Menard's

TRAFFIC IMPACT STUDY

September 4, 2012

Prepared For:
Menard, Inc.
5101 Menard Drive
Eau Claire, WI 54703

Prepared By:
Priority Engineers, Inc.
31720 S McClain Road
Harrisonville, MO 64701

9-4-12

September 4, 2012

Mr. Tyler Edwards
Menard, Inc.
5101 Menard Drive
Eau Claire, WI 54703

Re: Menard's Store – Little Blue Parkway
Independence, MO

Dear Mr. Edwards:

In response to your request, Priority Engineers, Inc. has completed a traffic impact study for the above referenced project. The purpose of the analysis is to determine the potential traffic impacts associated with this development on the intersections and streets surrounding this site, primarily during the AM and PM peak hour. The following report documents our analysis and recommendations.

We appreciate the opportunity to work with you on this project. Please contact us with any questions or if you require additional information.

Sincerely,

PRIORITY ENGINEERS, INC.

Kristin L. Skinner, P.E., PTOE
President

Priority Engineers, Inc.
31720 S McClain Road
Harrisonville, MO 64701
816.738.4400

1) INTRODUCTION

The purpose of this study is to examine the potential traffic impacts associated with the proposed Menard's development located on northeast corner of Interstate 70 and Little Blue Parkway in Independence, Missouri. Access to this site will be through the intersection of Little Blue Parkway and Jackson Drive. The Menard's site will be located near the center of this property and there will be a QuikTrip store located on the northeast corner of the Little Blue Parkway and Jackson Drive intersection. Additional lots will be available for future development.

The study area is shown in Figure 1. The site layout is shown in Figure 2.

2) EXISTING CONDITIONS

The existing site is approximately 55 acres of vacant land with the majority being used for agriculture. The site is bordered to the south by Interstate 70 and the Westbound I-70 Exit Ramp. To the west of this site is Little Blue Parkway. Little Blue Parkway is a four lane principal arterial street with a posted speed limit of 40 miles per hour. On the west side of Little Blue Parkway, there is large retail area located on Jackson Drive. Jackson Drive continues west and north to connect to East 39th Street on the east side of the Independence Center. It appears that Jackson Drive is a popular short-cut from East 39th Street even though the traveled distance using East 39th Street directly to Little Blue Parkway is the same. To the north and east of this site is currently undeveloped with primarily agricultural uses.

Peak Hour turning movement traffic counts for the intersections of Little Blue Parkway and Jackson Drive and for Little Blue Parkway and the I-70 Ramps were collected On August 14th and 15th. An ADT count was conducted between the Westbound I-70 Ramps and Jackson Drive beginning on August 15th and completed on August 16th. The complete traffic counts are shown in Appendix II. The peak hour traffic volumes and existing lane configurations are shown in Figures 3-7.

3) PROPOSED DEVELOPMENT

The proposed site plan is shown in Figure 2. A central 16.84 acre lot will be the location for the proposed Menard's store. The Menard's store will be 162,340 square feet in area. A proposed QuikTrip store will be located on the northeast corner of Jackson Road and Little Blue Parkway. The exact size of this lot has not yet been determined, but the size of the store will be 5,720 square feet. Jackson Road will provide the only entrance into the development.

4) TRIP GENERATION

The vehicle trips generated by the proposed development were estimated using the Institute of Transportation Engineers' Trip Generation, 8th Edition. Land Use 862, Home Improvement Superstore was used for the Menard's store and Land Use 853, Convenience Market with Gasoline Pumps was used for the QuikTrip Store. The estimated AM and PM peak hour traffic volumes associated with the first phase of this development are shown in Table 1.

Table 1: Trip Generation								
			AM Peak Hour			PM Peak Hour		
Land Use	Intensity	Daily	Total	In	Out	Total	In	Out
Home Improvement	162,340	4504	205	117	88	385	185	200
Convenience Market with Gasoline Pumps	5,720	4837	251	126	125	341	170	171
Total		**9341**	**456**	**243**	**213**	**726**	**355**	**371**

5) PASS BY TRIPS AND INTERNAL CAPTURE

Internal capture rate is defined by in the ITE Trip Generation Handbook, 2nd Edition as a percentage reduction that can be applied to the trip generation estimates for individual land uses to account for trips internal to the site. Typically, this rate is applied to a new development that contains various uses. In the case the Menard's development, the first phase of the development will have two uses. The ITE Trip Generation Handbook recommends a 20% internal capture rate between two retail uses.

Pass-by trips are made as intermediate stops on the way from an origin to a primary trip destination without a route diversion. Using the ITE Trip Generation Handbook, it was estimated that pass-by trips for the Menard's store would be 30% and 50% for QuikTrip.

The Trip Generation volumes were adjusted as shown in Table 2 below to reflect Pass By and Internal Capture.

Table 2: Trip Generation Including Pass By and Internal Capture								
			AM Peak Hour			PM Peak Hour		
Land Use	Intensity	Daily	Total	In	Out	Total	In	Out
Home Improvement	162,340	4504	205	117	88	385	185	200
(30% Pass By)								
Convenience Market with Gasoline Pumps	5,720	4837	251	126	125	341	170	171
(50% Pass By)								
Subtotal		**9341**	**456**	**243**	**213**	**726**	**355**	**371**
Internal Capture Reduction	**20%**	**-1868**	**-91**	**-49**	**-42**	**-145**	**-71**	**-74**
Pass By Trips		**3016**	**174**	**87**	**87**	**286**	**143**	**143**
New Trips		**4457**	**191**	**107**	**84**	**295**	**141**	**154**

6) TRIP DISTRIBUTION AND ASSIGNMENT

Trips generated by the Menard's development were distributed based on existing traffic flows and a general analysis of the surrounding area. The trips were distributed onto the existing street system approximately as follows:

- 30 percent to/from the north
- 25 percent to/from the south
- 15 percent to/from the west via Jackson Drive
- 15 percent to/from the west via Interstate 70
- 15 percent to/from the east via Interstate 70

The proposed development trips are shown in Figures 8 and 9 in Appendix I.

7) PROPOSED (FULL BUILD OUT) DEVELOPMENT

In addition to the Menard's store and QuikTrip, three additional lots are shown on the current site plan. These lots may be further divided depending on the types of tenants. Various retail uses are expected and may include box retail stores, banks, restaurants, cell phone stores, ect. The Shopping Center use is appropriate for these unknown lots as it may include a variety of retail uses.

The square footage of the remaining development was estimated using similar Menard's developments in other locations. It was estimated that 150,000 square feet of retail space may occur on the remaining development area. Generated Trips were estimated using the Institute of Transportation Engineers' Trip Generation, 8th Edition, Land Use 820. These trips were reduced by 20% for internal capture. Pass By trips were estimated to be 35% in the PM Peak Hour. Table 3 below shows the Trip Generation volumes for the Full Build Out Scenario.

Table 3: Trip Generation (Full Build Out Including Internal Capture and Pass By)

			AM Peak Hour			PM Peak Hour		
Land Use	***Intensity***	***Daily***	***Total***	***In***	***Out***	***Total***	***In***	***Out***
Home Improvement	162,340	4504	205	117	88	385	185	200
(30% Pass By)			*48*	*24*	*24*	*116*	*58*	*58*
Convenience Market with Gasoline Pumps	5,720	4837	251	126	125	341	170	171
(50% Pass By)			*126*	*63*	*63*	*170*	*85*	*85*
Shopping Center	150,000	8,839	196	120	76	835	409	426
(35% PM Peak Hour Pass By)						*292*	*146*	*146*
Subtotal		**18180**	**652**	**363**	**289**	**1561**	**764**	**797**
Internal Capture Reduction	**20%**	**-3636**	**-130**	**-72**	**-58**	**-312**	**-153**	**-159**
Pass By Trips		**6110**	**174**	**87**	**87**	**578**	**289**	**289**
New Trips		**8434**	**348**	**204**	**144**	**671**	**322**	**349**

Trips were distributed as described in Section 5 of this report. The proposed (full build out) development trips are shown in Figures 13-15 in Appendix I.

8) LEVEL OF SERVICE AND VOLUME/CAPACITY ANALYSES

Capacity analysis was used to quantify the impacts of the increased traffic on the intersections studied. The methodology outlined in the Highway Capacity Manual, 2000 Edition, was used as a basis to perform the analysis for this study. Capacity analysis defines the quality of traffic operation for an intersection using a grading system called Level of Service (LOS). The LOS is defined in terms of average vehicle delay. Levels of service A through F have been established with A representing the best and F the worst.

Table 4: Level of Service Definitions

Level of Service	*Unsignalized Intersection*	*Signalized Intersection*
A	< 10 Seconds	< 10 Seconds
B	< 15 Seconds	< 20 Seconds
C	< 25 Seconds	< 35 Seconds
D	< 35 Seconds	< 55 Seconds
E	< 50 Seconds	< 80 Seconds
F	≥ 50 Seconds	≥ 80 Seconds

The study intersections were evaluated using Synchro, an analysis package based in part on Highway Capacity Manual methods. The analysis reports are included in Appendix II.

Existing Conditions
The levels of service, lane configuration, and queue lengths for existing conditions are shown in Figures 6 and 7 in Appendix I. Each intersection has an acceptable overall level of service during peak hours. Isolated movements in the PM Peak Hour have a level of service of D.

Proposed Conditions
The levels of service, lane configuration, and queue lengths for the Proposed Conditions are shown in Figures 11 and 12 in Appendix I. All intersections have acceptable overall levels of service with some individual movements dropping to a level of service D. The east leg of the Little Blue Parkway and Jackson Drive intersection has been constructed in this scenario. This intersection was analyzed assuming that the full build out improvements would be added with a westbound dual left turn lane, a through lane, and a right turn lane.

Proposed (Full Build Out) Conditions
The levels of service, lane configuration, and queue lengths for the Proposed plus Approved Development Conditions are shown in Figures 16 and 17 in Appendix I. Each of the study intersections maintains an acceptable overall level of service in this scenario. There continue to be several individual movements at a level of service D. The eastbound through/right turn lane at Jackson Drive and Little Blue Parkway is a level of service E. Based upon existing counts, there are very few vehicles using the eastbound left turn lane. It may make sense for this signal to be modified to have a single left turn lane, a through lane, and a dual right.

9) FUTURE CONDITIONS

Future traffic projections were not available in this area. A growth rate of 2% per year for 20 years was applied in order to model the Future Scenario generating an increase in background traffic of about 48%. According to data available from the Mid America Regional Counsel (MARC), Jackson County is expected to grow 20% in the next 30 years. However, there are large tracts of undeveloped land available to the north surrounding Little Blue Parkway that may generate more significant increases in traffic volumes in this particular area.

Future Traffic Volumes, Levels of Service and Queue Lengths have been illustrated in Figures 18-22 in Appendix I. If traffic volumes do increase by 2% each year, additional lanes will be necessary at the interchange, including a southbound left turn lane onto the eastbound ramps that would require significant modifications to the existing bridge.

10) AVERAGE DAILY TRAFFIC

A 24 Hour Traffic Count was conducted on Little Blue Parkway between the westbound I-70 Ramp and Jackson Drive. The ADT was found to be 24,748 with a nearly equal directional split (12,436 northbound and 12,312 southbound). Daily estimated trip generation volumes have been added and illustrated for each scenario in Figures 5, 10, 15, and 20.

11) RECOMMENDATIONS & CONCLUSIONS

This study documents the impact of the proposed Menard's Development on adjacent intersections during the AM and PM peak hours. The following are the recommended improvements associated with this development.

<u>Jackson Drive and Little Blue Parkway:</u>

- Westbound, construct dual left turn lanes, a through lane, and a right turn lane.
- Northbound, construct a 150' right turn lane.
- Add westbound signal heads to the pre-constructed mast arm.

Table of Contents

APPENDIX I

APPENDIX II

APPENDIX I

Project Location	Menard's Independence Independence, MO	No Scale Figure 1	priority ENGINEERS 31720 S. McClain Road Harrisonville, MO 64701 816.738.4400

