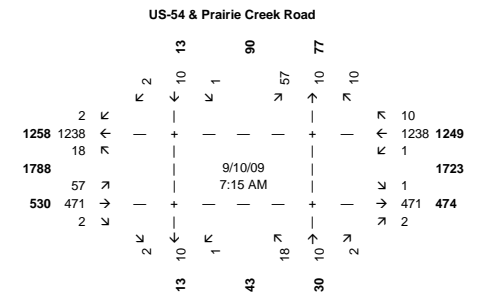
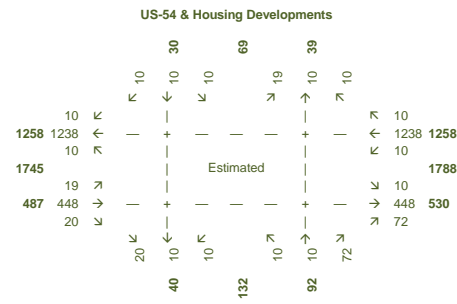
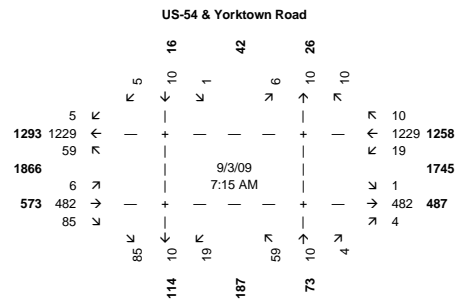
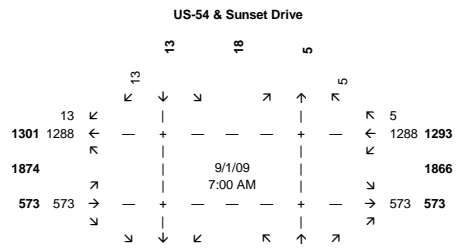


Traffic Analysis





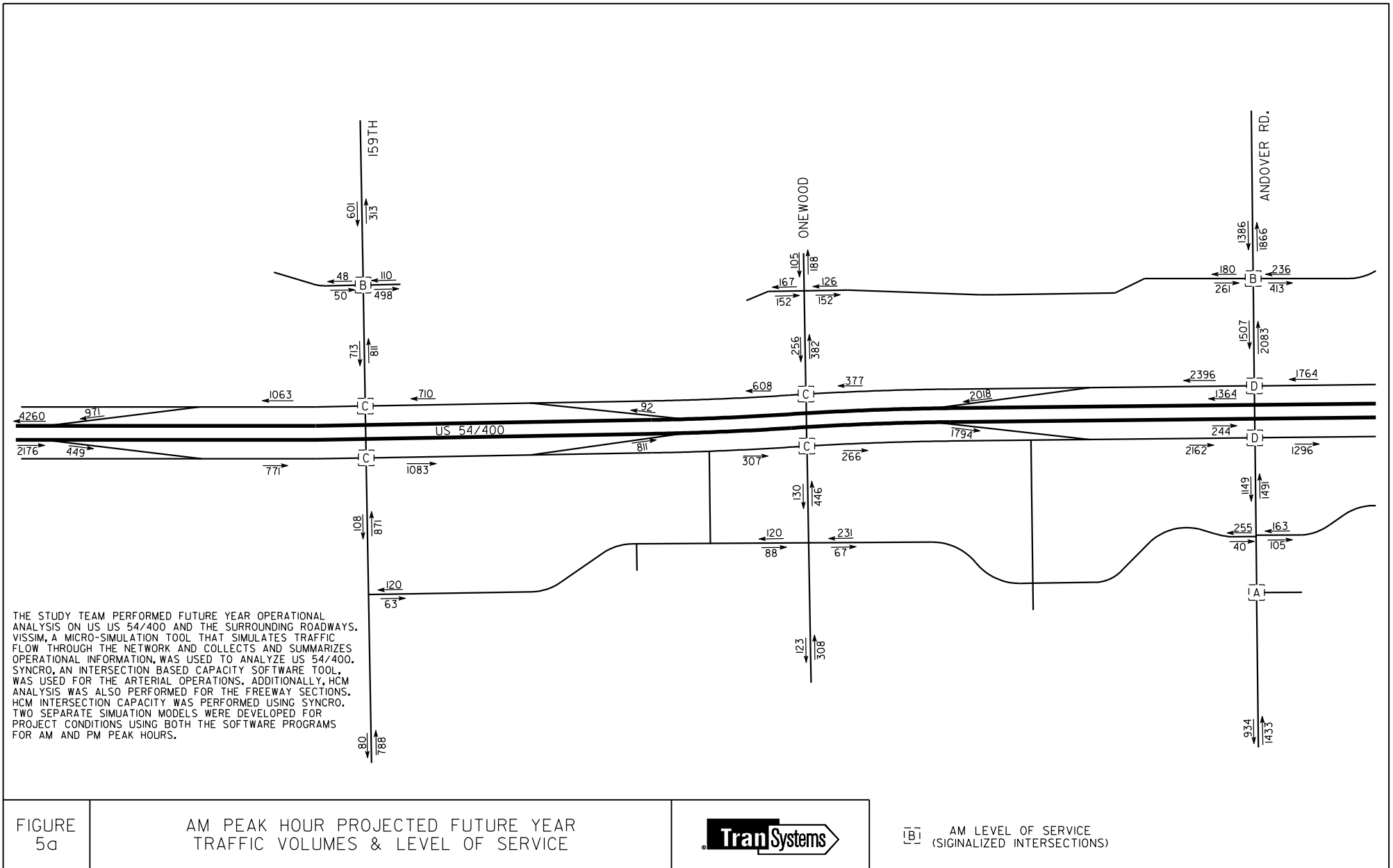


FIGURE 5a

AM PEAK HOUR PROJECTED FUTURE YEAR TRAFFIC VOLUMES & LEVEL OF SERVICE



[B] AM LEVEL OF SERVICE (SIGNALIZED INTERSECTIONS)

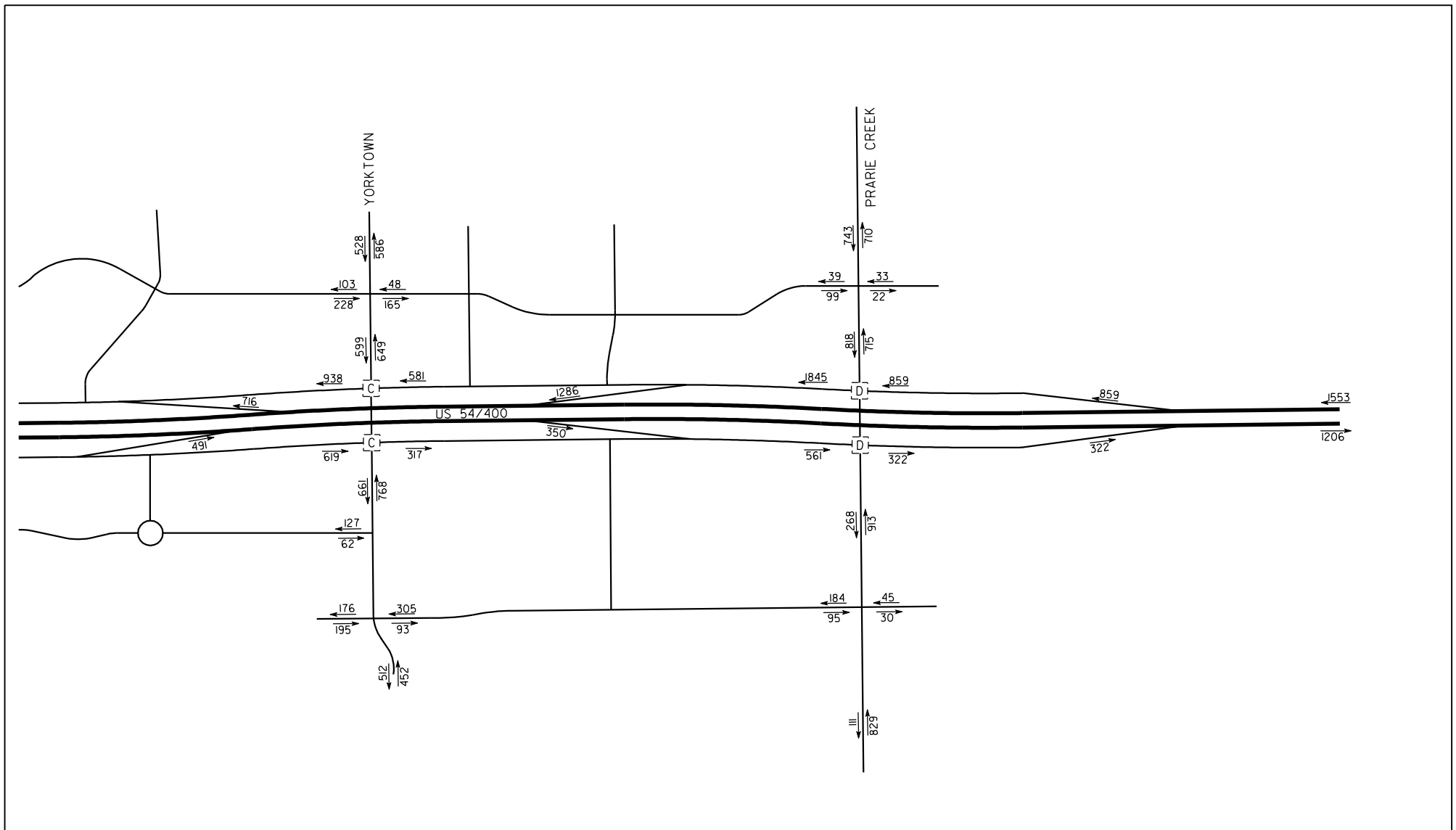


FIGURE 5b

AM PEAK HOUR PROJECTED FUTURE YEAR TRAFFIC VOLUMES & LEVEL OF SERVICE



[C] AM LEVEL OF SERVICE (SIGNALIZED INTERSECTIONS)

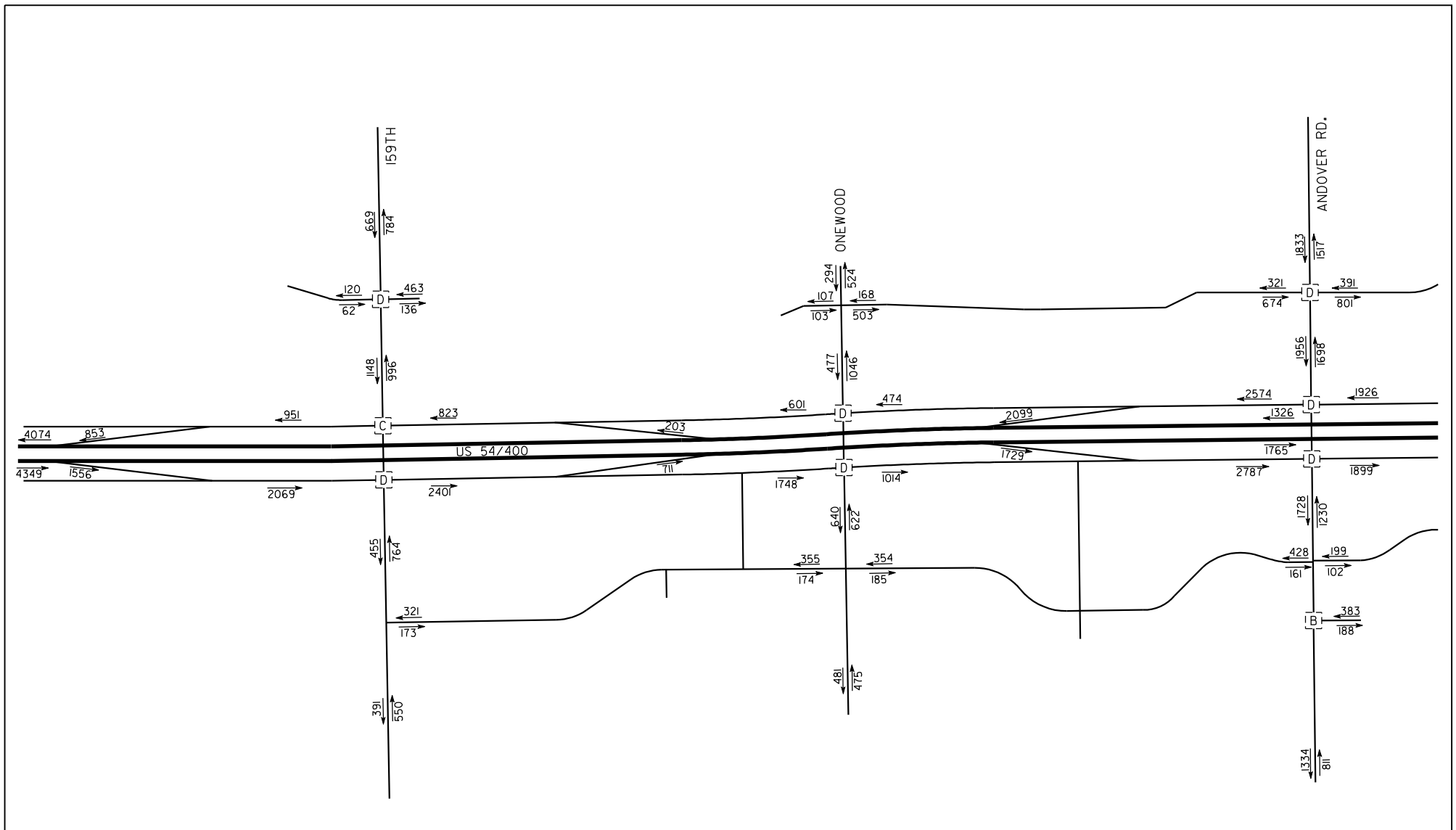


FIGURE 6a

PM PEAK HOUR PROJECTED FUTURE YEAR TRAFFIC VOLUMES & LEVEL OF SERVICE



[B] PM LEVEL OF SERVICE (SIGNALIZED INTERSECTIONS)

