SHORT REPORT

General Information		Site Information	
Analyst	M. Southern	Intersection	CENTRE AVE & EXIT
Agency or Co.	TRANS ASSOCIATES	Area Type	CBD or Similar
Date Performed	12/6/2005	Jurisdiction	CITY OF PITTSBURGH
Time Period	SATURDAY CASINO PEAK HOUR	Analysis Year	2008 COMBINED CONDITION

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		2			2		1		0			
Lane Group		T			T		L	LR				
Volume (vph)		150			221		958		606			
% Heavy Vehicles		2			2		2		2			
PHF		0.90			0.90		0.90		0.90			
Pretimed/Actuated (P/A)		P			P		P		P			
Startup Lost Time		2.0			2.0		2.0	2.0				
Extension of Effective Green		2.0			2.0		2.0	2.0				
Arrival Type		3			3		3	3				
Unit Extension		3.0			3.0		3.0	3.0				
Ped/Bike/RTOR Volume	0	0		124	0		0	0	50			
Lane Width		11.0			11.0		12.0	12.0				
Parking/Grade/Parking	N	4	Y	N	-2	Y	N	0	N			
Parking/Hour			20			20						
Bus Stops/Hour		0			0		0	0				
Minimum Pedestrian Time		3.2			14.0			3.2				

Phasing	Thru Only	02	03	04	NB Only	06	07	08
Timing	G = 20.0	G =	G =	G =	G = 59.0	G =	G =	G =
	Y = 5.5	Y =	Y =	Y =	Y = 5.5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		167			246		670	1012				
Lane Group Capacity		605			623		1044	979				
v/c Ratio		0.28			0.39		0.64	1.03				
Green Ratio		0.22			0.22		0.66	0.66				
Uniform Delay d_1		29.0			29.8		9.2	15.5				
Delay Factor k		0.50			0.50		0.50	0.50				
Incremental Delay d_2		1.1			1.9		3.0	37.8				
PF Factor		1.000			1.000		1.000	1.000				
Control Delay		30.1			31.7		12.2	53.3				
Lane Group LOS		C			C		B	D				
Approach Delay		30.1			31.7			36.9				
Approach LOS		C			C			D				
Intersection Delay		35.8			Intersection LOS						D	

SHORT REPORT

General Information		Site Information	
Analyst	CKR	Intersection	CENTRE AVE & CRAWFORD ST
Agency or Co.	TRANS ASSOCIATES	Area Type	CBD or Similar
Date Performed	12/6/2005	Jurisdiction	CITY OF PITTSBURGH
Time Period	SATURDAY CASINO PEAK HOUR	Analysis Year	2008 COMBINED CONDITION

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	0	1	1	1	1	0	0	1	0	0	1	0
Lane Group		LT	R	L	TR			LTR			LTR	
Volume (vph)	21	98	651	11	84	13	60	80	35	20	56	31
% Heavy Vehicles	5	5	5	4	4	4	5	5	5	6	6	6
PHF	0.78	0.78	0.78	0.86	0.86	0.86	0.85	0.85	0.85	0.65	0.65	0.65
Pretimed/Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup Lost Time		2.0	2.0	2.0	2.0			2.0			2.0	
Extension of Effective Green		2.0	2.0	2.0	2.0			2.0			2.0	
Arrival Type		3	3	3	3			3			3	
Unit Extension		3.0	3.0	3.0	3.0			3.0			3.0	
Ped/Bike/RTOR Volume	50	0	65	50	0	1	50	0	4	50	0	3
Lane Width		15.0	16.0	11.0	11.0			14.0			13.0	
Parking/Grade/Parking	N	-4	Y	N	8	Y	N	5	N	N	-6	N
Parking/Hour			10			10						
Bus Stops/Hour		0	0	0	0			0			0	
Minimum Pedestrian Time		22.8			13.5			14.8			14.8	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 56.0	G =	G =	G =	G = 24.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		153	751	13	112			201			160	
Lane Group Capacity		1073	813	606	788			354			390	
v/c Ratio		0.14	0.92	0.02	0.14			0.57			0.41	
Green Ratio		0.62	0.62	0.62	0.62			0.27			0.27	
Uniform Delay d_1		7.0	15.1	6.5	7.0			28.5			27.2	
Delay Factor k		0.50	0.50	0.50	0.50			0.50			0.50	
Incremental Delay d_2		0.3	17.7	0.1	0.4			6.5			3.2	
PF Factor		1.000	1.000	1.000	1.000			1.000			1.000	
Control Delay		7.3	32.8	6.6	7.4			35.0			30.3	
Lane Group LOS		A	C	A	A			C			C	
Approach Delay		28.5			7.3			35.0			30.3	
Approach LOS		C			A			C			C	
Intersection Delay		27.7			Intersection LOS						C	

SHORT REPORT

General Information		Site Information	
Analyst	CKR	Intersection	CENTRE AVE & DEVILLERS ST
Agency or Co.	TRANS ASSOCIATES	Area Type	CBD or Similar
Date Performed	12/6/2005	Jurisdiction	CITY OF PITTSBURGH
Time Period	SATURDAY CASINO PEAK HOUR	Analysis Year	2008 COMBINED CONDITION

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Lane Group		LTR			LTR			LTR			LTR	
Volume (vph)	9	133	1	1	103	11	1	1	1	1	1	2
% Heavy Vehicles	8	8	8	8	8	8	0	0	0	0	0	0
PHF	0.75	0.75	0.75	0.63	0.63	0.63	0.25	0.25	0.25	0.50	0.50	0.50
Pretimed/Actuated (P/A)	P	P	P	P	P	P	P	P	P	P	P	P
Startup Lost Time		2.0			2.0			2.0			2.0	
Extension of Effective Green		2.0			2.0			2.0			2.0	
Arrival Type		3			3			3			3	
Unit Extension		3.0			3.0			3.0			3.0	
Ped/Bike/RTOR Volume	25	0	0	25	0	1	25	0	0	25	0	0
Lane Width		16.0			10.0			11.0			11.0	
Parking/Grade/Parking	N	-2	N	N	-1	Y	N	0	Y	N	-6	Y
Parking/Hour						5			5			5
Bus Stops/Hour		0			0			0			0	
Minimum Pedestrian Time		11.4			12.9			14.6			13.4	

Phasing	EW Perm	EB Only	03	04	NS Perm	06	07	08
Timing	G = 24.0	G = 21.0	G =	G =	G = 19.0	G =	G =	G =
	Y = 6	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 80.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		190			181			12			8	
Lane Group Capacity		1141			383			301			306	
v/c Ratio		0.17			0.47			0.04			0.03	
Green Ratio		0.64			0.30			0.24			0.24	
Uniform Delay d_1		5.9			22.8			23.5			23.4	
Delay Factor k		0.50			0.50			0.50			0.50	
Incremental Delay d_2		0.3			4.1			0.2			0.2	
PF Factor		1.000			1.000			1.000			1.000	
Control Delay		6.2			27.0			23.7			23.6	
Lane Group LOS		A			C			C			C	
Approach Delay	6.2			27.0			23.7			23.6		
Approach LOS	A			C			C			C		
Intersection Delay	16.7			Intersection LOS						B		

SHORT REPORT

General Information		Site Information	
Analyst	N. Karsko	Intersection	CENTRE AVE & DEVILLERS ST
Agency or Co.	TRANS ASSOCIATES	Area Type	CBD or Similar
Date Performed	12/6/2005	Jurisdiction	CITY OF PITTSBURGH
Time Period	SATURDAY CASINO PEAK HOUR	Analysis Year	2008 COMBINED CONDITION

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		1	0	0	1		0		0			
Lane Group		TR			LT			LR				
Volume (vph)		127	29	28	78		6		15			
% Heavy Vehicles		0	0	0	0		0		0			
PHF		0.73	0.73	0.70	0.70		0.75		0.75			
Pretimed/Actuated (P/A)		P	P	P	P		P		P			
Startup Lost Time		2.0			2.0			2.0				
Extension of Effective Green		2.0			2.0			2.0				
Arrival Type		3			3			3				
Unit Extension		3.0			3.0			3.0				
Ped/Bike/RTOR Volume	25	0	3	0	0		25	0	0			
Lane Width		16.0			16.0			16.0				
Parking/Grade/Parking	N	-2	N	N	-1	N	N	4	Y			
Parking/Hour									5			
Bus Stops/Hour		0			0			0				
Minimum Pedestrian Time		15.9			12.7			13.4				

Phasing	EW Perm	WB Only	03	04	NB Only	06	07	08
Timing	G = 24.0	G = 21.0	G =	G =	G = 19.0	G =	G =	G =
	Y = 6	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 80.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		210			151			28				
Lane Group Capacity		569			1157			351				
v/c Ratio		0.37			0.13			0.08				
Green Ratio		0.30			0.64			0.24				
Uniform Delay d_1		22.0			5.7			23.7				
Delay Factor k		0.50			0.50			0.50				
Incremental Delay d_2		1.8			0.2			0.4				
PF Factor		1.000			1.000			1.000				
Control Delay		23.9			6.0			24.1				
Lane Group LOS		C			A			C				
Approach Delay	23.9			6.0			24.1					
Approach LOS	C			A			C					
Intersection Delay	16.9			Intersection LOS			B					

SHORT REPORT

General Information		Site Information	
Analyst	CKR	Intersection	FIFTH AVE & WASHINGTON/CHATHAM
Agency or Co.	TRANS ASSOCIATES	Area Type	CBD or Similar
Date Performed	12/6/2005	Jurisdiction	CITY OF PITTSBURGH
Time Period	SATURDAY CASINO PEAK HOUR	Analysis Year	2008 COMBINED CONDITION

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes				0	2	1	1	1			1	2
Lane Group					LT	R	L	T			T	R
Volume (vph)				8	1091	284	26	185			64	170
% Heavy Vehicles				4	4	4	0	0			3	3
PHF				0.81	0.81	0.81	0.84	0.84			0.73	0.73
Pretimed/Actuated (P/A)				P	P	P	P	P			P	P
Startup Lost Time					2.0	2.0	2.0	2.0			2.0	2.0
Extension of Effective Green					2.0	2.0	2.0	2.0			2.0	2.0
Arrival Type					3	3	3	3			3	3
Unit Extension					3.0	3.0	3.0	3.0			3.0	3.0
Ped/Bike/RTOR Volume				17	0	28	0	0		12	0	0
Lane Width					11.0	12.0	10.0	9.0			11.0	12.0
Parking/Grade/Parking				Y	-2	Y	N	-6	N	N	-2	N
Parking/Hour				20		20						
Bus Stops/Hour					0	0	0	0			0	0
Minimum Pedestrian Time					25.3			3.2			15.3	

Phasing	WB Only	02	03	04	NS Perm	06	07	08
Timing	G = 46.0	G =	G =	G =	G = 23.0	G =	G =	G =
	Y = 5.5	Y =	Y =	Y =	Y = 5.5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 80.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate				1357	316	31	220			88	233	
Lane Group Capacity				1581	640	327	456			466	710	
v/c Ratio				0.86	0.49	0.09	0.48			0.19	0.33	
Green Ratio				0.57	0.57	0.29	0.29			0.29	0.29	
Uniform Delay d_1				14.3	10.1	20.9	23.6			21.5	22.4	
Delay Factor k				0.50	0.50	0.50	0.50			0.50	0.50	
Incremental Delay d_2				6.3	2.7	0.6	3.6			0.9	1.2	
PF Factor				1.000	1.000	1.000	1.000			1.000	1.000	
Control Delay				20.5	12.8	21.5	27.2			22.4	23.7	
Lane Group LOS				C	B	C	C			C	C	
Approach Delay				19.1		26.5			23.3			
Approach LOS				B		C			C			
Intersection Delay	20.5			Intersection LOS					C			

SHORT REPORT

General Information		Site Information	
Analyst	CKR	Intersection	FORBES AVE & ARMSTRONG TUNNEL
Agency or Co.	TRANS ASSOCIATES	Area Type	CBD or Similar
Date Performed	12/6/2005	Jurisdiction	CITY OF PITTSBURGH
Time Period	SATURDAY CASINO PEAK HOUR	Analysis Year	2008 COMBINED CONDITION

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		2	0				0		2			
Lane Group		TR						LR	R			
Volume (vph)		442	205				43		272			
% Heavy Vehicles		3	3				1		1			
PHF		0.88	0.88				0.72		0.72			
Pretimed/Actuated (P/A)		P	P				P		P			
Startup Lost Time		2.0						2.0	2.0			
Extension of Effective Green		2.0						2.0	2.0			
Arrival Type		3						3	3			
Unit Extension		3.0						3.0	3.0			
Ped/Bike/RTOR Volume	50	0	0				0	0	16			
Lane Width		11.0						11.0	11.0			
Parking/Grade/Parking	N	3	N				N	0	N			
Parking/Hour												
Bus Stops/Hour		0						0	0			
Minimum Pedestrian Time		17.3						3.2				

Phasing	EB Only	02	03	04	NB Only	06	07	08
Timing	G = 41.0	G =	G =	G =	G = 29.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 80.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		735						210	206			
Lane Group Capacity		1447						522	892			
v/c Ratio		0.51						0.40	0.23			
Green Ratio		0.51						0.36	0.36			
Uniform Delay d_1		12.9						19.0	17.7			
Delay Factor k		0.50						0.50	0.50			
Incremental Delay d_2		1.3						2.3	0.6			
PF Factor		1.000						1.000	1.000			
Control Delay		14.1						21.3	18.3			
Lane Group LOS		B						C	B			
Approach Delay	14.1						19.9					
Approach LOS	B						B					
Intersection Delay	16.2			Intersection LOS						B		

