URBAN CROSSROADS
41 Corporate Park | Suite 300 | Irvine, CA 92606 | (949) 660-1994
www.urbanXroads.com

November 19, 2013

Mr. John Schaefer
HILLWOOD INVESTMENT PROPERTIES
901 Via Piemonte, Suite 175
Ontario, California 91764

Subject: Alliance California Gateway South Building 3 - Analysis of Peak Hour Queuing at the intersection of Waterman Avenue and Orange Show Road

Dear Mr. Schaefer:

Urban Crossroads, Inc. is pleased to submit this letter that supplements the *Alliance California Gateway South Building 3 Traffic Impact Analysis* (Urban Crossroads, Inc., September 25, 2013) (referred to as "traffic study"), and provides an assessment of potential peak hour queuing impacts to the BNSF railway crossings located near the intersection of Waterman Avenue and Orange Show Road.

INTRODUCTION

In an effort to assess potential queuing impacts to nearby BNSF railway crossings located approximately 600 feet to the south and 585 feet to the west of the intersection of Waterman Avenue and Orange Show Road (see Exhibit A), a peak hour queuing analysis has been performed for each traffic scenario analyzed in the traffic study.

ANALYSIS METHODOLOGY

The traffic modeling and signal timing optimization software package Synchro (Version 8 Build 804 Rev. 795) has been utilized to analyze the signalized intersection of Waterman Avenue and Orange Show Road. Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the Chapter 16 of the 2000 Highway Capacity Manual (HCM). Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length.

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15 minute volumes. Common practice for LOS analysis is to use a peak 15-mintue rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g. PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for Existing (2013), E+P and Opening Year (2014)

without and with Project traffic conditions. A PHF of 0.92 has been used for Horizon Year (2035) without and with Project traffic conditions. All other intersection parameters for Existing, Opening Year and Horizon Year traffic conditions are consistent with those defined by the San Bernardino County CMP traffic study guidelines.

ANALYSIS RESULTS

As shown in Table 1, anticipated peak hour vehicle queues for both the northbound and eastbound directions of travel were found to be within the allowable stacking distance provided between the stop bar at the intersection of Waterman Avenue and Orange Show Road and adjacent railroad crossings.

However, it should be noted that storm drain construction associated with the proposed Alliance California Gateway South Building 3 project is anticipated to result in a temporary closure of the #1 and #2 westbound travel lanes along Orange Show Road extending from the intersection of Waterman Avenue to approximately 500 feet to the east. It is also our understanding that during this temporary construction period westbound traffic will be redirected into the #1 eastbound travel lane in order to maintain one lane of travel in both the eastbound and westbound directions. To ensure that the temporary lane closures due to construction activity do not result in queuing issues for the eastbound approach the following mitigation measures are recommended:

1. To the extent feasible limit construction activity that would impact traffic flow along Orange Show Road or at the intersection of Waterman Avenue at Orange Show Road to occur outside of the typical morning and evening peak commute hours (i.e., 7AM-9AM and 4PM-6PM) when traffic flows are highest;

2. Working in conjunction with City of San Bernardino engineering staff, a traffic control plan should be developed that addresses the necessary lane closures and traffic diversion along Orange Show Road, along with lane closures and signal timing modifications at the intersection of Waterman Avenue and Orange Show Road to facilitate the temporary reductions in capacity, and ensure adequate vehicle stacking is provided.

Queuing worksheets for each scenario are included in this memo as Attachment “A”.

If you have any questions regarding this assessment please give me a call at (949) 660-1994 ext. 204.

Respectfully submitted,

URBAN CROSSROADS, INC.

