0.01		0.15			0.04	0.01
Uniform Delay, d1	29.5	19.8		30.7	18.8	16.8		10.0			9.5	9.4
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	1.4	1.7		1.8	0.2	0.0		0.4			0.1	0.0
Delay (s)	31.0	21.5		32.6	19.0	16.8		10.5			9.6	9.4
Level of Service	C	C		C	B	B		B			A	A
Approach Delay (s)		21.9			19.5			10.5			9.5	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM Average Control Delay	19.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	66.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #8 Lake Jennings Rd & El Monte Rd [NT PM PH + P]

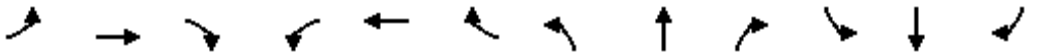
Cycle (sec):	100	Critical Vol./Cap.(X):	0.594
Loss Time (sec):	0	Average Delay (sec/veh):	15.0
Optimal Cycle:	0	Level Of Service:	C

Street Name:	Lake Jennings Rd						El Monte Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Ignore		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	1 1	0	0 1	0 0	1	0 1	0 0	1
Volume Module:												
Base Vol:	88	283	22	24	467	35	43	33	166	56	39	28
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	88	283	22	24	467	35	43	33	166	56	39	28
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00
PHF Volume:	93	298	23	25	492	37	45	35	175	59	41	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	93	298	23	25	492	37	45	35	175	59	41	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	93	298	23	25	492	37	45	35	175	59	41	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.93	0.07	1.00	1.86	0.14	0.57	0.43	1.00	0.59	0.41	1.00
Final Sat.:	493	501	39	473	961	73	257	197	521	253	176	484
Capacity Analysis Module:												
Vol/Sat:	0.19	0.59	0.59	0.05	0.51	0.51	0.18	0.18	0.34	0.23	0.23	0.00
Crit Moves:		****			****				****		****	
Delay/Veh:	11.3	17.7	17.7	10.5	16.1	15.9	11.7	11.7	12.2	12.7	12.7	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.3	17.7	17.7	10.5	16.1	15.9	11.7	11.7	12.2	12.7	12.7	0.0
LOS by Move:	B	C	C	B	C	C	B	B	B	B	B	*
ApproachDel:	16.3			15.8			12.1			12.7		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	16.3			15.8			12.1			12.7		
LOS by Appr:	C			C			B			B		
AllWayAvgQ:	0.2	1.3	1.3	0.1	1.0	0.9	0.2	0.2	0.4	0.3	0.3	0.0

Note: Queue reported is the number of cars per lane.

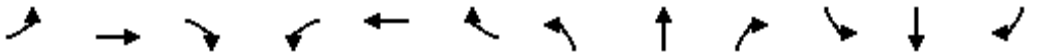
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1745		1863	1583	1770	1863
Flt Permitted	0.96		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1745		1863	1583	1770	1863
Volume (vph)	90	21	487	115	45	732
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	22	513	121	47	771
RTOR Reduction (vph)	11	0	0	30	0	0
Lane Group Flow (vph)	106	0	513	91	47	771
Turn Type				pt+ov	Prot	
Protected Phases	8		2	2 8	1	6
Permitted Phases						
Actuated Green, G (s)	10.2		41.9	57.5	10.0	57.3
Effective Green, g (s)	11.6		43.3	58.9	11.4	58.7
Actuated g/C Ratio	0.15		0.55	0.75	0.15	0.75
Clearance Time (s)	5.4		5.4		5.4	5.4
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Lane Grp Cap (vph)	259		1030	1191	258	1397
v/s Ratio Prot	c0.06		0.28	0.06	0.03	c0.41
v/s Ratio Perm						
v/c Ratio	0.41		0.50	0.08	0.18	0.55
Uniform Delay, d1	30.2		10.8	2.5	29.4	4.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1		1.7	0.0	1.5	0.5
Delay (s)	31.3		12.5	2.6	30.9	4.7
Level of Service	C		B	A	C	A
Approach Delay (s)	31.3		10.6			6.2
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	78.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.5%	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		4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Frt		1.00	0.85		0.98		1.00	0.96		1.00	1.00	0.85
Flt Protected		0.97	1.00		0.96		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1808	1583		1755		1770	1794		1770	1863	1583
Flt Permitted		0.97	1.00		0.96		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		1808	1583		1755		1770	1794		1770	1863	1583
Volume (vph)	64	42	213	182	25	44	185	615	201	75	680	75
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	67	44	224	192	26	46	195	647	212	79	716	79
RTOR Reduction (vph)	0	0	192	0	9	0	0	12	0	0	0	17
Lane Group Flow (vph)	0	111	32	0	255	0	195	847	0	79	716	62
Turn Type	Split		Perm	Split			Prot			Prot		Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)		10.2	10.2		15.4		6.6	32.1		3.1	28.6	28.6
Effective Green, g (s)		11.6	11.6		16.8		8.0	33.5		4.5	30.0	30.0
Actuated g/C Ratio		0.14	0.14		0.20		0.10	0.41		0.05	0.36	0.36
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	5.4
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		255	223		358		172	729		97	678	576
v/s Ratio Prot		c0.06			c0.15		c0.11	c0.47		0.04	0.38	
v/s Ratio Perm			0.02									0.04
v/c Ratio		0.44	0.14		0.71		1.13	1.16		0.81	1.06	0.11
Uniform Delay, d1		32.4	31.0		30.6		37.2	24.5		38.5	26.2	17.3
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		1.2	0.3		6.6		109.1	87.7		38.7	50.3	0.1
Delay (s)		33.6	31.3		37.1		146.3	112.1		77.3	76.5	17.4
Level of Service		C	C		D		F	F		E	E	B
Approach Delay (s)		32.1			37.1			118.4			71.2	
Approach LOS		C			D			F			E	

Intersection Summary			
HCM Average Control Delay	82.2	HCM Level of Service	F
HCM Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	82.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	44	0	203	0	799	542	0	707	337
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	46	0	214	0	841	571	0	744	355
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						13						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)											333	
pX, platoon unblocked	0.68	0.68	0.68	0.68	0.68		0.68					
vC, conflicting volume	1692	1585	744	1585	1585	841	744			841		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2017	1860	624	1860	1860	841	624			841		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	0	100	41	100			100		
cM capacity (veh/h)	12	50	330	38	50	365	652			794		

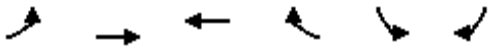
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	260	841	571	744	355
Volume Left	46	0	0	0	0
Volume Right	214	0	571	0	355
cSH	215	1700	1700	1700	1700
Volume to Capacity	1.21	0.49	0.34	0.44	0.21
Queue Length 95th (ft)	328	0	0	0	0
Control Delay (s)	90.4	0.0	0.0	0.0	0.0
Lane LOS	F				
Approach Delay (s)	90.4	0.0		0.0	
Approach LOS	F				

Intersection Summary				
Average Delay	8.5			
Intersection Capacity Utilization	61.3%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	434	663	63	27	0	919	0	105	21	424	56	329
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	457	698	66	28	0	967	0	111	22	446	59	346

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	457	764	28	967	133	505	346
Volume Left (vph)	457	0	28	0	0	446	0
Volume Right (vph)	0	66	0	967	22	0	346
Hadj (s)	0.53	-0.03	0.23	-0.57	-0.07	0.21	-0.57
Departure Headway (s)	7.2	6.6	7.7	3.2	6.9	6.4	3.2
Degree Utilization, x	0.91	1.41	0.06	0.86	0.25	0.89	0.31
Capacity (veh/h)	489	544	433	1115	501	561	1113
Control Delay (s)	47.6	213.1	11.2	21.9	12.3	41.1	7.6
Approach Delay (s)	151.2		21.6		12.3	27.5	
Approach LOS	F		C		B	D	

Intersection Summary			
Delay	72.2		
HCM Level of Service	F		
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Volume (vph)	53	28	28	72	52	93
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	56	29	29	76	55	98

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total (vph)	85	105	153
Volume Left (vph)	56	0	55
Volume Right (vph)	0	76	98
Hadj (s)	0.16	-0.40	-0.28
Departure Headway (s)	4.5	3.9	4.0
Degree Utilization, x	0.11	0.11	0.17
Capacity (veh/h)	769	867	850
Control Delay (s)	8.0	7.4	7.9
Approach Delay (s)	8.0	7.4	7.9
Approach LOS	A	A	A

Intersection Summary			
Delay	7.8		
HCM Level of Service	A		
Intersection Capacity Utilization	26.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	1039	57	0	897	0	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1094	60	0	944	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)				364		
pX, platoon unblocked					0.90	
vC, conflicting volume			1154		1596	577
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1154		1553	577
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			601		94	460

Direction, Lane #	EB 1	EB 2	WB 1	WB 2
Volume Total	729	425	472	472
Volume Left	0	0	0	0
Volume Right	0	60	0	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.43	0.25	0.28	0.28
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				
Approach Delay (s)	0.0		0.0	
Approach LOS				