SHORT REPORT

General Information		Site Information	
Analyst	CKR	Intersection	FORBES AVE & CHATHAM/McANULTY
Agency or Co.	TRANS ASSOCIATES	Area Type	CBD or Similar
Date Performed	12/6/2005	Jurisdiction	CITY OF PITTSBURGH
Time Period	SATURDAY CASINO PEAK HOUR	Analysis Year	2008 COMBINED CONDITION

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	1	2	0					1	1	0	1	
Lane Group	L	TR						T	R		LT	
Volume (vph)	176	527	10					29	11	52	10	
% Heavy Vehicles	4	4	4					0	0	0	0	
PHF	0.86	0.86	0.86					0.33	0.33	0.76	0.76	
Pretimed/Actuated (P/A)	P	P	P					P	P	P	P	
Startup Lost Time	2.0	2.0						2.0	2.0		2.0	
Extension of Effective Green	2.0	2.0						2.0	2.0		2.0	
Arrival Type	3	3						3	3		3	
Unit Extension	3.0	3.0						3.0	3.0		3.0	
Ped/Bike/RTOR Volume	17	0	0				8	0	1	21	0	
Lane Width	10.0	11.0						10.0	11.0		10.0	
Parking/Grade/Parking	N	3	N				N	-6	N	N	10	N
Parking/Hour												
Bus Stops/Hour	0	0						0	0		0	
Minimum Pedestrian Time		13.8						12.2			12.3	

Phasing	EB Only	02	03	04	NS Perm	06	07	08
Timing	G = 43.0	G =	G =	G =	G = 27.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 — Cycle Length C = 80.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate	205	625						88	30		81	
Lane Group Capacity	772	1597						555	485		375	
v/c Ratio	0.27	0.39						0.16	0.06		0.22	
Green Ratio	0.54	0.54						0.34	0.34		0.34	
Uniform Delay d_1	10.0	10.8						18.5	17.9		18.9	
Delay Factor k	0.50	0.50						0.50	0.50		0.50	
Incremental Delay d_2	0.8	0.7						0.6	0.2		1.3	
PF Factor	1.000	1.000						1.000	1.000		1.000	
Control Delay	10.8	11.6						19.2	18.2		20.3	
Lane Group LOS	B	B						B	B		C	
Approach Delay	11.4						18.9			20.3		
Approach LOS	B						B			C		
Intersection Delay	12.9			Intersection LOS						B		

SHORT REPORT

General Information		Site Information	
Analyst	CKR	Intersection	GRANT ST & BLVD OF ALLIES
Agency or Co.	TRANS ASSOCIATES	Area Type	CBD or Similar
Date Performed	12/6/2005	Jurisdiction	CITY OF PITTSBURGH
Time Period	SATURDAY CASINO PEAK HOUR	Analysis Year	2008 COMBINED CONDITION

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	0	2	1		2	0	0	2	0		2	0
Lane Group		LT	R		TR			LTR			TR	
Volume (vph)	24	135	111		142	29	26	560	35		826	37
% Heavy Vehicles	0	0	0		0	0	0	0	0		0	0
PHF	0.94	0.94	0.94		0.81	0.81	0.80	0.80	0.80		0.88	0.88
Pretimed/Actuated (P/A)	P	P	P		P	P	P	P	P		P	P
Startup Lost Time		2.0	2.0		2.0			2.0			2.0	
Extension of Effective Green		2.0	2.0		2.0			2.0			2.0	
Arrival Type		3	3		3			3			3	
Unit Extension		3.0	3.0		3.0			3.0			3.0	
Ped/Bike/RTOR Volume	100	0	6	100	0	0	100	0	0	100	0	0
Lane Width		11.0	12.0		12.0			11.0			11.0	
Parking/Grade/Parking	N	0	N	N	-2	N	N	1	N	N	-1	N
Parking/Hour												
Bus Stops/Hour		0	0		0			0			0	
Minimum Pedestrian Time		18.9			17.9			28.9			20.1	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 33.0	G =	G =	G =	G = 46.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 6	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 | Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		170	112		211			776			981	
Lane Group Capacity		1022	547		1159			1392			1606	
v/c Ratio		0.17	0.20		0.18			0.56			0.61	
Green Ratio		0.37	0.37		0.37			0.51			0.51	
Uniform Delay d_1		19.2	19.5		19.3			15.0			15.6	
Delay Factor k		0.50	0.50		0.50			0.50			0.50	
Incremental Delay d_2		0.4	0.8		0.3			1.6			1.7	
PF Factor		1.000	1.000		1.000			1.000			1.000	
Control Delay		19.6	20.4		19.7			16.7			17.4	
Lane Group LOS		B	C		B			B			B	
Approach Delay	19.9			19.7			16.7			17.4		
Approach LOS	B			B			B			B		
Intersection Delay	17.7			Intersection LOS						B		

SHORT REPORT

General Information		Site Information	
Analyst	CKR	Intersection	GRANT ST & FIRST AVE
Agency or Co.	TRANS ASSOCIATES	Area Type	CBD or Similar
Date Performed	12/6/2005	Jurisdiction	CITY OF PITTSBURGH
Time Period	SATURDAY CASINO PEAK HOUR	Analysis Year	2008 COMBINED CONDITION

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes				0		0		2	1	1	2	
Lane Group					LR			T	R	L	T	
Volume (vph)				106		6		616	428	27	803	
% Heavy Vehicles				0		0		1	1	2	2	
PHF				0.76		0.76		0.87	0.87	0.71	0.71	
Pretimed/Actuated (P/A)				P		P		P	P	P	P	
Startup Lost Time					2.0			2.0	2.0	2.0	2.0	
Extension of Effective Green					2.0			2.0	2.0	2.0	2.0	
Arrival Type					3			3	3	3	3	
Unit Extension					3.0			3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume				0	0	0	100	0	0	0	0	
Lane Width					12.0			11.0	12.0	10.0	12.0	
Parking/Grade/Parking				N	2	N	N	3	N	N	-3	N
Parking/Hour												
Bus Stops/Hour					0			0	0	0	0	
Minimum Pedestrian Time					18.7			12.9			3.2	

Phasing	WB Only	02	03	04	SB Only	NS Perm	07	08
Timing	G = 30.0	G =	G =	G =	G = 3.0	G = 44.0	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 3	Y = 5	Y =	Y =

Duration of Analysis (hrs) = 0.25

Cycle Length C = 90.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate					147			708	492	38	1131	
Lane Group Capacity					535			1500	1170	279	1800	
v/c Ratio					0.27			0.47	0.42	0.14	0.63	
Green Ratio					0.33			0.49	0.88	0.56	0.56	
Uniform Delay d_1					22.0			15.3	1.1	10.0	13.7	
Delay Factor k					0.50			0.50	0.50	0.50	0.50	
Incremental Delay d_2					1.3			1.1	1.1	1.0	1.7	
PF Factor					1.000			1.000	1.000	1.000	1.000	
Control Delay					23.3			16.3	2.2	11.0	15.3	
Lane Group LOS					C			B	A	B	B	
Approach Delay				23.3			10.5			15.2		
Approach LOS				C			B			B		
Intersection Delay	13.4			Intersection LOS						B		

SHORT REPORT

General Information		Site Information	
Analyst	CKR	Intersection	GRANT ST & FORT PITT/1-376
Agency or Co.	TRANS ASSOCIATES	Area Type	CBD or Similar
Date Performed	12/6/2005	Jurisdiction	CITY OF PITTSBURGH
Time Period	SATURDAY CASINO PEAK HOUR	Analysis Year	2008 COMBINED CONDITION

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	1				1	1		2			1	1
Lane Group	L				TR	R		T			T	R
Volume (vph)	159				88	300		592			728	180
% Heavy Vehicles	0				1	1		1			1	1
PHF	0.71				0.85	0.85		0.70			0.80	0.80
Pretimed/Actuated (P/A)	P				P	P		P			P	P
Startup Lost Time	2.0				2.0	2.0		2.0			2.0	2.0
Extension of Effective Green	2.0				2.0	2.0		2.0			2.0	2.0
Arrival Type	3				3	3		3			3	3
Unit Extension	3.0				3.0	3.0		3.0			3.0	3.0
Ped/Bike/RTOR Volume	100	0		0	0	0	0	0		0	0	0
Lane Width	12.0				13.0	12.0		10.0			12.0	12.0
Parking/Grade/Parking	N	0	N	N	2	N	N	3	N	N	-1	N
Parking/Hour												
Bus Stops/Hour	0				0	0		0			0	0
Minimum Pedestrian Time		17.6			3.2			3.2			3.2	

Phasing	EB Only	WB Only	03	04	Thru & RT	06	07	08
Timing	G = 15.0	G = 20.0	G =	G =	G = 39.0	G =	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 6	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 90.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate	224				122	335		846			910	225
Lane Group Capacity	271				376	317		1284			738	627
v/c Ratio	0.83				0.32	1.06		0.66			1.23	0.36
Green Ratio	0.17				0.22	0.22		0.43			0.43	0.43
Uniform Delay d_1	36.2				29.3	35.0		20.2			25.5	17.1
Delay Factor k	0.50				0.50	0.50		0.50			0.50	0.50
Incremental Delay d_2	24.2				2.3	66.3		2.7			116.5	1.6
PF Factor	1.000				1.000	1.000		1.000			1.000	1.000
Control Delay	60.4				31.6	101.3		22.9			142.0	18.7
Lane Group LOS	E				C	F		C			F	B
Approach Delay	60.4			82.7			22.9			117.6		
Approach LOS	E			F			C			F		
Intersection Delay	76.7			Intersection LOS						E		

SHORT REPORT

General Information		Site Information	
Analyst	CKR	Intersection	SECOND AVE/COURT & ROSS ST
Agency or Co.	TRANS ASSOCIATES	Area Type	CBD or Similar
Date Performed	12/6/2005	Jurisdiction	CITY OF PITTSBURGH
Time Period	SATURDAY CASINO PEAK HOUR	Analysis Year	2008 COMBINED CONDITION

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes	0	1	0		1	1	0	1	0	1	1	0
Lane Group		LTR			T	R		LTR		L	TR	
Volume (vph)	1	142	1		119	128	2	362	28	176	70	10
% Heavy Vehicles	1	1	1		4	4	2	2	2	3	3	3
PHF	0.86	0.86	0.86		0.90	0.90	0.68	0.68	0.68	0.89	0.89	0.89
Pretimed/Actuated (P/A)	P	P	P		P	P	P	P	P	P	P	P
Startup Lost Time		2.0			2.0	2.0		2.0		2.0	2.0	
Extension of Effective Green		2.0			2.0	2.0		2.0		2.0	2.0	
Arrival Type		3			3	3		3		3	3	
Unit Extension		3.0			3.0	3.0		3.0		3.0	3.0	
Ped/Bike/RTOR Volume	50	0	0	50	0	0	50	0	3	50	0	0
Lane Width		13.0			11.0	14.0		14.0		10.0	10.0	
Parking/Grade/Parking	Y	-2	Y	N	5	N	N	2	Y	N	-3	N
Parking/Hour	10		10						10			
Bus Stops/Hour		0			0	0		0		0	0	
Minimum Pedestrian Time		13.0			13.0			12.5			8.5	

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 23.0	G =	G =	G =	G = 36.0	G =	G =	G =
	Y = 5.5	Y =	Y =	Y =	Y = 5.5	Y =	Y =	Y =

Duration of Analysis (hrs) = 0.25 — Cycle Length C = 70.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		167			132	142		572		198	90	
Lane Group Capacity		463			509	441		764		313	789	
v/c Ratio		0.36			0.26	0.32		0.75		0.63	0.11	
Green Ratio		0.33			0.33	0.33		0.51		0.51	0.51	
Uniform Delay d_1		17.9			17.2	17.6		13.4		12.2	8.8	
Delay Factor k		0.50			0.50	0.50		0.50		0.50	0.50	
Incremental Delay d_2		2.2			1.2	1.9		6.6		9.4	0.3	
PF Factor		1.000			1.000	1.000		1.000		1.000	1.000	
Control Delay		20.1			18.5	19.6		20.1		21.6	9.1	
Lane Group LOS		C			B	B		C		C	A	
Approach Delay	20.1			19.0			20.1			17.7		
Approach LOS	C			B			C			B		
Intersection Delay	19.3			Intersection LOS						B		

APPENDIX M

SYNCHRO Queue Analysis

Lane Group	EBL2	EBL	EBR	NBT	NBR	NEL	NET	NER
Volume (vph)	155	169	88	566	79	525	349	340
Confl. Peds. (#/hr)								150
Peak Hour Factor	0.90	0.90	0.90	0.92	0.92	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%
Lane Group Flow (vph)	172	188	98	615	86	455	459	338
v/c Ratio	0.35	0.60	0.37	0.81	0.21	0.74	0.75	0.75
Control Delay	6.7	31.8	26.7	29.3	2.7	30.8	31.7	34.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	31.8	26.7	29.3	2.7	30.8	31.7	34.8
Queue Length 50th (ft)	11	72	40	85	1	223	236	166
Queue Length 95th (ft)	m35	m127	m67	m#148	m4	352	#383	#316
Internal Link Dist (ft)		486		204			736	
Turn Bay Length (ft)	200	200				300		
Base Capacity (vph)	490	311	264	762	407	614	608	449
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	0.35	0.60	0.37	0.81	0.21	0.74	0.75	0.75