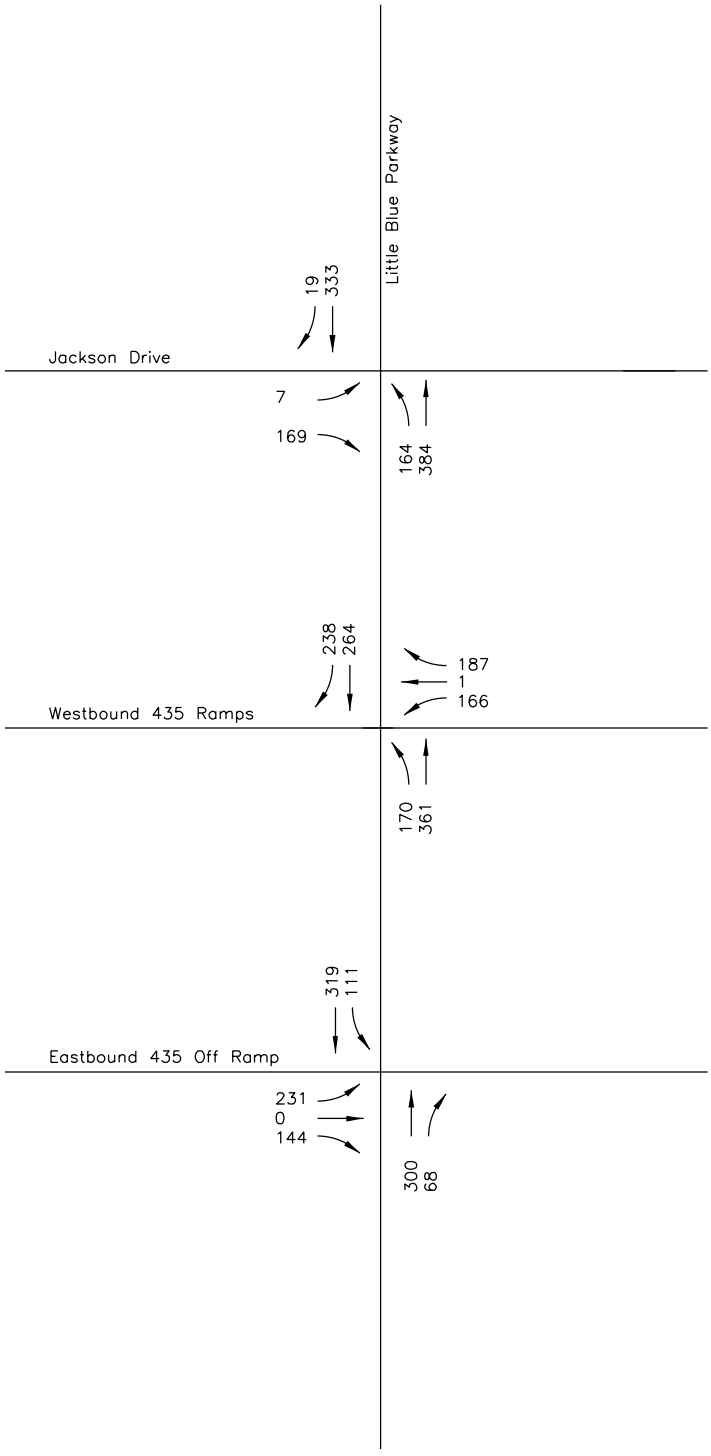
Site Plan

Menard's Independence
Independence, MO

No Scale

Figure 2

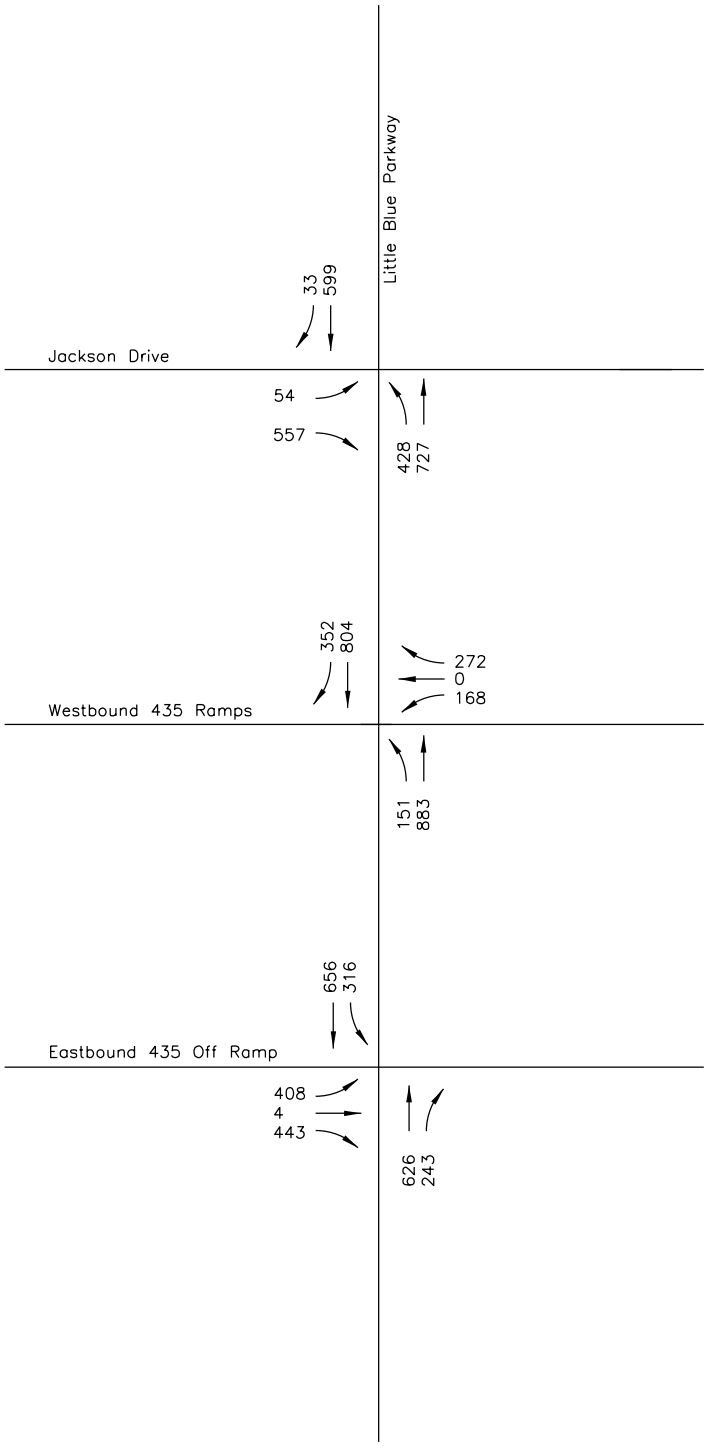
priority ENGINEERS
31720 S. McClain Road
Harrisonville, MO 64701
816.738.4400



LEGEND

Total Volume

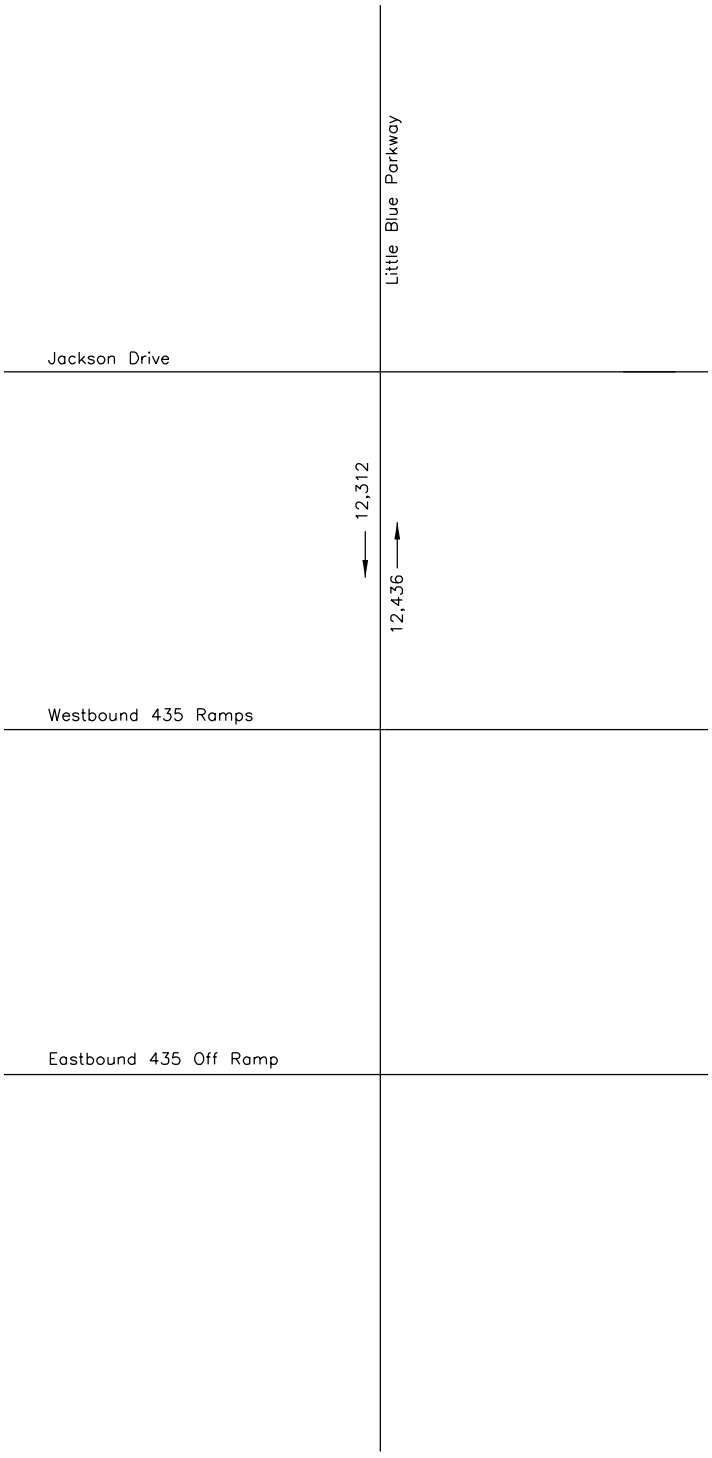
Existing AM Peak Hour Traffic Volumes	Menard's Independence Independence, MO	No Scale	Figure 3



LEGEND

Total Volume

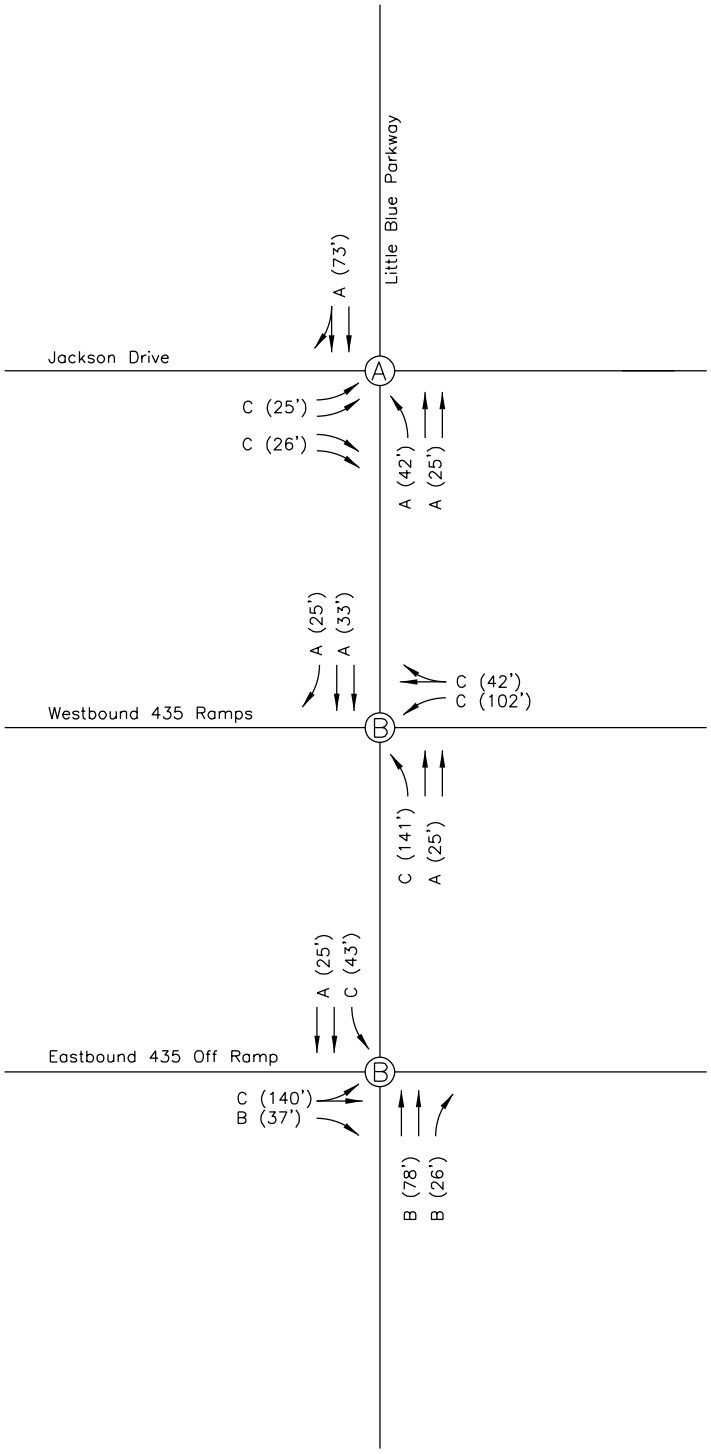
Existing PM Peak Hour Traffic Volumes	Menard's Independence Independence, MO	No Scale	Figure 4



LEGEND

ADT

Existing Average Daily Traffic (ADT)	Menard's Independence Independence, MO	No Scale	Figure 5



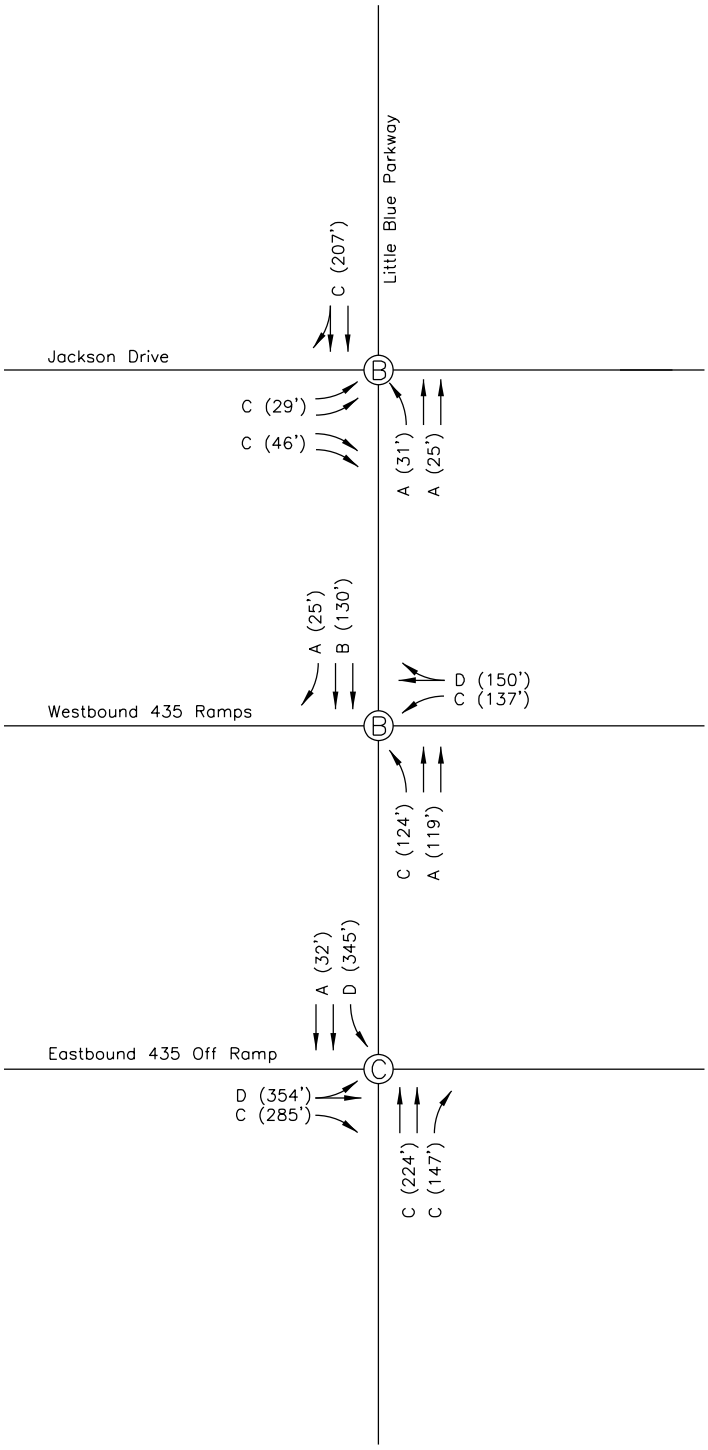
LEGEND

HCM LOS (95th Percentile Queue)