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

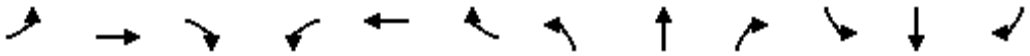
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	14	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00	1.00		1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00			1.00	0.97		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			0.99	1.00		1.00	
Frt	1.00	0.95		1.00	1.00			1.00	0.85		0.87	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1770	3345		1770	3537			1746	1543		1620	
Flt Permitted	0.95	1.00		0.95	1.00			0.73	1.00		0.98	
Satd. Flow (perm)	1770	3345		1770	3537			1345	1543		1597	
Volume (vph)	35	699	305	77	531	2	364	0	54	2	0	35
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	736	321	81	559	2	383	0	57	2	0	37
RTOR Reduction (vph)	0	46	0	0	0	0	0	0	39	0	25	0
Lane Group Flow (vph)	37	1011	0	81	561	0	0	383	18	0	14	0
Confl. Peds. (#/hr)			10	10			10		10			
Turn Type	Prot			Prot			Prot		Perm	Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases									8			
Actuated Green, G (s)	4.4	27.9		8.4	31.9			22.2	22.2		22.2	
Effective Green, g (s)	5.8	29.3		9.8	33.3			23.6	23.6		23.6	
Actuated g/C Ratio	0.08	0.39		0.13	0.45			0.32	0.32		0.32	
Clearance Time (s)	5.4	5.4		5.4	5.4			5.4	5.4		5.4	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	137	1312		232	1577			425	487		505	
v/s Ratio Prot	0.02	c0.30		0.05	c0.16							
v/s Ratio Perm								c0.28	0.01		0.01	
v/c Ratio	0.27	0.77		0.35	0.36			0.90	0.04		0.03	
Uniform Delay, d1	32.5	19.8		29.5	13.6			24.4	17.7		17.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.1	2.9		0.9	0.1			21.8	0.0		0.0	
Delay (s)	33.5	22.6		30.5	13.8			46.2	17.7		17.7	
Level of Service	C	C		C	B			D	B		B	
Approach Delay (s)		23.0			15.9			42.5			17.7	
Approach LOS		C			B			D			B	

Intersection Summary			
HCM Average Control Delay	24.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	74.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	733	22	0	610	0	23
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	772	23	0	642	0	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	205					
pX, platoon unblocked			0.75		0.75	0.75
vC, conflicting volume			795		1425	397
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			400		1237	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	97
cM capacity (veh/h)			870		127	817

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	514	280	642	24
Volume Left	0	0	0	0
Volume Right	0	23	0	24
cSH	1700	1700	1700	817
Volume to Capacity	0.30	0.16	0.38	0.03
Queue Length 95th (ft)	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	9.5
Lane LOS				A
Approach Delay (s)	0.0		0.0	9.5
Approach LOS				A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	2	581	173	18	493	2	116	0	34	1	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	612	182	19	519	2	122	0	36	1	0	2

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total (vph)	308	488	19	521	158	1	2
Volume Left (vph)	2	0	19	0	122	1	0
Volume Right (vph)	0	182	0	2	36	0	2
Hadj (s)	0.04	-0.23	0.53	0.03	0.05	0.53	-0.67
Departure Headway (s)	5.8	5.6	6.6	6.1	7.2	8.5	7.3
Degree Utilization, x	0.50	0.75	0.03	0.88	0.32	0.00	0.00
Capacity (veh/h)	600	634	524	581	477	392	452
Control Delay (s)	13.2	22.2	8.6	37.5	13.6	10.3	9.1
Approach Delay (s)	18.7		36.4		13.6	9.5	
Approach LOS	C		E		B	A	

Intersection Summary				
Delay	24.6			
HCM Level of Service	C			
Intersection Capacity Utilization	48.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	596	5	5	493	0	6
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	627	5	5	519	0	6
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			633		1159	630
vC1, stage 1 conf vol			0			
vC2, stage 2 conf vol			0			
vCu, unblocked vol			633		1159	630
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)			3.1			
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			875		215	482

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	633	524	6
Volume Left	0	5	0
Volume Right	5	0	6
cSH	1700	875	482
Volume to Capacity	0.37	0.01	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.2	12.6
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	12.6
Approach LOS			B

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	10	0	150	0	0	191
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	0	158	0	0	201
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	158			158	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	359	158			158	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	640	887			1422	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	158	201
Volume Left	11	0	0
Volume Right	0	0	0
cSH	640	1700	1422
Volume to Capacity	0.02	0.09	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	10.7	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.7	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	20.1%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX I

TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

COUNT DATE _____
CALC JAT DATE 8/10/14
CHK _____ DATE _____

DIST CO RTE PM

Major St: Olde Hwy. 80
Minor St: Lt. Jenning mktpl. dwy. #2

Critical Approach Speed _____ mph
Critical Approach Speed _____ mph

Speed limit or critical speed on major street traffic > 64 km/h (40 mph)..... ☐ or
In built up area of isolated community of < 10,000 population..... ☐ } RURAL (R)
☐ URBAN (U)

(Based on Estimated Average Daily Traffic - See Note)

URBAN..... RURAL.....

(21363 + 15914)/2 = 18637 Minimum Requirements EADT

dwy 8574/2 = 4287

CONDITION A - Minimum Vehicular Volume

Satisfied ✓ Not Satisfied _____

Number of lanes for moving traffic on each approach		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1	1	8,000	5,600	2,400	1,680
2 or More	1	9,600	6,720	2,400	1,680
2 or More	2 or More	9,600	6,720	3,200	2,240
1	2 or More	8,000	5,600	3,200	2,240

CONDITION B - Interruption of Continuous Traffic

Satisfied _____ Not Satisfied _____

Number of lanes for moving traffic on each approach		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1	1	12,000	8,400	1,200	850
2 or More	1	14,400	10,080	1,200	850
2 or More	2 or More	14,400	10,080	1,600	1,120
1	2 or More	12,000	8,400	1,600	1,120

Combination of CONDITIONS A + B

Satisfied _____ Not Satisfied _____

No one condition satisfied, but following conditions fulfilled 80% or more..... A _____ B _____

2 CONDITIONS 80%

2 CONDITIONS 80%

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 9-4
TRAFFIC SIGNAL WARRANTS

I-8 EB Off Ramp at Old Hwy. 80 / Lt. Jennings
Cumulative w/ Project Conditions

(Based on Estimated Average Daily Traffic - See Note)

URBAN ..... RURAL	Minimum Requirements EADT Old Hwy 80 Lt. Jennings Rt.	
1. Minimum Vehicular Satisfied ✓ Not Satisfied ____	Vehicles per day on major street (total of both approaches) 23,400	Vehicles per day on higher-volume minor street approach (one direction only) 23,700 / 2 = 11,850
Number of lanes for moving traffic on each approach Major Street / Minor Street	Urban / Rural	Urban / Rural
1 / 1	8,000 / 5,600	2,400 / 1,680
2 or more / 1	9,600 / 6,720	2,400 / 1,680
(2 or more) / (2 or more)	(9,600 / 6,720)	(3,200 / 2,240)
1 / 2 or more	8,000 / 5,600	3,200 / 2,240
2. Interuption of Continuous Traffic Satisfied ✓ Not Satisfied ____	Vehicles per day on major street (total of both approaches)	Vehicles per day on higher-volume minor street approach (one direction only)
Number of lanes for moving traffic on each approach Major Street / Minor Street	Urban / Rural	Urban / Rural
1 / 1	12,000 / 8,400	1,200 / 850
2 or more / 1	14,400 / 10,080	1,200 / 850
(2 or more) / (2 or more)	(14,400 / 10,080)	(1,600 / 1,120)
1 / 2 or more	12,000 / 8,400	1,600 / 1,120
3. Combination Satisfied ____ Not Satisfied ____ No one warrant satisfied, but following warrants fulfilled 80% or more ..... ____ (1) ____ (2)	2 Warrants	2 Warrants

NOTE: To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

"diverted" trips are considered in addition to the "primary" amount of trips. In essence, there are an overall 10,992 daily trips at the project's driveways and lesser amount further away at the off-site locations with the reduction of the passer-by and diverted trips. The project's primary trips at the off-site analysis locations include 4,683 daily trips with 203 AM peak hour trips and 464 PM peak hour trips, based on the adjustments of the passer-by and diverted trip reduction.

In other words, the 4,683 "primary" daily trips account for all new trips that travel to and from the project site and does not include trips that are already existing on the roadway network that are just - "passing-by" or "diverting" a short distance to the project site before returning to their original trip route. Therefore, the net impact to the community as a whole consists of the 4.683 daily trips.