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.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		-1%			-3%
Volume (veh/h)	0	59	586	64	0	340
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	66	651	71	0	378
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			150			284
pX, platoon unblocked	0.92	0.92			0.92	
vC, conflicting volume	813	253			722	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	632	26			534	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	93			100	
cM capacity (veh/h)	381	964			951	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	66	260	260	201	126	126	126
Volume Left	0	0	0	0	0	0	0
Volume Right	66	0	0	71	0	0	0
cSH	964	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.07	0.15	0.15	0.12	0.07	0.07	0.07
Queue Length 95th (ft)	5	0	0	0	0	0	0
Control Delay (s)	9.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	9.0	0.0			0.0		
Approach LOS	A						

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR2	NEL
Volume (vph)	907	163	141	170	124	35	389	57	89	334	5	68
Confl. Peds. (#/hr)		117			288			17			9	
Peak Hour Factor	0.91	0.91	0.93	0.93	0.93	0.92	0.92	0.92	0.94	0.94	0.93	0.80
Heavy Vehicles (%)	2%	2%	5%	5%	5%	5%	5%	5%	3%	3%	3%	0%
Lane Group Flow (vph)	1176	0	152	316	0	0	523	0	0	450	5	283
v/c Ratio	1.00		1.05	0.28			0.69			0.98	0.02	1.03
Control Delay	56.4		106.9	14.2			37.9			64.3	17.6	99.3
Queue Delay	0.0		0.0	0.0			0.0			0.0	0.0	0.0
Total Delay	56.4		106.9	14.2			37.9			64.3	17.6	99.3
Queue Length 50th (ft)	~348		~60	67			101			144	2	~173
Queue Length 95th (ft)	#499		#196	108			139			m#243	m4	#272
Internal Link Dist (ft)	452			538			348			70		548
Turn Bay Length (ft)			200									
Base Capacity (vph)	1173		145	1110			760			457	303	276
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	1.00		1.05	0.28			0.69			0.98	0.02	1.03

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	NER	NER2
Volume (vph)	280	71
Confl. Peds. (#/hr)		117
Peak Hour Factor	0.80	0.80
Heavy Vehicles (%)	0%	0%
Lane Group Flow (vph)	241	0
v/c Ratio	0.95	
Control Delay	84.3	
Queue Delay	0.0	
Total Delay	84.3	
Queue Length 50th (ft)	144	
Queue Length 95th (ft)	#246	
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)	253	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.95	

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	371	962	345	284	25	90
Confl. Peds. (#/hr)				124		18
Peak Hour Factor	0.82	0.82	0.88	0.88	0.90	0.90
Heavy Vehicles (%)	3%	3%	5%	5%	2%	2%
Lane Group Flow (vph)	452	1173	715	0	28	100
v/c Ratio	0.84	0.56	0.58		0.08	0.26
Control Delay	15.8	6.8	4.4		29.8	8.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	15.8	6.8	4.4		29.8	8.5
Queue Length 50th (ft)	106	174	5		13	0
Queue Length 95th (ft)	m114	m183	23		36	41
Internal Link Dist (ft)		538	249		257	
Turn Bay Length (ft)	50					
Base Capacity (vph)	538	2108	1225		335	380
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	0.84	0.56	0.58		0.08	0.26

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑↱							↱
Sign Control		Free			Free			Stop			Stop	
Grade		0%			-2%			0%			0%	
Volume (veh/h)	0	265	722	0	614	11	0	0	0	0	0	18
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.92	0.92	0.92	0.90	0.90	0.90
Hourly flow rate (vph)	0	294	802	0	682	12	0	0	0	0	0	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		329			136							
pX, platoon unblocked												
vC, conflicting volume	694			294			656	989	147	836	983	347
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	694			294			656	989	147	836	983	347
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	97
cM capacity (veh/h)	897			1264			340	245	873	260	247	649

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	147	147	802	455	240	20
Volume Left	0	0	0	0	0	0
Volume Right	0	0	802	0	12	20
cSH	1700	1700	1700	1700	1700	649
Volume to Capacity	0.09	0.09	0.47	0.27	0.14	0.03
Queue Length 95th (ft)	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.7
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.7
Approach LOS						B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	265	0	0	789	217	137
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Lane Group Flow (vph)	294	0	0	877	393	0
v/c Ratio	0.17			0.50	0.34	
Control Delay	4.6			14.4	13.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	4.6			14.4	13.6	
Queue Length 50th (ft)	21			173	48	
Queue Length 95th (ft)	28			218	84	
Internal Link Dist (ft)	56			136	129	
Turn Bay Length (ft)						
Base Capacity (vph)	1769			1769	1155	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.17			0.50	0.34	

Intersection Summary

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↱			↱
Sign Control		Free	Free		Stop	
Grade		-4%	0%		0%	
Volume (veh/h)	0	402	384	21	0	21
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	447	427	23	0	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		216	288			
pX, platoon unblocked					0.97	
vC, conflicting volume	450				662	225
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	450				620	225
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	1107				407	778

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	223	223	284	166	23
Volume Left	0	0	0	0	0
Volume Right	0	0	0	23	23
cSH	1700	1700	1700	1700	778
Volume to Capacity	0.13	0.13	0.17	0.10	0.03
Queue Length 95th (ft)	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	9.8
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.8
Approach LOS					A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	22.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	26	132	244	32	112	21	230	69	30	54	212	63
Confl. Peds. (#/hr)			50			50			50			50
Peak Hour Factor	0.89	0.89	0.89	0.85	0.85	0.85	0.93	0.93	0.93	0.85	0.85	0.85
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	6%	6%	6%	11%	11%	11%
Lane Group Flow (vph)	0	177	274	38	157	0	0	353	0	0	387	0
v/c Ratio		0.26	0.37	0.10	0.27			0.78			0.53	
Control Delay		14.7	3.0	18.0	18.2			31.6			17.2	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		14.7	3.0	18.0	18.2			31.6			17.2	
Queue Length 50th (ft)		41	0	13	53			151			133	
Queue Length 95th (ft)		68	16	32	92			#316			197	
Internal Link Dist (ft)		208			801			399			621	
Turn Bay Length (ft)												
Base Capacity (vph)		676	742	363	579			455			731	
Starvation Cap Reductn		0	0	0	0			0			0	
Spillback Cap Reductn		0	0	0	0			0			0	
Storage Cap Reductn		0	0	0	0			0			0	
Reduced v/c Ratio		0.26	0.37	0.10	0.27			0.78			0.53	

Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			8%	-6%	
Volume (veh/h)	1	71	22	99	218	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	79	24	110	242	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				701	555	
pX, platoon unblocked						
vC, conflicting volume	402	243	243			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	402	243	243			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	90	98			
cM capacity (veh/h)	593	796	1323			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	80	134	243
Volume Left	1	24	0
Volume Right	79	0	1
cSH	792	1323	1700
Volume to Capacity	0.10	0.02	0.14
Queue Length 95th (ft)	8	1	0
Control Delay (s)	10.1	1.5	0.0
Lane LOS	B	A	
Approach Delay (s)	10.1	1.5	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	69	193	24	46	4	61	3	30	1	1	1
Confl. Peds. (#/hr)			25			25			25			25
Peak Hour Factor	0.90	0.90	0.90	0.66	0.66	0.66	0.94	0.94	0.94	0.50	0.50	0.50
Heavy Vehicles (%)	6%	6%	6%	28%	28%	28%	5%	5%	5%	0%	0%	0%
Lane Group Flow (vph)	0	78	214	0	112	0	0	100	0	0	6	0
v/c Ratio		0.12	0.34		0.21			0.17			0.01	
Control Delay		9.6	3.4		10.2			7.6			7.7	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		9.6	3.4		10.2			7.6			7.7	
Queue Length 50th (ft)		13	0		19			11			1	
Queue Length 95th (ft)		33	30		31			34			3	
Internal Link Dist (ft)		194			220			475			246	
Turn Bay Length (ft)												
Base Capacity (vph)		642	638		525			575			616	
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		0.12	0.34		0.21			0.17			0.01	

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	10%			-12%	0%	
Volume (veh/h)	263	27	1	111	54	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	292	30	1	123	60	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	589			274		
pX, platoon unblocked						
vC, conflicting volume			322		433	161
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			322		433	161
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		89	100
cM capacity (veh/h)			1234		551	855

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	195	127	124	61
Volume Left	0	0	1	60
Volume Right	0	30	0	1
cSH	1700	1700	1234	554
Volume to Capacity	0.11	0.07	0.00	0.11
Queue Length 95th (ft)	0	0	0	9
Control Delay (s)	0.0	0.0	0.1	12.3
Lane LOS			A	B
Approach Delay (s)	0.0		0.1	12.3
Approach LOS				B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	10%			-12%	0%	
Volume (veh/h)	290	24	1	165	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	322	27	1	183	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	280			583		
pX, platoon unblocked						
vC, conflicting volume			349		521	174
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			349		521	174
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1207		485	839

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	215	134	184	2
Volume Left	0	0	1	1
Volume Right	0	27	0	1
cSH	1700	1700	1207	614
Volume to Capacity	0.13	0.08	0.00	0.00
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.1	10.9
Lane LOS			A	B
Approach Delay (s)	0.0		0.1	10.9
Approach LOS				B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	20.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL2	WBT	NBL	NBT	NBR	SBL	SBT	SBR2	NEL2	NER	NER2
Volume (vph)	8	146	220	0	1	89	250	312	37	225	290
Peak Hour Factor	0.92	0.81	0.90	0.90	0.90	0.92	0.92	0.92	0.91	0.91	0.92
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Lane Group Flow (vph)	9	180	168	77	0	0	369	339	41	562	0
v/c Ratio	0.03	0.65	0.71	0.20			11.18	0.60	0.07	0.86	
Control Delay	52.1	59.1	61.0	40.5			4615.6	16.2	0.2	45.0	
Queue Delay	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	
Total Delay	52.1	59.1	61.0	40.5			4615.6	16.2	0.2	45.0	
Queue Length 50th (ft)	7	154	152	55			~645	44	0	195	
Queue Length 95th (ft)	26	229	262	109			#980	176	0	#368	
Internal Link Dist (ft)		200		366			593				
Turn Bay Length (ft)									40		
Base Capacity (vph)	381	398	341	410			33	565	600	703	
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	0.45	0.49	0.19			11.18	0.60	0.07	0.80	

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.

Lane Group	EBL2	EBL	EBR	NBT	NBR	NEL	NET	NER
Lane Group Flow (vph)	288	240	139	1521	302	618	624	65
v/c Ratio	1.07	1.12	0.76	1.16	0.46	1.30	1.34	0.19
Control Delay	115.5	138.7	68.2	112.3	14.7	180.8	199.1	25.9
Queue Delay	0.0	0.0	0.0	66.6	0.0	0.0	0.0	0.0
Total Delay	115.5	138.7	68.2	178.9	14.7	180.8	199.1	25.9
Queue Length 50th (ft)	~200	~177	90	~609	75	~533	~574	30
Queue Length 95th (ft)	#359	#324	#190	#745	150	#757	#808	67
Internal Link Dist (ft)		486		204			736	
Turn Bay Length (ft)	200	200				300		
Base Capacity (vph)	269	214	182	1306	662	475	464	338
Starvation Cap Reductn	0	0	0	149	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	1.07	1.12	0.76	1.31	0.46	1.30	1.34	0.19

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.

Lane Group	EBL2	EBL	EBR	NBT	NBR	NEL	NET	NER
Volume (vph)	256	214	124	1399	278	986	219	63
Confl. Peds. (#/hr)								150
Peak Hour Factor	0.89	0.89	0.89	0.92	0.92	0.97	0.97	0.97
Heavy Vehicles (%)	3%	3%	3%	0%	0%	1%	1%	1%
Lane Group Flow (vph)	288	240	139	1521	302	618	624	65
v/c Ratio	1.07	1.12	0.76	1.16	0.46	1.30	1.34	0.19
Control Delay	115.5	138.7	68.2	112.3	14.7	180.8	199.1	25.9
Queue Delay	0.0	0.0	0.0	66.6	0.0	0.0	0.0	0.0
Total Delay	115.5	138.7	68.2	178.9	14.7	180.8	199.1	25.9
Queue Length 50th (ft)	~200	~177	90	~609	75	~533	~574	30
Queue Length 95th (ft)	#359	#324	#190	#745	150	#757	#808	67
Internal Link Dist (ft)		486		204			736	
Turn Bay Length (ft)	200	200				300		
Base Capacity (vph)	269	214	182	1306	662	475	464	338
Starvation Cap Reductn	0	0	0	149	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	1.07	1.12	0.76	1.31	0.46	1.30	1.34	0.19

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.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		-1%			-3%
Volume (veh/h)	0	279	1643	54	0	187
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	310	1826	60	0	208
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			150			284
pX, platoon unblocked	0.77	0.77			0.77	
vC, conflicting volume	1925	639			1886	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1605	0			1554	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	63			100	
cM capacity (veh/h)	74	836			325	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	310	730	730	425	69	69	69
Volume Left	0	0	0	0	0	0	0
Volume Right	310	0	0	60	0	0	0
cSH	836	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.37	0.43	0.43	0.25	0.04	0.04	0.04
Queue Length 95th (ft)	43	0	0	0	0	0	0
Control Delay (s)	11.8	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	B						
Approach Delay (s)	11.8	0.0			0.0		
Approach LOS	B						