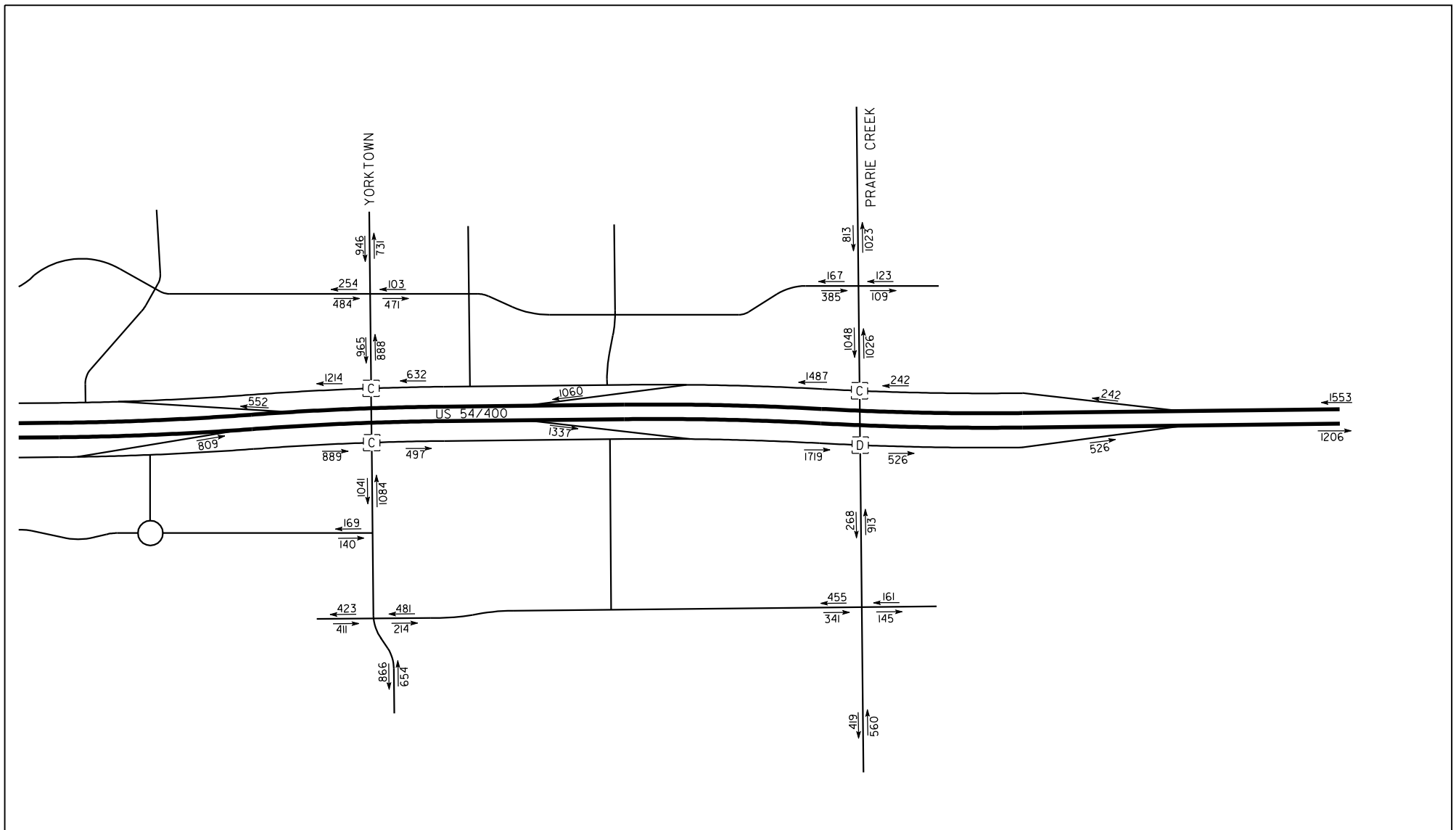


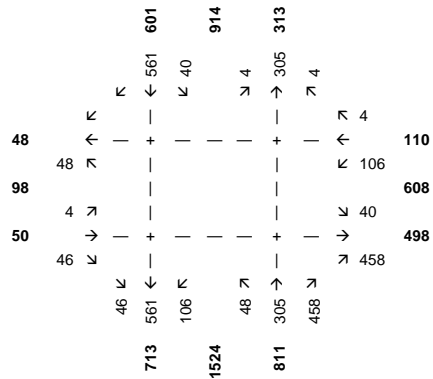
FIGURE 6b

PM PEAK HOUR PROJECTED FUTURE YEAR TRAFFIC VOLUMES & LEVEL OF SERVICE

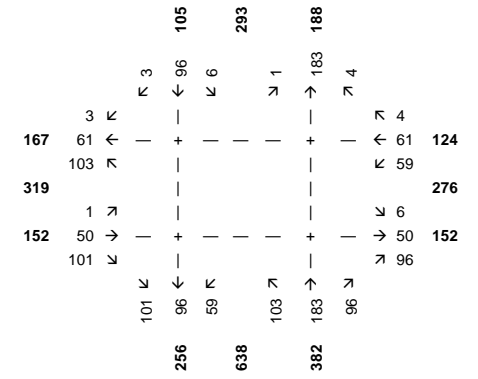


B PM LEVEL OF SERVICE (SIGNALIZED INTERSECTIONS)

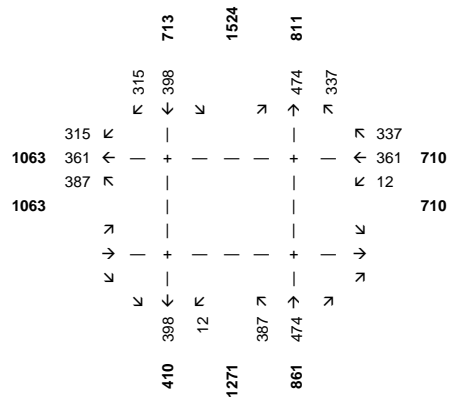
Willowbrook & 159th Street



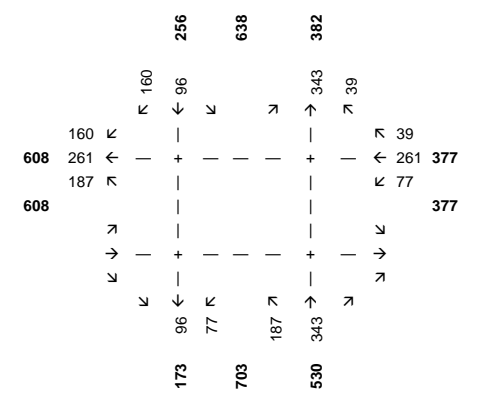
N Backage Rd & Onewood

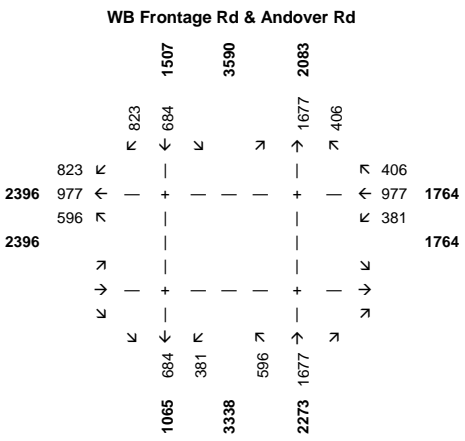
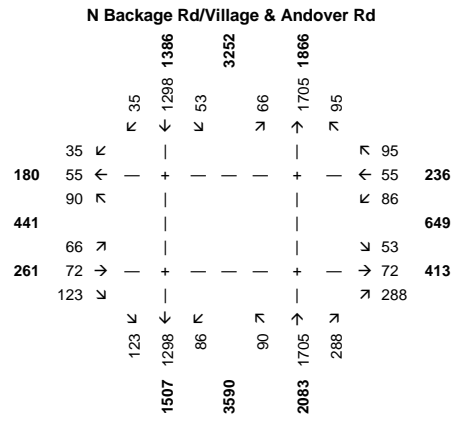
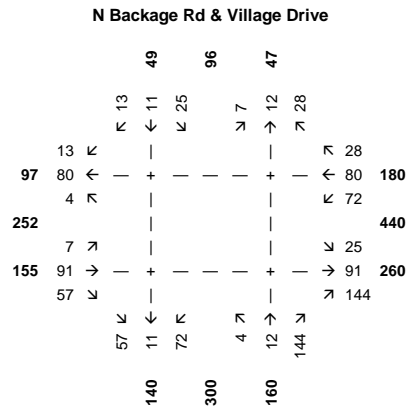
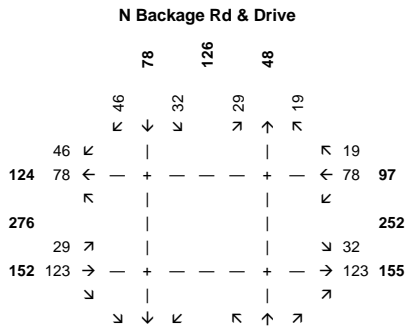


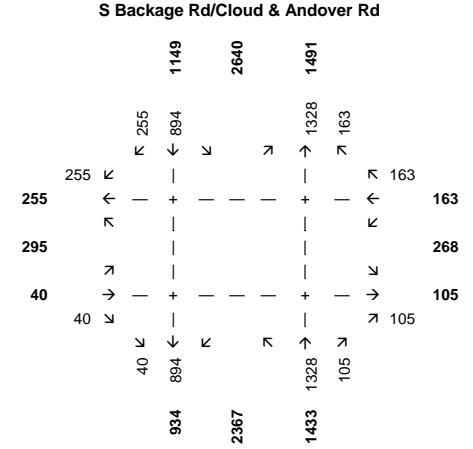
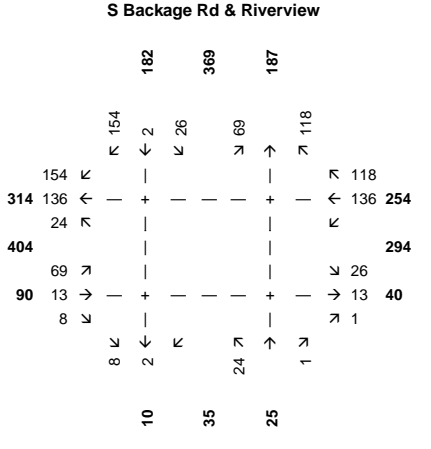
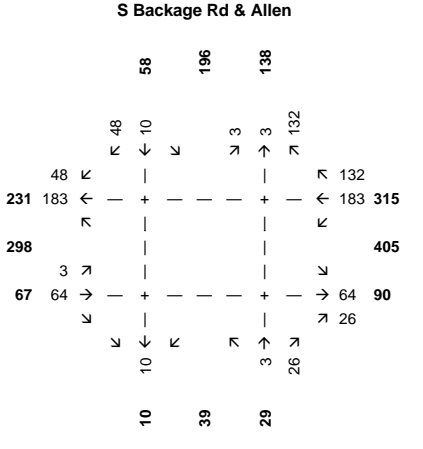
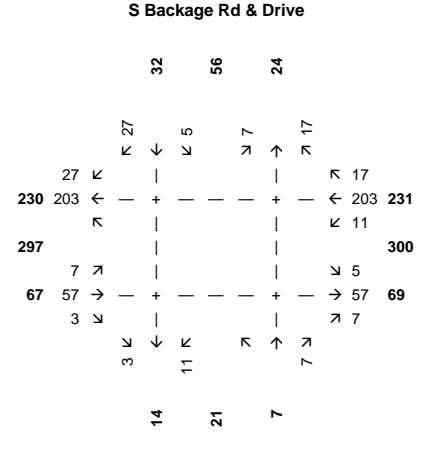
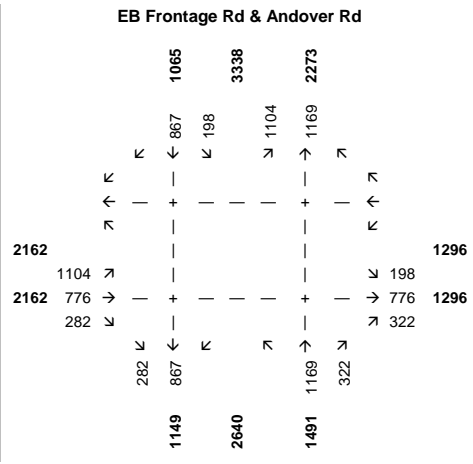
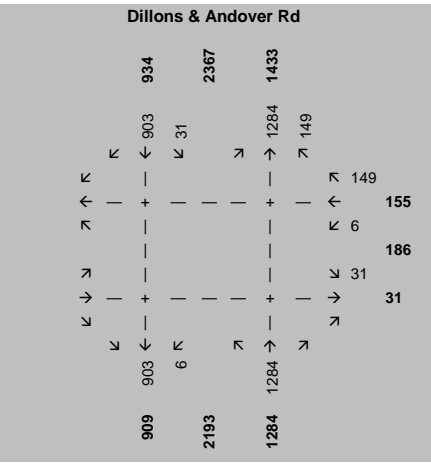
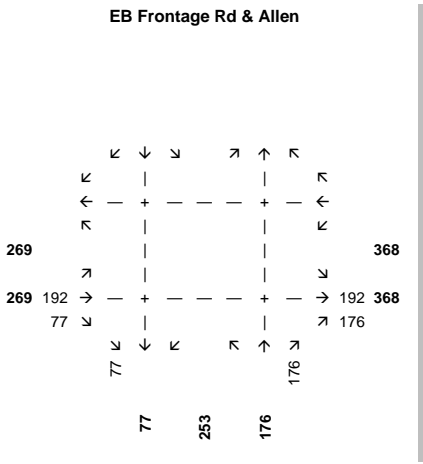
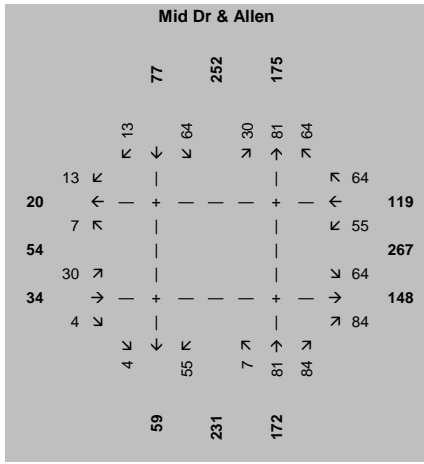
WB Frontage Rd & 159th Street