Table 1-1
Project Trip Generation

Land Use	Intensity	Units	Rate/ Trips	Daily	AM Peak Hour			PM Peak Hour		
					Total	In	Out	Total	In	Out
Neighborhood Shopping Center*	76100	Square Feet	Rate	120	4%	60%	40%	10%	50%	50%
			Trips	9,132	365	219	146	913	457	457
Gasoline with/Food Mart & Car Wash	12	Fueling Space	Rate	155	8%	50%	50%	9%	50%	50%
			Trips	1,860	149	75	75	167	84	84
Total Primary + Diverted + Passby				**10,992**	**514**	**294**	**221**	**1080**	**541**	**541**
Neighborhood Shopping Center*	78%	Passby Trip Reduction	Rate							
			Trips	7,123	285	171	114	712	356	356
Gasoline with/Food Mart & Car Wash	72%	Passby Trip Reduction	Rate							
			Trips	1,339	107	54	54	120	60	60
Total Primary + Diverted				**8,462**	**392**	**225**	**168**	**832**	**417**	**417**
Neighborhood Shopping Center*	47%	Diverted Trip Reduction	Rate							
			Trips	4,292	172	103	69	429	215	215
Gasoline with/Food Mart & Car Wash	21%	Diverted Trip Reduction	Rate							
			Trips	391	31	16	16	35	18	18
Total Primary				**4,683**	**203**	**119**	**84**	**464**	**232**	**232**

* includes 3 ksf from gas store
Source: SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates
Note: Numbers may not total due to rounding

1.5 TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution and assignment is the process of identifying the probable destinations, directions and traffic routes that project related traffic will likely affect. Trip distribution and assignment information can be estimated from observed traffic patterns, experience or through use of a computerized travel forecast model. Once the proposed developments trips have been estimated, they are assigned to the study area network. The trip distribution and assignment for this project is based on SANDAG's computerized travel forecast model (Series 12 Select Zone analysis). Appendix B contains the select zone model plots.

The trip distribution and assignment for the project-related trips is shown in Figure 1-3. Figure 1-4 shows the project-only daily trips while Figures 1-5 and 1-6 show project-only AM and PM peak hour trips, respectively.

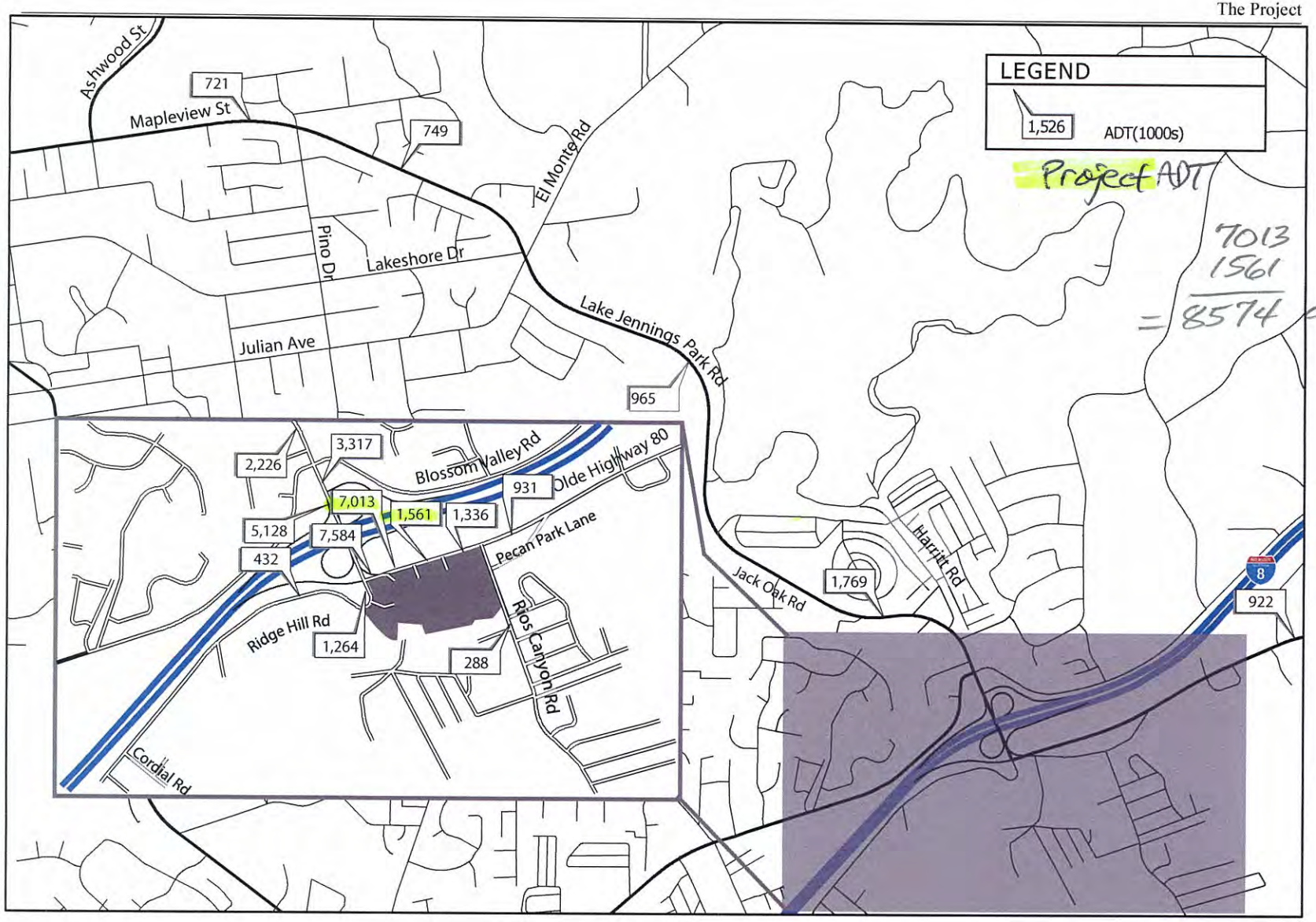
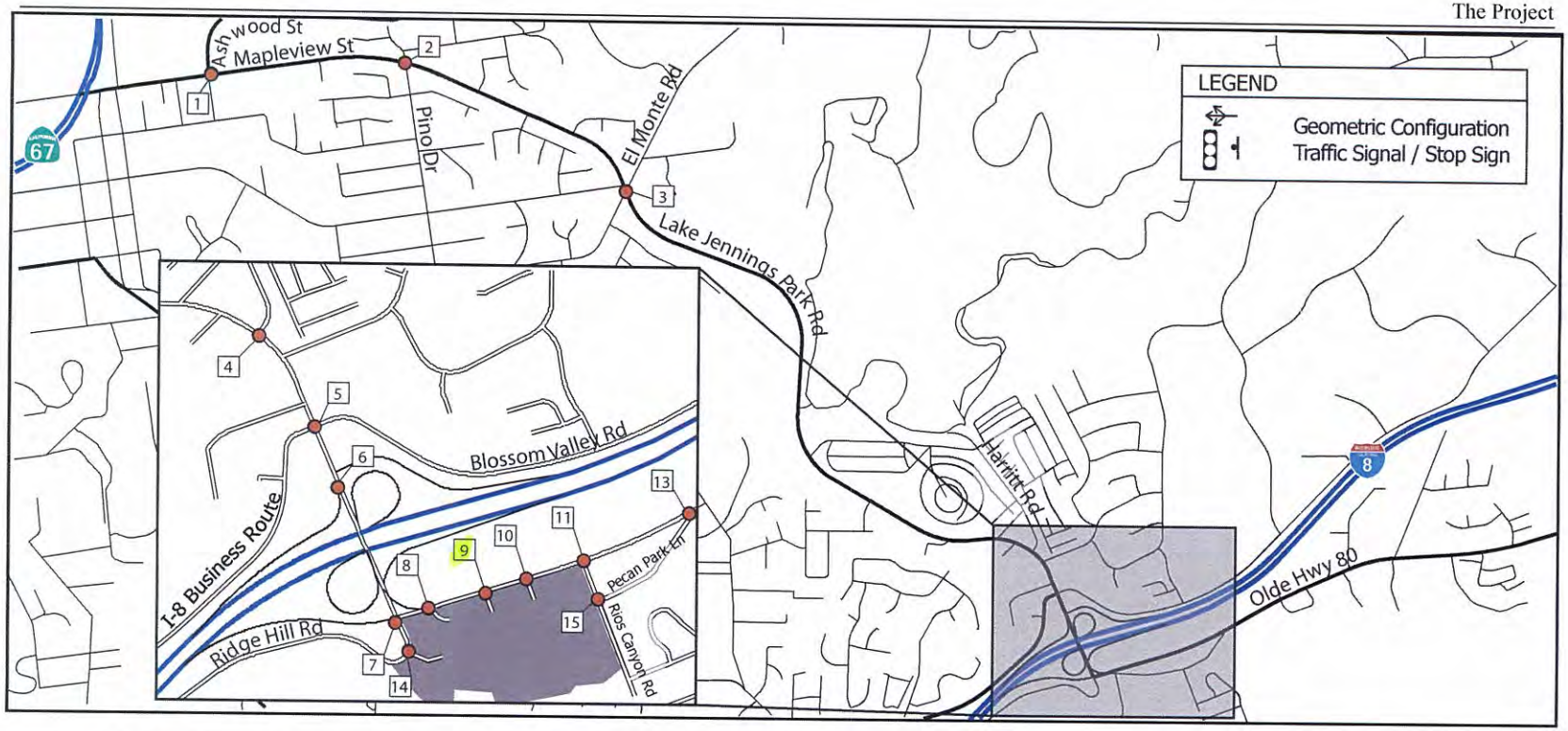
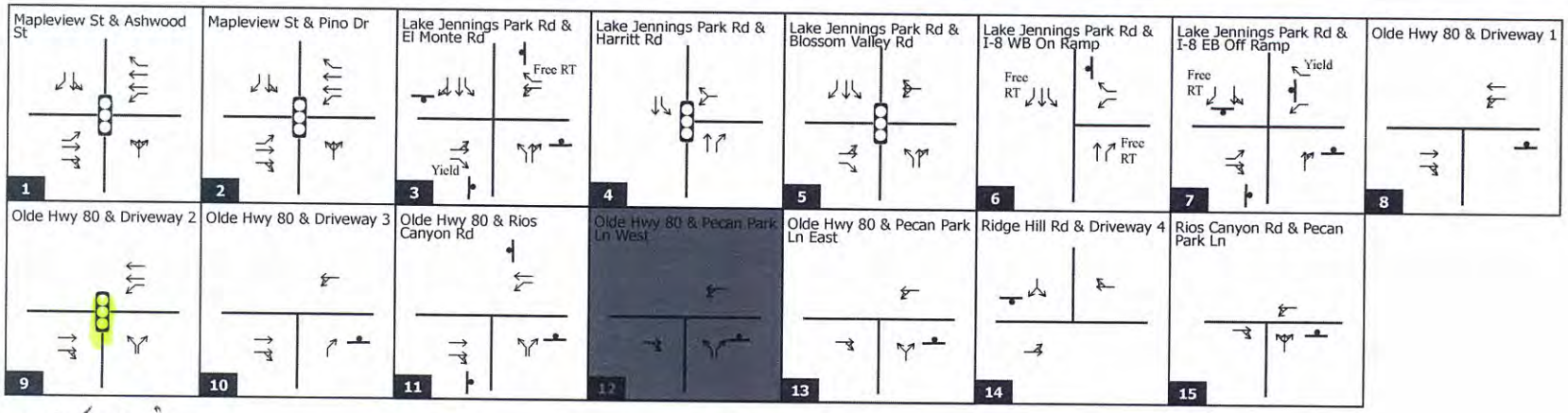