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR2	NEL
Volume (vph)	939	96	148	374	413	13	878	32	49	97	41	40
Confl. Peds. (#/hr)		138			5			12			57	
Peak Hour Factor	0.77	0.77	0.87	0.87	0.87	0.84	0.84	0.84	0.91	0.91	0.91	0.81
Heavy Vehicles (%)	2%	2%	2%	2%	2%	1%	1%	1%	9%	9%	9%	0%
Lane Group Flow (vph)	1344	0	170	905	0	0	1098	0	0	161	45	224
v/c Ratio	1.21		1.01	0.73			1.08			0.39	0.15	0.87
Control Delay	132.3		77.5	25.4			85.4			31.8	28.4	68.5
Queue Delay	0.0		0.0	1.9			38.8			0.0	0.0	82.1
Total Delay	132.3		77.5	27.3			124.3			31.8	28.4	150.7
Queue Length 50th (ft)	~496		~62	258			~257			40	20	125
Queue Length 95th (ft)	#486		m#93	m270			#307			71	49	#214
Internal Link Dist (ft)	452			538			348			70		548
Turn Bay Length (ft)			200									
Base Capacity (vph)	1110		168	1241			1019			410	297	258
Starvation Cap Reductn	0		0	0			0			0	0	0
Spillback Cap Reductn	0		0	190			80			0	0	67
Storage Cap Reductn	0		0	0			0			0	0	0
Reduced v/c Ratio	1.21		1.01	0.86			1.17			0.39	0.15	1.17

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	NER	NER2
Volume (vph)	285	11
Confl. Peds. (#/hr)		138
Peak Hour Factor	0.81	0.81
Heavy Vehicles (%)	0%	0%
Lane Group Flow (vph)	191	0
v/c Ratio	0.80	
Control Delay	61.6	
Queue Delay	0.0	
Total Delay	61.6	
Queue Length 50th (ft)	110	
Queue Length 95th (ft)	#191	
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)	238	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	0.80	

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	197	1199	581	449	227	354
Confl. Peds. (#/hr)				120		54
Peak Hour Factor	0.86	0.86	0.85	0.85	0.90	0.90
Heavy Vehicles (%)	3%	3%	1%	1%	2%	2%
Lane Group Flow (vph)	229	1394	1212	0	252	393
v/c Ratio	0.83	0.73	0.92		0.57	0.74
Control Delay	34.3	5.9	22.9		34.1	30.7
Queue Delay	0.0	0.6	0.1		0.0	0.0
Total Delay	34.3	6.5	23.1		34.1	30.7
Queue Length 50th (ft)	83	102	188		123	166
Queue Length 95th (ft)	m73	m91	#242		201	#269
Internal Link Dist (ft)		538	249		257	
Turn Bay Length (ft)	50					
Base Capacity (vph)	275	1909	1317		444	534
Starvation Cap Reductn	0	193	4		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.83	0.81	0.92		0.57	0.74

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑↱							↱
Sign Control		Free			Free			Stop			Stop	
Grade		0%			-2%			0%			0%	
Volume (veh/h)	0	396	1030	0	1017	24	0	0	0	0	0	13
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	440	1144	0	1130	27	0	0	0	0	0	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		329			136							
pX, platoon unblocked	0.91						0.91	0.91		0.91	0.91	0.91
vC, conflicting volume	1157			1584			1019	1597	220	1363	2728	578
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1072			1584			921	1556	220	1300	2801	436
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	97
cM capacity (veh/h)	587			411			199	102	784	108	16	516

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	220	220	1144	753	403	14
Volume Left	0	0	0	0	0	0
Volume Right	0	0	1144	0	27	14
cSH	1700	1700	1700	1700	1700	516
Volume to Capacity	0.13	0.13	0.67	0.44	0.24	0.03
Queue Length 95th (ft)	0	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.2
Lane LOS						B
Approach Delay (s)	0.0			0.0		12.2
Approach LOS						B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	396	0	0	370	671	424
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	2%	1%	2%	2%
Lane Group Flow (vph)	440	0	0	411	1217	0
v/c Ratio	0.43			0.38	0.68	
Control Delay	14.6			23.4	13.1	
Queue Delay	0.0			0.0	0.0	
Total Delay	14.6			23.4	13.1	
Queue Length 50th (ft)	88			95	191	
Queue Length 95th (ft)	112			m122	261	
Internal Link Dist (ft)	56			137	129	
Turn Bay Length (ft)						
Base Capacity (vph)	1031			1072	1799	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.43			0.38	0.68	

Intersection Summary

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↱			↱
Sign Control		Free	Free		Stop	
Grade		-4%	0%		0%	
Volume (veh/h)	0	820	346	48	0	24
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	911	384	53	0	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		217	288			
pX, platoon unblocked					0.90	
vC, conflicting volume	438				867	219
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	438				743	219
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	1118				316	785

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	456	456	256	181	27
Volume Left	0	0	0	0	0
Volume Right	0	0	0	53	27
cSH	1700	1700	1700	1700	785
Volume to Capacity	0.27	0.27	0.15	0.11	0.03
Queue Length 95th (ft)	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	9.7
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.7
Approach LOS					A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	28.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	24	160	636	25	170	38	161	188	76	32	89	63
Confl. Peds. (#/hr)			50			50			50			50
Peak Hour Factor	0.87	0.87	0.87	0.90	0.90	0.90	0.83	0.83	0.83	0.85	0.85	0.85
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	4%	4%	4%	9%	9%	9%
Lane Group Flow (vph)	0	212	731	28	231	0	0	513	0	0	217	0
v/c Ratio		0.25	1.01	0.06	0.32			0.96			0.36	
Control Delay		10.8	51.2	12.7	14.3			55.8			16.6	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		10.8	51.2	12.7	14.3			55.8			16.6	
Queue Length 50th (ft)		52	~423	8	70			268			67	
Queue Length 95th (ft)		m92	#628	23	121			#419			114	
Internal Link Dist (ft)		208			801			399			621	
Turn Bay Length (ft)												
Base Capacity (vph)		845	727	444	725			537			605	
Starvation Cap Reductn		0	0	0	0			0			0	
Spillback Cap Reductn		0	0	0	0			0			0	
Storage Cap Reductn		0	0	0	0			0			0	
Reduced v/c Ratio		0.25	1.01	0.06	0.32			0.96			0.36	

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.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			8%	-6%	
Volume (veh/h)	0	52	39	211	105	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	58	43	234	117	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				701	555	
pX, platoon unblocked						
vC, conflicting volume	438	117	117			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	438	117	117			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	94	97			
cM capacity (veh/h)	559	935	1472			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	58	278	117
Volume Left	0	43	0
Volume Right	58	0	0
cSH	935	1472	1700
Volume to Capacity	0.06	0.03	0.07
Queue Length 95th (ft)	5	2	0
Control Delay (s)	9.1	1.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	47	72	27	59	1	182	1	39	2	6	3
Confl. Peds. (#/hr)			25			25			25			25
Peak Hour Factor	0.88	0.88	0.88	0.87	0.87	0.87	0.89	0.89	0.89	0.55	0.55	0.55
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	0%	0%	0%
Lane Group Flow (vph)	0	54	82	0	100	0	0	249	0	0	20	0
v/c Ratio		0.09	0.18		0.20			0.38			0.03	
Control Delay		12.5	4.9		13.6			8.2			5.3	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		12.5	4.9		13.6			8.2			5.3	
Queue Length 50th (ft)		11	0		21			33			2	
Queue Length 95th (ft)		29	21		47			70			5	
Internal Link Dist (ft)		194			220			475			246	
Turn Bay Length (ft)												
Base Capacity (vph)		575	462		505			662			781	
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		0.09	0.18		0.20			0.38			0.03	

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	119	55	0	244	40	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	132	61	0	271	44	0

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total (vph)	88	105	271	44
Volume Left (vph)	0	0	0	44
Volume Right (vph)	0	61	0	0
Hadj (s)	0.03	-0.37	0.03	0.23
Departure Headway (s)	4.8	4.4	4.4	5.1
Degree Utilization, x	0.12	0.13	0.33	0.06
Capacity (veh/h)	728	790	807	643
Control Delay (s)	7.3	6.9	9.5	8.5
Approach Delay (s)	7.1		9.5	8.5
Approach LOS	A		A	A

Intersection Summary			
Delay	8.5		
HCM Level of Service	A		
Intersection Capacity Utilization	24.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	174	53	0	284	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	193	59	0	316	0	0

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total (vph)	129	123	316	0
Volume Left (vph)	0	0	0	0
Volume Right (vph)	0	59	0	0
Hadj (s)	0.03	-0.30	0.03	0.00
Departure Headway (s)	4.7	4.4	4.3	5.1
Degree Utilization, x	0.17	0.15	0.37	0.00
Capacity (veh/h)	752	804	829	645
Control Delay (s)	7.5	7.0	9.8	8.1
Approach Delay (s)	7.2		9.8	0.0
Approach LOS	A		A	A

Intersection Summary			
Delay	8.7		
HCM Level of Service	A		
Intersection Capacity Utilization	19.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL2	WBT	WBR	NBL	NBT	NBR	NEL2	NEL	NER	NER2
Volume (vph)	6	163	115	668	122	1	178	287	230	17
Peak Hour Factor	0.92	0.86	0.92	0.90	0.90	0.90	0.90	0.92	0.90	0.92
Heavy Vehicles (%)	2%	0%	2%	2%	2%	2%	0%	2%	0%	2%
Lane Group Flow (vph)	7	315	0	429	450	0	198	312	274	0
v/c Ratio	0.02	0.84		0.83	0.85		0.37	0.69	0.70	
Control Delay	30.2	52.5		35.9	37.3		12.7	29.9	30.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	
Total Delay	30.2	52.5		35.9	37.3		12.7	29.9	30.4	
Queue Length 50th (ft)	3	150		211	224		37	143	130	
Queue Length 95th (ft)	15	#301		#400	#424		90	231	220	
Internal Link Dist (ft)		200			366			493		
Turn Bay Length (ft)							40	40		
Base Capacity (vph)	347	373		562	571		615	539	469	
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	0.02	0.84		0.76	0.79		0.32	0.58	0.58	

Intersection Summary

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

Lane Group	EBL2	EBL	EBR	NBT	NBR	NEL	NET	NER
Volume (vph)	258	237	76	918	171	612	408	155
Confl. Peds. (#/hr)								100
Peak Hour Factor	0.95	0.95	0.95	0.81	0.81	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%
Lane Group Flow (vph)	272	249	80	1133	211	547	550	167
v/c Ratio	0.87	1.17	0.44	1.01	0.37	0.99	1.00	0.38
Control Delay	49.6	145.9	37.9	59.3	12.4	67.1	69.0	23.7
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	49.6	145.9	37.9	59.8	12.4	67.1	69.0	23.7
Queue Length 50th (ft)	99	~168	36	~340	39	320	~339	71
Queue Length 95th (ft)	m#226	m#289	m68	#401	77	#548	#579	129
Internal Link Dist (ft)		486		204			736	
Turn Bay Length (ft)	200	200				300		
Base Capacity (vph)	312	212	181	1125	577	550	549	435
Starvation Cap Reductn	0	0	0	2	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	0.87	1.17	0.44	1.01	0.37	0.99	1.00	0.38

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.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		-1%			-3%
Volume (veh/h)	0	42	1047	133	0	231
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	46	1138	145	0	251
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			150			284
pX, platoon unblocked	0.86	0.86			0.86	
vC, conflicting volume	1294	452			1283	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1016	36			1003	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	95			100	
cM capacity (veh/h)	201	884			590	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	46	455	455	372	84	84	84
Volume Left	0	0	0	0	0	0	0
Volume Right	46	0	0	145	0	0	0
cSH	884	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.05	0.27	0.27	0.22	0.05	0.05	0.05
Queue Length 95th (ft)	4	0	0	0	0	0	0
Control Delay (s)	9.3	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	9.3	0.0			0.0		
Approach LOS	A						

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR2	NEL
Volume (vph)	1324	197	118	143	360	10	612	29	74	140	17	69
Confl. Peds. (#/hr)		691			683			917			45	
Peak Hour Factor	0.95	0.95	0.89	0.89	0.89	0.96	0.96	0.96	0.94	0.94	0.94	0.95
Heavy Vehicles (%)	0%	0%	5%	5%	5%	1%	1%	1%	2%	2%	2%	0%
Lane Group Flow (vph)	1601	0	133	565	0	0	678	0	0	228	18	379
v/c Ratio	1.09		1.27	1.22dr			1.12			1.65dl	0.09	1.11
Control Delay	87.7		200.3	28.0			125.5			80.9	52.9	131.8
Queue Delay	10.6		0.0	0.2			11.8			0.3	0.0	106.4
Total Delay	98.4		200.3	28.2			137.3			81.2	52.9	238.2
Queue Length 50th (ft)	~861		~107	188			~258			107	14	~395
Queue Length 95th (ft)	#1001		#243	253			#347			#178	39	#599
Internal Link Dist (ft)	452			538			348			70		548
Turn Bay Length (ft)			50									
Base Capacity (vph)	1470		105	874			608			278	193	340
Starvation Cap Reductn	0		0	0			0			0	0	0
Spillback Cap Reductn	33		0	33			15			2	0	62
Storage Cap Reductn	0		0	0			0			0	0	0
Reduced v/c Ratio	1.11		1.27	0.67			1.14			0.83	0.09	1.36