Stop Sign

Ⓐ Traffic Signal LOS

Existing AM Peak Hour Lane Configurations & Levels of Service	Menard's Independence Independence, MO	No Scale	Figure 6



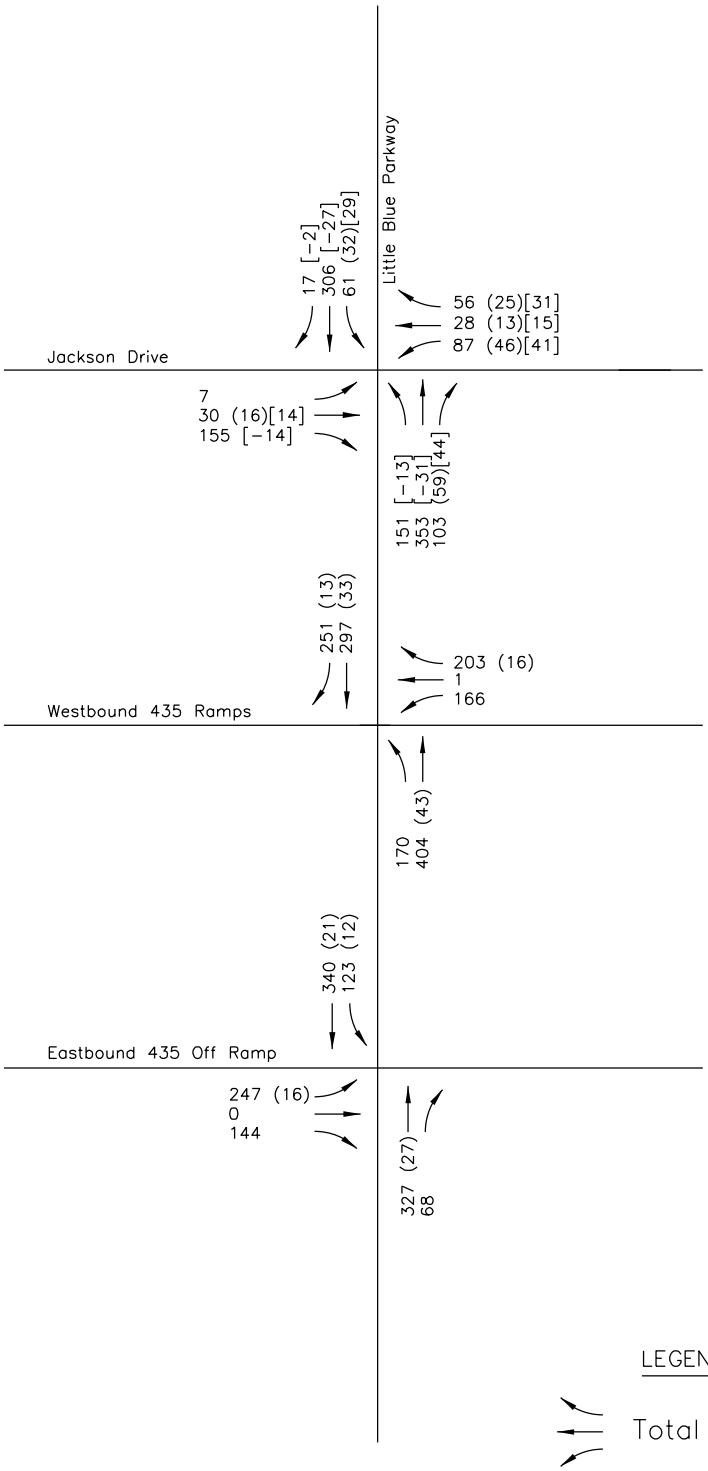
LEGEND

HCM LOS (95th Percentile Queue)

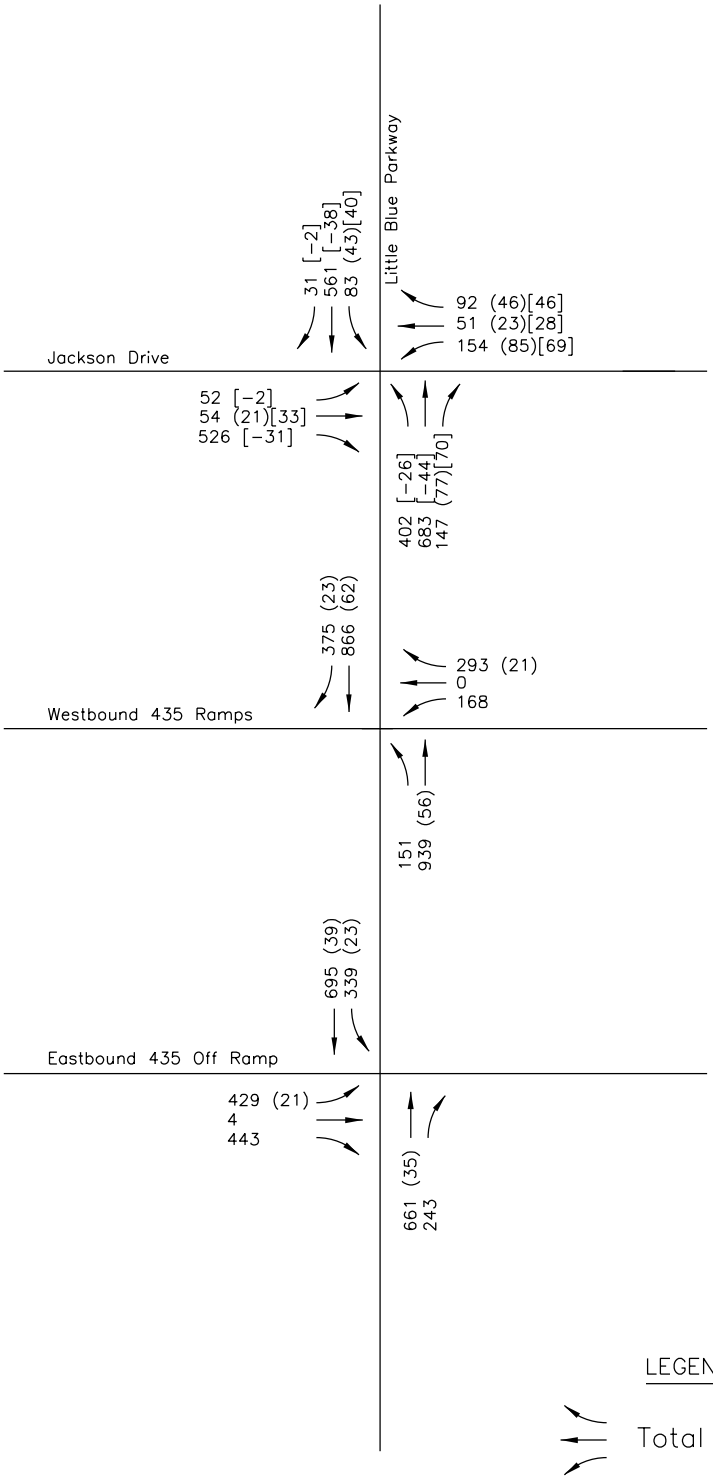
Stop Sign

Ⓐ Traffic Signal LOS

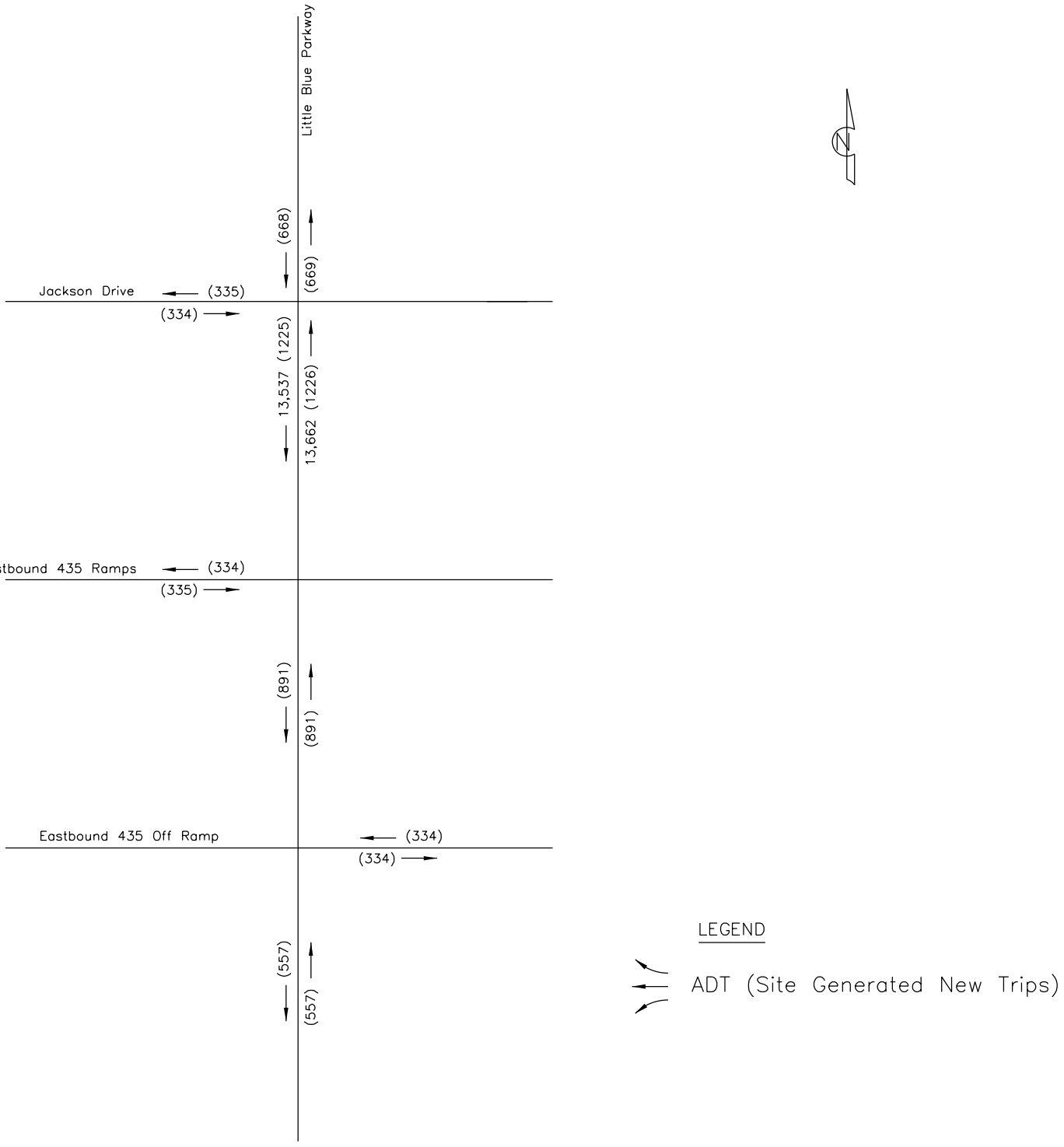
Existing PM Peak Hour Lane Configurations & Levels of Service	Menard's Independence Independence, MO	No Scale	Figure 7



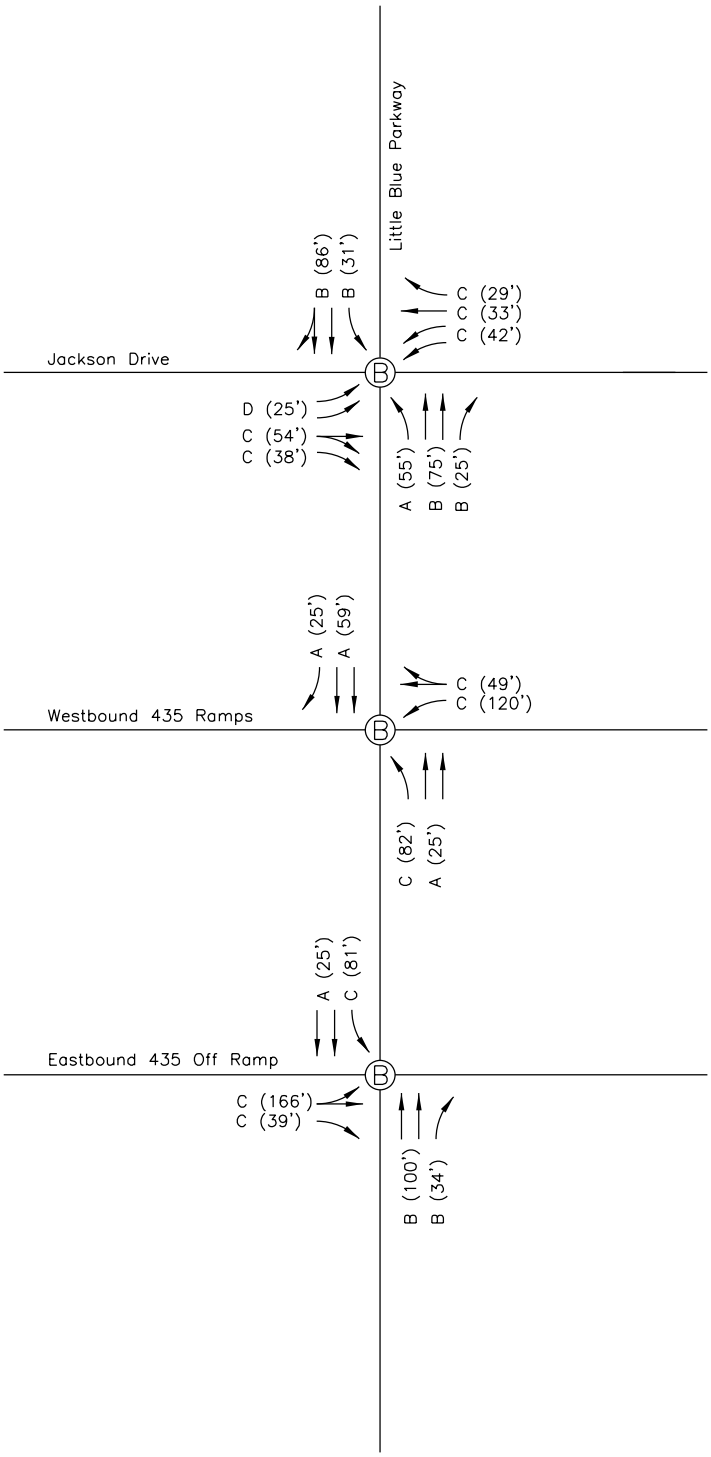
Proposed AM Peak Hour Traffic Volumes	Menard's Independence Independence, MO	No Scale	Figure 8