Aric Evatt, PTP
Principal

Donson Liu, EIT
Assistant Transportation Engineer

AE:DL

JN: 08765-10 Memo

Attachments

Table 1

Waterman Avenue and Orange Show Road
Peak Hour Queuing Length Summary

Scenario	Peak Hour	50th Percentile Queue (Feet)				95th Percentile Queue (Feet)			
		Turning Movement				Turning Movement			
		NBL	NBT	EBL	EBT	NBL	NBT	EBL	EBT
Existing (2013) Conditions	AM	54	110	52	110	175	197	169	153
	PM	136	190	82	147	318	289	218	185
Existing plus Project Conditions	AM	56	130	54	136	175	214	169	183
	PM	140	202	85	161	318	300	218	200
Existing plus Ambient Growth (2015) Conditions	AM	56	114	53	115	181	202	173	159
	PM	143	196	86	152	327	296	223	190
Existing plus Ambient Growth plus Project (2015) Conditions	AM	58	134	56	139	181	219	173	187
	PM	152	208	87	165	327	307	223	205
Existing plus Ambient plus Cumulative (2015) Conditions	AM	57	118	55	120	184	207	178	165
	PM	154	209	90	158	332	312	234	197
Existing plus Ambient plus Cumulative plus Project (2015) Conditions	AM	59	138	57	143	184	223	178	191
	PM	157	222	91	171	332	322	234	211
Horizon Year (2035) without Project Conditions	AM	65	140	84	147	203	236	228	205
	PM	173	336	133	220	371	502	307	284
Horizon Year (2035) with Project Conditions	AM	70	159	88	169	203	254	228	231
	PM	181	368	138	237	371	526	305	304

BOLD = Anticipated queue, including overflow from the northbound and eastbound left turn pockets, exceeds the distance from the intersection stop bar to the railroad tracks to the west and south of the intersection (600 feet to the south, 585 feet to the west).

EXHIBIT A

INTERSECTION OF WATERMAN AVENUE AND ORANGE SHOW ROAD AND ADJACENT RAILROAD CROSSINGS

ATTACHMENT "A"

Waterman Avenue and Orange Show Road

Queuing Worksheets

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	98	692	67	282	102	637	79	714
v/c Ratio	0.88	0.72	0.65	0.37	0.92	0.46	0.71	0.51
Control Delay	101.9	23.2	69.9	21.6	109.7	20.7	74.4	21.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	101.9	23.2	69.9	21.6	109.7	20.7	74.4	21.4
Queue Length 50th (ft)	52	110	35	47	54	110	41	127
Queue Length 95th (ft)	#169	153	#118	73	#175	197	#135	224
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	111	1491	103	1426	111	1396	111	1392
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	0.88	0.46	0.65	0.20	0.92	0.46	0.71	0.51

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	136	605	66	425	221	838	100	985
v/c Ratio	0.91	0.69	0.56	0.59	1.00	0.62	0.65	0.81
Control Delay	98.1	32.7	62.2	33.5	104.8	26.5	62.3	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.1	32.7	62.2	33.5	104.8	26.5	62.3	35.1
Queue Length 50th (ft)	82	147	39	103	136	190	58	249
Queue Length 95th (ft)	#218	185	#98	136	#318	289	#137	#395
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	149	1290	128	1241	220	1357	172	1209
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	0.91	0.47	0.52	0.34	1.00	0.62	0.58	0.81

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	98	760	90	320	102	692	82	714
v/c Ratio	0.92	0.79	0.91	0.37	0.95	0.52	0.77	0.53
Control Delay	111.2	27.5	113.3	22.9	120.1	22.3	83.5	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.2	27.5	113.3	22.9	120.1	22.3	83.5	22.8
Queue Length 50th (ft)	54	136	50	58	56	130	44	137
Queue Length 95th (ft)	#169	183	#159	86	#175	214	#140	224
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	107	1439	99	1372	107	1333	107	1340
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	0.92	0.53	0.91	0.23	0.95	0.52	0.77	0.53

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	136	639	122	515	221	865	101	985
v/c Ratio	0.93	0.78	0.97	0.67	1.02	0.65	0.66	0.83
Control Delay	102.2	37.4	119.3	36.2	109.9	27.7	63.9	36.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.2	37.4	119.3	36.2	109.9	27.7	63.9	36.5
Queue Length 50th (ft)	85	161	76	133	~140	202	60	255
Queue Length 95th (ft)	#218	200	#206	169	#318	300	#139	#395
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	147	1268	126	1223	216	1328	169	1189
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	0.93	0.50	0.97	0.42	1.02	0.65	0.60	0.83