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.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Lane Group	NER	NER2
Volume (vph)	491	105
Confl. Peds. (#/hr)		691
Peak Hour Factor	0.95	0.95
Heavy Vehicles (%)	0%	0%
Lane Group Flow (vph)	322	0
v/c Ratio	1.02	
Control Delay	107.8	
Queue Delay	0.0	
Total Delay	107.8	
Queue Length 50th (ft)	~326	
Queue Length 95th (ft)	#531	
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)	316	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	1.02	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	481	1529	526	567	23	95
Confl. Peds. (#/hr)				47		1414
Peak Hour Factor	0.83	0.83	0.75	0.75	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	4%	2%	2%
Lane Group Flow (vph)	580	1842	1457	0	26	106
v/c Ratio	1.11	0.75	1.03		0.17	0.67
Control Delay	98.2	6.3	44.1		40.4	30.0
Queue Delay	0.0	0.6	0.0		0.0	0.0
Total Delay	98.2	6.9	44.1		40.4	30.0
Queue Length 50th (ft)	~336	182	~415		14	0
Queue Length 95th (ft)	#471	197	191		39	#75
Internal Link Dist (ft)		538	250		292	
Turn Bay Length (ft)	50					
Base Capacity (vph)	524	2465	1415		154	159
Starvation Cap Reductn	0	276	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	1.11	0.84	1.03		0.17	0.67

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑↱							↱
Sign Control		Free			Free			Stop			Stop	
Grade		0%			-2%			0%			0%	
Volume (veh/h)	0	278	1274	0	1084	9	0	0	0	0	0	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	309	1416	0	1204	10	0	0	0	0	0	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		330			135							
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	1214			1724			921	1523	154	1364	2934	607
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1067			1724			719	1434	154	1245	3109	346
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	98
cM capacity (veh/h)	546			363			261	112	864	110	10	547

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	154	154	1416	803	411	10
Volume Left	0	0	0	0	0	0
Volume Right	0	0	1416	0	10	10
cSH	1700	1700	1700	1700	1700	547
Volume to Capacity	0.09	0.09	0.83	0.47	0.24	0.02
Queue Length 95th (ft)	0	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	11.7
Lane LOS						B
Approach Delay (s)	0.0			0.0		11.7
Approach LOS						B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	91.0%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	278	0	0	513	580	367
Peak Hour Factor	0.89	0.92	0.92	0.75	0.90	0.90
Heavy Vehicles (%)	3%	2%	2%	4%	2%	2%
Lane Group Flow (vph)	312	0	0	684	1052	0
v/c Ratio	0.25			0.56	0.63	
Control Delay	15.0			21.5	13.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	15.0			21.5	13.5	
Queue Length 50th (ft)	62			161	158	
Queue Length 95th (ft)	m77			169	222	
Internal Link Dist (ft)	55			134	129	
Turn Bay Length (ft)						
Base Capacity (vph)	1244			1232	1657	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.25			0.56	0.63	

Intersection Summary

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↱			↱
Sign Control		Free	Free		Stop	
Grade		-4%	0%		0%	
Volume (veh/h)	0	645	497	61	0	16
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	717	552	68	0	18
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		214	288			
pX, platoon unblocked					0.95	
vC, conflicting volume	620				944	310
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	620				885	310
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	956				269	686

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	358	358	368	252	18
Volume Left	0	0	0	0	0
Volume Right	0	0	0	68	18
cSH	1700	1700	1700	1700	686
Volume to Capacity	0.21	0.21	0.22	0.15	0.03
Queue Length 95th (ft)	0	0	0	0	2
Control Delay (s)	0.0	0.0	0.0	0.0	10.4
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.4
Approach LOS					B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	27.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	67	109	469	25	165	24	257	113	51	24	89	136
Confl. Peds. (#/hr)			50			50			50			50
Peak Hour Factor	0.89	0.89	0.89	0.88	0.88	0.88	0.84	0.84	0.84	0.94	0.94	0.94
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	1%	1%	1%	2%	2%	2%
Lane Group Flow (vph)	0	197	527	28	215	0	0	502	0	0	266	0
v/c Ratio		0.31	0.85	0.08	0.35			0.90			0.33	
Control Delay		17.9	37.7	17.0	19.4			42.2			9.6	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		17.9	37.7	17.0	19.4			42.2			9.6	
Queue Length 50th (ft)		65	300	9	78			243			52	
Queue Length 95th (ft)		107	#458	26	131			#402			103	
Internal Link Dist (ft)		208			801			399			621	
Turn Bay Length (ft)												
Base Capacity (vph)		627	617	367	609			558			802	
Starvation Cap Reductn		0	0	0	0			0			0	
Spillback Cap Reductn		0	0	0	0			0			0	
Storage Cap Reductn		0	0	0	0			0			0	
Reduced v/c Ratio		0.31	0.85	0.08	0.35			0.90			0.33	

Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			8%	-6%	
Volume (veh/h)	1	38	29	175	179	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	41	32	190	195	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				701	555	
pX, platoon unblocked						
vC, conflicting volume	448	195	196			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	448	195	196			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	98			
cM capacity (veh/h)	555	846	1377			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	42	222	196
Volume Left	1	32	0
Volume Right	41	0	1
cSH	835	1377	1700
Volume to Capacity	0.05	0.02	0.12
Queue Length 95th (ft)	4	2	0
Control Delay (s)	9.5	1.3	0.0
Lane LOS	A	A	
Approach Delay (s)	9.5	1.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	54	159	17	63	2	100	1	46	2	3	3
Confl. Peds. (#/hr)			25			25			25			25
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.74	0.74	0.74	0.40	0.40	0.40
Heavy Vehicles (%)	5%	5%	5%	1%	1%	1%	3%	3%	3%	0%	0%	0%
Lane Group Flow (vph)	0	60	173	0	92	0	0	198	0	0	21	0
v/c Ratio		0.11	0.34		0.17			0.28			0.03	
Control Delay		12.7	4.8		13.1			5.9			4.9	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		12.7	4.8		13.1			5.9			4.9	
Queue Length 50th (ft)		12	0		19			19			2	
Queue Length 95th (ft)		32	33		44			35			3	
Internal Link Dist (ft)		194			220			475			246	
Turn Bay Length (ft)												
Base Capacity (vph)		559	513		527			701			758	
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		0.11	0.34		0.17			0.28			0.03	

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	10%			-12%	0%	
Volume (veh/h)	213	42	1	166	27	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	237	47	1	184	30	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	589			274		
pX, platoon unblocked						
vC, conflicting volume			283		447	142
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			283		447	142
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		94	100
cM capacity (veh/h)			1276		540	880

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	158	126	186	31
Volume Left	0	0	1	30
Volume Right	0	47	0	1
cSH	1700	1700	1276	547
Volume to Capacity	0.09	0.07	0.00	0.06
Queue Length 95th (ft)	0	0	0	5
Control Delay (s)	0.0	0.0	0.1	12.0
Lane LOS			A	B
Approach Delay (s)	0.0		0.1	12.0
Approach LOS				B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	20.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	10%			-12%	0%	
Volume (veh/h)	255	40	1	193	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	283	44	1	214	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	280			583		
pX, platoon unblocked						
vC, conflicting volume			328		522	164
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			328		522	164
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1229		484	852

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	189	139	216	2
Volume Left	0	0	1	1
Volume Right	0	44	0	1
cSH	1700	1700	1229	617
Volume to Capacity	0.11	0.08	0.00	0.00
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	10.9
Lane LOS			A	B
Approach Delay (s)	0.0		0.0	10.9
Approach LOS				B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	22.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL2	WBT	WBR	NBL	NBT	NBR	NEL2	NEL	NER	NER2
Volume (vph)	7	133	27	453	1	1	97	67	294	358
Confl. Peds. (#/hr)						75				75
Peak Hour Factor	0.74	0.74	0.92	0.90	0.90	0.90	0.74	0.92	0.74	0.74
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%	0%	2%	0%	0%
Parking (#/hr)						10				
Lane Group Flow (vph)	9	209	0	260	245	0	131	419	535	0
v/c Ratio	0.03	0.72		0.62	0.58		0.21	0.78	0.67	
Control Delay	33.9	46.9		28.3	27.5		10.2	27.5	6.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	
Total Delay	33.9	46.9		28.3	27.5		10.2	27.5	6.9	
Queue Length 50th (ft)	4	97		117	109		19	162	14	
Queue Length 95th (ft)	16	#189		195	184		48	#385	35	
Internal Link Dist (ft)		200			366			493		
Turn Bay Length (ft)							40	40		
Base Capacity (vph)	287	301		483	484		726	628	854	
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	0.03	0.69		0.54	0.51		0.18	0.67	0.63	

Intersection Summary

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

Lane Group	EBL2	EBL	EBR	NBT	NBR	NEL	NET	NER
Volume (vph)	154	83	79	848	77	342	101	54
Confl. Peds. (#/hr)								100
Peak Hour Factor	0.81	0.81	0.81	0.80	0.80	0.66	0.66	0.66
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%
Lane Group Flow (vph)	190	108	92	1060	96	327	344	82
v/c Ratio	0.46	0.35	0.35	0.87	0.16	0.86	0.88	0.25
Control Delay	24.7	30.5	31.1	32.4	4.6	51.4	54.1	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.7	30.5	31.1	32.4	4.6	51.4	54.1	25.9
Queue Length 50th (ft)	62	46	41	252	0	163	173	32
Queue Length 95th (ft)	106	82	76	280	22	176	185	49
Internal Link Dist (ft)		486		204			736	
Turn Bay Length (ft)	200	200				300		
Base Capacity (vph)	416	312	266	1224	608	382	391	324
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	0.46	0.35	0.35	0.87	0.16	0.86	0.88	0.25

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		-1%			-3%
Volume (veh/h)	0	148	746	25	0	133
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	164	829	28	0	148
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			150			284
pX, platoon unblocked	0.92	0.92			0.92	
vC, conflicting volume	892	290			857	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	716	63			677	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	82			100	
cM capacity (veh/h)	337	912			840	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	164	332	332	194	49	49	49
Volume Left	0	0	0	0	0	0	0
Volume Right	164	0	0	28	0	0	0
cSH	912	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.18	0.20	0.20	0.11	0.03	0.03	0.03
Queue Length 95th (ft)	16	0	0	0	0	0	0
Control Delay (s)	9.8	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	9.8	0.0			0.0		
Approach LOS	A						

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL2	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR2	NEL
Volume (vph)	1315	36	90	140	422	15	317	34	69	40	8	11
Confl. Peds. (#/hr)		5			5						4	
Peak Hour Factor	0.70	0.70	0.73	0.73	0.73	0.80	0.80	0.80	0.78	0.78	0.78	0.56
Heavy Vehicles (%)	1%	1%	3%	3%	3%	1%	1%	1%	4%	4%	4%	0%
Lane Group Flow (vph)	1930	0	123	770	0	0	457	0	0	139	10	417
v/c Ratio	1.14		1.48	0.52			1.03			1.69dl	0.07	1.19
Control Delay	103.9		290.8	21.3			111.1			71.2	57.0	154.7
Queue Delay	4.5		0.0	0.0			9.5			0.0	0.0	2.9
Total Delay	108.4		290.8	21.3			120.5			71.2	57.0	157.6
Queue Length 50th (ft)	~1068		~88	218			~175			65	8	~453
Queue Length 95th (ft)	784		#152	228			176			87	24	313
Internal Link Dist (ft)	452			538			348			70		548
Turn Bay Length (ft)			350									
Base Capacity (vph)	1693		83	1478			444			232	152	351
Starvation Cap Reductn	0		0	0			0			0	0	0
Spillback Cap Reductn	15		0	6			12			0	0	2
Storage Cap Reductn	0		0	0			0			0	0	0
Reduced v/c Ratio	1.15		1.48	0.52			1.06			0.60	0.07	1.19

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.