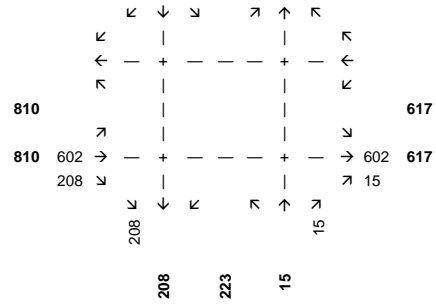
WB Frontage Rd & Onewood



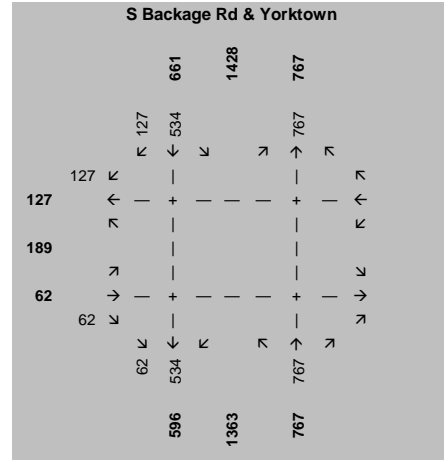




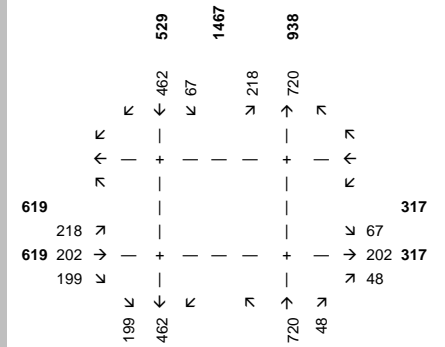
EB Frontage Rd & Roundabout Dr



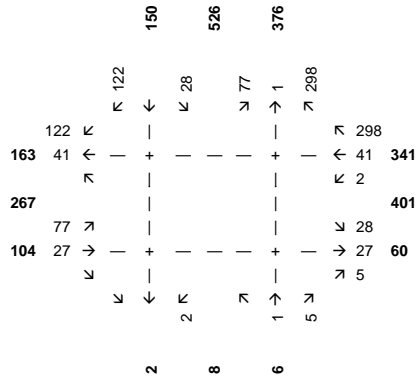
S Backage Rd & Yorktown



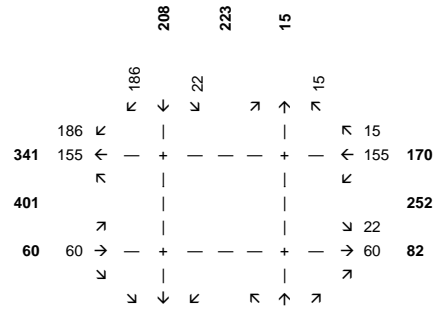
EB Frontage Rd & Yorktown



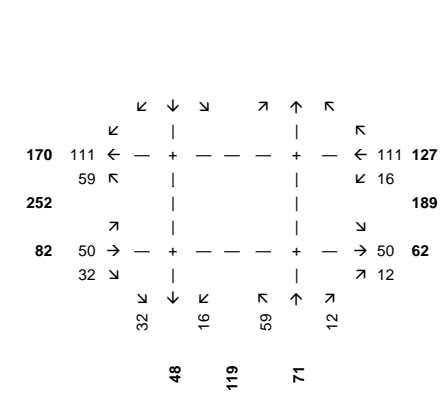
Dillons Dr & Cloud



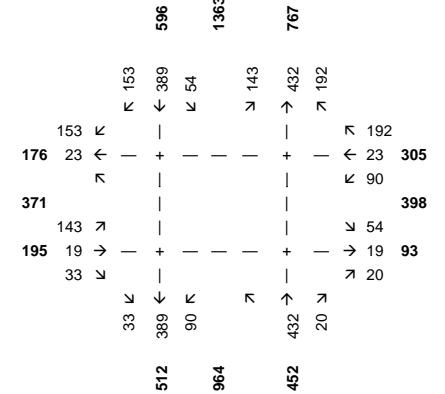
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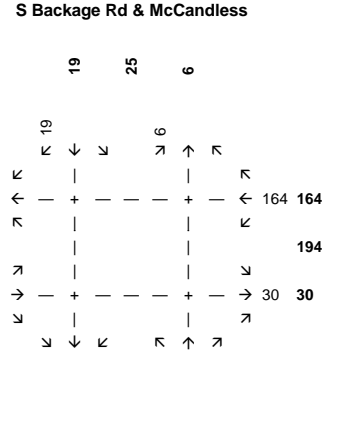
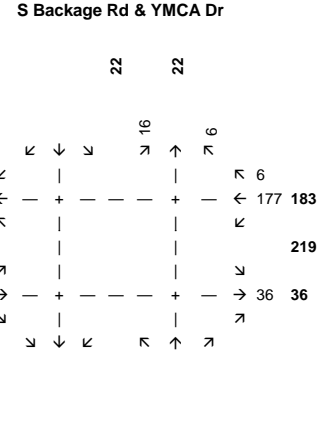
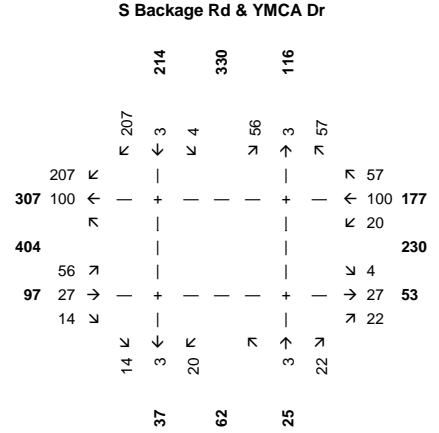
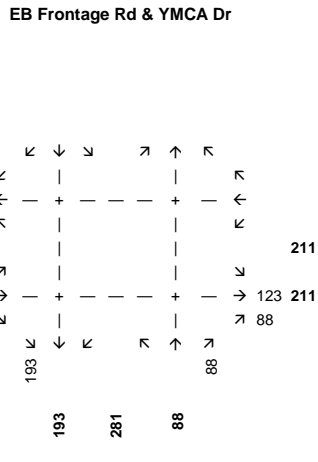
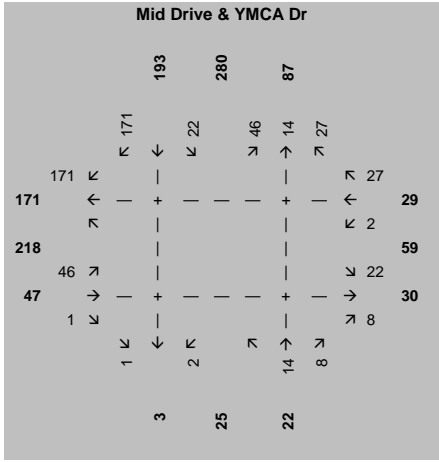


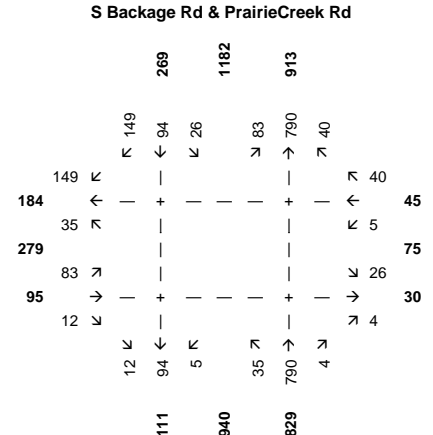
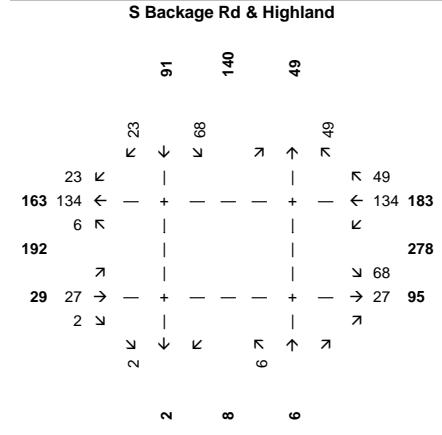
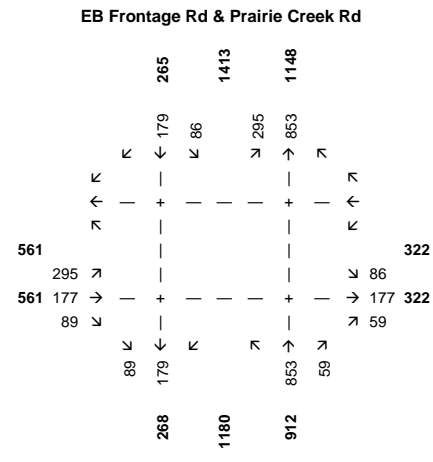
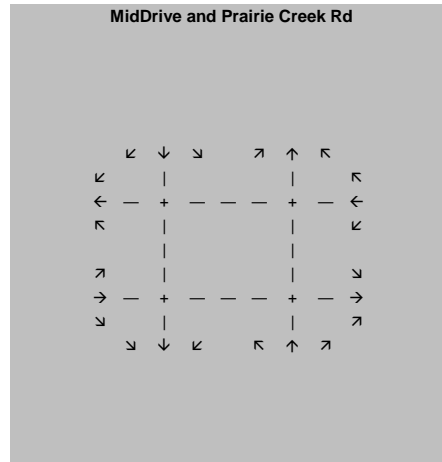
S Backage Rd & Drive

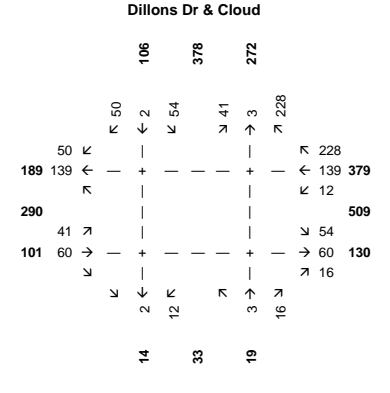
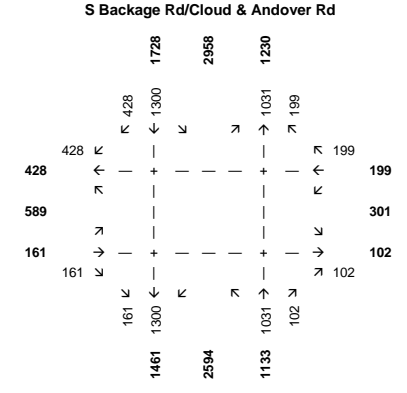
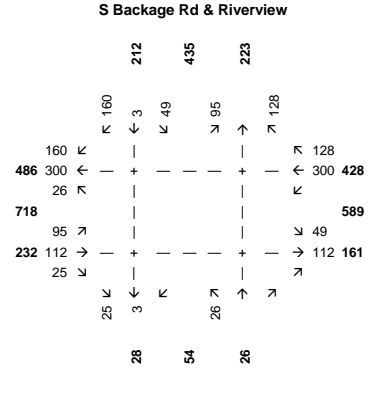
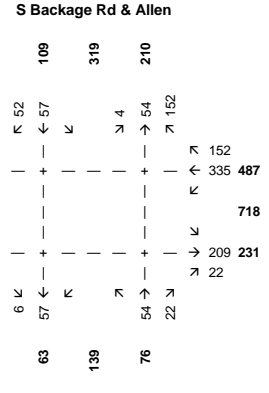
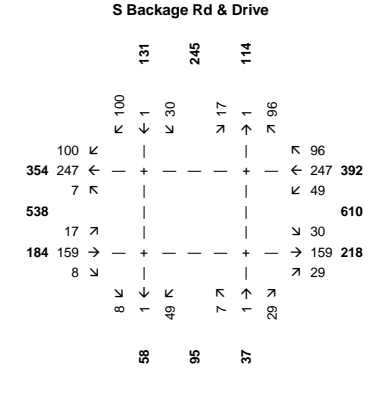
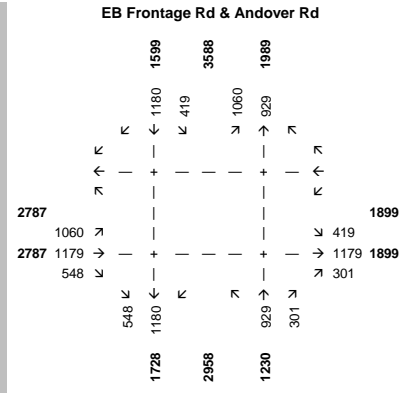
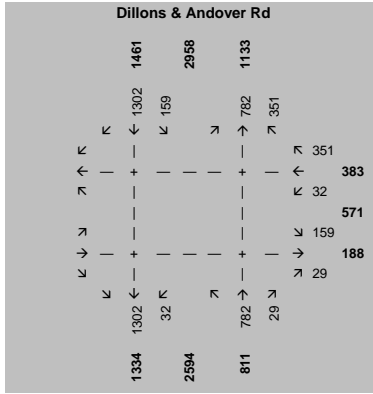
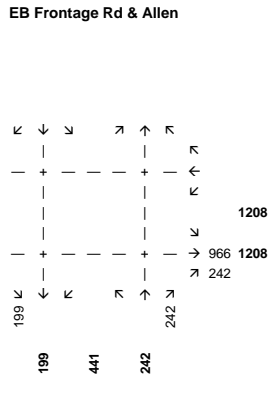
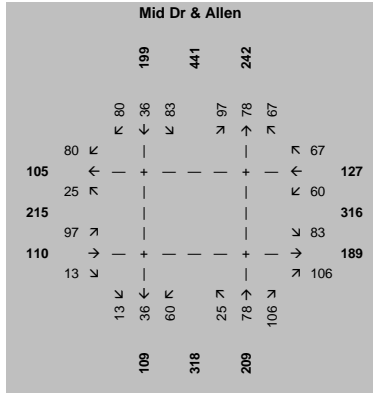


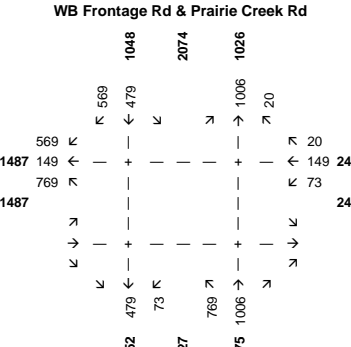
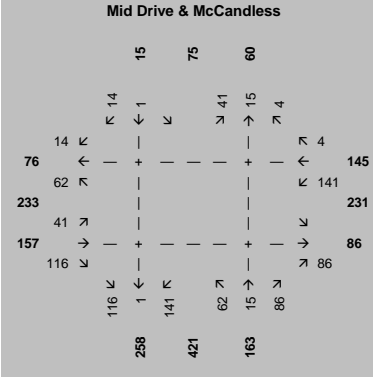
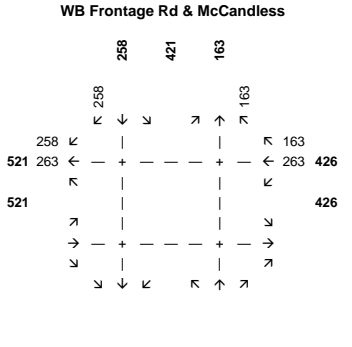
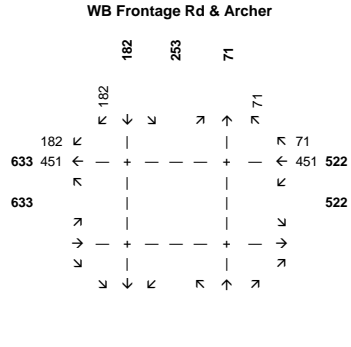
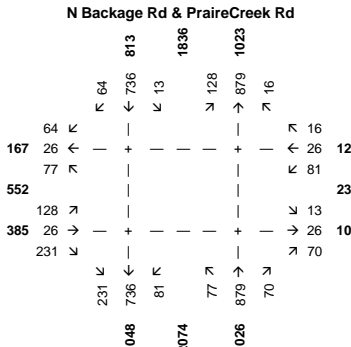
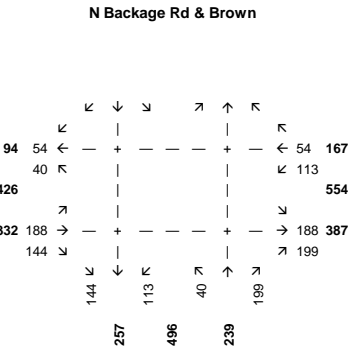
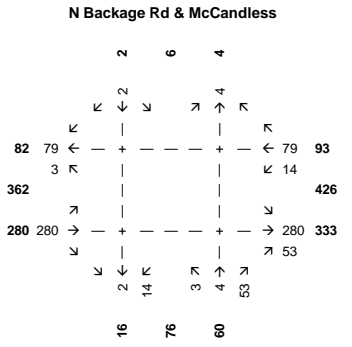
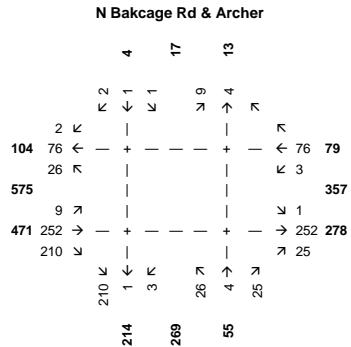
2S Backage Rd2 & Yorktown