Figure 1-4
Project Daily Roadway Segment Volumes





w/proj.

Figure 3-2
Existing Geometric Configuration

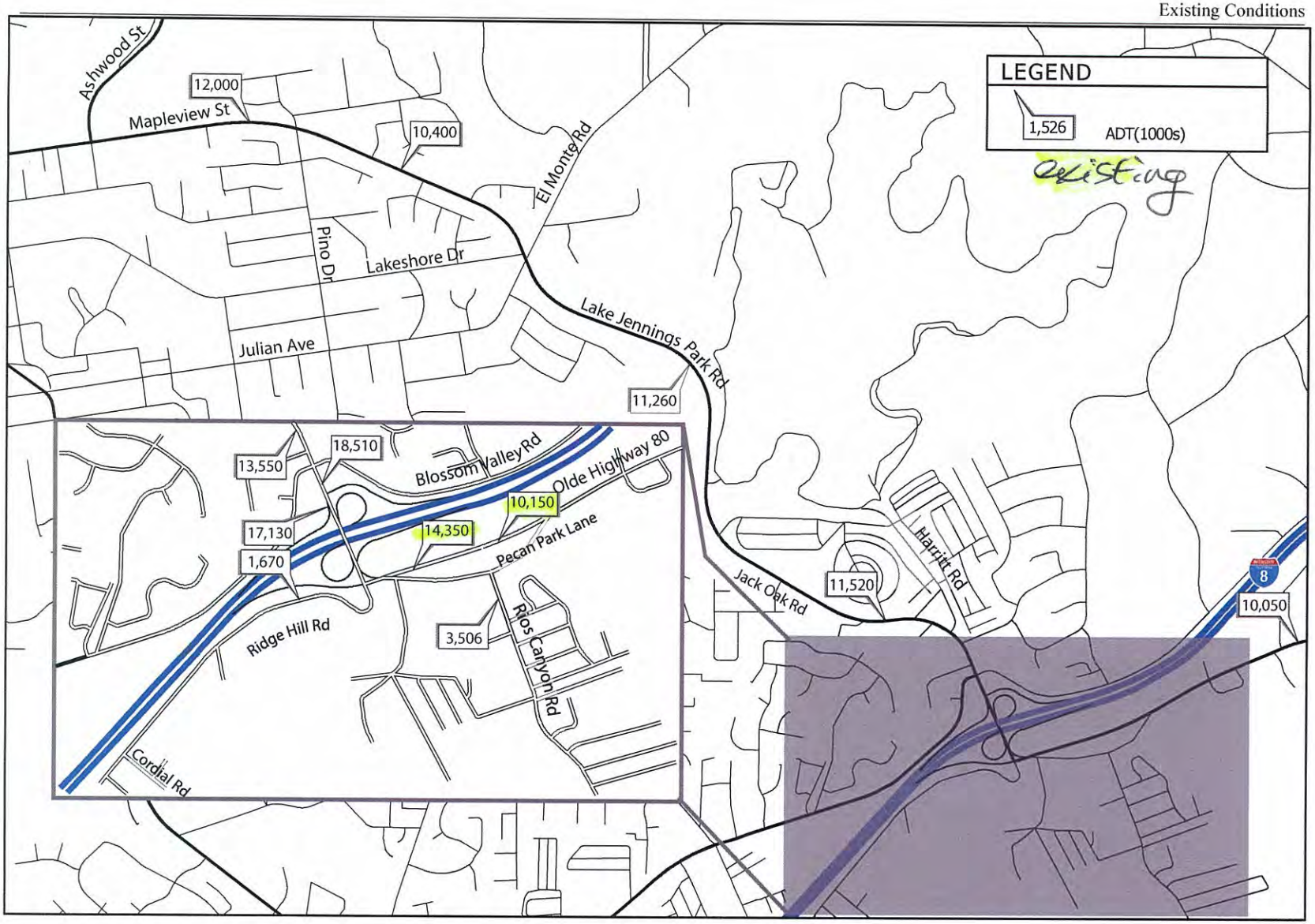


Figure 3-3
Existing Daily Roadway Segment Volumes