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

Lane Group	NER	NER2
Volume (vph)	436	9
Confl. Peds. (#/hr)		
Peak Hour Factor	0.56	0.56
Heavy Vehicles (%)	0%	0%
Lane Group Flow (vph)	398	0
v/c Ratio	1.20	
Control Delay	160.6	
Queue Delay	0.0	
Total Delay	160.6	
Queue Length 50th (ft)	~458	
Queue Length 95th (ft)	318	
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)	332	
Starvation Cap Reductn	0	
Spillback Cap Reductn	0	
Storage Cap Reductn	0	
Reduced v/c Ratio	1.20	

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	529	1462	495	463	25	147
Confl. Peds. (#/hr)				6		
Peak Hour Factor	0.88	0.88	0.81	0.81	0.90	0.90
Heavy Vehicles (%)	4%	4%	5%	5%	2%	2%
Lane Group Flow (vph)	601	1661	1183	0	28	163
v/c Ratio	1.08	0.71	0.86		0.16	1.05
Control Delay	83.1	5.9	15.1		35.0	125.4
Queue Delay	0.0	0.3	0.1		0.0	0.0
Total Delay	83.1	6.2	15.2		35.0	125.4
Queue Length 50th (ft)	~296	145	220		13	~90
Queue Length 95th (ft)	#476	192	212		37	#207
Internal Link Dist (ft)		538	249		257	
Turn Bay Length (ft)	50					
Base Capacity (vph)	559	2350	1374		173	155
Starvation Cap Reductn	0	183	5		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	1.08	0.77	0.86		0.16	1.05

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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑↱							↱
Sign Control		Free			Free			Stop			Stop	
Grade		0%			-2%			0%			0%	
Volume (veh/h)	0	134	1366	0	943	19	0	0	0	0	0	15
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	149	1518	0	1048	21	0	0	0	0	0	17
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		329			136							
pX, platoon unblocked	0.98						0.98	0.98		0.98	0.98	0.98
vC, conflicting volume	1069			1667			689	1218	74	1133	2725	534
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1052			1667			665	1203	74	1117	2738	507
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	97
cM capacity (veh/h)	646			382			328	180	972	159	19	501

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	74	74	1518	699	370	17
Volume Left	0	0	0	0	0	0
Volume Right	0	0	1518	0	21	17
cSH	1700	1700	1700	1700	1700	501
Volume to Capacity	0.04	0.04	0.89	0.41	0.22	0.03
Queue Length 95th (ft)	0	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.4
Lane LOS						B
Approach Delay (s)	0.0			0.0		12.4
Approach LOS						B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	97.3%	ICU Level of Service	F
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	134	0	0	137	825	295
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Lane Group Flow (vph)	149	0	0	152	1245	0
v/c Ratio	0.12			0.13	0.77	
Control Delay	15.9			19.0	17.7	
Queue Delay	0.0			0.0	0.0	
Total Delay	15.9			19.0	17.7	
Queue Length 50th (ft)	27			26	220	
Queue Length 95th (ft)	m40			47	303	
Internal Link Dist (ft)	56			134	129	
Turn Bay Length (ft)						
Base Capacity (vph)	1194			1194	1627	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.12			0.13	0.77	

Intersection Summary

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↱			↱
Sign Control		Free	Free		Stop	
Grade		-4%	0%		0%	
Volume (veh/h)	0	429	126	40	0	11
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	477	140	44	0	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		214	288			
pX, platoon unblocked					0.99	
vC, conflicting volume	184				401	92
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	184				389	92
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1388				583	947

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	238	238	93	91	12
Volume Left	0	0	0	0	0
Volume Right	0	0	0	44	12
cSH	1700	1700	1700	1700	947
Volume to Capacity	0.14	0.14	0.05	0.05	0.01
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	8.9
Lane LOS					A
Approach Delay (s)	0.0		0.0		8.9
Approach LOS					A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	16.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	13	84	328	14	90	11	50	67	33	14	43	21
Confl. Peds. (#/hr)			50			50			50			50
Peak Hour Factor	0.90	0.90	0.90	0.79	0.79	0.79	0.73	0.73	0.73	0.66	0.66	0.66
Heavy Vehicles (%)	3%	3%	3%	6%	6%	6%	2%	2%	2%	5%	5%	5%
Lane Group Flow (vph)	0	107	364	18	128	0	0	205	0	0	118	0
v/c Ratio		0.13	0.41	0.04	0.19			0.31			0.17	
Control Delay		6.2	2.6	7.1	6.9			13.9			10.5	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		6.2	2.6	7.1	6.9			13.9			10.5	
Queue Length 50th (ft)		19	17	2	12			55			25	
Queue Length 95th (ft)		m24	m22	6	19			77			37	
Internal Link Dist (ft)		208			801			399			621	
Turn Bay Length (ft)												
Base Capacity (vph)		810	880	464	663			668			714	
Starvation Cap Reductn		0	0	0	0			0			0	
Spillback Cap Reductn		0	0	0	0			0			0	
Storage Cap Reductn		0	0	0	0			0			0	
Reduced v/c Ratio		0.13	0.41	0.04	0.19			0.31			0.17	

Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			8%	-6%	
Volume (veh/h)	0	72	58	33	38	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	80	64	37	42	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				701	555	
pX, platoon unblocked						
vC, conflicting volume	208	42	42			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	208	42	42			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	96			
cM capacity (veh/h)	748	1028	1567			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	80	101	42
Volume Left	0	64	0
Volume Right	80	0	0
cSH	1028	1567	1700
Volume to Capacity	0.08	0.04	0.02
Queue Length 95th (ft)	6	3	0
Control Delay (s)	8.8	4.8	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	4.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	1	32	28	9	35	1	42	2	18	1	1	1
Confl. Peds. (#/hr)			25			25			25			25
Peak Hour Factor	0.83	0.83	0.83	0.69	0.69	0.69	0.73	0.73	0.73	0.25	0.25	0.25
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	5%	5%	5%	0%	0%	0%
Lane Group Flow (vph)	0	40	34	0	65	0	0	86	0	0	12	0
v/c Ratio		0.06	0.06		0.09			0.15			0.02	
Control Delay		9.0	4.1		9.2			7.7			7.7	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		9.0	4.1		9.2			7.7			7.7	
Queue Length 50th (ft)		7	0		11			10			1	
Queue Length 95th (ft)		18	10		21			23			2	
Internal Link Dist (ft)		194			220			475			246	
Turn Bay Length (ft)												
Base Capacity (vph)		667	554		689			573			615	
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		0.06	0.06		0.09			0.15			0.02	

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	10%			-12%	0%	
Volume (veh/h)	63	41	1	77	28	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	70	46	1	86	31	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	589			274		
pX, platoon unblocked						
vC, conflicting volume			116		181	58
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			116		181	58
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	100
cM capacity (veh/h)			1471		791	996

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	47	69	87	32
Volume Left	0	0	1	31
Volume Right	0	46	0	1
cSH	1700	1700	1471	797
Volume to Capacity	0.03	0.04	0.00	0.04
Queue Length 95th (ft)	0	0	0	3
Control Delay (s)	0.0	0.0	0.1	9.7
Lane LOS			A	A
Approach Delay (s)	0.0		0.1	9.7
Approach LOS				A

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	15.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	10%			-12%	0%	
Volume (veh/h)	104	40	1	105	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	116	44	1	117	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	280			583		
pX, platoon unblocked						
vC, conflicting volume			160		257	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			160		257	80
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1417		710	964

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	77	83	118	2
Volume Left	0	0	1	1
Volume Right	0	44	0	1
cSH	1700	1700	1417	817
Volume to Capacity	0.05	0.05	0.00	0.00
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.1	9.4
Lane LOS			A	A
Approach Delay (s)	0.0		0.1	9.4
Approach LOS				A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	17.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL2	WBT	WBR	NBL	NBT	NBR	NEL2	NEL	NER	NER2
Volume (vph)	11	87	7	634	1	1	16	11	144	7
Confl. Peds. (#/hr)						75				75
Peak Hour Factor	0.74	0.74	0.92	0.90	0.90	0.90	0.91	0.92	0.91	0.91
Heavy Vehicles (%)	0%	0%	2%	2%	2%	2%	14%	2%	14%	14%
Parking (#/hr)						10				
Lane Group Flow (vph)	15	126	0	368	338	0	18	95	83	0
v/c Ratio	0.05	0.42		0.66	0.60		0.07	0.45	0.41	
Control Delay	35.6	37.3		33.9	32.4		15.4	39.4	36.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	
Total Delay	35.6	37.3		33.9	32.4		15.4	39.4	36.3	
Queue Length 50th (ft)	7	62		180	160		0	48	42	
Queue Length 95th (ft)	23	111		#457	#403		19	114	101	
Internal Link Dist (ft)		200			389			493		
Turn Bay Length (ft)							40	40		
Base Capacity (vph)	473	495		601	603		387	363	321	
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	0.03	0.25		0.61	0.56		0.05	0.26	0.26	

Intersection Summary

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

Lane Group	EBL2	EBL	EBR	NBT	NBR	NEL	NET	NER
Volume (vph)	82	85	61	847	79	228	87	39
Confl. Peds. (#/hr)								100
Peak Hour Factor	0.91	0.91	0.91	0.71	0.71	0.86	0.86	0.86
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%
Lane Group Flow (vph)	90	93	67	1193	111	182	184	45
v/c Ratio	0.19	0.28	0.24	0.97	0.18	0.50	0.51	0.15
Control Delay	7.3	28.4	28.1	46.5	4.5	31.3	31.8	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	28.4	28.1	46.5	4.5	31.3	31.8	25.1
Queue Length 50th (ft)	0	39	29	302	0	82	86	18
Queue Length 95th (ft)	35	79	65	273	16	140	148	44
Internal Link Dist (ft)		486		204			736	
Turn Bay Length (ft)	200	200				300		
Base Capacity (vph)	472	331	281	1224	617	364	359	293
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	0.19	0.28	0.24	0.97	0.18	0.50	0.51	0.15

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		-1%			-3%
Volume (veh/h)	0	35	916	27	0	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	38	996	29	0	110
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)			150			284
pX, platoon unblocked	0.90	0.90			0.90	
vC, conflicting volume	1047	347			1025	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	829	50			804	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			100	
cM capacity (veh/h)	278	906			734	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	38	398	398	228	37	37	37
Volume Left	0	0	0	0	0	0	0
Volume Right	38	0	0	29	0	0	0
cSH	906	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.04	0.23	0.23	0.13	0.02	0.02	0.02
Queue Length 95th (ft)	3	0	0	0	0	0	0
Control Delay (s)	9.1	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A						
Approach Delay (s)	9.1	0.0			0.0		
Approach LOS	A						

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR2
Volume (vph)	1061	31	77	0	116	417	30	464	36	60	32	9
Confl. Peds. (#/hr)		58				42			77			5
Peak Hour Factor	0.84	0.84	0.72	0.72	0.72	0.72	0.90	0.90	0.90	0.87	0.87	0.87
Heavy Vehicles (%)	1%	1%	4%	4%	4%	4%	1%	1%	1%	5%	5%	5%
Lane Group Flow (vph)	1300	0	0	107	740	0	0	589	0	0	106	10
v/c Ratio	0.97			1.88	0.98dr			0.69			0.28	0.03
Control Delay	53.8			477.7	26.1			48.4			41.8	38.1
Queue Delay	1.5			0.0	0.0			1.0			0.0	0.0
Total Delay	55.4			477.7	26.2			49.4			41.8	38.1
Queue Length 50th (ft)	512			~127	217			155			36	6
Queue Length 95th (ft)	#589			#144	205			200			62	21
Internal Link Dist (ft)	452				538			348			70	
Turn Bay Length (ft)				350								
Base Capacity (vph)	1340			57	1185			855			385	292
Starvation Cap Reductn	0			0	0			0			0	0
Spillback Cap Reductn	14			0	20			93			7	0
Storage Cap Reductn	0			0	0			0			0	0
Reduced v/c Ratio	0.98			1.88	0.64			0.77			0.28	0.03

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.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Lane Group	NEL	NER	NER2
Volume (vph)	8	352	3
Confl. Peds. (#/hr)			
Peak Hour Factor	0.67	0.67	0.67
Heavy Vehicles (%)	4%	4%	4%
Lane Group Flow (vph)	276	265	0
v/c Ratio	0.97	0.99	
Control Delay	94.5	100.2	
Queue Delay	9.4	0.0	
Total Delay	103.9	100.2	
Queue Length 50th (ft)	214	216	
Queue Length 95th (ft)	#224	#241	
Internal Link Dist (ft)	548		
Turn Bay Length (ft)			
Base Capacity (vph)	284	268	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	11	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	1.01	0.99	

Intersection Summary

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Volume (vph)	114	1504	548	634	23	63
Confl. Peds. (#/hr)				15		10
Peak Hour Factor	0.94	0.94	0.83	0.83	0.61	0.61
Heavy Vehicles (%)	4%	4%	4%	4%	0%	0%
Lane Group Flow (vph)	121	1600	1424	0	38	103
v/c Ratio	0.52	0.73	0.74		0.13	0.95
Control Delay	13.6	9.2	7.6		33.0	120.0
Queue Delay	0.0	0.5	0.4		0.0	0.0
Total Delay	13.6	9.7	8.0		33.0	120.0
Queue Length 50th (ft)	16	223	167		19	60
Queue Length 95th (ft)	46	300	142		31	#88
Internal Link Dist (ft)		538	249		257	
Turn Bay Length (ft)	50					
Base Capacity (vph)	231	2187	1918		287	108
Starvation Cap Reductn	0	213	144		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.52	0.81	0.80		0.13	0.95

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↱		↑↑↱							↱
Sign Control		Free			Free			Stop			Stop	
Grade		0%			-2%			0%			0%	
Volume (veh/h)	0	150	1384	0	1159	20	0	0	0	0	0	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	163	1504	0	1260	22	0	0	0	0	0	25
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		329			136							
pX, platoon unblocked	0.94						0.94	0.94		0.94	0.94	0.94
vC, conflicting volume	1282			1667			818	1445	82	1352	2938	641
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1232			1667			736	1406	82	1307	3003	547
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	94
cM capacity (veh/h)	525			382			271	129	962	110	12	450

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	82	82	1504	840	442	25
Volume Left	0	0	0	0	0	0
Volume Right	0	0	1504	0	22	25
cSH	1700	1700	1700	1700	1700	450
Volume to Capacity	0.05	0.05	0.88	0.49	0.26	0.06
Queue Length 95th (ft)	0	0	0	0	0	4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	13.5
Lane LOS						B
Approach Delay (s)	0.0			0.0		13.5
Approach LOS						B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Volume (vph)	150	0	0	221	958	608
Peak Hour Factor	0.89	0.92	0.92	0.75	0.92	0.92
Heavy Vehicles (%)	3%	2%	2%	4%	2%	2%
Lane Group Flow (vph)	169	0	0	295	1702	0
v/c Ratio	0.38			0.36	0.73	
Control Delay	24.8			23.4	9.2	
Queue Delay	0.0			0.0	0.0	
Total Delay	24.8			23.4	9.2	
Queue Length 50th (ft)	82			72	214	
Queue Length 95th (ft)	m112			82	291	
Internal Link Dist (ft)	56			134	129	
Turn Bay Length (ft)						
Base Capacity (vph)	441			829	2342	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.38			0.36	0.73	