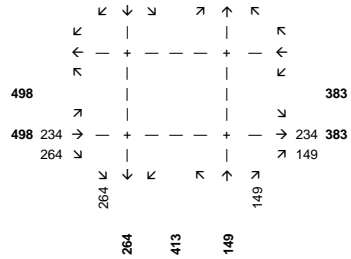




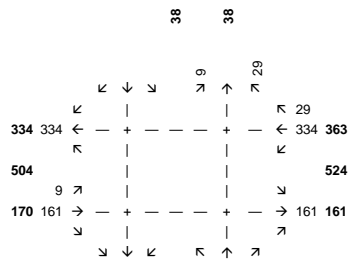




EB Frontage Rd & YMCA Dr

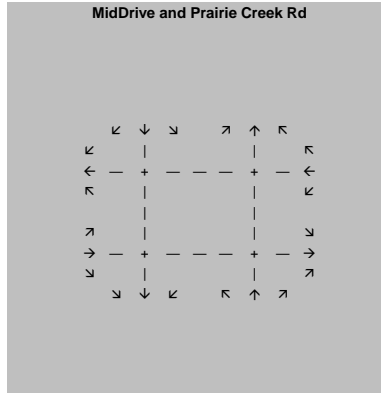


S Backage Rd & YMCA Dr

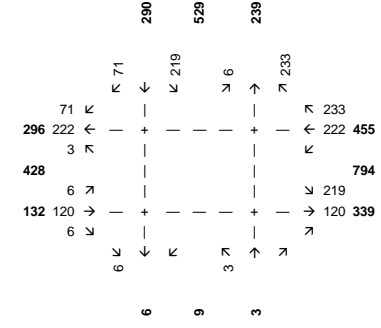


38 38

MidDrive and Prairie Creek Rd

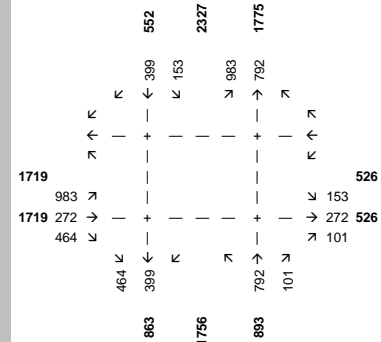


S Backage Rd & Highland

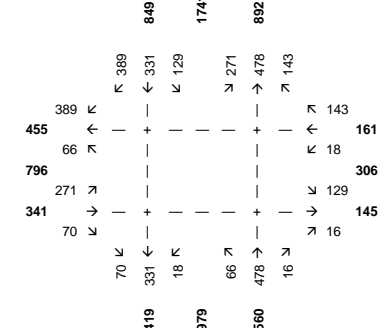


290 529 239

EB Frontage Rd & Prairie Creek Rd



S Backage Rd & PrairieCreek Rd



849 1741 892



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔↔	↕↕	↗					↕↕↕	↗	↔↔	↕↕		
Volume (vph)	330	384	57	0	0	0	0	532	339	360	51	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0		
Lane Util. Factor	0.97	0.95	1.00					0.81	0.81	0.97	0.95		
Fr _t	1.00	1.00	0.85					0.96	0.85	1.00	1.00		
Fl _t Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00		
Satd. Flow (prot)	3433	3539	1583					5816	1282	3433	3539		
Fl _t Permitted	0.95	1.00	1.00					1.00	1.00	0.34	1.00		
Satd. Flow (perm)	3433	3539	1583					5816	1282	1234	3539		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	330	384	57	0	0	0	0	532	339	360	51	0	
RTOR Reduction (vph)	0	0	45	0	0	0	0	64	139	0	0	0	
Lane Group Flow (vph)	330	384	12	0	0	0	0	638	30	360	51	0	
Turn Type	Perm		Perm						Perm	custom			
Protected Phases		2						4		6	6		
Permitted Phases	2		2						4	8	4	8	
Actuated Green, G (s)	19.1	19.1	19.1					16.0	16.0	30.9	46.9		
Effective Green, g (s)	19.1	19.1	19.1					16.0	16.0	30.9	46.9		
Actuated g/C Ratio	0.21	0.21	0.21					0.18	0.18	0.34	0.52		
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	729	751	336					1034	228	815	2316		
v/s Ratio Prot		c0.11						c0.11		c0.08	0.00		
v/s Ratio Perm	0.10		0.01						0.02	c0.07	0.01		
v/c Ratio	0.45	0.51	0.04					0.62	0.13	0.44	0.02		
Uniform Delay, d1	30.9	31.3	28.1					34.2	31.2	21.7	10.4		
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.10	0.07		
Incremental Delay, d2	2.0	2.5	0.2					2.8	1.2	0.4	0.0		
Delay (s)	32.9	33.8	28.3					36.9	32.3	2.6	0.8		
Level of Service	C	C	C					D	C	A	A		
Approach Delay (s)		33.0			0.0			36.0				2.3	
Approach LOS		C			A			D				A	
Intersection Summary													
HCM Average Control Delay			28.2									HCM Level of Service	C
HCM Volume to Capacity ratio			0.50										
Actuated Cycle Length (s)			90.0							24.0			
Intersection Capacity Utilization			77.1%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

Synchro analysis was developed using 2040 traffic volumes that were developed by a combination of the WAMPO Travel Demand Model, the study team's future year land use plan and VISSIM simulation software. Synchro helped develop intersection level capacities, lane arrangements, level of service analysis and queue lengths. The queue length results also help determine adjacent intersection node placement to achieve appropriate intersection spacing.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↗	↗	↖	↗			↑↑↑	↖
Volume (vph)	0	0	0	12	361	337	387	474	0	0	398	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	6.0	6.0	6.0			6.0	6.0
Lane Util. Factor				1.00	0.95	1.00	0.97	0.95			0.86	1.00
Flt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	3539	1583	3433	3539			6408	1583
Flt Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	3539	1583	3433	3539			6408	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	12	361	337	387	474	0	0	398	315
RTOR Reduction (vph)	0	0	0	0	0	281	0	0	0	0	0	45
Lane Group Flow (vph)	0	0	0	12	361	56	387	474	0	0	398	270
Turn Type				Perm	Perm	Split						custom
Protected Phases					8		4	4			6	6
Permitted Phases				8		8		2				2
Actuated Green, G (s)				14.9	14.9	14.9	16.0	51.1			16.0	35.1
Effective Green, g (s)				14.9	14.9	14.9	16.0	51.1			16.0	35.1
Actuated g/C Ratio				0.17	0.17	0.17	0.18	0.57			0.18	0.39
Clearance Time (s)				6.0	6.0	6.0	6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				293	586	262	610	2481			1139	617
v/s Ratio Prot					c0.10		c0.11	0.03			0.06	c0.08
v/s Ratio Perm				0.01		0.04		0.10				0.09
v/c Ratio				0.04	0.62	0.21	0.63	0.19			0.35	0.44
Uniform Delay, d1				31.5	34.9	32.5	34.3	9.4			32.4	20.2
Progression Factor				1.00	1.00	1.00	0.25	0.03			0.81	0.73
Incremental Delay, d2				0.1	1.9	0.4	3.9	0.1			0.8	2.2
Delay (s)				31.6	36.8	32.9	12.3	0.4			27.2	16.9
Level of Service				C	D	C	B	A			C	B
Approach Delay (s)		0.0			34.9			5.8			22.6	
Approach LOS		A			C			A			C	
Intersection Summary												
HCM Average Control Delay			20.1		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			90.0		Sum of lost time (s)					24.0		
Intersection Capacity Utilization			77.1%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												

US 54 Andover, KS
 24: EB KELLOGG FRONTAGE ROAD & ONEWOOD DRIVE

AM Peak Hour
 9/27/2011
























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗					↑↑			↙↑	
Volume (vph)	156	126	25	0	0	0	0	374	72	68	105	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0					6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00					0.95			0.95	
Fr _t	1.00	1.00	0.85					0.98			1.00	
Fit Protected	0.95	1.00	1.00					1.00			0.98	
Satd. Flow (prot)	1770	3539	1583					3454			3471	
Fit Permitted	0.95	1.00	1.00					1.00			0.74	
Satd. Flow (perm)	1770	3539	1583					3454			2603	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	156	126	25	0	0	0	0	374	72	68	105	0
RTOR Reduction (vph)	0	0	19	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	156	126	6	0	0	0	0	431	0	0	173	0
Turn Type	Perm		Perm							custom		
Protected Phases		2						4		6	6	
Permitted Phases	2		2							8	4 8	
Actuated Green, G (s)	23.0	23.0	23.0					22.0			50.1	
Effective Green, g (s)	23.0	23.0	23.0					22.0			50.1	
Actuated g/C Ratio	0.24	0.24	0.24					0.23			0.52	
Clearance Time (s)	6.0	6.0	6.0					6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)	419	838	375					783			1477	
v/s Ratio Prot		0.04						c0.12			c0.02	
v/s Ratio Perm	c0.09		0.00								c0.04	
v/c Ratio	0.37	0.15	0.02					0.55			0.12	
Uniform Delay, d1	31.0	29.3	28.4					33.2			12.1	
Progression Factor	1.00	1.00	1.00					1.00			0.18	
Incremental Delay, d2	2.5	0.4	0.1					2.8			0.0	
Delay (s)	33.5	29.7	28.5					35.9			2.2	
Level of Service	C	C	C					D			A	
Approach Delay (s)		31.5				0.0		35.9			2.2	
Approach LOS		C				A		D			A	
Intersection Summary												
HCM Average Control Delay			28.2			HCM Level of Service					C	
HCM Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			97.1			Sum of lost time (s)				24.0		
Intersection Capacity Utilization			44.6%			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				↖	↗			↖			↗	↘
Volume (vph)	0	0	0	77	261	39	187	343	0	0	96	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0			6.0			6.0	6.0
Lane Util. Factor				1.00	0.95			0.95			0.95	1.00
Fr _t				1.00	0.98			1.00			1.00	0.85
Fl _t Protected				0.95	1.00			0.98			1.00	1.00
Satd. Flow (prot)				1770	3470			3478			3539	1583
Fl _t Permitted				0.95	1.00			0.57			1.00	1.00
Satd. Flow (perm)				1770	3470			2031			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	77	261	39	187	343	0	0	96	160
RTOR Reduction (vph)	0	0	0	0	12	0	0	0	0	0	0	135
Lane Group Flow (vph)	0	0	0	77	288	0	0	530	0	0	96	25
Turn Type				Split		custom						Perm
Protected Phases				8	8		4	4			6	
Permitted Phases							2	2				6
Actuated Green, G (s)				13.1	13.1			60.0			15.0	15.0
Effective Green, g (s)				13.1	13.1			60.0			15.0	15.0
Actuated g/C Ratio				0.13	0.13			0.62			0.15	0.15
Clearance Time (s)				6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)				239	468			1583			547	245
v/s Ratio Prot				0.04	c0.08			c0.08			0.03	
v/s Ratio Perm								c0.13				0.02
v/c Ratio				0.32	0.62			0.33			0.18	0.10
Uniform Delay, d ₁				38.0	39.6			8.9			35.7	35.3
Progression Factor				1.00	1.00			0.14			1.00	1.00
Incremental Delay, d ₂				0.8	2.4			0.5			0.7	0.8
Delay (s)				38.8	42.0			1.7			36.4	36.1
Level of Service				D	D			A			D	D
Approach Delay (s)		0.0			41.4			1.7			36.2	
Approach LOS		A			D			A			D	
Intersection Summary												
HCM Average Control Delay				22.2		HCM Level of Service					C	
HCM Volume to Capacity ratio				0.39								
Actuated Cycle Length (s)				97.1		Sum of lost time (s)				24.0		
Intersection Capacity Utilization				48.3%		ICU Level of Service				A		
Analysis Period (min)				15								
c Critical Lane Group												

US 54 Andover, KS
34: NORTH REVERSE FRONTAGE ROAD & ANDOVER ROAD

AM Peak Hour
9/27/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	66	72	123	86	55	95	90	1705	288	53	1298	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Fr _t	1.00	0.91		1.00	0.91		1.00	0.98		1.00	1.00	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3204		1770	3203		1770	4975		1770	5065	
Fl _t Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3204		1770	3203		1770	4975		1770	5065	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	72	123	86	55	95	90	1705	288	53	1298	35
RTOR Reduction (vph)	0	112	0	0	86	0	0	17	0	0	2	0
Lane Group Flow (vph)	66	83	0	86	64	0	90	1976	0	53	1331	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	8.0	10.4		9.0	11.4		11.7	68.6		8.0	64.9	
Effective Green, g (s)	8.0	10.4		9.0	11.4		11.7	68.6		8.0	64.9	
Actuated g/C Ratio	0.07	0.09		0.08	0.10		0.10	0.57		0.07	0.54	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	118	278		133	304		173	2844		118	2739	
v/s Ratio Prot	0.04	c0.03		c0.05	0.02		0.05	c0.40		0.03	c0.26	
v/s Ratio Perm												
v/c Ratio	0.56	0.30		0.65	0.21		0.52	0.69		0.45	0.49	
Uniform Delay, d ₁	54.3	51.4		54.0	50.1		51.5	18.3		53.9	17.2	
Progression Factor	1.00	1.00		1.00	1.00		1.19	0.28		1.00	1.00	
Incremental Delay, d ₂	5.6	0.6		10.3	0.3		2.3	1.1		2.7	0.6	
Delay (s)	59.9	52.0		64.3	50.5		63.6	6.3		56.6	17.8	
Level of Service	E	D		E	D		E	A		E	B	
Approach Delay (s)		54.0			55.5			8.8			19.3	
Approach LOS		D			E			A			B	
Intersection Summary												
HCM Average Control Delay			18.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			84.4%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Volume (vph)	1104	776	282	0	0	0	0	1169	322	198	867	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0			
Lane Util. Factor	0.97	0.86	0.86					0.81	1.00	0.97	0.91			
Fr _t	1.00	0.99	0.85					1.00	0.85	1.00	1.00			
Fl _t Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00			
Satd. Flow (prot)	3433	4764	1362					7544	1583	3433	5085			
Fl _t Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00			
Satd. Flow (perm)	3433	4764	1362					7544	1583	3433	5085			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	1104	776	282	0	0	0	0	1169	322	198	867	0		
RTOR Reduction (vph)	0	5	106	0	0	0	0	0	39	0	0	0		
Lane Group Flow (vph)	1104	819	128	0	0	0	0	1169	283	198	867	0		
Turn Type	Perm		Perm						custom		Prot			
Protected Phases		2						4	4	6	6	4		
Permitted Phases	2		2						8		8			
Actuated Green, G (s)	38.0	38.0	38.0					18.0	44.0	14.0	64.0			
Effective Green, g (s)	38.0	38.0	38.0					18.0	44.0	14.0	64.0			
Actuated g/C Ratio	0.32	0.32	0.32					0.15	0.37	0.12	0.53			
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0				
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0				
Lane Grp Cap (vph)	1087	1509	431					1132	580	401	2966			
v/s Ratio Prot		0.17						c0.15	c0.07	c0.06	0.09			
v/s Ratio Perm	c0.32		0.09						0.11		0.08			
v/c Ratio	1.02	0.54	0.30					1.03	0.49	0.49	0.29			
Uniform Delay, d1	41.0	33.8	30.9					51.0	29.3	49.7	15.5			
Progression Factor	1.00	1.00	1.00					0.92	0.67	0.39	0.08			
Incremental Delay, d2	31.3	1.4	1.8					35.2	0.6	2.7	0.0			
Delay (s)	72.3	35.2	32.7					82.2	20.2	21.8	1.2			
Level of Service	E	D	C					F	C	C	A			
Approach Delay (s)		53.9			0.0			68.8			5.1			
Approach LOS		D			A			E			A			
Intersection Summary														
HCM Average Control Delay			47.6									HCM Level of Service	D	
HCM Volume to Capacity ratio			0.80											
Actuated Cycle Length (s)			120.0								24.0			
Intersection Capacity Utilization			117.7%										ICU Level of Service	H
Analysis Period (min)			15											
c Critical Lane Group														