Proposed PM Peak Hour Traffic Volumes	Menard's Independence Independence, MO	No Scale	Figure 9



Proposed Average Daily Traffic (ADT)	Menard's Independence Independence, MO	No Scale Figure 10	priority ENGINEERS



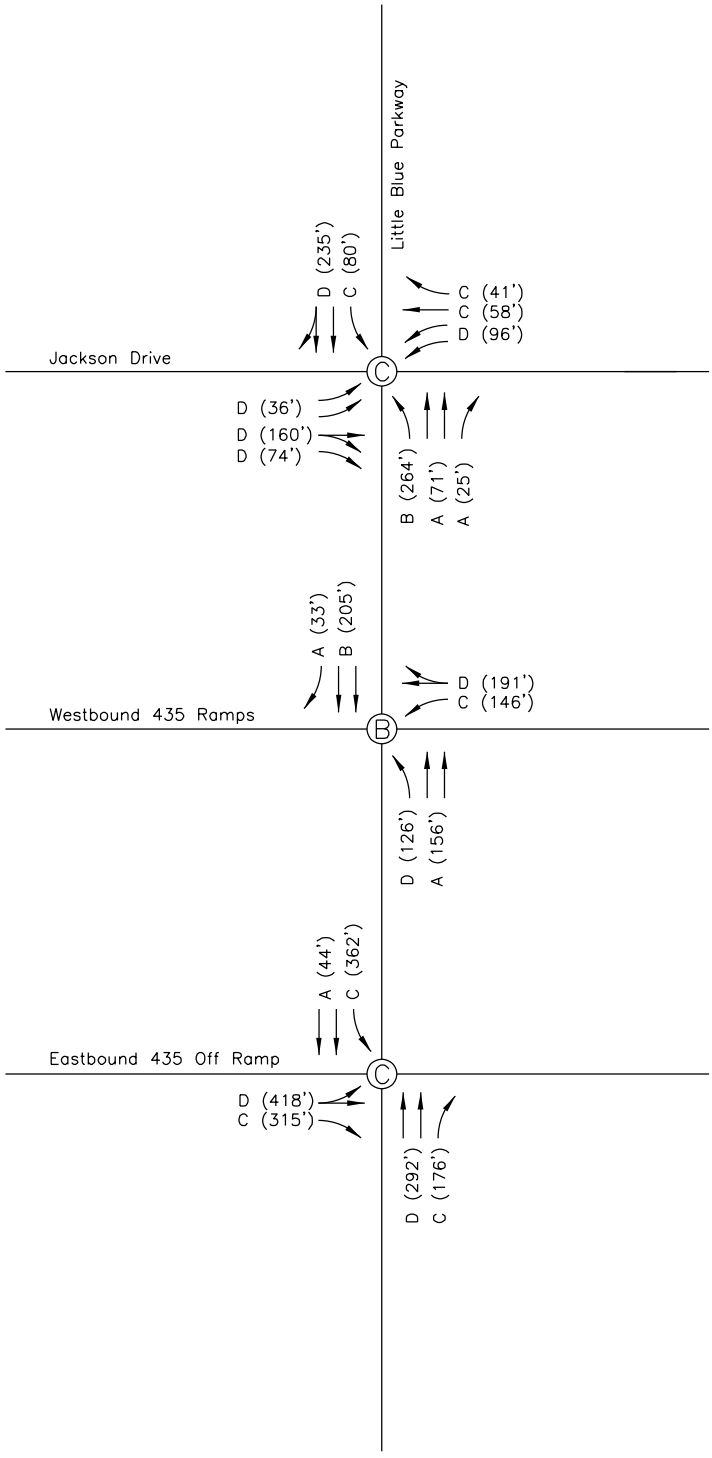
LEGEND

HCM LOS (95th Percentile Queue)

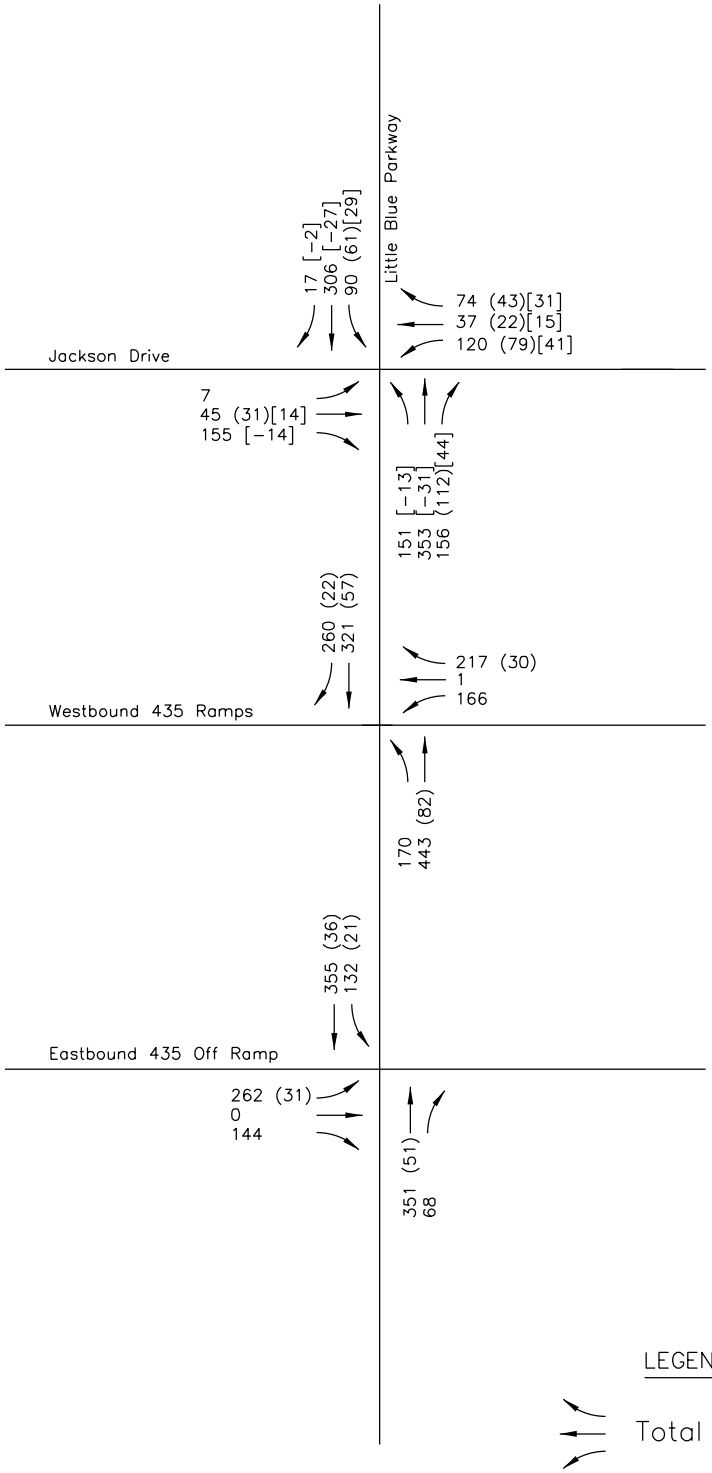
Stop Sign

Ⓐ Traffic Signal LOS

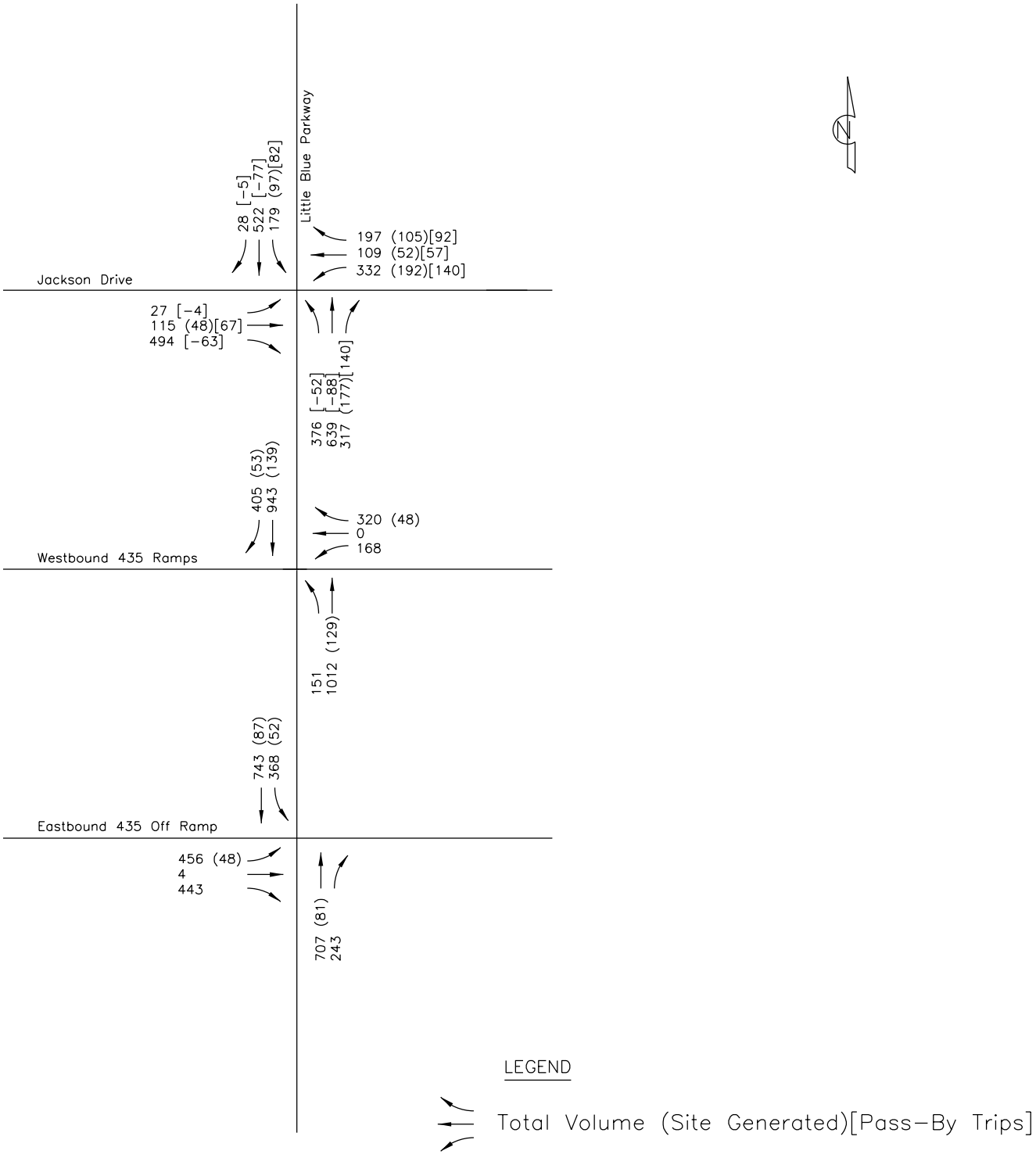
Proposed AM Peak Hour Lane Configurations & Levels of Service	Menard's Independence Independence, MO	No Scale	Figure 11



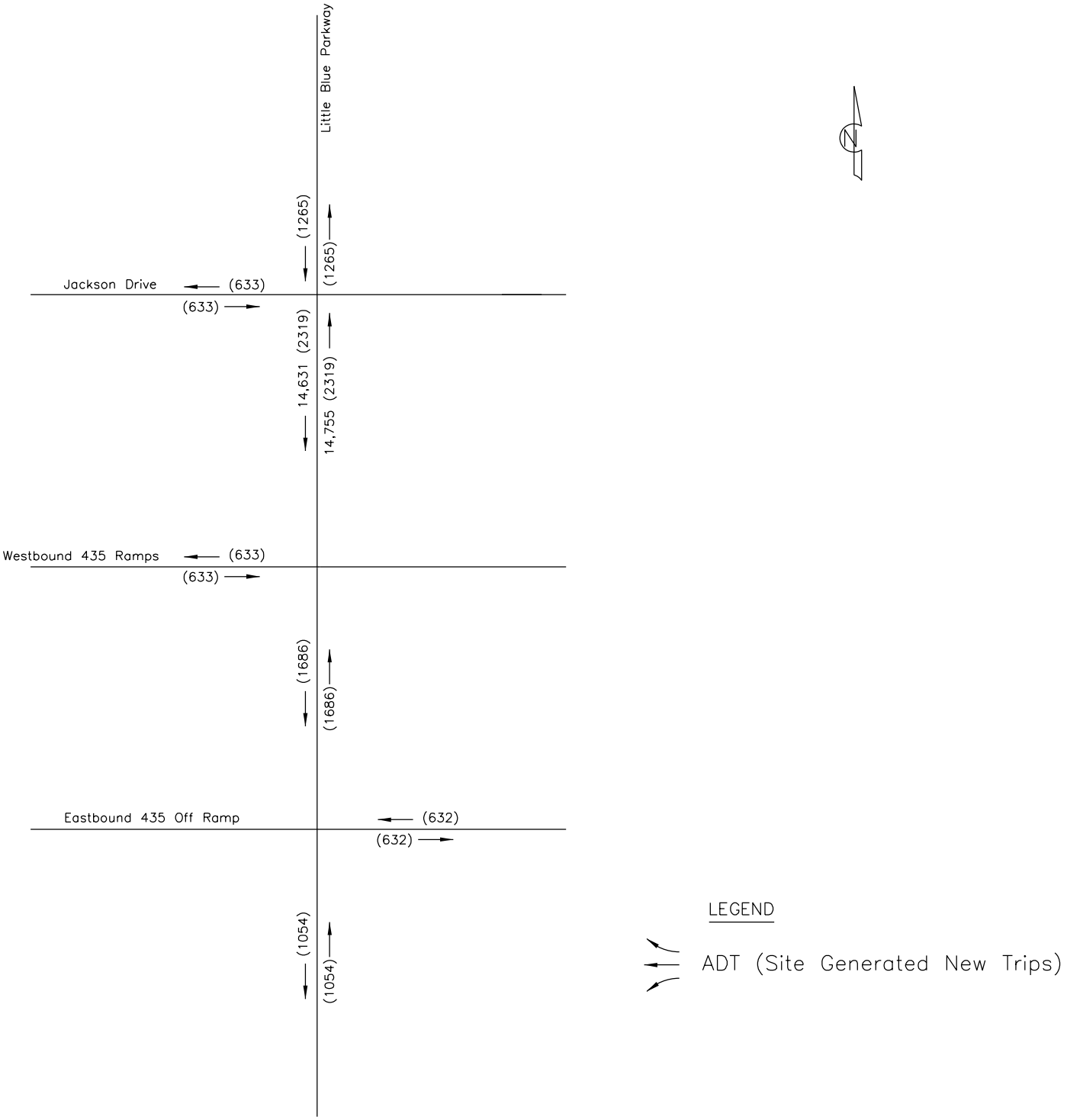
Proposed PM Peak Hour Lane Configurations & Levels of Service	Menard's Independence Independence, MO	No Scale	Figure 12