Intersection Summary

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↱			↱
Sign Control		Free	Free		Stop	
Grade		-4%	0%		0%	
Volume (veh/h)	0	756	209	40	0	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	822	227	43	0	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)		214	288			
pX, platoon unblocked						
vC, conflicting volume	271				660	135
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	271				660	135
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1290				396	889

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	411	411	151	119	13
Volume Left	0	0	0	0	0
Volume Right	0	0	0	43	13
cSH	1700	1700	1700	1700	889
Volume to Capacity	0.24	0.24	0.09	0.07	0.01
Queue Length 95th (ft)	0	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	0.0	9.1
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.1
Approach LOS					A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	21	98	651	11	84	13	60	80	35	20	56	31
Confl. Peds. (#/hr)			50			50			50			50
Peak Hour Factor	0.78	0.78	0.78	0.86	0.86	0.86	0.85	0.85	0.85	0.65	0.65	0.65
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	5%	5%	5%	6%	6%	6%
Lane Group Flow (vph)	0	153	835	13	113	0	0	206	0	0	165	0
v/c Ratio		0.14	0.88	0.02	0.12			0.53			0.38	
Control Delay		6.5	22.5	6.3	6.0			31.5			25.6	
Queue Delay		0.0	2.7	0.0	0.0			0.0			0.0	
Total Delay		6.5	25.3	6.3	6.0			31.5			25.6	
Queue Length 50th (ft)		26	285	3	20			92			64	
Queue Length 95th (ft)		m46	348	9	38			151			79	
Internal Link Dist (ft)		208			801			399			621	
Turn Bay Length (ft)												
Base Capacity (vph)		1099	954	638	945			388			432	
Starvation Cap Reductn		0	54	0	0			0			0	
Spillback Cap Reductn		0	0	0	0			0			0	
Storage Cap Reductn		0	0	0	0			0			0	
Reduced v/c Ratio		0.14	0.93	0.02	0.12			0.53			0.38	

Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			8%	-6%	
Volume (veh/h)	1	36	29	85	68	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	39	32	92	74	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)				701	555	
pX, platoon unblocked						
vC, conflicting volume	230	74	75			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	230	74	75			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	98			
cM capacity (veh/h)	743	987	1524			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	40	124	75
Volume Left	1	32	0
Volume Right	39	0	1
cSH	978	1524	1700
Volume to Capacity	0.04	0.02	0.04
Queue Length 95th (ft)	3	2	0
Control Delay (s)	8.8	2.0	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	2.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	22.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Volume (vph)	12	45	58	10	50	1	47	1	12	1	1	1
Confl. Peds. (#/hr)			25			25			25			25
Peak Hour Factor	0.86	0.86	0.86	0.77	0.77	0.77	0.63	0.63	0.63	0.25	0.25	0.25
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	3%	3%	3%	0%	0%	0%
Lane Group Flow (vph)	0	66	67	0	79	0	0	96	0	0	12	0
v/c Ratio		0.12	0.15		0.15			0.14			0.02	
Control Delay		12.8	5.0		13.0			5.8			5.0	
Queue Delay		0.0	0.0		0.0			0.0			0.0	
Total Delay		12.8	5.0		13.0			5.8			5.0	
Queue Length 50th (ft)		13	0		16			10			1	
Queue Length 95th (ft)		33	19		33			18			1	
Internal Link Dist (ft)		194			220			475			246	
Turn Bay Length (ft)												
Base Capacity (vph)		552	456		530			707			764	
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		0.12	0.15		0.15			0.14			0.02	

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	10%			-12%	0%	
Volume (veh/h)	115	41	1	97	29	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	125	45	1	105	32	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	589			274		
pX, platoon unblocked						
vC, conflicting volume			170		255	85
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			170		255	85
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	100
cM capacity (veh/h)			1405		711	957

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	83	86	107	33
Volume Left	0	0	1	32
Volume Right	0	45	0	1
cSH	1700	1700	1405	718
Volume to Capacity	0.05	0.05	0.00	0.05
Queue Length 95th (ft)	0	0	0	4
Control Delay (s)	0.0	0.0	0.1	10.3
Lane LOS			A	B
Approach Delay (s)	0.0		0.1	10.3
Approach LOS				B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	10%			-12%	0%	
Volume (veh/h)	156	40	1	126	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	170	43	1	137	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)	280			583		
pX, platoon unblocked						
vC, conflicting volume			213		330	107
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			213		330	107
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1354		638	927

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	113	100	138	2
Volume Left	0	0	1	1
Volume Right	0	43	0	1
cSH	1700	1700	1354	756
Volume to Capacity	0.07	0.06	0.00	0.00
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	0.0	0.0	0.1	9.8
Lane LOS			A	A
Approach Delay (s)	0.0		0.1	9.8
Approach LOS				A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	17.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL2	WBT	WBR	NBL	NBT	NBR	NEL2	NEL	NER	NER2
Volume (vph)	10	88	16	689	4	1	56	16	183	15
Confl. Peds. (#/hr)						75				75
Peak Hour Factor	0.74	0.74	0.92	0.60	0.92	0.60	0.76	0.92	0.76	0.76
Heavy Vehicles (%)	0%	0%	2%	0%	2%	0%	2%	2%	2%	2%
Parking (#/hr)						10				
Lane Group Flow (vph)	14	136	0	592	562	0	74	147	131	0
v/c Ratio	0.07	0.62		0.86	0.81		0.28	0.70	0.65	
Control Delay	50.6	59.7		37.2	34.9		23.5	58.1	56.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	
Total Delay	50.6	59.7		37.2	34.9		23.5	58.1	56.1	
Queue Length 50th (ft)	10	99		416	383		19	109	97	
Queue Length 95th (ft)	27	143		344	#653		47	#216	138	
Internal Link Dist (ft)		200			366			493		
Turn Bay Length (ft)							40	40		
Base Capacity (vph)	226	237		756	757		296	253	224	
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	0.06	0.57		0.78	0.74		0.25	0.58	0.58	

Intersection Summary

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

APPENDIX N

Accident Data Request Letter

Darryl Phillips

From: Darryl Phillips
Sent: Friday, November 11, 2005 12:39 PM
To: 'Kaikai, Sidney'
Cc: Cindy Jampole; Chris Droznek
Subject: Uptown traffic study

Attachments: Accident Analysis Corridors.pdf

Sidney,

As you discussed with Cindy Jampole earlier this week when reviewing our proposed scope of work for the project, we will need to analyze the accident history. To do so, we will need to obtain accident records from the City Police. I believe that you will have to request this data from them.

Specifically, we will need accident data for the past three years for the following streets:

Centre Avenue from Sixth Avenue to Crawford Street
Washington Place from Fifth Avenue to Bedford Avenue (entire length of street)
Fifth Avenue from Magee Street to Diamond Street
Crawford Street from Bedford Avenue to Reed Street/Crawford Street (entire length of street)
Pride Street from Reed Street/Crawford Street to Fifth Avenue

This includes all intermediate intersections and midblock locations on these streets. I have attached a map showing the required area.

As you know, we are on a very tight schedule for this work, and I appreciate your assistance. If there is anything we can do to expedite the process, including meeting with the Police or picking the data up, please let me know.

Thank you,

Darryl

Accident Analysis Corridors.pd...

Darryl C Phillips, P.E., PTOE
Trans Associates Engineering Consultants, Inc.
4955 Steubenville Pike
Pittsburgh, PA 15205
Phone: 412-490-0630
Fax: 412-490-0631
Email: phillipsd@transassociates.com

Darryl Phillips

From: Kaikai, Sidney [Sidney.Kaikai@city.pittsburgh.pa.us]
Sent: Friday, November 18, 2005 3:18 PM
To: Darryl Phillips; Stuart Anderson
Subject: Casino Gaming Traffic Accident Data
Attachments: casino gaming accident data request.doc

Your requests have been forwarded to our Public Safety Department, Records Room, for processing. You will hear from me as soon as I get a response from them.

<<casino gaming accident data request.doc>>

Sidney B. Kaikai, AICP

Principal Transportation Planner

Department of City Planning

200 Ross Street, 4th Floor

Pittsburgh, PA 15219

Phone: 412-255-2224

Fax: 412-255-2838

E-mail: sidney.kaikai@city.pittsburgh.pa.us

MEMORANDUM

TO:	Lynne Coyner	Municipal Courts, Records Room
FROM:	Sidney B. Kaikai, AICP	City Planning Department
DATE:	November 18, 2005	
SUBJECT:	**Traffic Accident Data Request**	

The City Planning Department is working with local developers to carryout traffic data collection activities related to casino gaming. There are seven (7) potential sites and each developer must complete a Traffic and Parking Impact Study of their site as part their application submission to the Pennsylvania Gaming Advisory Task Force by December 28, 2005.

In the coming weeks, I will be sending you requests for traffic accident data for use by each traffic consultant for traffic analysis purposes. This memorandum contains two (2) requests; one from the IBI Group, 230 Richmond Street West Toronto, Ontario, in connection with the Connelly site on the North Shore, west of the Science Center; and Trans Associates Engineering Consultants, in connection with the Mellon Arena site in the Lower Hill and Uptown areas. The requests are listed below as follows:

The Connelly Site in the North Shore:

- *Traffic Consultant: The IBI Group:*

- Reedsdale Street/SR 65/West End Bridge Ramp
- Reedsdale Street/Sproat Way
- North Shore Drive/Sproat Way
- North Shore Drive/Allegheny Avenue
- Allegheny Avenue/Reedsdale Street
- Allegheny Avenue/Ridge Avenue
- Ridge Avenue/Fontella Street
- Ridge Avenue/Western Avenue

- Western Avenue/West End Bridge
- Beaver Avenue/North Point Drive
- W General Robinson/Mazeroski Way
- Reedsdale Street (full length)
- Sproat Way (full length)
- North Shore Drive (full length)
- Allegheny Avenue (Western Avenue to North Shore Drive)
- Ridge Avenue (Galveston Avenue to Western Avenue)
- West End Bridge

The Mellon Arena Site in the Hill District and Uptown:

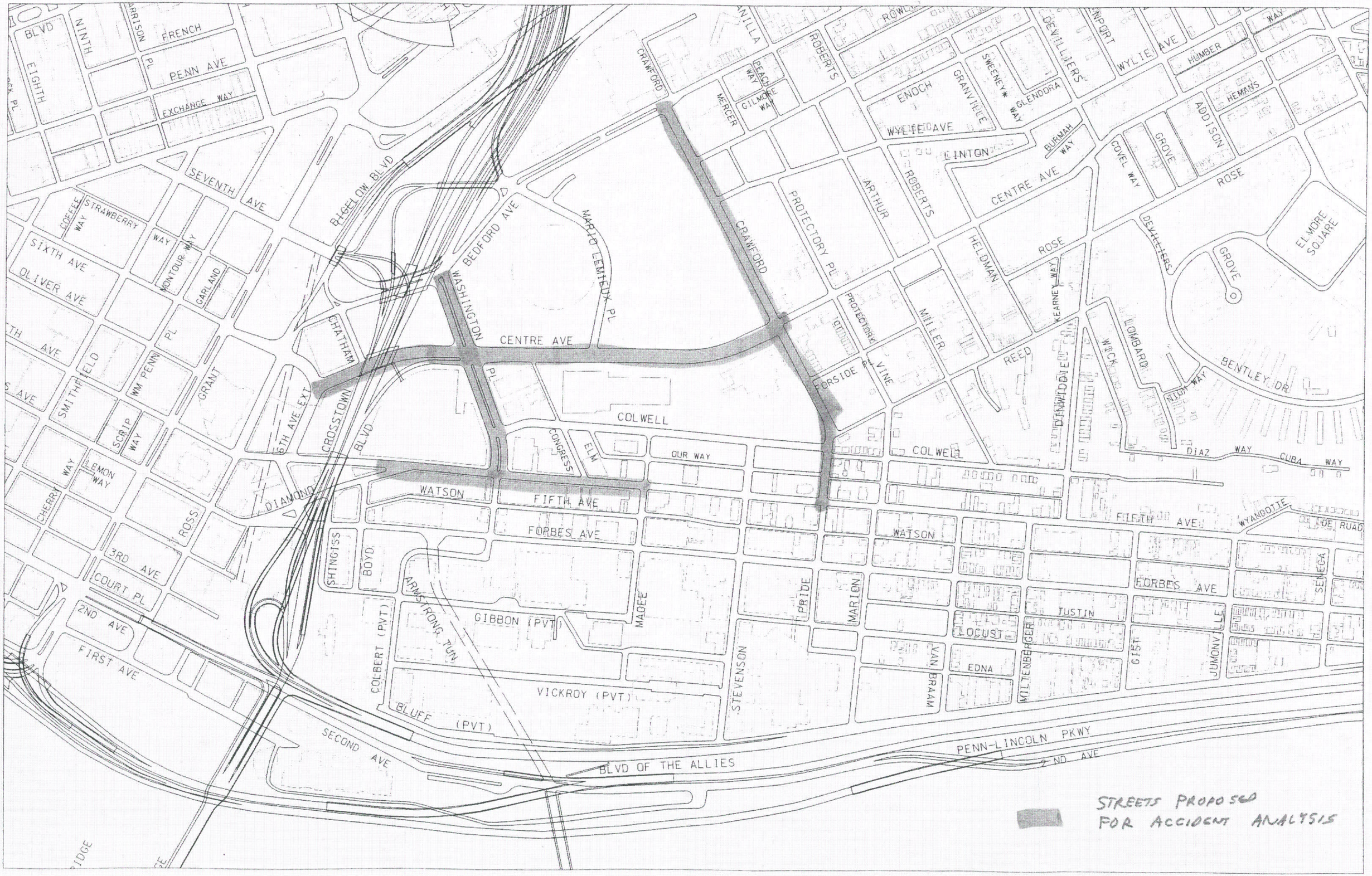
- *Traffic Consultant: Trans Associates*

- Centre Avenue from Sixth Avenue to Crawford Street
- Washington Place from Fifth Avenue to Bedford Avenue (entire length of street)
- Fifth Avenue from Magee Street to Diamond Street
- Crawford Street from Bedford Avenue to Reed Street/Crawford Street (entire length of street)
- Pride Street from Reed Street/Crawford Street to Fifth Avenue
- This includes all intermediate intersections and midblock locations on these streets.