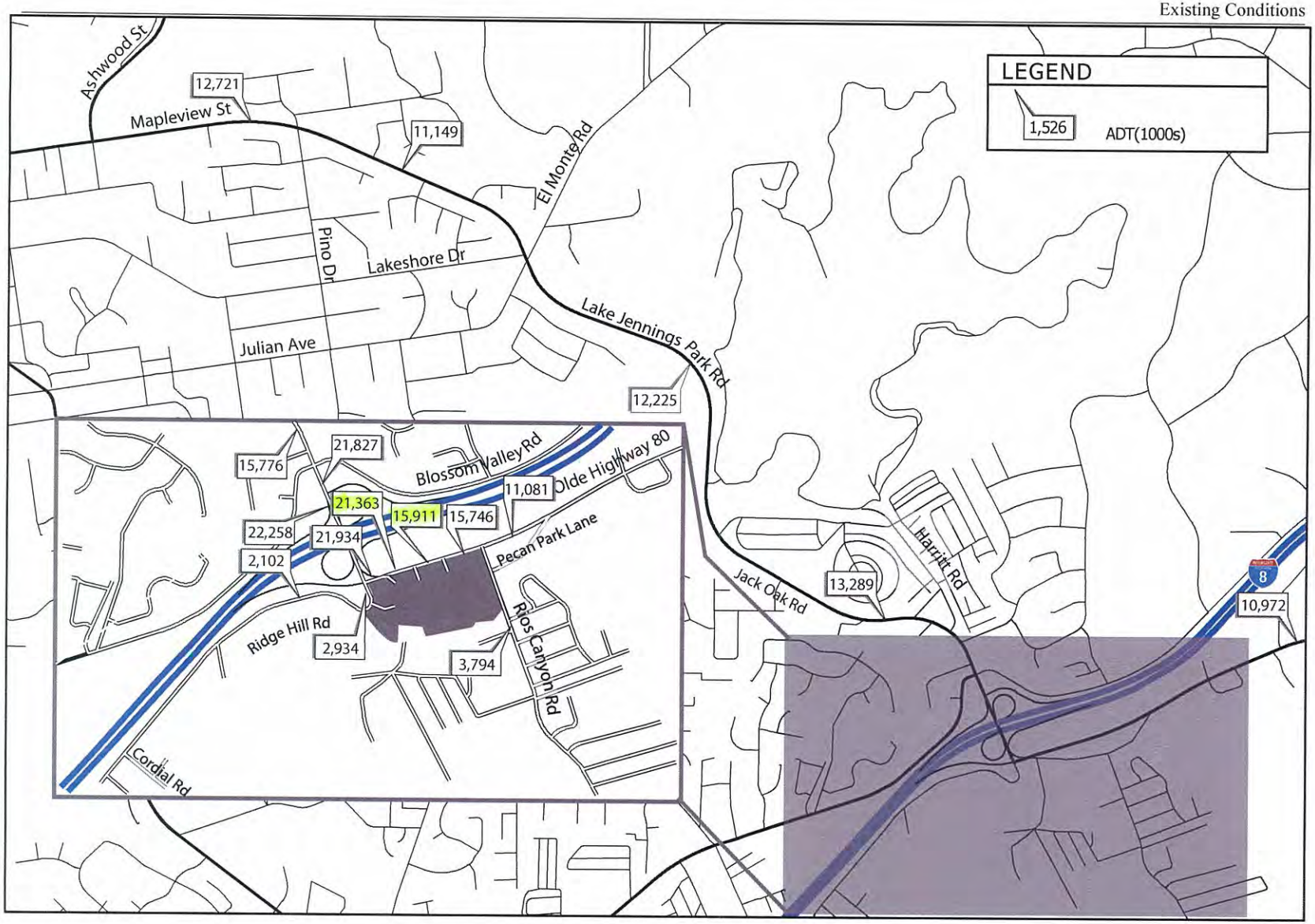
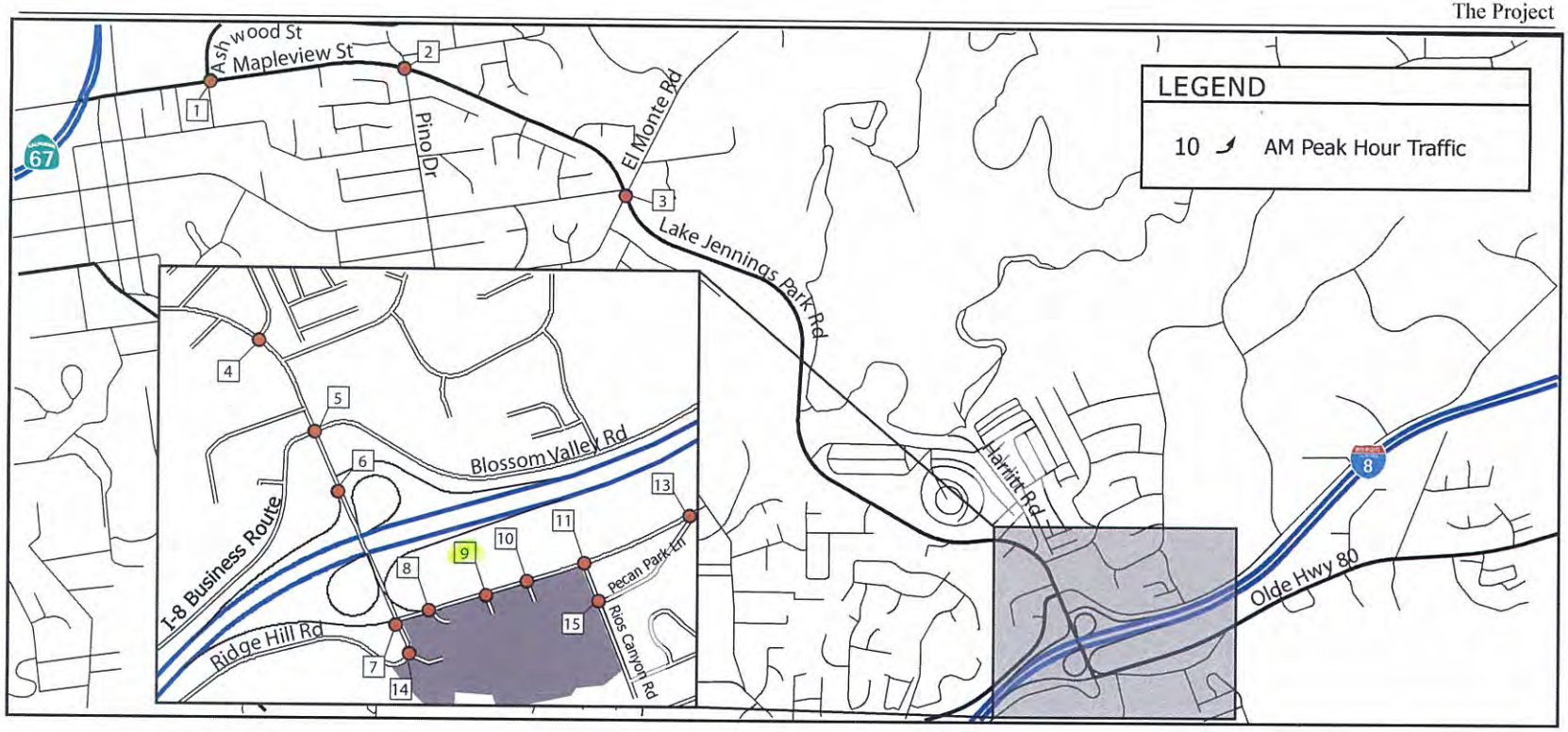


Figure 3-6
Existing With Project Daily Roadway Segment Volumes



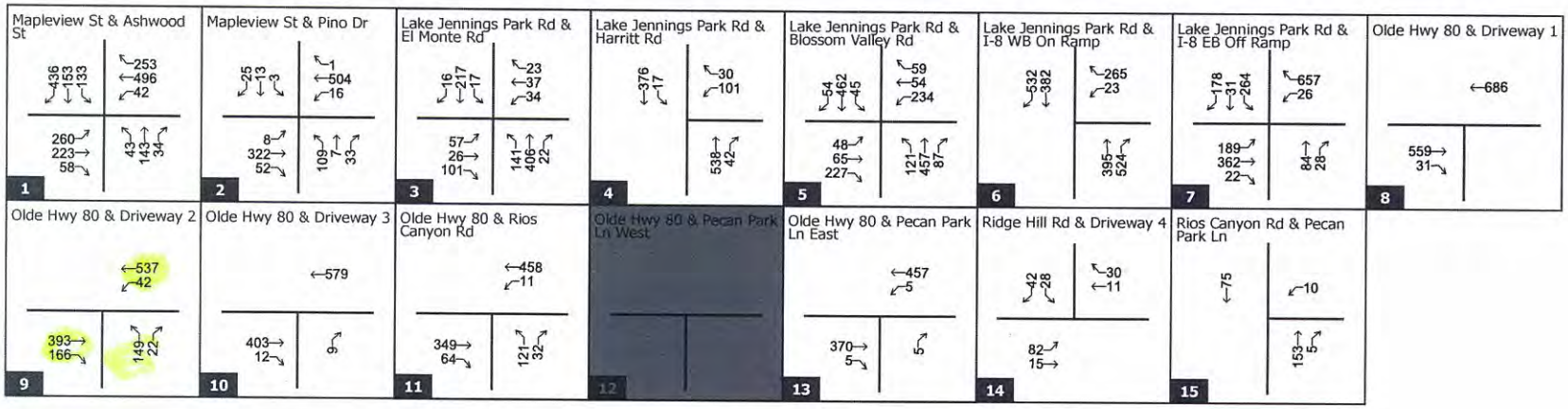
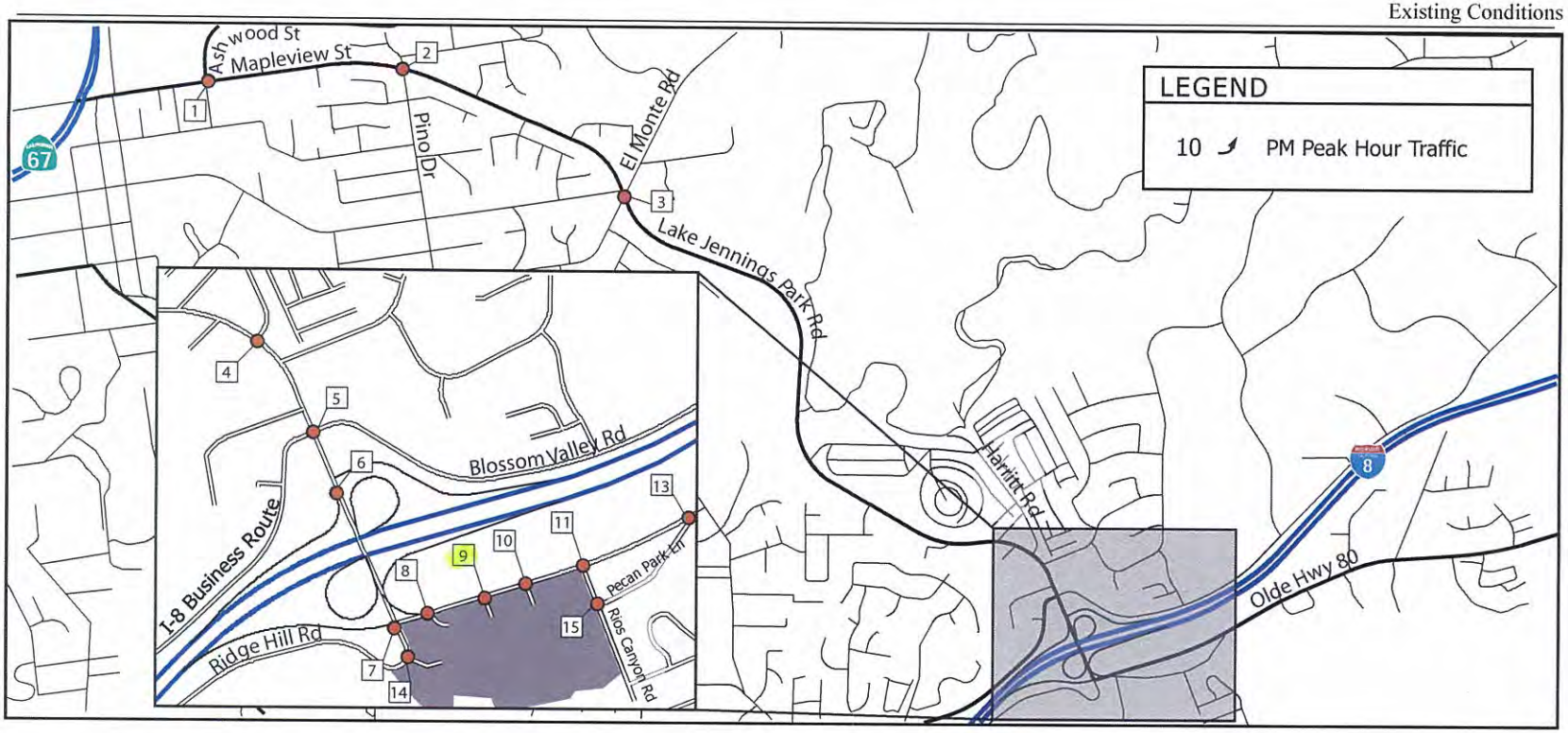