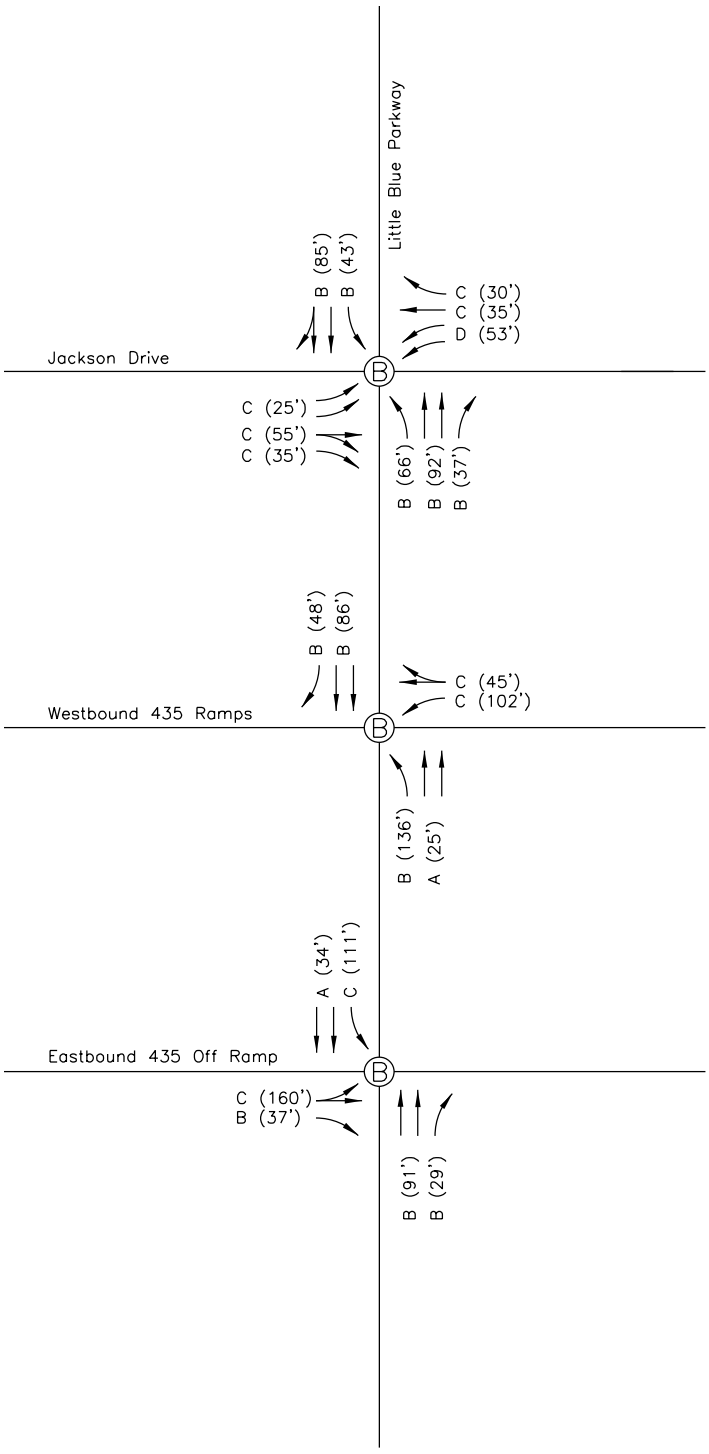
Proposed (Full Build-Out) AM Peak Hour Traffic Volumes	Menard's Independence Independence, MO	No Scale Figure 13	priority ENGINEERS



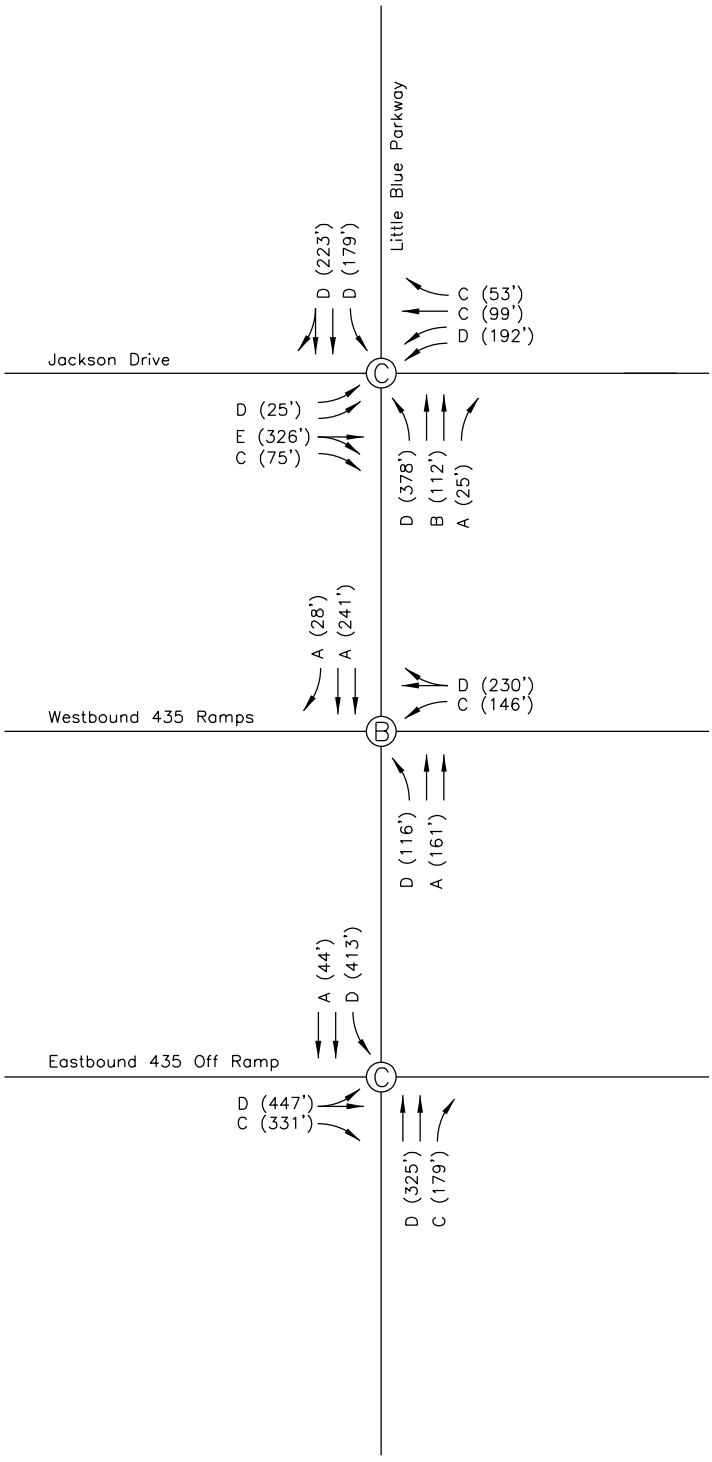
Proposed (Full Build-Out) PM Peak Hour Traffic Volumes	Menard's Independence Independence, MO	No Scale Figure 14	priority ENGINEERS



Proposed (Full Build–Out) Average Daily Traffic (ADT)	Menard's Independence Independence, MO	No Scale	Figure 15



Proposed (Full Build-Out) AM Peak Hour Lane Configurations & Levels of Service	Menard's Independence Independence, MO	No Scale Figure 16	priority ENGINEERS



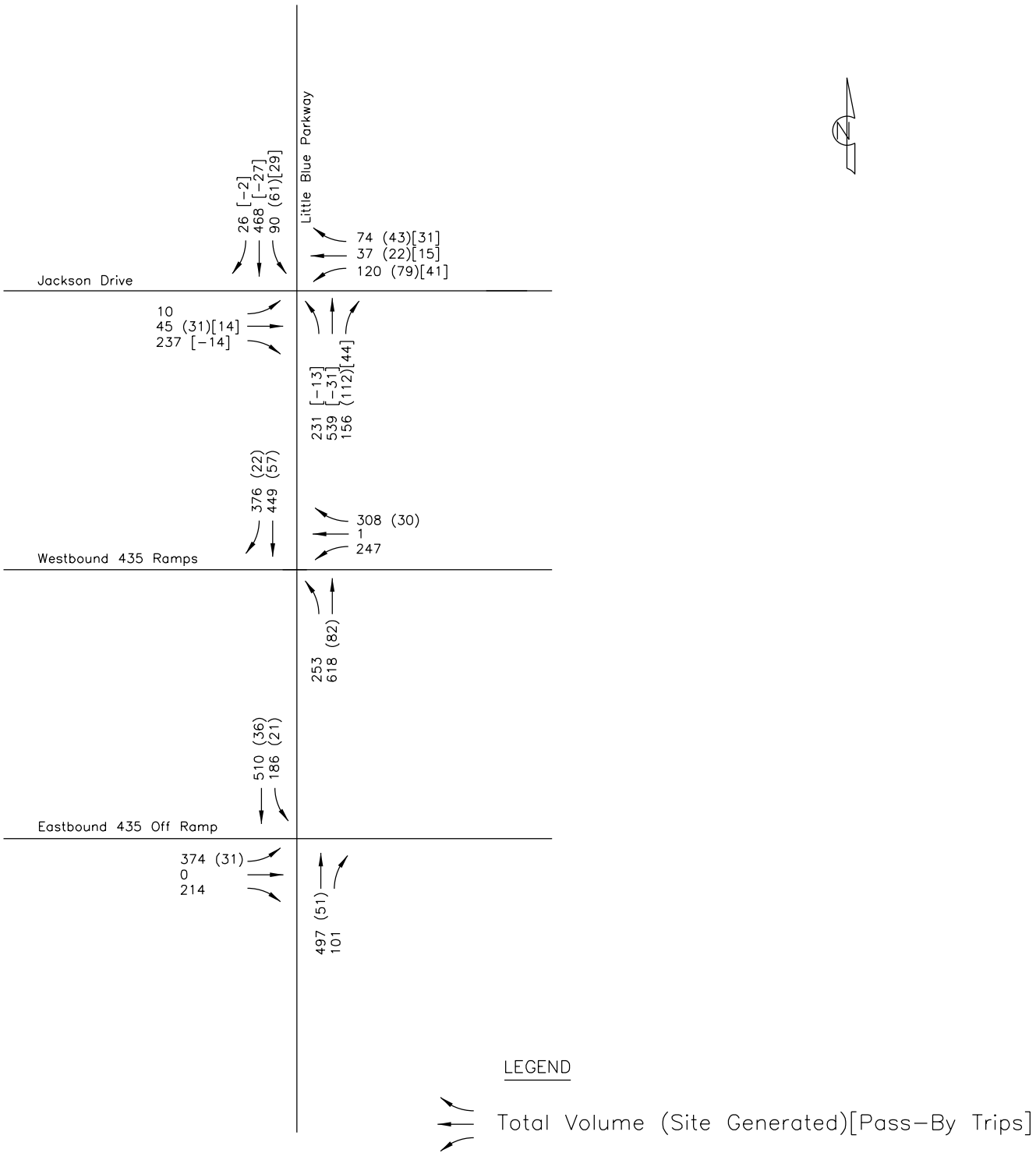
LEGEND

HCM LOS (95th Percentile Queue)