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	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	704	68	288	105	650	80	728
v/c Ratio	0.91	0.72	0.67	0.38	0.95	0.47	0.73	0.52
Control Delay	106.7	23.6	71.4	21.7	117.1	21.0	76.1	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.7	23.6	71.4	21.7	117.1	21.0	76.1	21.8
Queue Length 50th (ft)	53	115	35	48	56	114	41	131
Queue Length 95th (ft)	#173	159	#119	74	#181	202	#138	229
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	110	1484	102	1419	110	1391	110	1388
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	0.91	0.47	0.67	0.20	0.95	0.47	0.73	0.52

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	139	617	67	433	226	853	102	1004
v/c Ratio	0.93	0.69	0.57	0.59	1.03	0.63	0.67	0.83
Control Delay	103.4	33.0	62.9	33.6	111.6	27.0	63.3	36.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.4	33.0	62.9	33.6	111.6	27.0	63.3	36.2
Queue Length 50th (ft)	86	152	40	106	~143	196	60	258
Queue Length 95th (ft)	#223	190	#102	138	#327	296	#140	#409
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	149	1285	128	1238	219	1350	171	1205
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	0.93	0.48	0.52	0.35	1.03	0.63	0.60	0.83

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	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	100	772	91	325	105	706	83	728
v/c Ratio	0.94	0.80	0.92	0.38	0.99	0.53	0.78	0.54
Control Delay	116.7	27.7	116.3	22.9	128.5	22.6	85.6	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.7	27.7	116.3	22.9	128.5	22.6	85.6	23.2
Queue Length 50th (ft)	56	139	51	59	58	134	45	142
Queue Length 95th (ft)	#173	187	#162	88	#181	219	#141	229
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	106	1435	99	1367	106	1329	106	1336
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	0.94	0.54	0.92	0.24	0.99	0.53	0.78	0.54

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	139	650	124	523	226	880	104	1004
v/c Ratio	0.95	0.78	0.98	0.68	1.05	0.67	0.68	0.85
Control Delay	107.9	37.6	123.9	36.2	116.6	28.3	65.1	37.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	107.9	37.6	123.9	36.2	116.6	28.3	65.1	37.7
Queue Length 50th (ft)	87	165	77	136	~152	208	62	264
Queue Length 95th (ft)	#223	205	#209	171	#327	307	#144	#409
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	146	1264	126	1220	216	1321	169	1185
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	0.95	0.51	0.98	0.43	1.05	0.67	0.62	0.85

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	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	103	716	71	297	106	663	84	756
v/c Ratio	0.94	0.77	0.70	0.36	0.97	0.49	0.77	0.55
Control Delay	117.2	26.2	76.7	21.8	124.2	21.6	83.3	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	117.2	26.2	76.7	21.8	124.2	21.6	83.3	22.6
Queue Length 50th (ft)	55	120	37	50	57	118	44	140
Queue Length 95th (ft)	#178	165	#124	77	#184	207	#144	239
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	109	1457	101	1395	109	1365	109	1364
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	0.94	0.49	0.70	0.21	0.97	0.49	0.77	0.55

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	633	75	452	229	889	107	1032
v/c Ratio	0.98	0.70	0.63	0.61	1.05	0.67	0.69	0.86
Control Delay	114.7	33.4	67.4	33.9	117.2	28.1	65.4	38.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	114.7	33.4	67.4	33.9	117.2	28.1	65.4	38.2
Queue Length 50th (ft)	90	158	45	111	~154	209	63	271
Queue Length 95th (ft)	#234	197	#117	145	#332	312	#151	#427
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	148	1278	127	1230	218	1335	170	1199
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	0.98	0.50	0.59	0.37	1.05	0.67	0.63	0.86