Figure 3-7
Existing With Project AM Peak Hour Intersection Volumes



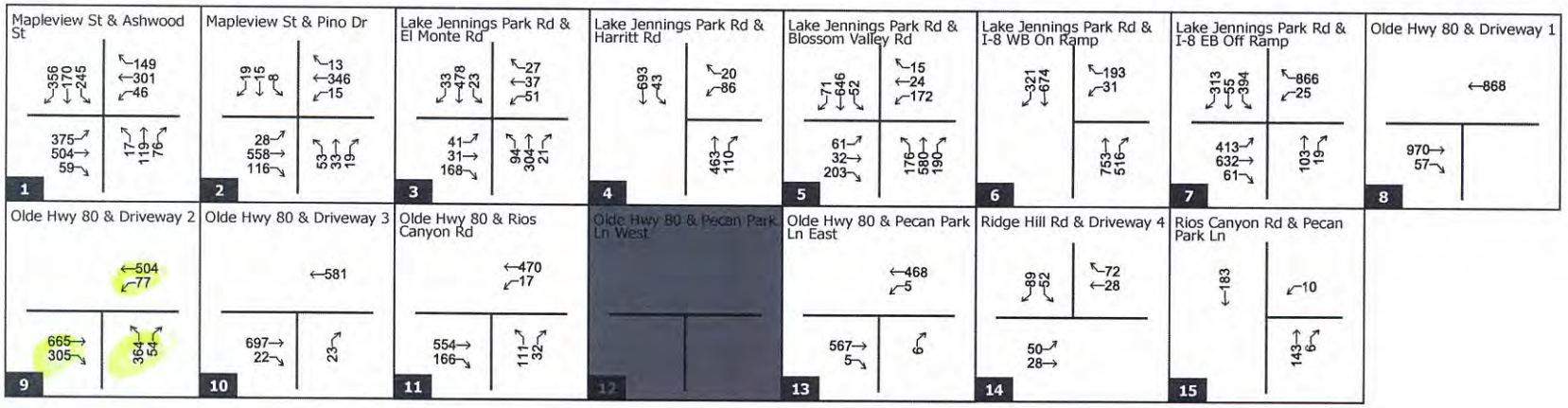


Figure 3-8
Existing With Project PM Peak Hour Intersection Volumes

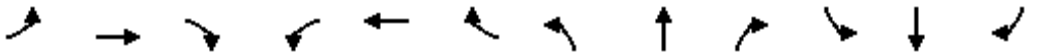
APPENDIX J

TRIP DIVERSION & PASSER BY AREAS

Trip Diversion and Passby Areas

APPENDIX K

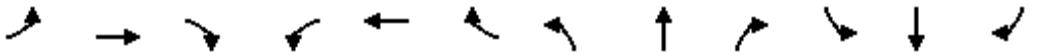
MITIGATIONS MEASURES & RESULTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	23	0	265	0	395	524	0	382	532
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	24	0	279	0	416	552	0	402	560
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						13						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								855			333	
pX, platoon unblocked												
vC, conflicting volume	749	818	201	617	818	208	402			416		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	749	818	201	617	818	208	402			416		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	94	100	65	100			100		
cM capacity (veh/h)	195	309	806	374	309	798	1153			1140		

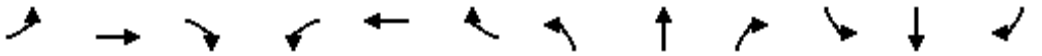
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	303	208	208	552	201	201	560
Volume Left	24	0	0	0	0	0	0
Volume Right	279	0	0	552	0	0	560
cSH	867	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.35	0.12	0.12	0.32	0.12	0.12	0.33
Queue Length 95th (ft)	39	0	0	0	0	0	0
Control Delay (s)	12.2	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	12.2	0.0			0.0		
Approach LOS	B						

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	36.3%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	14	12	12	14	12	15	12
Total Lost time (s)	4.0	4.0		4.0		4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00		0.88		0.95		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00		1.00		0.99		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00		1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00		0.85		0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95		1.00		1.00		0.95	0.96	1.00
Satd. Flow (prot)	1770	1847		1770		2972		3389		1681	1871	1583
Flt Permitted	0.95	1.00		0.95		1.00		1.00		0.95	0.96	1.00
Satd. Flow (perm)	1770	1847		1770		2972		3389		1681	1871	1583
Volume (vph)	189	362	22	26	0	657	0	84	28	264	31	178
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	199	381	23	27	0	692	0	88	29	278	33	187
RTOR Reduction (vph)	0	3	0	0	0	524	0	26	0	0	0	0
Lane Group Flow (vph)	199	401	0	27	0	168	0	91	0	144	167	187
Confl. Peds. (#/hr)				10		10			10	10		
Turn Type	Prot			Prot		Over				Split		Free
Protected Phases	7	4		3		6		2		6	6	
Permitted Phases												Free
Actuated Green, G (s)	23.3	16.9		1.4		12.1		3.7		12.1	12.1	54.1
Effective Green, g (s)	24.3	17.9		2.4		13.1		4.7		13.1	13.1	54.1
Actuated g/C Ratio	0.45	0.33		0.04		0.24		0.09		0.24	0.24	1.00
Clearance Time (s)	5.0	5.0		5.0		5.0		5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	795	611		79		720		294		407	453	1583
v/s Ratio Prot	c0.11	c0.22		0.02		0.06		c0.03		0.09	c0.09	
v/s Ratio Perm												0.12
v/c Ratio	0.25	0.66		0.34		0.23		0.31		0.35	0.37	0.12
Uniform Delay, d1	9.2	15.5		25.1		16.5		23.2		17.0	17.1	0.0
Progression Factor	1.00	1.00		1.00		1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	2.6		2.6		0.2		0.6		0.5	0.5	0.2
Delay (s)	9.4	18.0		27.7		16.6		23.8		17.5	17.6	0.2
Level of Service	A	B		C		B		C		B	B	A
Approach Delay (s)		15.2			17.0			23.8			11.0	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	54.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



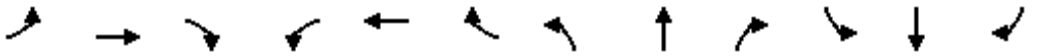
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	36	0	193	0	802	562	0	723	321
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	38	0	203	0	844	592	0	761	338
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						13						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								855			333	
pX, platoon unblocked												
vC, conflicting volume	1285	1605	381	1225	1605	422	761			844		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1285	1605	381	1225	1605	422	761			844		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	72	100	65	100			100		
cM capacity (veh/h)	79	104	617	135	104	580	847			788		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	241	422	422	592	381	381	338
Volume Left	38	0	0	0	0	0	0
Volume Right	203	0	0	592	0	0	338
cSH	688	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.35	0.25	0.25	0.35	0.22	0.22	0.20
Queue Length 95th (ft)	39	0	0	0	0	0	0
Control Delay (s)	18.8	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C						
Approach Delay (s)	18.8	0.0			0.0		
Approach LOS	C						