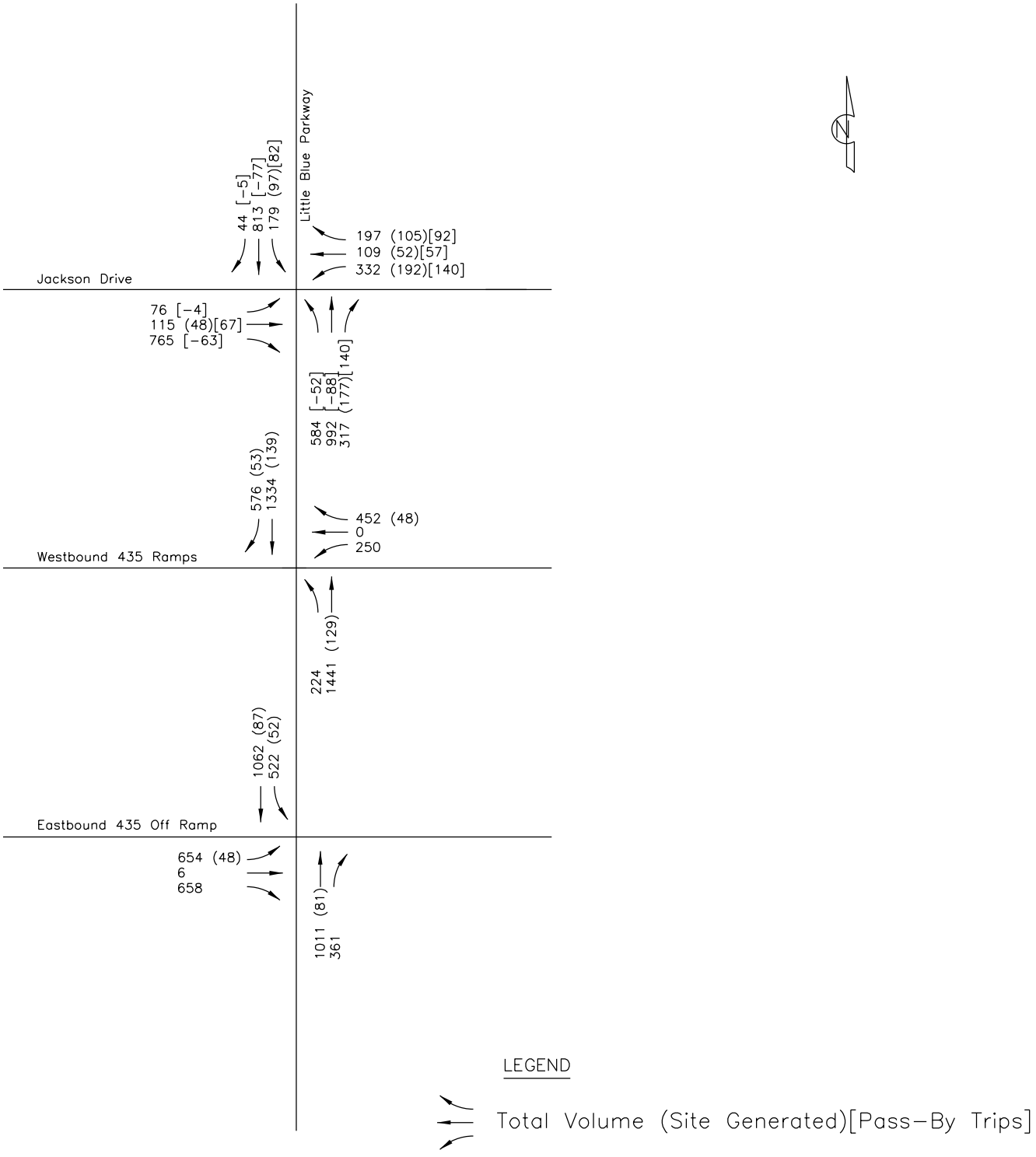
Stop Sign

Ⓐ Traffic Signal LOS

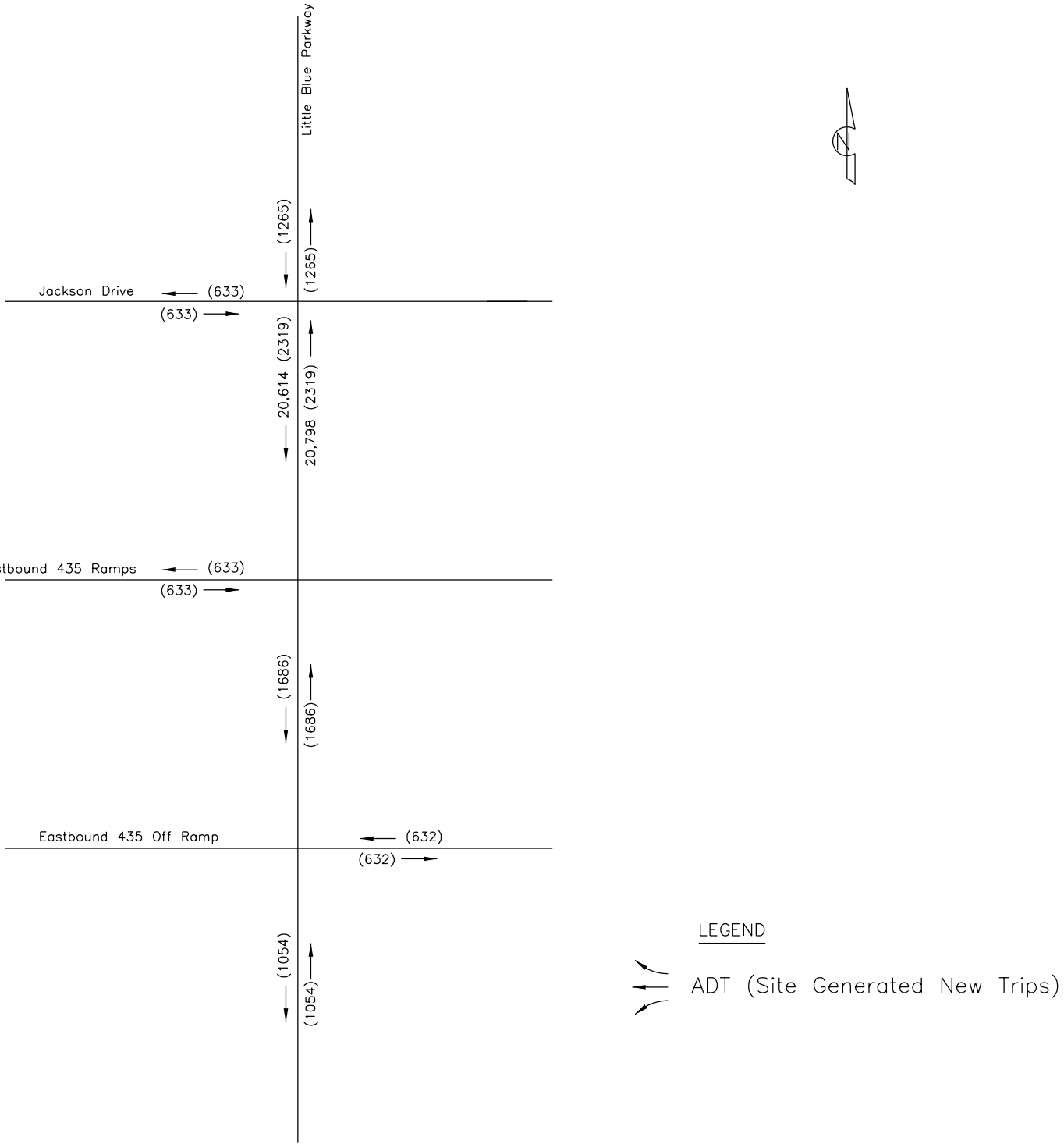
Proposed (Full Build-Out) PM Peak Hour Lane Configurations & Levels of Service	Menard's Independence Independence, MO	No Scale Figure 17	priority ENGINEERS



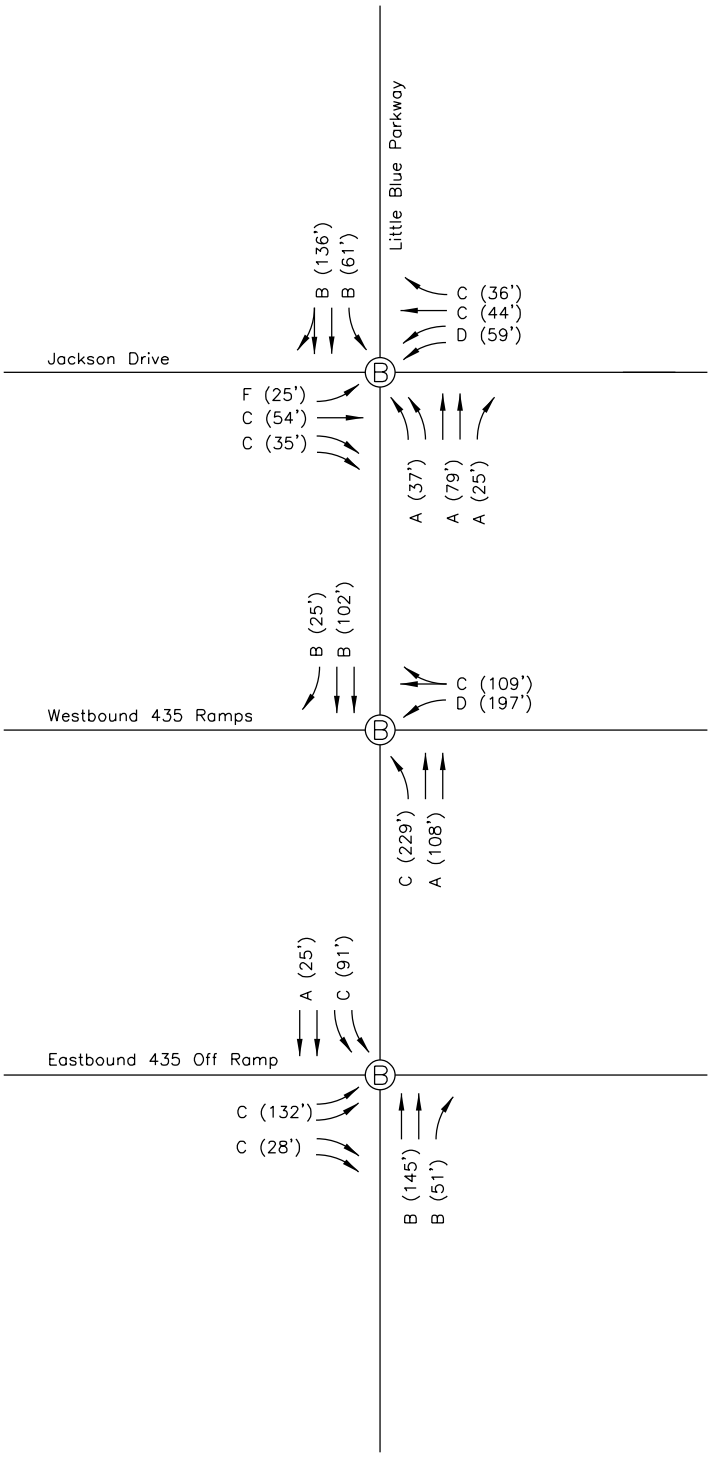
Future AM Peak Hour Traffic Volumes	Menard's Independence Independence, MO	No Scale Figure 18	priority ENGINEERS



Future PM Peak Hour Traffic Volumes	Menard's Independence Independence, MO	No Scale	Figure 19



Future Average Daily Traffic (ADT)	Menard's Independence Independence, MO	No Scale	Figure 20



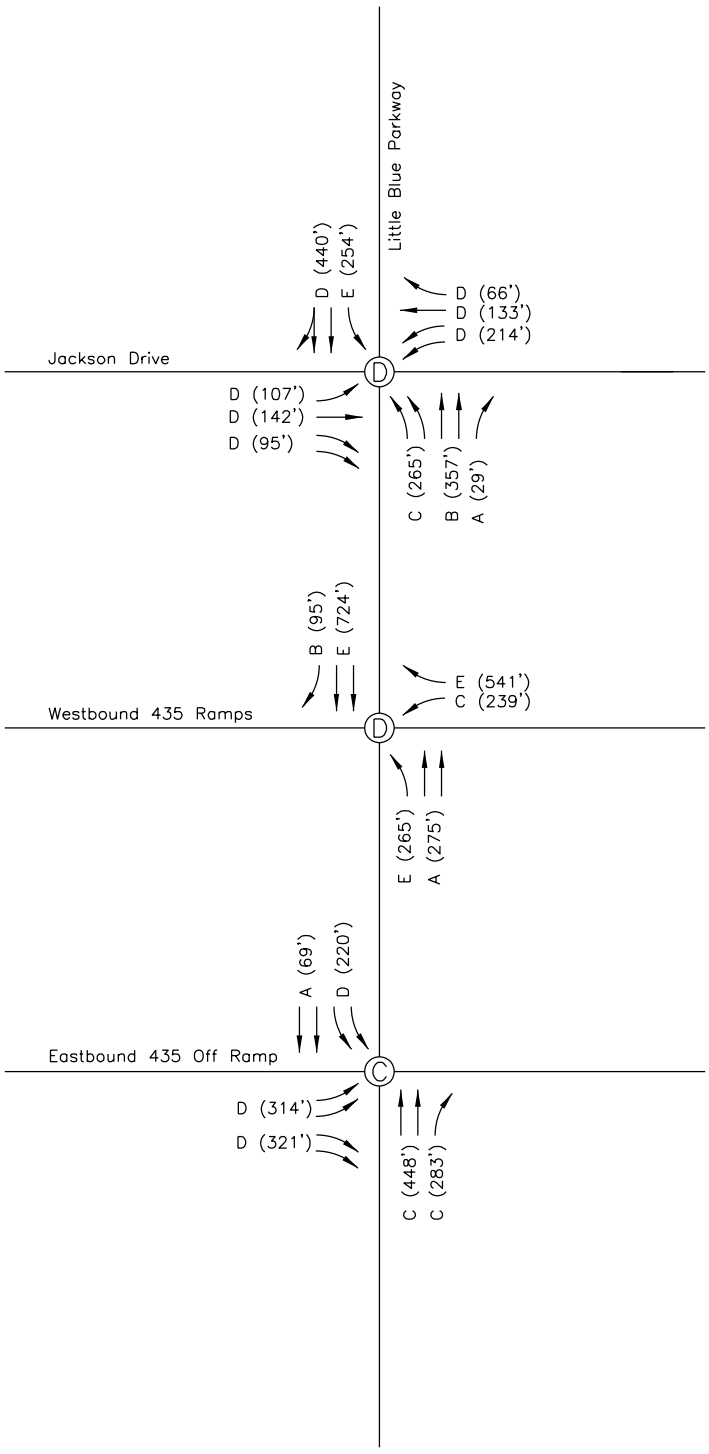
LEGEND

HCM LOS (95th Percentile Queue)

Stop Sign

Ⓐ Traffic Signal LOS

Future AM Peak Hour Lane Configurations & Levels of Service	Menard's Independence Independence, MO	No Scale	Figure 21



LEGEND

HCM LOS (95th Percentile Queue)

Stop Sign

Ⓐ Traffic Signal LOS

Future PM Peak Hour Lane Configurations & Levels of Service	Menard's Independence Independence, MO	No Scale	Figure 22

APPENDIX II

Traffic Counts

Synchro Reports

Location WB I70 Ramps & Little Blue Parkway
Start Date: 8/14/2012
Start Time: 4:00 PM
Counted By: Shannon Briscoe

	Northbound			Southbound			Eastbound			Westbound				
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4:00 PM	51	138			212	62				35	1	73	572	
4:15 AM	39	193			189	61				42	0	67	591	
4:30 AM	27	233			183	73				38	0	57	611	
4:45 AM	38	243			178	82				41	0	68	650	2424
5:00 AM	37	190			202	98				46	0	81	654	2506
5:15 AM	49	217			221	99				43	0	66	695	2610
5:30 AM	47	190			188	66				51	1	65	608	2607
5:45 AM	23	183			201	52				57	0	60	576	2533
	151	883			784	352				168	0	272		

Location Jackson & Little Blue Parkway
Start Date: 8/14/2012
Start Time: 4:00 PM
Counted By: Shannon Briscoe