As you know, we are on a very tight schedule for this work, and I appreciate your assistance. If there is anything I can do to expedite the process, including meeting with you or picking the data up, please let me know.

Cc: Susan Golomb, Planning Director
Patrick Hassett, Assistant Planning Director
Sidney Kaikai, Principal Transportation Planner

Attachment: Maps of accident data locations.


BLVD
EIGHTH
NINTH
ARRISON
FRENCH
PL
PENN AVE
EXCHANGE WAY
SEVENTH AVE
BIGELOW BLVD
COFFEE WAY
STRAWBERRY WAY
SIXTH AVE
OLIVER AVE
MONTOUR WAY
GARLAND
PL
WM PENN
GRANT
SMITHFIELD
SCRIP WAY
CHERRY WAY
LEMON WAY
ROSS
3RD AVE
COURT PL
2ND AVE
FIRST AVE
CHATHAM
6TH AVE EXT
CROSSTOWN BLVD
DIAMOND
BEDFORD AVE
MARIO LEMIEUX PL
WASHINGTON PL
CENTRE AVE
COLWELL
CONGRESS
ELM
OUR WAY
WATSON
FIFTH AVE
FORBES AVE
SHINGISS
BOYD
COLBERT (PVT)
ARMSTRONG TUN
GIBBON (PVT)
MAGEE
VICKROY (PVT)
BLUFF (PVT)
SECOND AVE
BLVD OF THE ALLIES
CRAWFORD
PROTECTORY PL
ARTHUR
ROBERTS
MERCER
BEACH WAY
GILMORE WAY
ENOCH
GRANVILLE
SWEENEY WAY
GLENDORA
WYLIE AVE
HUMBER WAY
WYLIE AVE
BURMAH WAY
CLINTON
CENTRE AVE
ROSE
HELOMAN
MILLER
PROTECTORY
FORSIDE
VINE
REED
KEARNEY WAY
COVEL WAY
GROVE
ADDISON
HEMANS
DEVILLIERS
ELMORE SQUARE
LOMBARD
WICK
DAWSON
BENTLEY DR
NINTH WAY
DIAZ WAY
CUBA WAY
PRIDE
MARION
STEVENSON
VAN BRAAM
LOCUST
EDNA
MILTENBERGER
JUSTIN
GIST
JUMONVILLE
SENECA
WYANDOTTE
PENN-LINCOLN PKWY
2ND AVE
STREETS PROPOSED
FOR ACCIDENT ANALYSIS

APPENDIX O

Roadway Improvement Costs

TABLE O-1
CENTRE AVENUE AND WASHINGTON PLACE PUBLIC IMPROVEMENTS
OPINION OF PROBABLE COST
Pittsburgh First Master Plan
Traffic and Parking Study
City of Pittsburgh, Allegheny County, Pennsylvania

DESCRIPTION	QTY.	UNIT	UNIT PRICE	COST
CLASS I, EXCAVATION	10,565	CY	$10.00	$105,700.00
8" SUBBASE (NO. 2A)	17,432	SY	$7.50	$130,700.00
10" REINFORCED CEMENT CONCRETE PAVEMENT	17,432	SY	$55.00	$958,800.00
BRICK CROSSWALK	1,496	SY	$200.00	$299,200.00
GRANITE CURB	4,570	LF	$40.00	$182,800.00
GRANITE MOUNTABLE CURB	3,645	LF	$50.00	$182,300.00
CLASS 1 GEOTEXTILE	4,570	LF	$1.25	$5,700.00
15" REINFORCED CONCRETE PIPE	3,650	LF	$65.00	$237,300.00
MANHOLE	27	EA	$3,200.00	$86,400.00
TYPE C INLET, BICYCLE SAFE GRATE, SPECIAL	42	EA	$4,000.00	$168,000.00
PAVEMENT BASE DRAIN	4,570	LF	$6.00	$27,400.00
24" EXTRA STRENGTH VITRIFIED CLAY PIPE	1,560	LF	$288.00	$449,300.00
36" EXTRA STRENGTH VITRIFIED CLAY PIPE	641	LF	$432.00	$276,900.00
4" WHITE HOT THERMOPLASTIC PAVEMENT MARKINGS	2,908	LF	$0.75	$2,200.00
8" WHITE HOT THERMOPLASTIC PAVEMENT MARKINGS	1,883	LF	$1.50	$2,800.00
24" WHITE HOT THERMOPLASTIC PAVEMENT MARKINGS	200	LF	$8.50	$1,700.00
WHITE HOT THERMOPLASTIC LEGEND, "ONLY", 8' - 0"	9	EA	$200.00	$1,800.00
WHITE HOT THERMOPLASTIC LEGEND, "LEFT ARROW", 12' - 0" X 3' - 0"	7	EA	$125.00	$900.00

Table O-1 (cont'd)
CENTRE AVENUE AND WASHINGTON PLACE PUBLIC IMPROVEMENTS
OPINION OF PROBABLE COST
Pittsburgh First Master Plan
Traffic and Parking Study
City of Pittsburgh, Allegheny County, Pennsylvania

DESCRIPTION	QTY.	UNIT	UNIT PRICE	COST
WHITE HOT THERMOPLASTIC LEGEND, "RIGHT ARROW", 12' - 0" X 3' - 0"	2	EA	$125.00	$300.00
REPLACEMENT OF EXISTING 8" WATER LINE	2200	LF	$125.00	$275,000.00
CONSTRUCTION SURVEYING (1%)	1	LS	$34,000.00	$34,000.00
MAINTENANCE & PROTECTION OF TRAFFIC DURING CONSTRUCTION (12%)	1	LS	$407,400.00	$407,400.00
MOBILIZATION (5%)	1	LS	$169,800.00	$169,800.00

SUBTOTAL	$4,006,400.00
30% CONTIGENCY	$1,201,900.00
TOTAL CONSTRUCTION COST	**$5,208,300.00** *
20% ENGINEERING/DESIGN	$1,041,700.00
GRAND TOTAL CONSTRUCTION COST	**$6,250,000.00** *

*Does not include any private utility relocation or right-of-way acquisition.

*Does not include any construction items beyond the roadway curb.

Source: Trans Associates

TABLE 0-2
CENTRE AVENUE PUBLIC IMPROVEMENTS ONLY
OPINION OF PROBABLE COST
Pittsburgh First Master Plan
Traffic and Parking Study
City of Pittsburgh, Allegheny County, Pennsylvania

DESCRIPTION	QTY.	UNIT	UNIT PRICE	COST
CLASS I, EXCAVATION	7,791	CY	$10.00	$78,000.00
8" SUBBASE (NO. 2A)	12,697	SY	$7.50	$95,200.00
10" REINFORCED CEMENT CONCRETE PAVEMENT	12,697	SY	$55.00	$698,400.00
BRICK CROSSWALK	1,191	SY	$200.00	$238,200.00
GRANITE CURB	3,362	LF	$40.00	$134,500.00
GRANITE MOUNTABLE CURB	2,668	LF	$50.00	$133,400.00
CLASS 1 GEOTEXTILE	3,362	LF	$1.25	$4,200.00
15" REINFORCED CONCRETE PIPE	2,517	LF	$65.00	$163,700.00
MANHOLE	19	EA	$3,200.00	$60,800.00
TYPE C INLET, BICYCLE SAFE GRATE, SPECIAL	30	EA	$4,000.00	$120,000.00
PAVEMENT BASE DRAIN	3,362	LF	$6.00	$20,200.00
24" EXTRA STRENGTH VITRIFIED CLAY PIPE	1,560	LF	$288.00	$449,300.00
36" EXTRA STRENGTH VITRIFIED CLAY PIPE	0	LF	$432.00	$0.00
4" WHITE HOT THERMOPLASTIC PAVEMENT MARKINGS	1,946	LF	$0.75	$1,500.00
8" WHITE HOT THERMOPLASTIC PAVEMENT MARKINGS	1,465	LF	$1.50	$2,200.00
24" WHITE HOT THERMOPLASTIC PAVEMENT MARKINGS	115	LF	$8.50	$1,000.00
WHITE HOT THERMOPLASTIC LEGEND, "ONLY", 8' - 0"	9	EA	$200.00	$1,800.00
WHITE HOT THERMOPLASTIC LEGEND, "LEFT ARROW", 12' - 0" X 3' - 0"	7	EA	$125.00	$900.00

TABLE 0-2 (cont'd)
CENTRE AVENUE PUBLIC IMPROVEMENTS ONLY
OPINION OF PROBABLE COST
Pittsburgh First Master Plan
Traffic and Parking Study
City of Pittsburgh, Allegheny County, Pennsylvania

DESCRIPTION	QTY.	UNIT	UNIT PRICE	COST
WHITE HOT THERMOPLASTIC LEGEND, "RIGHT ARROW", 12' - 0" X 3' - 0"	2	EA	$125.00	$300.00
REPLACEMENT OF EXISTING 8" WATER LINE	1559	LF	$125.00	$194,900.00
CONSTRUCTION SURVEYING (1%)	1	LS	$24,000.00	$24,000.00
MAINTENANCE & PROTECTION OF TRAFFIC DURING CONSTRUCTION (12%)	1	LS	$287,800.00	$287,800.00
MOBILIZATION (5%)	1	LS	$120,000.00	$120,000.00

SUBTOTAL	$2,830,300.00
30% CONTIGENCY	$849,100.00
TOTAL CONSTRUCTION COST	**$3,679,400.00** *
20% ENGINEERING/DESIGN	$735,900.00
GRAND TOTAL CONSTRUCTION COST	**$4,415,300.00** *

* Does not include any private utility relocation or right-of-way acquisition.

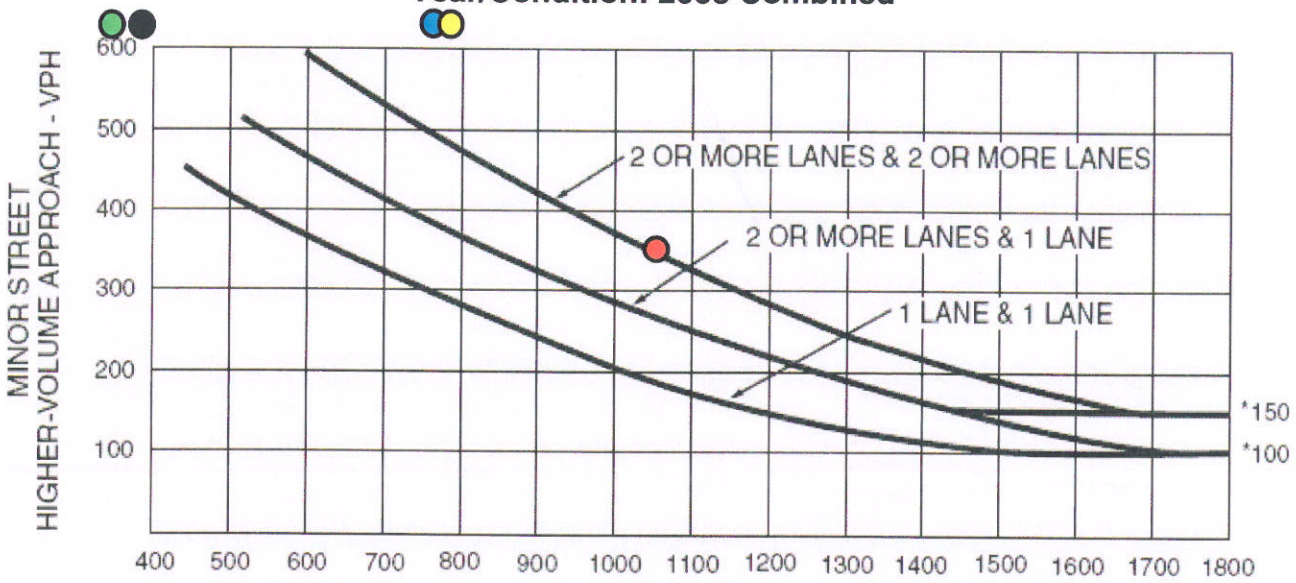
* Does not include any construction items beyond the roadway curb.

Source: Trans Associates

APPENDIX P

Signal Warrant Analysis

Peak Hour Volume Warrant
Project: Pittsburgh First Master Plan
Intersection: Centre Avenue & Casino Garage Exit Driveway
Year/Condition: 2008 Combined



MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Key

A.M. Peak Hour:
P.M. Peak Hour:
Arena Peak Hour:
Friday Casino Peak Hour:
Saturday Casino Peak Hour:

	Major Street Volume (2 Lane Approach)	Minor Street Volume (2 Lane Approach)	Meets Warrant?
A.M. Peak Hour	1,054	354	YES
P.M. Peak Hour	766	1,095	YES
Arena Peak Hour	791	947	YES
Friday Casino Peak Hour	271	1,120	YES(1)
Saturday Casino Peak Hour	371	1,564	YES(1)

(1) Minor street traffic volumes exceed chart limits.