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	40.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	14	12	12	14	12	15	12
Total Lost time (s)	4.0	4.0		4.0		4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00		0.88		0.95		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00		1.00		1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00		1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00		0.85		0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95		1.00		1.00		0.95	0.96	1.00
Satd. Flow (prot)	1770	1838		1770		2972		3442		1681	1874	1583
Flt Permitted	0.95	1.00		0.95		1.00		1.00		0.95	0.96	1.00
Satd. Flow (perm)	1770	1838		1770		2972		3442		1681	1874	1583
Volume (vph)	413	632	61	25	0	866	0	103	19	394	55	313
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	435	665	64	26	0	912	0	108	20	415	58	329
RTOR Reduction (vph)	0	3	0	0	0	509	0	18	0	0	0	0
Lane Group Flow (vph)	435	726	0	26	0	403	0	110	0	219	254	329
Confl. Peds. (#/hr)				10		10			10	10		
Turn Type	Prot			Prot		Over				Split		Free
Protected Phases	7	4		3		6		2		6	6	
Permitted Phases												Free
Actuated Green, G (s)	38.9	32.1		1.8		14.5		6.2		14.5	14.5	74.6
Effective Green, g (s)	39.9	33.1		2.8		15.5		7.2		15.5	15.5	74.6
Actuated g/C Ratio	0.53	0.44		0.04		0.21		0.10		0.21	0.21	1.00
Clearance Time (s)	5.0	5.0		5.0		5.0		5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	947	816		66		618		332		349	389	1583
v/s Ratio Prot	c0.25	c0.39		0.01		0.14		c0.03		0.13	c0.14	
v/s Ratio Perm												0.21
v/c Ratio	0.46	0.89		0.39		0.65		0.33		0.63	0.65	0.21
Uniform Delay, d1	10.7	19.1		35.1		27.1		31.5		26.9	27.1	0.0
Progression Factor	1.00	1.00		1.00		1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	11.6		3.8		2.5		0.6		3.5	3.9	0.3
Delay (s)	11.1	30.7		38.9		29.5		32.0		30.4	31.0	0.3
Level of Service	B	C		D		C		C		C	C	A
Approach Delay (s)		23.3			29.8			32.0			18.2	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	74.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.0%	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												
Volume (vph)	50	73	238	246	57	72	127	482	92	59	491	57
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		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.97		1.00	0.98		1.00	0.98	
Flt Protected		0.98	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1826	1583		1757		1770	3454		1770	3484	
Flt Permitted		0.98	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1826	1583		1757		1770	3454		1770	3484	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	77	251	259	60	76	134	507	97	62	517	60
RTOR Reduction (vph)	0	0	212	0	9	0	0	18	0	0	9	0
Lane Group Flow (vph)	0	130	39	0	386	0	134	586	0	62	568	0
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		11.0	11.0		19.0		11.2	24.5		4.2	17.5	
Effective Green, g (s)		12.4	12.4		20.4		12.6	25.9		5.6	18.9	
Actuated g/C Ratio		0.15	0.15		0.25		0.16	0.32		0.07	0.24	
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		281	244		446		277	1114		123	820	
v/s Ratio Prot		c0.07			c0.22		c0.08	0.17		0.04	c0.16	
v/s Ratio Perm			0.02									
v/c Ratio		0.46	0.16		0.87		0.48	0.53		0.50	0.69	
Uniform Delay, d1		30.9	29.4		28.6		30.9	22.2		36.0	28.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2	0.3		16.0		1.3	0.5		3.2	2.5	
Delay (s)		32.1	29.7		44.6		32.2	22.6		39.2	30.6	
Level of Service		C	C		D		C	C		D	C	
Approach Delay (s)		30.6			44.6			24.4			31.4	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	80.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

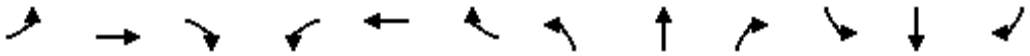
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	31	0	278	0	416	549	0	406	559
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	33	0	293	0	438	578	0	427	588
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						13						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								855			333	
pX, platoon unblocked												
vC, conflicting volume	646	865	214	652	865	219	427			438		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	646	865	214	652	865	219	427			438		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	91	100	63	100			100		
cM capacity (veh/h)	224	290	791	353	290	785	1128			1118		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	325	219	219	578	214	214	588
Volume Left	33	0	0	0	0	0	0
Volume Right	293	0	0	578	0	0	588
cSH	873	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.37	0.13	0.13	0.34	0.13	0.13	0.35
Queue Length 95th (ft)	43	0	0	0	0	0	0
Control Delay (s)	12.7	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	12.7	0.0			0.0		
Approach LOS	B						

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	37.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	199	380	22	27	0	693	0	87	29	287	32	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	14	12	12	14	12	15	12
Total Lost time (s)	5.4	5.4		5.4		5.4		5.4		5.4	5.4	
Lane Util. Factor	0.91	0.91		1.00		0.88		0.95		0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00		0.96		0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00		1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00		0.85		0.96		1.00	1.00	
Flt Protected	0.95	1.00		0.95		1.00		1.00		0.95	0.96	
Satd. Flow (prot)	1610	3356		1770		2864		3387		1681	1872	
Flt Permitted	0.95	1.00		0.95		1.00		1.00		0.95	0.96	
Satd. Flow (perm)	1610	3356		1770		2864		3387		1681	1872	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	209	400	23	28	0	729	0	92	31	302	34	0
RTOR Reduction (vph)	0	5	0	0	0	559	0	28	0	0	0	0
Lane Group Flow (vph)	188	439	0	28	0	170	0	95	0	166	170	0
Confl. Peds. (#/hr)				10		10			10	10		
Turn Type	Split	NA		Prot		Perm		NA		Split	NA	
Protected Phases	2	2		1				8		4	4	
Permitted Phases						4		8				
Actuated Green, G (s)	12.5	12.5		1.4		12.4		5.4		12.4	12.4	
Effective Green, g (s)	12.5	12.5		1.4		12.4		5.4		12.4	12.4	
Actuated g/C Ratio	0.23	0.23		0.03		0.23		0.10		0.23	0.23	
Clearance Time (s)	5.4	5.4		5.4		5.4		5.4		5.4	5.4	
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	377	787		46		666		343		391	435	
v/s Ratio Prot	0.12	c0.13		c0.02				c0.03		c0.10	0.09	
v/s Ratio Perm						0.06						
v/c Ratio	0.50	0.56		0.61		0.25		0.28		0.42	0.39	
Uniform Delay, d1	17.7	18.0		25.7		16.7		22.1		17.4	17.3	
Progression Factor	1.00	1.00		1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.9		20.7		0.2		0.4		0.7	0.6	
Delay (s)	18.7	18.8		46.4		16.9		22.6		18.2	17.8	
Level of Service	B	B		D		B		C		B	B	
Approach Delay (s)		18.8			18.0			22.6			18.0	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	53.3	Sum of lost time (s)	21.6
Intersection Capacity Utilization	56.5%	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												
Volume (vph)	64	42	213	182	25	44	185	615	201	75	680	75
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		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.98		1.00	0.96		1.00	0.99	
Flt Protected		0.97	1.00		0.96		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1808	1583		1755		1770	3408		1770	3486	
Flt Permitted		0.97	1.00		0.96		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1808	1583		1755		1770	3408		1770	3486	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	67	44	224	192	26	46	195	647	212	79	716	79
RTOR Reduction (vph)	0	0	190	0	9	0	0	36	0	0	10	0
Lane Group Flow (vph)	0	111	34	0	255	0	195	823	0	79	785	0
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		9.7	9.7		13.9		8.6	24.4		3.2	19.0	
Effective Green, g (s)		11.1	11.1		15.3		10.0	25.8		4.6	20.4	
Actuated g/C Ratio		0.15	0.15		0.21		0.14	0.35		0.06	0.28	
Clearance Time (s)		5.4	5.4		5.4		5.4	5.4		5.4	5.4	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		275	241		368		243	1207		111	976	
v/s Ratio Prot		c0.06			c0.15		c0.11	0.24		0.04	c0.23	
v/s Ratio Perm			0.02									
v/c Ratio		0.40	0.14		0.69		0.80	0.68		0.71	0.80	
Uniform Delay, d1		27.9	26.7		26.6		30.4	20.0		33.4	24.3	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.0	0.3		5.5		17.2	1.6		19.3	4.9	
Delay (s)		28.8	27.0		32.1		47.6	21.6		52.8	29.2	
Level of Service		C	C		C		D	C		D	C	
Approach Delay (s)		27.6			32.1			26.4			31.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	72.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.2%	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												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	44	0	203	0	799	542	0	707	337
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	46	0	214	0	841	571	0	744	355
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						13						
Median type		None			None							
Median storage veh)												
Upstream signal (ft)								855			333	
pX, platoon unblocked	0.93	0.93	0.93	0.93	0.93		0.93					
vC, conflicting volume	1165	1585	372	1213	1585	421	744			841		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1103	1555	252	1155	1555	421	651			841		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	67	100	63	100			100		
cM capacity (veh/h)	98	104	696	141	104	582	867			790		