	Northbound			Southbound			Eastbound			Westbound				
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4:00 PM	77	139			134	4	14		124				492	
4:15 AM	95	141			125	3	12		115				491	
4:30 AM	93	179			107	8	9		106				502	
4:45 AM	89	162			144	9	11		105				520	2005
5:00 AM	104	184			164	9	13		130				604	2117
5:15 AM	112	184			138	7	19		134				594	2220
5:30 AM	109	179			125	8	11		161				593	2311
5:45 AM	87	139			95	10	5		130				466	2257
	414	709			571	33	54		530					

Location EB I70 Ramps & Little Blue Parkway
Start Date: 8/14/2012
Start Time: 4:00 PM
Counted By: Kristin Skinner

	Northbound			Southbound			Eastbound			Westbound				
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4:00 PM		121	38	85	149	0	77	0	71				541	
4:15 AM		139	43	93	151	0	94	1	86				607	
4:30 AM		139	58	56	167	0	126	1	132				679	
4:45 AM		162	56	69	150	0	114	1	151				703	2530
5:00 AM		136	69	93	158	0	95	0	90				641	2630
5:15 AM		188	60	98	181	0	73	2	70				672	2695
5:30 AM		142	54	84	167	0	85	0	83				615	2631
5:45 AM		124	50	59	194	0	82	1	89				599	2527
		625	243	316	656		408	4	443					

Location WB I70 Ramps & Little Blue Parkway
Start Date: 8/14/2012
Start Time: 6:45 AM
Counted By: Kristin Skinner

	Northbound			Southbound			Eastbound			Westbound				
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
6:45 AM	31	82	0	0	56	52	0	0	0	30	0	38	289	
7:00 AM	53	69	0	0	52	70	0	0	0	27	0	34	305	
7:15 AM	43	84	0	0	67	60	0	0	0	48	1	36	339	
7:30 AM	43	106	0	0	82	57	0	0	0	45	0	59	392	1325
7:45 AM	31	102	0	0	63	51	0	0	0	46	0	58	351	1387
8:00 AM	38	71	0	0	67	40	0	0	0	44	1	37	298	1380
8:15 AM	33	74	0	0	52	42	0	0	0	45	0	36	282	1323
8:30 AM	21	57	0	0	59	39	0	0	0	29	0	32	237	1168
	170	361	0	0	264	238	0	0	0	166	1	187		

Location Jackson & Little Blue Parkway
Start Date: 8/14/2012
Start Time: 6:45 AM
Counted By: Shannon Briscoe

	Northbound			Southbound			Eastbound			Westbound				
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
6:45 AM	50	75			75	4	1		21				226	
7:00 AM	36	80			68	5	3		45				237	
7:15 AM	38	96			77	2	0		49				262	
7:30 AM	34	102			85	5	3		36				265	990
7:45 AM	56	102			85	7	1		39				290	1054
8:00 AM	34	63			87	5	4		47				240	1057
8:15 AM	55	95			73	4	1		31				259	1054
8:30 AM	22	82			51	6	1		38				200	989
	164	380	0	0	315	19	7	0	169	0	0	0		

Location EB I70 Ramps & Little Blue Parkway
Start Date: 8/14/2012
Start Time: 6:45 AM
Counted By: Shannon Briscoe

	Northbound			Southbound			Eastbound			Westbound				
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
6:45 AM	0	56	11	21	65	0	64	0	19				236	
7:00 AM	0	73	14	24	49	0	48	0	14				222	
7:15 AM	0	73	11	31	71	0	53	0	36				275	
7:30 AM	0	66	14	33	87	0	66	0	40				306	1039
7:45 AM	0	77	29	23	94	0	53	0	54				330	1133
8:00 AM	0	69	23	27	81	0	39	0	31				270	1181
8:15 AM	0	55	21	15	70	0	42	0	47				250	1156
8:30 AM	0	40	21	16	60	0	32	0	28				197	1047
	0	289	68	111	301	0	220	0	144	0	0	0		

Little Blue Parkway South of Jackson

Time	Northbound	Southbound	Total
12:00	226	219	445
12:15	200	201	401
12:30	241	227	468
12:45	250	218	468
13:00	235	212	447
13:15	233	222	455
13:30	233	245	478
13:45	221	228	449
14:00	202	256	458
14:15	195	222	417
14:30	220	253	473
14:45	221	240	461
15:00	202	223	425
15:15	227	235	462
15:30	223	220	443
15:45	245	230	475
16:00	244	260	504
16:15	228	267	495
16:30	261	240	501
16:45	315	296	611
17:00	279	252	531
17:15	249	343	592
17:30	266	291	557
17:45	245	248	493
18:00	265	279	544
18:15	244	235	479
18:30	238	240	478
18:45	196	235	431
19:00	189	208	397
19:15	188	203	391
19:30	192	162	354
19:45	178	181	359
20:00	152	180	332
20:15	156	205	361
20:30	131	141	272
20:45	122	140	262
21:00	103	149	252
21:15	104	147	251
21:30	76	106	182

21:45	68	77	145
22:00	61	88	149
22:15	63	50	113
22:30	50	54	104
22:45	43	49	92
23:00	27	43	70
23:15	22	37	59
23:30	26	32	58
23:45	24	36	60
8/16/2012	13	21	34
0:15	16	30	46
0:30	12	17	29
0:45	21	16	37
1:00	14	8	22
1:15	6	16	22
1:30	4	5	9
1:45	11	8	19
2:00	6	7	13
2:15	3	2	5
2:30	9	6	15
2:45	7	6	13
3:00	6	4	10
3:15	7	4	11
3:30	6	6	12
3:45	8	11	19
4:00	4	9	13
4:15	10	5	15
4:30	14	15	29
4:45	19	6	25
5:00	13	17	30
5:15	17	22	39
5:30	21	29	50
5:45	50	45	95
6:00	52	43	95
6:15	77	55	132
6:30	93	67	160
6:45	122	109	231
7:00	152	99	251
7:15	133	119	252
7:30	159	116	275
7:45	190	150	340
8:00	140	117	257
8:15	139	89	228
8:30	124	106	230

8:45	137	110	247
9:00	136	138	274
9:15	138	125	263
9:30	122	120	242
9:45	169	114	283
10:00	170	91	261
10:15	186	134	320
10:30	190	133	323
10:45	180	181	361
11:00	179	158	337
11:15	199	150	349
11:30	172	169	341
11:45	201	179	380
Totals	**12436**	**12312**	**24748**

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	8	184	178	417	383
v/c Ratio	0.02	0.40	0.26	0.17	0.23
Control Delay	23.3	7.5	4.5	2.5	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	7.5	4.5	2.5	10.4
Queue Length 50th (ft)	1	0	9	11	37
Queue Length 95th (ft)	6	26	42	20	73
Internal Link Dist (ft)	1045			889	338
Turn Bay Length (ft)	250		350		
Base Capacity (vph)	915	878	683	2457	1645
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	0.01	0.21	0.26	0.17	0.23

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	7	169	164	384	333	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.88	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	2787	1770	3539	3510	
Flt Permitted	0.95	1.00	0.43	1.00	1.00	
Satd. Flow (perm)	3433	2787	806	3539	3510	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	184	178	417	362	21
RTOR Reduction (vph)	0	165	0	0	5	0
Lane Group Flow (vph)	8	19	178	417	378	0
Turn Type	NA	custom	pm+pt	NA	NA	
Protected Phases			5	2	6	
Permitted Phases	4	4	2			
Actuated Green, G (s)	6.3	6.3	41.7	41.7	28.1	
Effective Green, g (s)	6.3	6.3	41.7	41.7	28.1	
Actuated g/C Ratio	0.10	0.10	0.70	0.70	0.47	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	360	293	682	2460	1644	
v/s Ratio Prot			c0.03	0.12	0.11	
v/s Ratio Perm	0.00	c0.01	c0.15			
v/c Ratio	0.02	0.07	0.26	0.17	0.23	
Uniform Delay, d1	24.1	24.2	3.5	3.2	9.5	
Progression Factor	1.00	1.00	1.05	0.69	1.00	
Incremental Delay, d2	0.0	0.1	0.2	0.1	0.3	
Delay (s)	24.1	24.3	3.8	2.3	9.8	
Level of Service	C	C	A	A	A	
Approach Delay (s)	24.3			2.8	9.8	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	8.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	180	204	185	392	287	259
v/c Ratio	0.53	0.43	0.62	0.18	0.24	0.37
Control Delay	26.7	6.5	29.8	1.8	10.8	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.7	6.5	29.8	1.8	10.8	2.9
Queue Length 50th (ft)	59	0	38	0	17	0
Queue Length 95th (ft)	102	42	#141	3	35	0
Internal Link Dist (ft)		1217		631	889	
Turn Bay Length (ft)						150
Base Capacity (vph)	472	572	317	2150	1196	706
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	0.38	0.36	0.58	0.18	0.24	0.37

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												
Volume (vph)	0	0	0	166	1	187	170	361	0	0	264	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor				1.00	1.00		1.00	0.95			0.95	1.00
Frt				1.00	0.85		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1585		1770	3539			3539	1583
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	1585		1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	180	1	203	185	392	0	0	287	259
RTOR Reduction (vph)	0	0	0	0	164	0	0	0	0	0	0	171
Lane Group Flow (vph)	0	0	0	180	40	0	185	392	0	0	287	88
Turn Type				Perm	NA		Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8								6
Actuated Green, G (s)				11.5	11.5		10.2	36.5			20.3	20.3
Effective Green, g (s)				11.5	11.5		10.2	36.5			20.3	20.3
Actuated g/C Ratio				0.19	0.19		0.17	0.61			0.34	0.34
Clearance Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				339	304		301	2153			1197	536
v/s Ratio Prot					0.03		c0.10	0.11			c0.08	
v/s Ratio Perm				c0.10								0.06
v/c Ratio				0.53	0.13		0.61	0.18			0.24	0.16
Uniform Delay, d1				21.8	20.1		23.1	5.2			14.3	13.9
Progression Factor				1.00	1.00		0.87	0.27			0.65	0.47
Incremental Delay, d2				1.6	0.2		3.5	0.2			0.5	0.6
Delay (s)				23.4	20.3		23.5	1.6			9.7	7.2
Level of Service				C	C		C	A			A	A
Approach Delay (s)		0.0			21.8			8.6			8.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	251	157	326	74	121	347
v/c Ratio	0.65	0.33	0.24	0.11	0.50	0.17
Control Delay	29.1	5.8	15.6	5.7	25.3	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	5.8	15.6	5.7	25.3	1.1
Queue Length 50th (ft)	82	0	45	1	24	0
Queue Length 95th (ft)	140	37	78	26	43	3
Internal Link Dist (ft)	923		509			631
Turn Bay Length (ft)				25		
Base Capacity (vph)	472	537	1359	652	268	2057
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	0.53	0.29	0.24	0.11	0.45	0.17

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	231	0	144	0	0	0	0	300	68	111	319	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	1.00	0.95	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					3539	1583	1770	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1770	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	251	0	157	0	0	0	0	326	74	121	347	0
RTOR Reduction (vph)	0	0	123	0	0	0	0	0	46	0	0	0
Lane Group Flow (vph)	0	251	34	0	0	0	0	326	28	121	347	0
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)		13.1	13.1					21.9	21.9	7.0	34.9	
Effective Green, g (s)		13.1	13.1					21.9	21.9	7.0	34.9	
Actuated g/C Ratio		0.22	0.22					0.36	0.36	0.12	0.58	
Clearance Time (s)		6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		386	346					1292	578	207	2059	
v/s Ratio Prot								c0.09		c0.07	0.10	
v/s Ratio Perm		0.14	0.02						0.02			
v/c Ratio		0.65	0.10					0.25	0.05	0.58	0.17	
Uniform Delay, d1		21.4	18.7					13.3	12.3	25.1	5.8	
Progression Factor		1.00	1.00					1.00	1.00	0.76	0.14	
Incremental Delay, d2		3.9	0.1					0.5	0.2	4.0	0.2	
Delay (s)		25.3	18.9					13.8	12.5	23.1	1.0	
Level of Service		C	B					B	B	C	A	
Approach Delay (s)		22.8			0.0			13.5			6.7	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	14.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	59	605	465	790	687
v/c Ratio	0.16	0.73	0.59	0.30	0.51
Control Delay	32.1	8.5	5.7	1.3	21.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.1	8.5	5.7	1.3	21.1
Queue Length 50th (ft)	14	0	22	8	129
Queue Length 95th (ft)	29	46	31	25	207
Internal Link Dist (ft)	1045			889	338
Turn Bay Length (ft)	250		350		
Base Capacity (vph)	687	1041	783	2637	1348
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	0.58	0.59	0.30	0.51

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	54	557	428	727	599	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.88	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.99	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3433	2787	1770	3539	3511	
Flt Permitted	0.95	1.00	0.32	1.00	1.00	
Satd. Flow (perm)	3433	2787	600	3539	3511	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	59	605	465	790	651	36
RTOR Reduction (vph)	0	541	0	0	4	0
Lane Group Flow (vph)	59	64	465	790	683	0
Turn Type	NA	custom	pm+pt	NA	NA	
Protected Phases			5	2	6	
Permitted Phases	4	4	2			
Actuated Green, G (s)	8.4	8.4	59.6	59.6	30.6	
Effective Green, g (s)	8.4	8.4	59.6	59.6	30.6	
Actuated g/C Ratio	0.11	0.11	0.75	0.75	0.38	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	360	293	783	2637	1343	
v/s Ratio Prot			c0.17	0.22	0.19	
v/s Ratio Perm	0.02	c0.02	c0.27			
v/c Ratio	0.16	0.22	0.59	0.30	0.51	
Uniform Delay, d1	32.6	32.8	10.0	3.3	18.9	
Progression Factor	1.00	1.00	0.24	0.28	1.00	
Incremental Delay, d2	0.2	0.4	1.1	0.3	1.4	
Delay (s)	32.8	33.2	3.5	1.2	20.3	
Level of Service	C	C	A	A	C	
Approach Delay (s)	33.1			2.1	20.3	
Approach LOS	C			A	C	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	183	296	164	960	874	383
v/c Ratio	0.58	0.75	0.49	0.40	0.60	0.44
Control Delay	36.7	27.8	32.6	3.9	11.7	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	27.8	32.6	3.9	11.7	1.6
Queue Length 50th (ft)	84	73	91	83	84	0
Queue Length 95th (ft)	137	150	m124	119	130	6
Internal Link Dist (ft)		1217		631	889	
Turn Bay Length (ft)						150
Base Capacity (vph)	420	481	332	2375	1446	873
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	0.44	0.62	0.49	0.40	0.60	0.44