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations				↔↔	↔↔↔	↔	↔↔	↔↔↔			↑↑↑↑	↔↔	
Volume (vph)	0	0	0	381	977	406	596	1677	0	0	684	823	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)				6.0	6.0	6.0	6.0	6.0			6.0	6.0	
Lane Util. Factor				0.97	0.91	1.00	0.97	0.91			0.81	0.88	
Flt				1.00	1.00	0.85	1.00	1.00			1.00	0.85	
Flt Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00	
Satd. Flow (prot)				3433	5085	1583	3433	5085			7544	2787	
Flt Permitted				0.95	1.00	1.00	0.11	1.00			1.00	1.00	
Satd. Flow (perm)				3433	5085	1583	380	5085			7544	2787	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	0	0	381	977	406	596	1677	0	0	684	823	
RTOR Reduction (vph)	0	0	0	0	0	31	0	0	0	0	0	504	
Lane Group Flow (vph)	0	0	0	381	977	375	596	1677	0	0	684	319	
Turn Type				Perm		Perm	custom					Perm	
Protected Phases					8		4	4	6		6		
Permitted Phases				8		8	2	2				6	
Actuated Green, G (s)				26.0	26.0	26.0	56.0	76.0			14.0	14.0	
Effective Green, g (s)				26.0	26.0	26.0	56.0	76.0			14.0	14.0	
Actuated g/C Ratio				0.22	0.22	0.22	0.47	0.63			0.12	0.12	
Clearance Time (s)				6.0	6.0	6.0	6.0				6.0	6.0	
Vehicle Extension (s)				3.0	3.0	3.0	3.0				3.0	3.0	
Lane Grp Cap (vph)				744	1102	343	635	3475			880	325	
v/s Ratio Prot					0.19		c0.14	0.15			0.09		
v/s Ratio Perm				0.11		c0.24	c0.30	0.18				c0.11	
v/c Ratio				0.51	0.89	1.09	0.94	0.48			0.78	0.98	
Uniform Delay, d1				41.4	45.6	47.0	47.0	11.6			51.5	52.9	
Progression Factor				1.00	1.00	1.00	0.65	0.00			0.74	1.45	
Incremental Delay, d2				0.6	8.8	75.6	3.5	0.0			6.0	42.6	
Delay (s)				42.0	54.4	122.6	34.2	0.0			44.0	119.4	
Level of Service				D	D	F	C	A			D	F	
Approach Delay (s)		0.0			67.4			9.0			85.1		
Approach LOS		A			E			A			F		
Intersection Summary													
HCM Average Control Delay			48.3		HCM Level of Service							D	
HCM Volume to Capacity ratio			0.99										
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						24.0		
Intersection Capacity Utilization			117.7%		ICU Level of Service						H		
Analysis Period (min)			15										
c Critical Lane Group													



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↘	↗		↘	↗			↗	↘
Volume (vph)	0	0	0	275	159	147	435	502	0	0	255	344
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor				1.00	0.95		1.00	0.95			0.91	1.00
Fr _t				1.00	0.93		1.00	1.00			1.00	0.85
Fit Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	3284		1770	3539			5085	1583
Fit Permitted				0.95	1.00		0.21	1.00			1.00	1.00
Satd. Flow (perm)				1770	3284		392	3539			5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	275	159	147	435	502	0	0	255	344
RTOR Reduction (vph)	0	0	0	0	120	0	0	0	0	0	0	302
Lane Group Flow (vph)	0	0	0	275	186	0	435	502	0	0	255	42
Turn Type				Perm			custom					Perm
Protected Phases					8		4	4			6	
Permitted Phases				8			2	2 6				6
Actuated Green, G (s)				18.3	18.3		44.0	56.0			12.0	12.0
Effective Green, g (s)				18.3	18.3		44.0	56.0			12.0	12.0
Actuated g/C Ratio				0.19	0.19		0.45	0.57			0.12	0.12
Clearance Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				330	611		526	2448			621	193
v/s Ratio Prot					0.06		c0.21	0.05			c0.05	
v/s Ratio Perm				c0.16			c0.16	0.09				0.03
v/c Ratio				0.83	0.31		0.83	0.21			0.41	0.22
Uniform Delay, d1				38.5	34.5		31.1	10.3			39.9	38.9
Progression Factor				1.00	1.00		0.53	0.00			1.00	1.00
Incremental Delay, d2				16.3	0.3		11.9	0.2			2.0	2.6
Delay (s)				54.8	34.8		28.3	0.2			41.9	41.5
Level of Service				D	C		C	A			D	D
Approach Delay (s)		0.0			44.3			13.2			41.7	
Approach LOS		A			D			B			D	
Intersection Summary												
HCM Average Control Delay				29.8			HCM Level of Service				C	
HCM Volume to Capacity ratio				0.76								
Actuated Cycle Length (s)				98.3			Sum of lost time (s)			24.0		
Intersection Capacity Utilization				75.3%			ICU Level of Service			D		
Analysis Period (min)				15								
c Critical Lane Group												

US 54 Andover, KS
70: EB KELLOGG FRONTAGE ROAD & YORKTOWN STREET

AM Peak Hour
9/27/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↖	↑	↗					↑↑↑	↗	↘	↑↑	
Volume (vph)	218	202	199	0	0	0	0	720	48	67	462	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	1.00	1.00					0.91	1.00	1.00	0.95	
Fr _t	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Fl _t Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	1863	1583					5085	1583	1770	3539	
Fl _t Permitted	0.95	1.00	1.00					1.00	1.00	0.37	1.00	
Satd. Flow (perm)	3433	1863	1583					5085	1583	683	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	218	202	199	0	0	0	0	720	48	67	462	0
RTOR Reduction (vph)	0	0	161	0	0	0	0	0	36	0	0	0
Lane Group Flow (vph)	218	202	38	0	0	0	0	720	12	67	462	0
Turn Type	Perm		Perm						Perm	custom		
Protected Phases			2						4	6		6
Permitted Phases	2		2						4	8		4 8
Actuated Green, G (s)	19.0	19.0	19.0					25.0	25.0	30.3	55.3	
Effective Green, g (s)	19.0	19.0	19.0					25.0	25.0	30.3	55.3	
Actuated g/C Ratio	0.19	0.19	0.19					0.25	0.25	0.31	0.56	
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	664	360	306					1293	403	343	2423	
v/s Ratio Prot	c0.11								c0.14	0.02		c0.02
v/s Ratio Perm	0.06		0.02						0.01	0.04	0.11	
v/c Ratio	0.33	0.56	0.13					0.56	0.03	0.20	0.19	
Uniform Delay, d1	34.2	35.9	32.8					31.8	27.5	24.4	10.5	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.01	0.39	
Incremental Delay, d2	1.3	6.2	0.8					1.7	0.1	0.3	0.0	
Delay (s)	35.5	42.1	33.6					33.6	27.7	0.5	4.1	
Level of Service	D	D	C					C	C	A	A	
Approach Delay (s)	37.0				0.0				33.2			3.7
Approach LOS	D				A				C			A
Intersection Summary												
HCM Average Control Delay			26.3		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			98.3		Sum of lost time (s)						12.0	
Intersection Capacity Utilization			75.3%		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					↕↕		↕↕	↕↕			↕↕↕	↕
Volume (vph)	0	0	0	103	393	363	796	352	0	0	162	656
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					6.0		6.0	6.0			6.0	6.0
Lane Util. Factor					0.95		0.97	0.95			0.86	0.86
Fr _t					0.94		1.00	1.00			0.90	0.85
Fit Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					3295		3433	3539			4323	1362
Fit Permitted					0.99		0.31	1.00			1.00	1.00
Satd. Flow (perm)					3295		1112	3539			4323	1362
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	103	393	363	796	352	0	0	162	656
RTOR Reduction (vph)	0	0	0	0	132	0	0	0	0	0	88	88
Lane Group Flow (vph)	0	0	0	0	727	0	796	352	0	0	402	240
Turn Type				Perm		custom						Perm
Protected Phases					8		4	4			6	
Permitted Phases				8			2	2 6				6
Actuated Green, G (s)					23.0		32.0	53.0			21.0	21.0
Effective Green, g (s)					23.0		32.0	53.0			21.0	21.0
Actuated g/C Ratio					0.23		0.32	0.53			0.21	0.21
Clearance Time (s)					6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					758		797	2300			908	286
v/s Ratio Prot							c0.19	0.03			0.09	
v/s Ratio Perm					0.22		c0.13	0.07				c0.18
v/c Ratio					0.96		1.00	0.15			0.44	0.84
Uniform Delay, d1					38.0		37.2	12.0			34.4	37.9
Progression Factor					1.00		0.72	0.00			1.00	1.00
Incremental Delay, d2					22.9		25.7	0.1			1.6	24.3
Delay (s)					61.0		52.3	0.1			36.0	62.2
Level of Service					E		D	A			D	E
Approach Delay (s)		0.0			61.0			36.3			46.5	
Approach LOS		A			E			D			D	
Intersection Summary												
HCM Average Control Delay			46.8									D
HCM Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			100.0						24.0			
Intersection Capacity Utilization			87.4%									E
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)	295	177	89	0	0	0	0	853	59	86	179	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0					6.0		6.0	6.0	
Lane Util. Factor	0.97	1.00	1.00					0.86		1.00	0.95	
Fr _t	1.00	1.00	0.85					0.99		1.00	1.00	
Fit Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	3433	1863	1583					6346		1770	3539	
Fit Permitted	0.95	1.00	1.00					1.00		0.28	1.00	
Satd. Flow (perm)	3433	1863	1583					6346		530	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	295	177	89	0	0	0	0	853	59	86	179	0
RTOR Reduction (vph)	0	0	77	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	295	177	12	0	0	0	0	901	0	86	179	0
Turn Type	Perm		Perm							custom		
Protected Phases		2						4			6	
Permitted Phases	2		2							6 8	4 8	
Actuated Green, G (s)	13.0	13.0	13.0					19.0		50.0	63.0	
Effective Green, g (s)	13.0	13.0	13.0					19.0		50.0	63.0	
Actuated g/C Ratio	0.13	0.13	0.13					0.19		0.50	0.63	
Clearance Time (s)	6.0	6.0	6.0					6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)	446	242	206					1206		265	2654	
v/s Ratio Prot		c0.10						c0.14			0.01	
v/s Ratio Perm	0.09		0.01							c0.16	0.04	
v/c Ratio	0.66	0.73	0.06					0.75		0.32	0.07	
Uniform Delay, d1	41.4	41.8	38.1					38.2		14.9	7.1	
Progression Factor	1.00	1.00	1.00					1.00		0.34	0.71	
Incremental Delay, d2	7.5	17.7	0.5					4.3		0.6	0.0	
Delay (s)	48.9	59.5	38.6					42.5		5.8	5.1	
Level of Service	D	E	D					D		A	A	
Approach Delay (s)		50.6			0.0			42.5			5.3	
Approach LOS		D			A			D			A	
Intersection Summary												
HCM Average Control Delay			39.4					HCM Level of Service			D	
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			100.0					Sum of lost time (s)		18.0		
Intersection Capacity Utilization			87.4%					ICU Level of Service		E		
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖↗	↖		↖	↖↗		↖	↗	↖↗
Volume (vph)	4	0	46	106	5	4	48	305	458	40	561	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.97	1.00		1.00	0.95		1.00	0.95	
Fr _t	1.00	0.85		1.00	0.93		1.00	0.91		1.00	1.00	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583		3433	1739		1770	3221		1770	3535	
Fl _t Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1583		3433	1739		1770	3221		1770	3535	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	0	46	106	5	4	48	305	458	40	561	5
RTOR Reduction (vph)	0	42	0	0	3	0	0	240	0	0	1	0
Lane Group Flow (vph)	4	4	0	106	6	0	48	523	0	40	565	0
Turn Type	Prot		Prot		Prot		Prot		Prot			
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	2.0	8.4		8.0	14.4		6.1	42.9		6.7	43.5	
Effective Green, g (s)	2.0	8.4		8.0	14.4		6.1	42.9		6.7	43.5	
Actuated g/C Ratio	0.02	0.09		0.09	0.16		0.07	0.48		0.07	0.48	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	39	148		305	278		120	1535		132	1709	
v/s Ratio Prot	0.00	c0.00		c0.03	c0.00		0.03	c0.16		0.02	c0.16	
v/s Ratio Perm												
v/c Ratio	0.10	0.03		0.35	0.02		0.40	0.34		0.30	0.33	
Uniform Delay, d ₁	43.1	37.1		38.5	31.9		40.2	14.7		39.4	14.3	
Progression Factor	1.00	1.00		1.00	1.00		1.09	0.30		1.00	1.00	
Incremental Delay, d ₂	1.2	0.1		0.7	0.0		2.1	0.6		1.3	0.5	
Delay (s)	44.3	37.2		39.2	31.9		46.0	4.9		40.7	14.8	
Level of Service	D	D		D	C		D	A		D	B	
Approach Delay (s)	37.7		38.7		7.4		16.5					
Approach LOS	D		D		A		B					
Intersection Summary												
HCM Average Control Delay	14.1		HCM Level of Service				B					
HCM Volume to Capacity ratio	0.33											
Actuated Cycle Length (s)	90.0		Sum of lost time (s)				30.0					
Intersection Capacity Utilization	56.2%		ICU Level of Service				B					
Analysis Period (min)	15											
c Critical Lane Group												



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↗	↑↑↑		↘	↑↑↑
Volume (vph)	6	49	1284	1	31	903
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91
Fr _t	1.00	0.85	1.00		1.00	1.00
Fl _t Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	5085		1770	5085
Fl _t Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	5085		1770	5085
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	49	1284	1	31	903
RTOR Reduction (vph)	0	43	0	0	0	0
Lane Group Flow (vph)	6	6	1285	0	31	903
Turn Type	pm+ov			Prot		
Protected Phases	8	1	2		1	6
Permitted Phases	8					
Actuated Green, G (s)	2.0	14.8	87.2		12.8	106.0
Effective Green, g (s)	2.0	14.8	87.2		12.8	106.0
Actuated g/C Ratio	0.02	0.12	0.73		0.11	0.88
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	30	274	3695		189	4492
v/s Ratio Prot	c0.00	0.00	c0.25		0.02	c0.18
v/s Ratio Perm	0.00					
v/c Ratio	0.20	0.02	0.35		0.16	0.20
Uniform Delay, d ₁	58.2	46.2	6.0		48.7	1.0
Progression Factor	1.00	1.00	1.00		0.57	0.77
Incremental Delay, d ₂	3.3	0.0	0.3		0.4	0.1
Delay (s)	61.5	46.3	6.3		28.3	0.9
Level of Service	E	D	A		C	A
Approach Delay (s)	47.9		6.3			1.8
Approach LOS	D		A			A
Intersection Summary						
HCM Average Control Delay			5.4	HCM Level of Service		A
HCM Volume to Capacity ratio			0.31			
Actuated Cycle Length (s)			120.0	Sum of lost time (s)		12.0
Intersection Capacity Utilization			44.1%	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														
Volume (vph)	506	1319	244	0	0	0	0	420	344	738	211	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0			
Lane Util. Factor	0.97	0.95	1.00					0.81	0.81	0.97	0.95			
Fr _t	1.00	1.00	0.85					0.96	0.85	1.00	1.00			
Fl _t Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00			
Satd. Flow (prot)	3433	3539	1583					5772	1282	3433	3539			
Fl _t Permitted	0.95	1.00	1.00					1.00	1.00	0.39	1.00			
Satd. Flow (perm)	3433	3539	1583					5772	1282	1401	3539			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	506	1319	244	0	0	0	0	420	344	738	211	0		
RTOR Reduction (vph)	0	0	127	0	0	0	0	34	34	0	0	0		
Lane Group Flow (vph)	506	1319	117	0	0	0	0	558	138	738	211	0		
Turn Type	Perm		Perm						Perm	custom				
Protected Phases		2						4		6	6			
Permitted Phases	2		2						4	8	4	8		
Actuated Green, G (s)	43.0	43.0	43.0					12.0	12.0	31.0	43.0			
Effective Green, g (s)	43.0	43.0	43.0					12.0	12.0	31.0	43.0			
Actuated g/C Ratio	0.39	0.39	0.39					0.11	0.11	0.28	0.39			
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	1342	1383	619					630	140	727	1770			
v/s Ratio Prot		c0.37						0.10		c0.17	0.02			
v/s Ratio Perm	0.15		0.07						c0.11	c0.12	0.04			
v/c Ratio	0.38	0.95	0.19					0.89	0.99	1.02	0.12			
Uniform Delay, d1	23.9	32.5	22.0					48.3	48.9	36.5	21.4			
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.61	0.19			
Incremental Delay, d2	0.8	15.4	0.7					16.7	72.6	28.9	0.0			
Delay (s)	24.7	47.9	22.7					65.1	121.6	51.2	4.1			
Level of Service	C	D	C					E	F	D	A			
Approach Delay (s)		39.3			0.0			77.8			40.7			
Approach LOS		D			A			E			D			
Intersection Summary														
HCM Average Control Delay			47.4									HCM Level of Service	D	
HCM Volume to Capacity ratio			0.98											
Actuated Cycle Length (s)			110.0							24.0			Sum of lost time (s)	
Intersection Capacity Utilization			101.8%										ICU Level of Service	G
Analysis Period (min)			15											
c Critical Lane Group														