Intersection Summary

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Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	103	783	94	334	106	718	86	756
v/c Ratio	0.97	0.80	0.96	0.38	1.00	0.54	0.81	0.57
Control Delay	124.8	28.1	125.5	23.0	132.3	22.9	90.9	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	124.8	28.1	125.5	23.0	132.3	22.9	90.9	23.7
Queue Length 50th (ft)	57	143	53	61	59	138	47	150
Queue Length 95th (ft)	#178	191	#167	90	#184	223	#148	239
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	106	1431	98	1363	106	1326	106	1331
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	0.97	0.55	0.96	0.25	1.00	0.54	0.81	0.57

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	666	132	543	229	916	108	1032
v/c Ratio	1.00	0.79	1.06	0.69	1.07	0.70	0.70	0.88
Control Delay	120.8	37.7	142.4	36.4	123.0	29.5	67.3	40.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	120.8	37.7	142.4	36.4	123.0	29.5	67.3	40.0
Queue Length 50th (ft)	91	171	~89	142	~157	222	65	277
Queue Length 95th (ft)	#234	211	#225	178	#332	322	#152	#427
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	145	1256	125	1212	214	1310	167	1179
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	1.00	0.53	1.06	0.45	1.07	0.70	0.65	0.88

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	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	774	96	365	115	729	102	977
v/c Ratio	1.15	0.79	0.85	0.39	1.02	0.52	0.90	0.70
Control Delay	171.3	28.6	95.4	22.4	134.1	22.8	106.1	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	171.3	28.6	95.4	22.4	134.1	22.8	106.1	26.3
Queue Length 50th (ft)	~84	147	52	65	~65	142	56	207
Queue Length 95th (ft)	#228	205	#168	99	#203	236	#178	337
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	113	1451	113	1436	113	1405	113	1401
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	1.15	0.53	0.85	0.25	1.02	0.52	0.90	0.70

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	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	186	716	139	601	243	1121	147	1195
v/c Ratio	0.93	0.82	0.80	0.73	0.95	0.82	0.84	1.00
Control Delay	98.0	44.5	79.8	42.2	92.5	36.9	84.7	62.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.0	44.5	79.8	42.2	92.5	36.9	84.7	62.1
Queue Length 50th (ft)	133	220	97	182	173	336	104	398
Queue Length 95th (ft)	#307	284	#225	239	#371	#502	#244	#623
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	199	1163	182	1129	255	1371	179	1198
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	0.93	0.62	0.76	0.53	0.95	0.82	0.82	1.00

Intersection Summary

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	130	838	117	401	115	781	104	977
v/c Ratio	1.17	0.81	1.05	0.41	1.04	0.57	0.94	0.71
Control Delay	179.1	29.9	144.7	23.4	140.0	24.1	115.2	27.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	179.1	29.9	144.7	23.4	140.0	24.1	115.2	27.4
Queue Length 50th (ft)	~88	169	~72	76	~70	159	58	216
Queue Length 95th (ft)	#228	231	#205	113	#203	254	#181	337
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	111	1430	111	1406	111	1369	111	1373
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	1.17	0.59	1.05	0.29	1.04	0.57	0.94	0.71

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	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	186	747	191	685	243	1146	148	1195
v/c Ratio	0.94	0.84	0.96	0.77	0.98	0.86	0.86	1.03
Control Delay	100.7	46.9	104.5	43.7	99.2	41.0	89.1	71.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	100.7	46.9	104.5	43.7	99.2	41.0	89.1	71.6
Queue Length 50th (ft)	138	237	142	216	181	368	109	~449
Queue Length 95th (ft)	#305	304	#311	278	#371	#526	#245	#626
Internal Link Dist (ft)		1351		1813		1257		1051
Turn Bay Length (ft)	210		210		225		245	
Base Capacity (vph)	197	1103	198	1107	249	1325	175	1161
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	0.94	0.68	0.96	0.62	0.98	0.86	0.85	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.