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	260	421	421	571	372	372	355
Volume Left	46	0	0	0	0	0	0
Volume Right	214	0	0	571	0	0	355
cSH	708	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.37	0.25	0.25	0.34	0.22	0.22	0.21
Queue Length 95th (ft)	42	0	0	0	0	0	0
Control Delay (s)	19.7	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C						
Approach Delay (s)	19.7	0.0			0.0		
Approach LOS	C						

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	41.3%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	434	663	63	27	0	919	0	105	21	424	56	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	14	12	12	14	12	15	12
Total Lost time (s)	5.4	5.4		5.4		5.4		5.4		5.4	5.4	
Lane Util. Factor	0.91	0.91		1.00		0.88		0.95		0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00		0.96		1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00		1.00		1.00		1.00	1.00	
Frt	1.00	0.99		1.00		0.85		0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95		1.00		1.00		0.95	0.96	
Satd. Flow (prot)	1610	3337		1770		2848		3437		1681	1875	
Flt Permitted	0.95	1.00		0.95		1.00		1.00		0.95	0.96	
Satd. Flow (perm)	1610	3337		1770		2848		3437		1681	1875	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	457	698	66	28	0	967	0	111	22	446	59	0
RTOR Reduction (vph)	0	7	0	0	0	411	0	20	0	0	0	0
Lane Group Flow (vph)	398	816	0	28	0	556	0	113	0	250	255	0
Confl. Peds. (#/hr)				10		10			10	10		
Turn Type	Split	NA		Prot		Perm		NA		Split	NA	
Protected Phases	2	2		1				8		4	4	
Permitted Phases						4		8				
Actuated Green, G (s)	23.6	23.6		1.3		19.0		6.1		19.0	19.0	
Effective Green, g (s)	23.6	23.6		1.3		19.0		6.1		19.0	19.0	
Actuated g/C Ratio	0.33	0.33		0.02		0.27		0.09		0.27	0.27	
Clearance Time (s)	5.4	5.4		5.4		5.4		5.4		5.4	5.4	
Vehicle Extension (s)	3.0	3.0		3.0		3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	530	1099		32		755		292		446	497	
v/s Ratio Prot	c0.25	0.24		c0.02				c0.03		0.15	0.14	
v/s Ratio Perm						c0.20						
v/c Ratio	0.75	0.74		0.88		0.74		0.39		0.56	0.51	
Uniform Delay, d1	21.4	21.3		35.1		24.0		31.0		22.7	22.4	
Progression Factor	1.00	1.00		1.00		1.00		1.00		1.00	1.00	
Incremental Delay, d2	5.9	2.8		107.3		3.7		0.9		1.6	0.9	
Delay (s)	27.3	24.1		142.3		27.8		31.8		24.3	23.3	
Level of Service	C	C		F		C		C		C	C	
Approach Delay (s)		25.1			31.0			31.8			23.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	71.6	Sum of lost time (s)	21.6
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX L

TRAFFIC CONTROL PLAN

Content to be provided

APPENDIX M

DESIGN EXCEPTIONS

County of San Diego

MARK WARDLAW
DIRECTOR
PHONE (858) 694-2962
FAX (858) 694-2555

PLANNING & DEVELOPMENT SERVICES
5510 OVERLAND AVENUE, SUITE 310, SAN DIEGO, CA 92123
www.sdcounty.ca.gov/pds

DARREN GRETLER
ASSISTANT DIRECTOR
PHONE (858) 694-2962
FAX (858) 694-2555

August 17, 2015

South Coast Development, LLC
Attn: Lee Vance
P.O. Box 1053
Solana Beach, CA 92075

REQUEST FOR EXCEPTIONS TO PUBLIC ROAD STANDARDS – "LAKE JENNINGS MARKET PLACE - ***PDS2014-TM-5590"***

Dear Mr. Vance:

Department of Planning & Development Services (PDS) has reviewed your request for a design exception to Public Road Standards dated July 15, 2015. The request is to waive the 300-foot driveway separation requirements of Section 6.1.C.2 for the intersection of Olde Highway 80 and proposed re-alignment of Pecan Park Lane (East) and existing driveways along both sides of Olde Highway 80.

PDS is able to support your request for modification of the above mentioned standard. Adequate sight distance along Olde Highway 80 at the proposed re-alignment of Pecan Park Lane (East) intersection and existing driveways have been certified per Public Road Standards. The request was reviewed and supported by the County of San Diego Department of Public Works, Traffic Engineer section.

If you have any questions or need additional information related to this request, please contact Ed Sinsay, LD Manager at (858) 694-2486.

Sincerely,

DARREN GRETLER, Assistant Director
Planning & Development Services

DG: EMS: SH

cc: PDS2014-TM-5590 File
David Sibbet, PL Project Manager

NATURE OF REQUEST

The Department of Planning & Development Services (PDS) received a Request for Design Exception to Public Road Standards by South Coast Development, LLC for Lake Jennings Market Place, dated July 15, 2015. The request is to waive the 300-foot driveway separation requirements of Section 6.1.C.2.

BACKGROUND:

The proposed project, Lake Jennings Marketplace is a 76,100 square foot commercial shopping center with associated parking, landscaping, and signage. The project includes six buildings on six individual lots. The six buildings include: 43,000 square foot market or grocery store, 4,500 square foot financial building, 3,500 square foot fast food restaurant with drive-through, 43,800 square foot pad for gas station with a car wash, 9,600 square foot restaurant/retail building, and 12,500 square foot restaurant/retail building. The project also includes an open space easement along the southern property boundary to include the Los Coches Creek and associated buffer.

The project site is located off of Olde Highway 80 near Lake Jennings Park Road in the Lakeside Community Planning area, within unincorporated San Diego County. The project proposes four access points: one from Ridge Hill Road located on the west side of the project, a right-in only approximately 200 feet east from Lake Jennings Park Road, a full signalized intersection entry half way along the project frontage, and a second non-signalized entry near the northeast corner of the property.

Applicant's request is based on the following:

1. There are numerous existing driveways on both sides of Olde Highway 80 within 300 feet of the proposed re-alignment of Pecan Park Lane (East) connecting to Olde Highway 80 that do not meet 300 foot separation.

2. The Engineer of Work (EOW) has certified adequate unobstructed sight distance in both directions along Olde Highway 80 from the intersection of the proposed re-alignment of Pecan Park Lane (East) per Section 6.1 Table 5 of the County Public Road Standards, dated July 16, 2015 by Stuart Peace.

3. The design exception request is based on the project applicant's desire to limit impacts to the community during the construction time of the project. Pecan Park Lane (West) will be closed and traffic will be temporarily routed to Pecan Park Lane (East). In recognition of the acute angle that Pecan Park Lane (East) intersects with Olde Highway 80, the applicant is re-aligning Pecan Park Lane (East) such that it intersects Olde Highway 80 in a more standard configuration during the time that traffic is temporarily routed to Pecan Park Lane (East).

PROJECT MANAGEMENT TEAM REVIEW:
It is recommended that the Director of Planning & Services support this request. Decision is based upon the following:

1. County Public Road Standards Section 6.7.I.5 indicates: "Along County maintained roads, driveway separation from other driveways and roads shall conform to Section 6.1.C.1 and Section 6.1.C.2. The proposed driveway will be considered a non-Mobility Element road. If conformance with Section 6.1.C.1 and Section 6.1.C.2 cannot be achieved because of factors such as limited property frontage, topography, or available sight distance, then a modification of this standard may be granted provided the proposed driveway is located at the location which would cause the least traffic impact." County Public Road Standards Section 6.1.C.2 indicates: "Minimum distance between roads entering into other roads shall be as follows: 1. Non-Mobility Element roads entering into a Mobility Element road shall have their centerlines separated by at least 300 feet."

2. The project provides adequate sight distance from the proposed re-alignment of Pecan Park Lane (East) intersection in both directions along Olde Highway 80.

3. County of San Diego - Traffic Engineer section has reviewed and supported the request.

4. PDS Project Planning Manager, David Sibbet, concurs with the applicant's request.

RECOMMENDATION:
The Project Team recommends supporting the applicant's request.

Request Recommended/
Not Recommended:

Edwin M. Sinsay Date: 8/20/15
EDWIN M. SINSAY

Request Recommended/
Not Recommended:

Darren M. Gretler Date: 8/24/2015
DARREN M. GRETLER