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↘	↗	↗	↘	↗			↑↑↑	↗
Volume (vph)	0	0	0	104	392	327	257	669	0	0	846	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	6.0	6.0	6.0			6.0	6.0
Lane Util. Factor				1.00	0.95	1.00	0.97	0.95			0.86	1.00
Fr _t				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Fl _t Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	3539	1583	3433	3539			6408	1583
Fl _t Permitted				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	3539	1583	3433	3539			6408	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	104	392	327	257	669	0	0	846	302
RTOR Reduction (vph)	0	0	0	0	0	288	0	0	0	0	0	12
Lane Group Flow (vph)	0	0	0	104	392	39	257	669	0	0	846	290
Turn Type				Perm		Perm	Split					custom
Protected Phases					8		4	4			6	6
Permitted Phases				8		8		2				2
Actuated Green, G (s)				13.0	13.0	13.0	12.0	73.0			18.0	61.0
Effective Green, g (s)				13.0	13.0	13.0	12.0	73.0			18.0	61.0
Actuated g/C Ratio				0.12	0.12	0.12	0.11	0.66			0.16	0.55
Clearance Time (s)				6.0	6.0	6.0	6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				209	418	187	375	2735			1049	878
v/s Ratio Prot				c0.11			c0.07	0.03			c0.13	c0.05
v/s Ratio Perm				0.06		0.02		0.16				0.13
v/c Ratio				0.50	0.94	0.21	0.69	0.24			0.81	0.33
Uniform Delay, d1				45.4	48.1	43.8	47.2	7.4			44.3	13.4
Progression Factor				1.00	1.00	1.00	0.65	0.02			0.79	1.07
Incremental Delay, d2				1.9	28.5	0.6	4.4	0.2			5.2	0.8
Delay (s)				47.3	76.6	44.4	35.1	0.3			40.2	15.0
Level of Service				D	E	D	D	A			D	B
Approach Delay (s)		0.0			60.1			10.0			33.6	
Approach LOS		A			E			A			C	
Intersection Summary												
HCM Average Control Delay			33.6		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			110.0		Sum of lost time (s)					24.0		
Intersection Capacity Utilization			101.8%		ICU Level of Service				G			
Analysis Period (min)			15									
c Critical Lane Group												

US 54 Andover, KS
 24: EB KELLOGG FRONTAGE ROAD & ONEWOOD DRIVE

PM Peak Hour
 9/27/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	648	884	196	0	0	0	0	530	93	37	444	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0					6.0			6.0	
Lane Util. Factor	1.00	0.95	1.00					0.95			0.95	
Fr _t	1.00	1.00	0.85					0.98			1.00	
Fl _t Protected	0.95	1.00	1.00					1.00			1.00	
Satd. Flow (prot)	1770	3539	1583					3460			3526	
Fl _t Permitted	0.95	1.00	1.00					1.00			0.82	
Satd. Flow (perm)	1770	3539	1583					3460			2890	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	648	884	196	0	0	0	0	530	93	37	444	0
RTOR Reduction (vph)	0	0	116	0	0	0	0	13	0	0	0	0
Lane Group Flow (vph)	648	884	80	0	0	0	0	610	0	0	481	0
Turn Type	Perm		Perm							custom		
Protected Phases		2						4		6	6	
Permitted Phases	2		2							8	4 8	
Actuated Green, G (s)	45.0	45.0	45.0					20.0			41.0	
Effective Green, g (s)	45.0	45.0	45.0					20.0			41.0	
Actuated g/C Ratio	0.41	0.41	0.41					0.18			0.37	
Clearance Time (s)	6.0	6.0	6.0					6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)	724	1448	648					629			1135	
v/s Ratio Prot		0.25						c0.18			c0.04	
v/s Ratio Perm	c0.37		0.05								c0.12	
v/c Ratio	0.90	0.61	0.12					0.97			0.42	
Uniform Delay, d1	30.3	25.6	20.2					44.7			25.7	
Progression Factor	1.00	1.00	1.00					1.00			0.63	
Incremental Delay, d2	15.9	1.9	0.4					29.2			0.1	
Delay (s)	46.2	27.5	20.6					73.9			16.3	
Level of Service	D	C	C					E			B	
Approach Delay (s)		33.7			0.0			73.9			16.3	
Approach LOS		C			A			E			B	
Intersection Summary												
HCM Average Control Delay			39.6									HCM Level of Service D
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			110.0						24.0			
Intersection Capacity Utilization			81.9%									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				↖	↗			↖			↗	↘
Volume (vph)	0	0	0	169	77	78	210	968	0	0	313	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0			6.0			6.0	6.0
Lane Util. Factor				1.00	0.95			0.95			0.95	1.00
Fr _t				1.00	0.92			1.00			1.00	0.85
Fl _t Protected				0.95	1.00			0.99			1.00	1.00
Satd. Flow (prot)				1770	3272			3508			3539	1583
Fl _t Permitted				0.95	1.00			0.52			1.00	1.00
Satd. Flow (perm)				1770	3272			1835			3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	169	77	78	210	968	0	0	313	314
RTOR Reduction (vph)	0	0	0	0	70	0	0	0	0	0	0	285
Lane Group Flow (vph)	0	0	0	169	85	0	0	1178	0	0	313	29
Turn Type				Split		custom						Perm
Protected Phases				8	8		4	4			6	
Permitted Phases							2	2				6
Actuated Green, G (s)				11.0	11.0			75.0			10.0	10.0
Effective Green, g (s)				11.0	11.0			75.0			10.0	10.0
Actuated g/C Ratio				0.10	0.10			0.68			0.09	0.09
Clearance Time (s)				6.0	6.0			6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)				177	327			1555			322	144
v/s Ratio Prot				c0.10	0.03			c0.14			c0.09	
v/s Ratio Perm								c0.38				0.02
v/c Ratio				0.95	0.26			0.76			0.97	0.20
Uniform Delay, d ₁				49.3	45.7			11.5			49.9	46.3
Progression Factor				1.00	1.00			0.40			1.00	1.00
Incremental Delay, d ₂				54.0	0.4			1.3			43.6	3.1
Delay (s)				103.3	46.2			5.9			93.4	49.4
Level of Service				F	D			A			F	D
Approach Delay (s)		0.0			76.0			5.9			71.4	
Approach LOS		A			E			A			E	
Intersection Summary												
HCM Average Control Delay				35.9								D
HCM Volume to Capacity ratio				0.81								
Actuated Cycle Length (s)				110.0					24.0			
Intersection Capacity Utilization				75.6%								D
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)	128	26	231	81	26	16	77	879	67	13	736	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Fr _t	1.00	0.87		1.00	0.94		1.00	0.99		1.00	0.99	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1612		1770	1756		1770	3502		1770	3497	
Fl _t Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1612		1770	1756		1770	3502		1770	3497	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	128	26	231	81	26	16	77	879	67	13	736	64
RTOR Reduction (vph)	0	205	0	0	15	0	0	4	0	0	5	0
Lane Group Flow (vph)	128	52	0	81	27	0	77	942	0	13	795	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	16.2	11.4		10.8	6.0		8.2	51.8		2.0	45.6	
Effective Green, g (s)	16.2	11.4		10.8	6.0		8.2	51.8		2.0	45.6	
Actuated g/C Ratio	0.16	0.11		0.11	0.06		0.08	0.52		0.02	0.46	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	287	184		191	105		145	1814		35	1595	
v/s Ratio Prot	c0.07	c0.03		0.05	0.02		0.04	c0.27		0.01	c0.23	
v/s Ratio Perm												
v/c Ratio	0.45	0.28		0.42	0.26		0.53	0.52		0.37	0.50	
Uniform Delay, d ₁	37.8	40.6		41.7	44.9		44.1	15.9		48.4	19.1	
Progression Factor	1.00	1.00		1.00	1.00		1.15	0.19		1.00	1.00	
Incremental Delay, d ₂	1.1	0.9		1.5	1.3		3.5	1.0		6.5	1.1	
Delay (s)	39.0	41.4		43.2	46.2		54.1	4.0		54.9	20.3	
Level of Service	D	D		D	D		D	A		D	C	
Approach Delay (s)		40.6			44.2			7.8			20.8	
Approach LOS		D			D			A			C	
Intersection Summary												
HCM Average Control Delay			19.6			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			78.7%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

US 54 Andover, KS
34: NORTH REVERSE FRONTAGE ROAD & ANDOVER ROAD

PM Peak Hour
9/27/2011

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Volume (vph)	88	314	272	145	110	136	119	1293	285	202	1539	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91		1.00	0.91	
Fr _t	1.00	0.93		1.00	0.92		1.00	0.97		1.00	0.99	
Fl _t Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3293		1770	3246		1770	4948		1770	5042	
Fl _t Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3293		1770	3246		1770	4948		1770	5042	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	88	314	272	145	110	136	119	1293	285	202	1539	92
RTOR Reduction (vph)	0	114	0	0	110	0	0	24	0	0	4	0
Lane Group Flow (vph)	88	472	0	145	136	0	119	1554	0	202	1627	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.7	23.6		15.2	27.1		14.8	57.4		19.8	62.4	
Effective Green, g (s)	11.7	23.6		15.2	27.1		14.8	57.4		19.8	62.4	
Actuated g/C Ratio	0.08	0.17		0.11	0.19		0.11	0.41		0.14	0.45	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	148	555		192	628		187	2029		250	2247	
v/s Ratio Prot	0.05	c0.14		c0.08	c0.04		0.07	0.31		c0.11	c0.32	
v/s Ratio Perm												
v/c Ratio	0.59	0.85		0.76	0.22		0.64	0.77		0.81	0.72	
Uniform Delay, d ₁	61.9	56.5		60.6	47.5		60.0	35.5		58.3	31.8	
Progression Factor	1.00	1.00		1.00	1.00		1.03	0.37		1.00	1.00	
Incremental Delay, d ₂	6.3	11.9		15.5	0.2		6.3	2.6		17.2	2.1	
Delay (s)	68.1	68.4		76.1	47.7		68.2	15.8		75.4	33.8	
Level of Service	E	E		E	D		E	B		E	C	
Approach Delay (s)		68.4			58.2			19.5			38.4	
Approach LOS		E			E			B			D	
Intersection Summary												
HCM Average Control Delay			37.5			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)			30.0			
Intersection Capacity Utilization			88.3%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Volume (vph)	1060	1179	548	0	0	0	0	929	301	419	1180	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0			
Lane Util. Factor	0.97	0.86	0.86					0.81	1.00	0.97	0.91			
Fr _t	1.00	0.98	0.85					1.00	0.85	1.00	1.00			
Fl _t Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00			
Satd. Flow (prot)	3433	4720	1362					7544	1583	3433	5085			
Fl _t Permitted	0.95	1.00	1.00					1.00	1.00	0.95	1.00			
Satd. Flow (perm)	3433	4720	1362					7544	1583	3433	5085			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Adj. Flow (vph)	1060	1179	548	0	0	0	0	929	301	419	1180	0		
RTOR Reduction (vph)	0	12	55	0	0	0	0	0	8	0	0	0		
Lane Group Flow (vph)	1060	1326	334	0	0	0	0	929	293	419	1180	0		
Turn Type	Perm		Perm						custom		Prot			
Protected Phases		2						4	4	6	6	4		
Permitted Phases	2		2						8			8		
Actuated Green, G (s)	44.0	44.0	44.0					19.0	51.0	21.0	78.0			
Effective Green, g (s)	44.0	44.0	44.0					19.0	51.0	21.0	78.0			
Actuated g/C Ratio	0.31	0.31	0.31					0.14	0.36	0.15	0.56			
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0				
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0				
Lane Grp Cap (vph)	1079	1483	428					1024	577	515	3051			
v/s Ratio Prot		0.28						c0.12	c0.07	c0.12	0.13			
v/s Ratio Perm	c0.31		0.25						0.12		0.10			
v/c Ratio	0.98	0.89	0.78					0.91	0.51	0.81	0.39			
Uniform Delay, d ₁	47.6	45.8	43.6					59.6	34.7	57.6	17.5			
Progression Factor	1.00	1.00	1.00					0.86	0.78	0.35	0.06			
Incremental Delay, d ₂	23.5	8.7	13.2					13.0	0.7	4.1	0.0			
Delay (s)	71.1	54.5	56.8					64.1	27.9	24.3	1.1			
Level of Service	E	D	E					E	C	C	A			
Approach Delay (s)		61.1			0.0			55.2			7.1			
Approach LOS		E			A			E			A			
Intersection Summary														
HCM Average Control Delay			44.5									HCM Level of Service	D	
HCM Volume to Capacity ratio			0.81											
Actuated Cycle Length (s)			140.0								24.0			
Intersection Capacity Utilization			113.7%										ICU Level of Service	H
Analysis Period (min)			15											
c Critical Lane Group														



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖ ↗	↖ ↗	↖	↖ ↗	↖ ↗			↑ ↑ ↑	↖ ↗
Volume (vph)	0	0	0	499	1168	259	550	1439	0	0	1100	856
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	6.0	6.0	6.0			6.0	6.0
Lane Util. Factor				0.97	0.91	1.00	0.97	0.91			0.81	0.88
Fr _t				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Fl _t Protected				0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				3433	5085	1583	3433	5085			7544	2787
Fl _t Permitted				0.95	1.00	1.00	0.09	1.00			1.00	1.00
Satd. Flow (perm)				3433	5085	1583	329	5085			7544	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	499	1168	259	550	1439	0	0	1100	856
RTOR Reduction (vph)	0	0	0	0	0	51	0	0	0	0	0	507
Lane Group Flow (vph)	0	0	0	499	1168	208	550	1439	0	0	1100	349
Turn Type				Perm		Perm	custom					Perm
Protected Phases					8		4	4 6			6	
Permitted Phases				8		8	2	2				6
Actuated Green, G (s)				32.0	32.0	32.0	63.0	90.0			21.0	21.0
Effective Green, g (s)				32.0	32.0	32.0	63.0	90.0			21.0	21.0
Actuated g/C Ratio				0.23	0.23	0.23	0.45	0.64			0.15	0.15
Clearance Time (s)				6.0	6.0	6.0	6.0				6.0	6.0
Vehicle Extension (s)				3.0	3.0	3.0	3.0				3.0	3.0
Lane Grp Cap (vph)				785	1162	362	569	3487			1132	418
v/s Ratio Prot					c0.23		c0.13	0.14			c0.15	
v/s Ratio Perm				0.15		0.13	c0.30	0.15				0.13
v/c Ratio				0.64	1.01	0.57	0.97	0.41			0.97	0.83
Uniform Delay, d ₁				48.7	54.0	48.0	56.7	12.2			59.2	57.8
Progression Factor				1.00	1.00	1.00	0.64	0.00			0.61	0.99
Incremental Delay, d ₂				1.7	27.7	2.2	17.5	0.1			16.0	12.2
Delay (s)				50.4	81.7	50.2	54.0	0.1			52.1	69.4
Level of Service				D	F	D	D	A			D	E
Approach Delay (s)		0.0			69.3			15.0			59.7	
Approach LOS		A			E			B			E	
Intersection Summary												
HCM Average Control Delay			47.7	HCM Level of Service				D				
HCM Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			140.0	Sum of lost time (s)				24.0				
Intersection Capacity Utilization			113.7%	ICU Level of Service				H				
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↗		↖	↗			↖↗	↖
Volume (vph)	0	0	0	177	417	38	496	850	0	0	664	301
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor				1.00	0.95		1.00	0.95			0.91	1.00
Fr _t				1.00	0.99		1.00	1.00			1.00	0.85
Fl _t Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	3495		1770	3539			5085	1583
Fl _t Permitted				0.95	1.00		0.18	1.00			1.00	1.00
Satd. Flow (perm)				1770	3495		339	3539			5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	177	417	38	496	850	0	0	664	301
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	254
Lane Group Flow (vph)	0	0	0	177	449	0	496	850	0	0	664	47
Turn Type				Perm			custom					Perm
Protected Phases					8		4	4			6	
Permitted Phases				8			2	2				6
Actuated Green, G (s)				15.9	15.9		53.0	70.0			17.0	17.0
Effective Green, g (s)				15.9	15.9		53.0	70.0			17.0	17.0
Actuated g/C Ratio				0.14	0.14		0.48	0.64			0.15	0.15
Clearance Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				256	506		567	2641			787	245
v/s Ratio Prot					c0.13		c0.25	0.09			c0.13	
v/s Ratio Perm				0.10			c0.18	0.15				0.03
v/c Ratio				0.69	0.89		0.87	0.32			0.84	0.19
Uniform Delay, d ₁				44.7	46.1		34.1	9.1			45.2	40.5
Progression Factor				1.00	1.00		0.42	0.01			1.00	1.00
Incremental Delay, d ₂				7.8	17.0		12.7	0.3			10.7	1.7
Delay (s)				52.5	63.1		27.0	0.3			55.9	42.2
Level of Service				D	E		C	A			E	D
Approach Delay (s)		0.0			60.1			10.2			51.6	
Approach LOS		A			E			B			D	
Intersection Summary												
HCM Average Control Delay			34.5									C
HCM Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			109.9						24.0			
Intersection Capacity Utilization			85.2%									E
Analysis Period (min)			15									
c Critical Lane Group												

US 54 Andover, KS
70: EB KELLOGG FRONTAGE ROAD & YORKTOWN STREET

PM Peak Hour
9/27/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑	↗					↑↑↑	↗	↖	↑↑	
Volume (vph)	341	294	354	0	0	0	0	1005	79	124	717	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	1.00	1.00					0.91	1.00	1.00	0.95	
Fr _t	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Fl _t Protected	0.95	1.00	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	1863	1583					5085	1583	1770	3539	
Fl _t Permitted	0.95	1.00	1.00					1.00	1.00	0.27	1.00	
Satd. Flow (perm)	3433	1863	1583					5085	1583	508	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	341	294	354	0	0	0	0	1005	79	124	717	0
RTOR Reduction (vph)	0	0	226	0	0	0	0	0	57	0	0	0
Lane Group Flow (vph)	341	294	128	0	0	0	0	1005	22	124	717	0
Turn Type	Perm		Perm						Perm	custom		
Protected Phases			2						4	6		6
Permitted Phases	2		2						4	8		4 8
Actuated Green, G (s)	22.0	22.0	22.0					31.0	31.0	32.9	63.9	
Effective Green, g (s)	22.0	22.0	22.0					31.0	31.0	32.9	63.9	
Actuated g/C Ratio	0.20	0.20	0.20					0.28	0.28	0.30	0.58	
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	687	373	317					1434	447	347	2444	
v/s Ratio Prot	c0.16							c0.20		0.06	c0.05	
v/s Ratio Perm	0.10		0.08						0.01	c0.05	0.16	
v/c Ratio	0.50	0.79	0.40					0.70	0.05	0.36	0.29	
Uniform Delay, d1	39.0	41.7	38.2					35.3	28.7	29.0	11.6	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.06	0.31	
Incremental Delay, d2	2.6	15.5	3.8					2.9	0.2	0.3	0.0	
Delay (s)	41.6	57.2	42.0					38.2	28.9	2.0	3.7	
Level of Service	D	E	D					D	C	A	A	
Approach Delay (s)	46.4			0.0				37.5			3.4	
Approach LOS	D			A				D			A	
Intersection Summary												
HCM Average Control Delay			30.7	HCM Level of Service				C				
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			109.9	Sum of lost time (s)				18.0				
Intersection Capacity Utilization			85.2%	ICU Level of Service				E				
Analysis Period (min)			15									
c Critical Lane Group												

US 54 Andover, KS
 90: WB KELLOGG FRONTAGE ROAD & PRAIRIE CREEK ROAD

PM Peak Hour
 9/27/2011



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔		↔	↔			↔	↔
Volume (vph)	0	0	0	73	149	20	769	1006	0	0	479	569
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					6.0		6.0	6.0			6.0	6.0
Lane Util. Factor					0.95		0.97	0.95			0.86	0.86
Fr _t					0.99		1.00	1.00			0.94	0.85
Fit Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					3443		3433	3539			4537	1362
Fit Permitted					0.99		0.13	1.00			1.00	1.00
Satd. Flow (perm)					3443		466	3539			4537	1362
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	73	149	20	769	1006	0	0	479	569
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	108	236
Lane Group Flow (vph)	0	0	0	0	236	0	769	1006	0	0	656	48
Turn Type				Perm		custom						Perm
Protected Phases					8		4	4			6	
Permitted Phases				8			2	2 6				6
Actuated Green, G (s)					10.0		49.0	66.0			17.0	17.0
Effective Green, g (s)					10.0		49.0	66.0			17.0	17.0
Actuated g/C Ratio					0.10		0.49	0.66			0.17	0.17
Clearance Time (s)					6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					344		762	2760			771	232
v/s Ratio Prot							c0.18	0.07			c0.14	
v/s Ratio Perm					0.07		c0.31	0.22				0.04
v/c Ratio					0.69		1.01	0.36			0.85	0.21
Uniform Delay, d1					43.5		37.7	7.6			40.3	35.7
Progression Factor					1.00		0.66	0.12			0.65	0.86
Incremental Delay, d2					5.6		29.5	0.1			10.3	1.8
Delay (s)					49.0		54.3	1.0			36.5	32.4
Level of Service					D		D	A			D	C
Approach Delay (s)		0.0			49.0			24.1			35.4	
Approach LOS		A			D			C			D	
Intersection Summary												
HCM Average Control Delay			29.9		HCM Level of Service						C	
HCM Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)					24.0		
Intersection Capacity Utilization			85.9%		ICU Level of Service				E			
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑	↗					↑↑↑		↖	↑↑	
Volume (vph)	983	272	464	0	0	0	0	792	101	153	399	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0					6.0		6.0	6.0	
Lane Util. Factor	0.97	1.00	1.00					0.86		1.00	0.95	
Fr _t	1.00	1.00	0.85					0.98		1.00	1.00	
Fit Protected	0.95	1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	3433	1863	1583					6299		1770	3539	
Fit Permitted	0.95	1.00	1.00					1.00		0.29	1.00	
Satd. Flow (perm)	3433	1863	1583					6299		541	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	983	272	464	0	0	0	0	792	101	153	399	0
RTOR Reduction (vph)	0	0	306	0	0	0	0	23	0	0	0	0
Lane Group Flow (vph)	983	272	158	0	0	0	0	870	0	153	399	0
Turn Type	Perm		Perm							custom		
Protected Phases		2						4			6	
Permitted Phases	2		2							6 8	4 8	
Actuated Green, G (s)	31.0	31.0	31.0					18.0		33.0	45.0	
Effective Green, g (s)	31.0	31.0	31.0					18.0		33.0	45.0	
Actuated g/C Ratio	0.31	0.31	0.31					0.18		0.33	0.45	
Clearance Time (s)	6.0	6.0	6.0					6.0			6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)	1064	578	491					1134		179	2017	
v/s Ratio Prot		0.15						c0.14			0.03	
v/s Ratio Perm	c0.29		0.10							c0.28	0.08	
v/c Ratio	0.92	0.47	0.32					0.77		0.85	0.20	
Uniform Delay, d1	33.4	27.9	26.4					39.0		31.3	16.6	
Progression Factor	1.00	1.00	1.00					1.00		0.30	0.32	
Incremental Delay, d2	14.4	2.7	1.7					5.0		16.7	0.0	
Delay (s)	47.8	30.6	28.2					44.0		26.1	5.4	
Level of Service	D	C	C					D		C	A	
Approach Delay (s)		39.8			0.0			44.0			11.1	
Approach LOS		D			A			D			B	
Intersection Summary												
HCM Average Control Delay			36.0								HCM Level of Service	D
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			100.0								Sum of lost time (s)	18.0
Intersection Capacity Utilization			85.9%								ICU Level of Service	E
Analysis Period (min)			15									
c Critical Lane Group												



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↗		↖	↗	
Volume (vph)	1	0	61	428	5	30	105	753	136	1	659	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Flt	1.00	0.85		1.00	0.87		1.00	0.98		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583		1770	1623		1770	3458		1770	3531	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1583		1770	1623		1770	3458		1770	3531	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	0	61	428	5	30	105	753	136	1	659	10
RTOR Reduction (vph)	0	55	0	0	19	0	0	12	0	0	1	0
Lane Group Flow (vph)	1	6	0	428	16	0	105	877	0	1	668	0
Turn Type	Prot		Prot		Prot		Prot		Prot			
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	2.0	11.6		29.7	39.3		12.1	42.7		2.0	32.6	
Effective Green, g (s)	2.0	11.6		29.7	39.3		12.1	42.7		2.0	32.6	
Actuated g/C Ratio	0.02	0.11		0.27	0.36		0.11	0.39		0.02	0.30	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	32	167		478	580		195	1342		32	1046	
v/s Ratio Prot	0.00	c0.00		c0.24	0.01		0.06	c0.25		0.00	c0.19	
v/s Ratio Perm												
v/c Ratio	0.03	0.04		0.90	0.03		0.54	0.65		0.03	0.64	
Uniform Delay, d1	53.0	44.2		38.7	22.9		46.3	27.6		53.0	33.6	
Progression Factor	1.00	1.00		1.00	1.00		1.20	0.85		1.00	1.00	
Incremental Delay, d2	0.4	0.1		18.9	0.0		2.7	2.3		0.4	3.0	
Delay (s)	53.4	44.3		57.6	23.0		58.2	25.9		53.4	36.6	
Level of Service	D	D		E	C		E	C		D	D	
Approach Delay (s)	44.4		55.0		29.3		36.6					
Approach LOS	D		D		C		D					
Intersection Summary												
HCM Average Control Delay	37.4		HCM Level of Service				D					
HCM Volume to Capacity ratio	0.68											
Actuated Cycle Length (s)	110.0		Sum of lost time (s)				24.0					
Intersection Capacity Utilization	78.9%		ICU Level of Service				D					
Analysis Period (min)	15											
c Critical Lane Group												



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↷	↶↷		↶	↷
Volume (vph)	1	175	782	29	159	1302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	0.91		1.00	0.91
Fr _t	1.00	0.85	0.99		1.00	1.00
Fl _t Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1583	5058		1770	5085
Fl _t Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	1583	5058		1770	5085
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	175	782	29	159	1302
RTOR Reduction (vph)	0	65	2	0	0	0
Lane Group Flow (vph)	1	110	809	0	159	1302
Turn Type	pm+ov			Prot		
Protected Phases	8	1	2		1	6
Permitted Phases	8					
Actuated Green, G (s)	2.0	46.0	76.0		44.0	126.0
Effective Green, g (s)	2.0	46.0	76.0		44.0	126.0
Actuated g/C Ratio	0.01	0.33	0.54		0.31	0.90
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	25	588	2746		556	4577
v/s Ratio Prot	0.00	c0.06	0.16		0.09	c0.26
v/s Ratio Perm	0.01					
v/c Ratio	0.04	0.19	0.29		0.29	0.28
Uniform Delay, d ₁	68.1	33.6	17.4		36.2	0.9
Progression Factor	1.00	1.00	1.00		0.71	0.54
Incremental Delay, d ₂	0.7	0.2	0.3		0.3	0.1
Delay (s)	68.7	33.8	17.7		25.9	0.6
Level of Service	E	C	B		C	A
Approach Delay (s)	34.0		17.7			3.4
Approach LOS	C		B			A
Intersection Summary						
HCM Average Control Delay			10.3		HCM Level of Service	B
HCM Volume to Capacity ratio			0.27			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	6.0
Intersection Capacity Utilization			47.9%		ICU Level of Service	A
Analysis Period (min)	15					
c Critical Lane Group						



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	330	384	57	702	169	360	51
v/c Ratio	0.45	0.51	0.15	0.64	0.46	0.44	0.02
Control Delay	33.9	34.8	9.9	33.4	9.9	3.4	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	34.8	9.9	33.4	9.9	3.4	0.4
Queue Length 50th (ft)	86	104	0	102	0	0	0
Queue Length 95th (ft)	129	152	32	136	66	0	0
Internal Link Dist (ft)		148		634			161
Turn Bay Length (ft)					200		
Base Capacity (vph)	729	752	381	1098	367	814	2315
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.51	0.15	0.64	0.46	0.44	0.02
Intersection Summary							



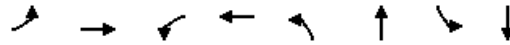
Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	12	361	337	387	474	398	315
v/c Ratio	0.04	0.62	0.62	0.63	0.19	0.35	0.48
Control Delay	30.5	39.4	9.4	12.4	0.3	27.3	8.4
Queue Delay	0.0	0.0	0.0	0.1	0.3	0.0	0.0
Total Delay	30.5	39.4	9.4	12.4	0.6	27.3	8.4
Queue Length 50th (ft)	6	99	0	16	1	25	17
Queue Length 95th (ft)	21	143	72	32	1	47	81
Internal Link Dist (ft)		111			161	676	
Turn Bay Length (ft)							300
Base Capacity (vph)	334	668	572	610	2482	1139	662
Starvation Cap Reductn	0	0	0	6	1344	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.54	0.59	0.64	0.42	0.35	0.48
Intersection Summary							



Lane Group	EBL	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	156	126	25	446	173
v/c Ratio	0.37	0.15	0.06	0.56	0.12
Control Delay	34.6	30.5	12.1	35.2	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.6	30.5	12.1	35.2	1.5
Queue Length 50th (ft)	81	32	0	123	2
Queue Length 95th (ft)	144	58	21	180	3
Internal Link Dist (ft)		101		392	161
Turn Bay Length (ft)					
Base Capacity (vph)	419	838	394	798	1477
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.37	0.15	0.06	0.56	0.12
Intersection Summary					



Lane Group	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	77	300	530	96	160
v/c Ratio	0.32	0.62	0.33	0.18	0.42
Control Delay	41.6	43.8	1.2	37.3	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	43.8	1.3	37.3	10.0
Queue Length 50th (ft)	44	88	3	27	0
Queue Length 95th (ft)	88	133	3	52	57
Internal Link Dist (ft)		62	161	403	
Turn Bay Length (ft)					200
Base Capacity (vph)	291	583	1583	547	380
Starvation Cap Reductn	0	0	122	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.26	0.51	0.36	0.18	0.42
Intersection Summary					



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	195	86	150	90	1993	53	1333
v/c Ratio	0.45	0.50	0.53	0.38	0.52	0.67	0.36	0.48
Control Delay	62.5	25.0	64.0	23.1	69.9	6.3	59.3	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.5	25.0	64.0	23.1	69.9	6.3	59.3	18.3
Queue Length 50th (ft)	50	27	65	21	66	106	39	231
Queue Length 95th (ft)	97	65	119	53	m99	m201	82	301
Internal Link Dist (ft)		634		786		505		357
Turn Bay Length (ft)	200		200		200		200	
Base Capacity (vph)	148	482	177	509	187	2958	148	2790
Starvation Cap Reductn	0	0	0	0	0	44	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.40	0.49	0.29	0.48	0.68	0.36	0.48

Intersection Summary
 m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1104	824	234	1169	322	198	867
v/c Ratio	1.02	0.54	0.44	1.03	0.52	0.49	0.29
Control Delay	72.1	35.1	14.0	81.4	11.9	22.0	1.2
Queue Delay	0.0	0.0	0.0	1.6	0.0	0.0	0.2
Total Delay	72.1	35.1	14.0	82.9	11.9	22.0	1.4
Queue Length 50th (ft)	~452	201	51	~240	97	11	4
Queue Length 95th (ft)	#597	248	137	#288	68	m34	5
Internal Link Dist (ft)		92		406			154
Turn Bay Length (ft)					200		
Base Capacity (vph)	1087	1514	537	1132	619	401	2966
Starvation Cap Reductn	0	0	0	0	0	0	1241
Spillback Cap Reductn	0	0	0	5	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.54	0.44	1.04	0.52	0.49	0.50

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	381	977	406	596	1677	684	823
v/c Ratio	0.51	0.89	1.09	0.94	0.48	0.78	0.99
Control Delay	44.3	56.4	111.6	33.3	0.0	44.1	49.8
Queue Delay	0.0	0.0	0.0	0.0	1.6	0.0	0.0
Total Delay	44.3	56.4	111.6	33.3	1.7	44.1	49.8
Queue Length 50th (ft)	135	270	~328	90	0	130	217
Queue Length 95th (ft)	185	#343	#529	m81	m0	156	#275
Internal Link Dist (ft)		102			154	505	
Turn Bay Length (ft)							200
Base Capacity (vph)	744	1102	374	635	3475	880	830
Starvation Cap Reductn	0	0	0	0	1539	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.89	1.09	0.94	0.87	0.78	0.99

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	275	306	435	502	255	344
v/c Ratio	0.83	0.42	0.83	0.21	0.41	0.69
Control Delay	60.7	19.6	29.4	0.2	42.5	12.8
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	60.7	19.6	29.4	0.4	42.5	12.8
Queue Length 50th (ft)	167	45	125	0	56	0
Queue Length 95th (ft)	#291	84	#238	0	83	85
Internal Link Dist (ft)		48		150	558	
Turn Bay Length (ft)						200
Base Capacity (vph)	360	785	526	2448	621	496
Starvation Cap Reductn	0	0	0	1216	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.39	0.83	0.41	0.41	0.69

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	218	202	199	720	48	67	462
v/c Ratio	0.33	0.56	0.43	0.56	0.11	0.20	0.19
Control Delay	36.2	43.2	8.3	34.1	9.4	1.4	2.3
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.4
Total Delay	36.2	43.2	8.3	34.2	9.4	1.4	2.7
Queue Length 50th (ft)	62	118	0	147	0	0	4
Queue Length 95th (ft)	97	192	59	188	28	0	m29
Internal Link Dist (ft)		60		290			150
Turn Bay Length (ft)					200		
Base Capacity (vph)	663	360	467	1293	439	343	2423
Starvation Cap Reductn	0	0	0	0	0	0	1375
Spillback Cap Reductn	0	0	0	53	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.56	0.43	0.58	0.11	0.20	0.44

Intersection Summary
 m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	859	796	352	490	328
v/c Ratio	0.97	1.00	0.15	0.49	0.87
Control Delay	54.2	53.5	0.1	28.4	50.0
Queue Delay	0.0	0.0	0.7	0.0	0.0
Total Delay	54.2	53.5	0.8	28.4	50.0
Queue Length 50th (ft)	236	100	0	81	160
Queue Length 95th (ft)	#366	#192	m0	118	#347
Internal Link Dist (ft)	42		161	530	
Turn Bay Length (ft)					400
Base Capacity (vph)	890	797	2300	997	375
Starvation Cap Reductn	0	0	1573	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.97	1.00	0.48	0.49	0.87

Intersection Summary

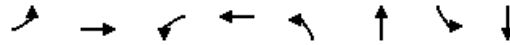
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	295	177	89	912	86	179
v/c Ratio	0.66	0.73	0.31	0.75	0.32	0.07
Control Delay	49.3	60.6	12.0	42.2	8.4	2.4
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	49.3	60.6	12.0	42.3	8.4	2.4
Queue Length 50th (ft)	93	110	0	159	6	7
Queue Length 95th (ft)	138	#208	44	196	52	m10
Internal Link Dist (ft)		81		504		161
Turn Bay Length (ft)						
Base Capacity (vph)	446	242	283	1216	265	2654
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	23	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.73	0.31	0.76	0.32	0.07

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	4	46	106	9	48	763	40	566
v/c Ratio	0.02	0.09	0.28	0.03	0.24	0.37	0.19	0.27
Control Delay	36.0	0.3	38.7	24.8	43.0	2.4	38.2	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.0	0.3	38.7	24.8	43.0	2.4	38.2	14.9
Queue Length 50th (ft)	2	0	28	2	24	3	20	117
Queue Length 95th (ft)	12	0	53	17	m41	15	52	164
Internal Link Dist (ft)		433		1040		676		292
Turn Bay Length (ft)	200		200		200		200	
Base Capacity (vph)	197	570	383	366	199	2069	211	2084
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.08	0.28	0.02	0.24	0.37	0.19	0.27

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	6	49	1285	31	903
v/c Ratio	0.04	0.18	0.32	0.14	0.18
Control Delay	51.3	11.8	5.6	27.8	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	11.8	5.6	27.8	0.6
Queue Length 50th (ft)	4	0	96	17	0
Queue Length 95th (ft)	18	31	195	m44	38
Internal Link Dist (ft)	365		643		311
Turn Bay Length (ft)				200	
Base Capacity (vph)	236	295	4001	236	4899
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.17	0.32	0.13	0.18

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	506	1319	244	592	172	738	211
v/c Ratio	0.38	0.95	0.33	0.89	0.99	1.02	0.12
Control Delay	25.0	48.5	6.1	62.4	104.8	51.1	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.0	48.5	6.1	62.4	104.8	51.1	2.9
Queue Length 50th (ft)	129	469	16	120	119	~131	1
Queue Length 95th (ft)	173	#622	67	#177	#297	#156	m14
Internal Link Dist (ft)		148		634			161
Turn Bay Length (ft)					200		
Base Capacity (vph)	1342	1383	746	663	174	727	1770
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.95	0.33	0.89	0.99	1.02	0.12

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	104	392	327	257	669	846	302
v/c Ratio	0.50	0.94	0.69	0.69	0.24	0.81	0.34
Control Delay	54.4	79.6	13.3	35.3	0.2	40.4	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.3	0.0
Total Delay	54.4	79.6	13.3	35.3	0.5	40.7	7.4
Queue Length 50th (ft)	70	146	0	34	1	154	9
Queue Length 95th (ft)	127	#241	87	m46	m1	m199	m93
Internal Link Dist (ft)		111			161	676	
Turn Bay Length (ft)							300
Base Capacity (vph)	209	418	475	375	2735	1049	890
Starvation Cap Reductn	0	0	0	0	1334	0	0
Spillback Cap Reductn	0	0	0	0	0	24	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.94	0.69	0.69	0.48	0.83	0.34

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	648	884	196	623	481
v/c Ratio	0.90	0.61	0.26	0.97	0.42
Control Delay	47.2	27.8	3.8	73.1	11.9
Queue Delay	0.0	0.0	0.0	12.9	0.1
Total Delay	47.2	27.8	3.8	86.0	12.0
Queue Length 50th (ft)	419	254	0	226	29
Queue Length 95th (ft)	#644	321	43	#346	m32
Internal Link Dist (ft)		101		392	161
Turn Bay Length (ft)					
Base Capacity (vph)	724	1448	763	642	1135
Starvation Cap Reductn	0	0	0	0	134
Spillback Cap Reductn	0	0	0	34	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.90	0.61	0.26	1.02	0.48

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

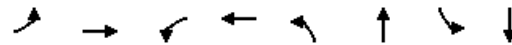


Lane Group	WBL	WBT	NBT	SBT	SBR
Lane Group Flow (vph)	169	155	1178	313	314
v/c Ratio	0.95	0.39	0.76	0.97	0.73
Control Delay	107.1	26.7	5.0	94.2	16.4
Queue Delay	1.1	0.0	0.5	0.0	0.0
Total Delay	108.2	26.7	5.5	94.2	16.4
Queue Length 50th (ft)	121	26	42	117	0
Queue Length 95th (ft)	#256	60	m77	#209	#93
Internal Link Dist (ft)		62	161	403	
Turn Bay Length (ft)					200
Base Capacity (vph)	177	398	1554	322	429
Starvation Cap Reductn	0	0	96	0	0
Spillback Cap Reductn	1	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.96	0.39	0.81	0.97	0.73

Intersection Summary

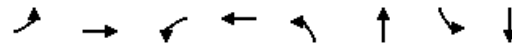
95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	128	257	81	42	77	946	13	800
v/c Ratio	0.45	0.66	0.39	0.22	0.43	0.46	0.07	0.46
Control Delay	43.2	16.5	46.6	32.2	55.8	3.4	42.0	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	16.5	46.6	32.2	55.8	3.4	42.0	20.6
Queue Length 50th (ft)	78	15	48	15	35	4	8	188
Queue Length 95th (ft)	130	89	95	48	m76	183	26	272
Internal Link Dist (ft)		250		422		530		409
Turn Bay Length (ft)	200				200		200	
Base Capacity (vph)	306	479	206	260	181	2069	177	1725
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.54	0.39	0.16	0.43	0.46	0.07	0.46

Intersection Summary
 m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	88	586	145	246	119	1578	202	1631
v/c Ratio	0.59	0.88	0.76	0.33	0.64	0.77	0.81	0.72
Control Delay	78.4	58.1	84.1	21.9	75.8	16.0	81.8	35.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	78.4	58.1	84.1	21.9	75.8	16.2	81.8	35.0
Queue Length 50th (ft)	78	212	129	43	116	422	178	469
Queue Length 95th (ft)	137	#292	#215	83	183	462	#283	531
Internal Link Dist (ft)		634		786		505		357
Turn Bay Length (ft)	200		200		200		200	
Base Capacity (vph)	164	704	215	786	215	2052	278	2253
Starvation Cap Reductn	0	0	0	0	0	58	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.83	0.67	0.31	0.55	0.79	0.73	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1060	1338	389	929	301	419	1180
v/c Ratio	0.98	0.89	0.81	0.91	0.52	0.81	0.39
Control Delay	70.9	54.1	48.8	64.2	17.4	25.1	1.0
Queue Delay	0.0	0.0	0.0	0.3	0.0	1.9	0.4
Total Delay	70.9	54.1	48.8	64.6	17.4	26.9	1.5
Queue Length 50th (ft)	494	446	309	209	142	40	5
Queue Length 95th (ft)	#642	515	#504	#248	106	m46	m6
Internal Link Dist (ft)		92		406			154
Turn Bay Length (ft)					200		
Base Capacity (vph)	1079	1495	483	1024	584	515	3051
Starvation Cap Reductn	0	0	0	0	0	28	1235
Spillback Cap Reductn	0	0	0	7	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.89	0.81	0.91	0.52	0.86	0.65

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	499	1168	259	550	1439	1100	856
v/c Ratio	0.64	1.01	0.63	0.97	0.41	0.97	0.92
Control Delay	53.0	81.0	43.4	52.8	0.1	53.0	29.1
Queue Delay	0.0	0.0	0.0	0.0	1.3	0.0	0.0
Total Delay	53.0	81.0	43.4	52.8	1.4	53.0	29.1
Queue Length 50th (ft)	213	~395	160	96	0	252	288
Queue Length 95th (ft)	274	#502	259	m#136	m0	#311	#380
Internal Link Dist (ft)		102			154	505	
Turn Bay Length (ft)							200
Base Capacity (vph)	785	1162	413	569	3487	1132	926
Starvation Cap Reductn	0	0	0	0	1735	0	0
Spillback Cap Reductn	0	0	0	0	46	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	1.01	0.63	0.97	0.82	0.97	0.92

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	177	455	496	850	664	301
v/c Ratio	0.69	0.89	0.87	0.32	0.84	0.60
Control Delay	59.9	66.3	28.2	0.3	56.3	10.4
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	59.9	66.3	28.2	0.6	56.3	10.4
Queue Length 50th (ft)	120	165	109	0	168	0
Queue Length 95th (ft)	#211	#256	#217	0	#227	79
Internal Link Dist (ft)		48		150	558	
Turn Bay Length (ft)						200
Base Capacity (vph)	257	515	568	2641	787	499
Starvation Cap Reductn	0	0	0	1085	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.88	0.87	0.55	0.84	0.60

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	341	294	354	1005	79	124	717
v/c Ratio	0.50	0.79	0.65	0.70	0.16	0.36	0.29
Control Delay	41.9	58.0	15.5	38.4	7.5	2.9	2.2
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.2	0.8
Total Delay	41.9	58.0	15.5	38.5	7.5	3.2	3.0
Queue Length 50th (ft)	111	199	42	232	0	1	21
Queue Length 95th (ft)	157	#330	142	283	36	m0	m31
Internal Link Dist (ft)		60		290			150
Turn Bay Length (ft)					200		
Base Capacity (vph)	688	373	543	1435	503	348	2444
Starvation Cap Reductn	0	0	0	0	0	31	1333
Spillback Cap Reductn	0	0	0	32	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.79	0.65	0.72	0.16	0.39	0.65

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	242	769	1006	764	284
v/c Ratio	0.69	1.01	0.36	0.87	0.61
Control Delay	53.3	53.4	0.5	32.9	9.4
Queue Delay	0.0	0.0	1.0	0.0	0.0
Total Delay	53.3	53.4	1.5	32.9	9.4
Queue Length 50th (ft)	77	84	0	157	90
Queue Length 95th (ft)	#121	#119	m15	#219	54
Internal Link Dist (ft)	42		161	530	
Turn Bay Length (ft)					400
Base Capacity (vph)	351	762	2760	879	467
Starvation Cap Reductn	0	0	1406	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	1.01	0.74	0.87	0.61

Intersection Summary

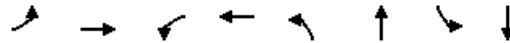
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	983	272	464	893	153	399
v/c Ratio	0.92	0.47	0.58	0.77	0.86	0.20
Control Delay	48.6	31.2	6.6	43.0	36.5	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5
Total Delay	48.6	31.2	6.6	43.0	36.5	4.0
Queue Length 50th (ft)	310	139	9	154	39	13
Queue Length 95th (ft)	#434	217	88	192	m45	m22
Internal Link Dist (ft)		81		504		161
Turn Bay Length (ft)						
Base Capacity (vph)	1064	578	796	1157	178	2017
Starvation Cap Reductn	0	0	0	0	0	1175
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.47	0.58	0.77	0.86	0.47

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1	61	428	35	105	889	1	669
v/c Ratio	0.01	0.15	0.90	0.06	0.54	0.54	0.01	0.56
Control Delay	46.0	0.8	61.2	10.6	65.0	20.6	46.0	33.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.0	0.8	61.2	10.6	65.0	20.6	46.0	33.8
Queue Length 50th (ft)	1	0	280	2	77	159	1	217
Queue Length 95th (ft)	6	0	#459	27	m119	295	6	288
Internal Link Dist (ft)		433		1040		676		292
Turn Bay Length (ft)	200		200		200		200	
Base Capacity (vph)	161	445	506	642	201	1655	161	1203
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.14	0.85	0.05	0.52	0.54	0.01	0.56

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	WBL	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	1	175	811	159	1302
v/c Ratio	0.01	0.29	0.28	0.29	0.26
Control Delay	61.0	15.4	15.8	27.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	61.0	15.4	15.8	27.1	0.4
Queue Length 50th (ft)	1	51	121	85	0
Queue Length 95th (ft)	7	93	193	m131	50
Internal Link Dist (ft)	365		643		311
Turn Bay Length (ft)				200	
Base Capacity (vph)	228	598	2922	556	4925
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.00	0.29	0.28	0.29	0.26

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.