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												
Volume (vph)	0	0	0	168	0	272	151	883	0	0	804	352
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor				1.00	1.00		1.00	0.95			0.95	1.00
Frt				1.00	0.85		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1583		1770	3539			3539	1583
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	1583		1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	183	0	296	164	960	0	0	874	383
RTOR Reduction (vph)	0	0	0	0	113	0	0	0	0	0	0	226
Lane Group Flow (vph)	0	0	0	183	183	0	164	960	0	0	874	157
Turn Type				Perm	NA		Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8								6
Actuated Green, G (s)				14.3	14.3		15.0	53.7			32.7	32.7
Effective Green, g (s)				14.3	14.3		15.0	53.7			32.7	32.7
Actuated g/C Ratio				0.18	0.18		0.19	0.67			0.41	0.41
Clearance Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				316	283		332	2376			1447	647
v/s Ratio Prot					c0.12		c0.09	0.27			c0.25	
v/s Ratio Perm				0.10								0.10
v/c Ratio				0.58	0.65		0.49	0.40			0.60	0.24
Uniform Delay, d1				30.1	30.5		29.1	5.9			18.6	15.5
Progression Factor				1.00	1.00		0.98	0.54			0.51	0.12
Incremental Delay, d2				2.6	5.0		0.8	0.3			1.6	0.8
Delay (s)				32.7	35.5		29.3	3.6			11.0	2.6
Level of Service				C	D		C	A			B	A
Approach Delay (s)		0.0			34.4			7.3			8.5	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	447	482	680	264	343	713
v/c Ratio	0.85	0.80	0.69	0.52	0.97	0.36
Control Delay	42.9	26.3	30.6	20.7	59.8	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	26.3	30.6	20.7	59.8	1.9
Queue Length 50th (ft)	204	130	163	72	182	33
Queue Length 95th (ft)	#354	#285	224	147	#345	32
Internal Link Dist (ft)	923		509			631
Turn Bay Length (ft)				25		
Base Capacity (vph)	555	627	985	506	354	1958
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	0.81	0.77	0.69	0.52	0.97	0.36

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												
Volume (vph)	408	4	443	0	0	0	0	626	243	316	656	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	1.00	0.95	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1775	1583					3539	1583	1770	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1775	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	443	4	482	0	0	0	0	680	264	343	713	0
RTOR Reduction (vph)	0	0	135	0	0	0	0	0	65	0	0	0
Lane Group Flow (vph)	0	447	347	0	0	0	0	680	199	343	713	0
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)		23.7	23.7					22.3	22.3	16.0	44.3	
Effective Green, g (s)		23.7	23.7					22.3	22.3	16.0	44.3	
Actuated g/C Ratio		0.30	0.30					0.28	0.28	0.20	0.55	
Clearance Time (s)		6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		526	469					986	441	354	1960	
v/s Ratio Prot								c0.19		c0.19	0.20	
v/s Ratio Perm		0.25	0.22						0.13			
v/c Ratio		0.85	0.74					0.69	0.45	0.97	0.36	
Uniform Delay, d1		26.5	25.4					25.8	23.8	31.8	10.0	
Progression Factor		1.00	1.00					1.00	1.00	0.60	0.14	
Incremental Delay, d2		12.2	6.0					3.9	3.3	34.9	0.4	
Delay (s)		38.7	31.4					29.7	27.1	53.9	1.9	
Level of Service		D	C					C	C	D	A	
Approach Delay (s)		34.9			0.0			29.0			18.8	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	27.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	8	104	97	95	30	61	164	384	112	66	351
v/c Ratio	0.04	0.44	0.39	0.38	0.08	0.16	0.25	0.19	0.12	0.12	0.22
Control Delay	31.7	18.3	11.6	35.6	22.3	8.4	8.7	11.3	4.6	9.2	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	18.3	11.6	35.6	22.3	8.4	8.7	11.3	4.6	9.2	14.1
Queue Length 50th (ft)	1	13	0	20	10	0	21	46	4	11	50
Queue Length 95th (ft)	8	54	38	42	33	29	55	75	14	31	86
Internal Link Dist (ft)		1045			448			889			338
Turn Bay Length (ft)	250						350		150	150	
Base Capacity (vph)	203	418	419	252	471	446	665	1978	934	548	1612
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.25	0.23	0.38	0.06	0.14	0.25	0.19	0.12	0.12	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	30	155	87	28	56	151	353	103	61	306	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.90	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	1588	1504	3433	1863	1583	1770	3539	1583	1770	3512	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.54	1.00	1.00	0.52	1.00	
Satd. Flow (perm)	3433	1588	1504	3433	1863	1583	1009	3539	1583	977	3512	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	33	168	95	30	61	164	384	112	66	333	18
RTOR Reduction (vph)	0	61	83	0	0	49	0	0	65	0	5	0
Lane Group Flow (vph)	8	43	14	95	30	12	164	384	47	66	346	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8	2		2	6		
Actuated Green, G (s)	0.8	10.0	10.0	4.1	13.3	13.3	37.7	29.5	29.5	26.1	23.7	
Effective Green, g (s)	0.8	10.0	10.0	4.1	13.3	13.3	37.7	29.5	29.5	26.1	23.7	
Actuated g/C Ratio	0.01	0.14	0.14	0.06	0.19	0.19	0.54	0.42	0.42	0.37	0.34	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	39	227	215	201	354	301	633	1491	667	391	1189	
v/s Ratio Prot	0.00	c0.03		c0.03	c0.02		c0.03	0.11		0.01	0.10	
v/s Ratio Perm			0.01			0.01	c0.11		0.03	0.06		
v/c Ratio	0.21	0.19	0.06	0.47	0.08	0.04	0.26	0.26	0.07	0.17	0.29	
Uniform Delay, d1	34.3	26.4	26.0	31.9	23.3	23.1	8.9	13.1	12.1	14.8	17.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.88	0.94	1.26	1.00	1.00	
Incremental Delay, d2	2.6	0.4	0.1	1.8	0.1	0.1	0.2	0.4	0.2	0.2	0.6	
Delay (s)	36.9	26.8	26.1	33.7	23.4	23.2	8.1	12.7	15.4	15.0	17.6	
Level of Service	D	C	C	C	C	C	A	B	B	B	B	
Approach Delay (s)		26.9			28.6			12.0			17.2	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	30.0
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	180	222	185	439	323	273
v/c Ratio	0.57	0.48	0.61	0.19	0.23	0.35
Control Delay	32.8	7.4	30.9	1.1	10.3	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	7.4	30.9	1.1	10.3	3.1
Queue Length 50th (ft)	72	0	60	0	33	1
Queue Length 95th (ft)	120	49	82	3	59	1
Internal Link Dist (ft)		1217		631	889	
Turn Bay Length (ft)						150
Base Capacity (vph)	430	552	379	2301	1389	787
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	0.42	0.40	0.49	0.19	0.23	0.35

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	166	1	203	170	404	0	0	297	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor				1.00	1.00		1.00	0.95			0.95	1.00
Frt				1.00	0.85		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1585		1770	3539			3539	1583
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	1585		1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	180	1	221	185	439	0	0	323	273
RTOR Reduction (vph)	0	0	0	0	182	0	0	0	0	0	0	166
Lane Group Flow (vph)	0	0	0	180	40	0	185	439	0	0	323	107
Turn Type				Perm	NA		Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8								6
Actuated Green, G (s)				12.5	12.5		12.0	45.5			27.5	27.5
Effective Green, g (s)				12.5	12.5		12.0	45.5			27.5	27.5
Actuated g/C Ratio				0.18	0.18		0.17	0.65			0.39	0.39
Clearance Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				316	283		303	2300			1390	622
v/s Ratio Prot					0.03		c0.10	0.12			c0.09	
v/s Ratio Perm				c0.10								0.07
v/c Ratio				0.57	0.14		0.61	0.19			0.23	0.17
Uniform Delay, d1				26.3	24.2		26.8	4.9			14.2	13.8
Progression Factor				1.00	1.00		0.86	0.18			0.61	0.62
Incremental Delay, d2				2.4	0.2		3.4	0.2			0.4	0.6
Delay (s)				28.6	24.5		26.5	1.0			9.1	9.2
Level of Service				C	C		C	A			A	A
Approach Delay (s)		0.0			26.3			8.6			9.1	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	268	157	355	74	134	370
v/c Ratio	0.68	0.33	0.24	0.11	0.52	0.17
Control Delay	33.5	5.9	17.1	8.5	28.2	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	5.9	17.1	8.5	28.2	2.4
Queue Length 50th (ft)	106	0	55	5	46	26
Queue Length 95th (ft)	166	39	100	34	81	0
Internal Link Dist (ft)	923		509			631
Turn Bay Length (ft)				25		
Base Capacity (vph)	506	564	1452	682	329	2146
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	0.53	0.28	0.24	0.11	0.41	0.17

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	247	0	144	0	0	0	0	327	68	123	340	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	1.00	0.95	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					3539	1583	1770	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1770	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	268	0	157	0	0	0	0	355	74	134	370	0
RTOR Reduction (vph)	0	0	122	0	0	0	0	0	34	0	0	0
Lane Group Flow (vph)	0	268	35	0	0	0	0	355	40	134	370	0
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)		15.6	15.6					27.5	27.5	8.9	42.4	
Effective Green, g (s)		15.6	15.6					27.5	27.5	8.9	42.4	
Actuated g/C Ratio		0.22	0.22					0.39	0.39	0.13	0.61	
Clearance Time (s)		6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		394	353					1390	622	225	2144	
v/s Ratio Prot								c0.10		c0.08	0.10	
v/s Ratio Perm		0.15	0.02						0.03			
v/c Ratio		0.68	0.10					0.26	0.06	0.60	0.17	
Uniform Delay, d1		24.9	21.6					14.3	13.2	28.9	6.1	
Progression Factor		1.00	1.00					1.00	1.00	0.78	0.33	
Incremental Delay, d2		4.8	0.1					0.4	0.2	4.1	0.2	
Delay (s)		29.7	21.7					14.8	13.4	26.6	2.2	
Level of Service		C	C					B	B	C	A	
Approach Delay (s)		26.8			0.0			14.6			8.7	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	57	322	309	167	55	100	437	742	160	90	644
v/c Ratio	0.37	0.81	0.66	0.60	0.15	0.26	0.73	0.44	0.19	0.42	0.64
Control Delay	49.0	29.1	11.4	50.4	31.4	8.5	16.6	5.0	0.8	32.5	32.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	29.1	11.4	50.4	31.4	8.5	16.6	5.0	0.8	32.5	32.3
Queue Length 50th (ft)	16	57	0	47	26	0	55	49	1	40	174
Queue Length 95th (ft)	36	#160	74	#96	58	41	#264	71	m5	80	235
Internal Link Dist (ft)		1045			448			889			338
Turn Bay Length (ft)	250						350		150	150	
Base Capacity (vph)	153	454	521	280	377	400	595	1674	833	212	999
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.71	0.59	0.60	0.15	0.25	0.73	0.44	0.19	0.42	0.64

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												
Volume (vph)	52	54	526	154	51	92	402	683	147	83	561	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.88	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	1553	1504	3433	1863	1583	1770	3539	1583	1770	3511	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.41	1.00	1.00	0.22	1.00	
Satd. Flow (perm)	3433	1553	1504	3433	1863	1583	759	3539	1583	414	3511	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	59	572	167	55	100	437	742	160	90	610	34
RTOR Reduction (vph)	0	188	267	0	0	81	0	0	89	0	4	0
Lane Group Flow (vph)	57	134	42	167	55	19	437	742	71	90	640	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8	2		2	6		
Actuated Green, G (s)	3.2	12.2	12.2	8.5	17.5	17.5	40.2	40.2	40.2	23.1	23.1	
Effective Green, g (s)	3.2	12.2	12.2	8.5	17.5	17.5	40.2	40.2	40.2	23.1	23.1	
Actuated g/C Ratio	0.04	0.14	0.14	0.09	0.19	0.19	0.45	0.45	0.45	0.26	0.26	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	122	211	204	324	362	308	588	1581	707	183	901	
v/s Ratio Prot	0.02	c0.09		c0.05	0.03		c0.18	0.21		0.03	c0.18	
v/s Ratio Perm			0.03			0.01	c0.15		0.05	0.10		
v/c Ratio	0.47	0.64	0.21	0.52	0.15	0.06	0.74	0.47	0.10	0.49	0.71	
Uniform Delay, d1	42.6	36.8	34.6	38.8	30.1	29.6	21.3	17.4	14.4	27.3	30.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.34	0.24	0.12	1.00	1.00	
Incremental Delay, d2	2.8	6.2	0.5	1.4	0.2	0.1	4.5	0.9	0.3	2.1	4.7	
Delay (s)	45.4	43.0	35.1	40.2	30.3	29.7	11.7	5.2	2.0	29.4	35.1	
Level of Service	D	D	D	D	C	C	B	A	A	C	D	
Approach Delay (s)		39.6			35.2			6.9			34.4	
Approach LOS		D			D			A			C	

Intersection Summary			
HCM Average Control Delay	23.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	183	318	164	1021	941	408
v/c Ratio	0.53	0.79	0.56	0.43	0.61	0.45
Control Delay	37.0	35.8	40.7	5.2	11.0	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	35.8	40.7	5.2	11.0	2.0
Queue Length 50th (ft)	93	110	102	121	92	0
Queue Length 95th (ft)	146	191	m126	m156	205	33
Internal Link Dist (ft)		1217		631	889	
Turn Bay Length (ft)						150
Base Capacity (vph)	472	506	295	2378	1553	899
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	0.39	0.63	0.56	0.43	0.61	0.45

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												
Volume (vph)	0	0	0	168	0	293	151	939	0	0	866	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor				1.00	1.00		1.00	0.95			0.95	1.00
Frt				1.00	0.85		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1583		1770	3539			3539	1583
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	1583		1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	183	0	318	164	1021	0	0	941	408
RTOR Reduction (vph)	0	0	0	0	93	0	0	0	0	0	0	204
Lane Group Flow (vph)	0	0	0	183	225	0	164	1021	0	0	941	204
Turn Type				Perm	NA		Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8								6
Actuated Green, G (s)				17.5	17.5		15.0	60.5			39.5	39.5
Effective Green, g (s)				17.5	17.5		15.0	60.5			39.5	39.5
Actuated g/C Ratio				0.19	0.19		0.17	0.67			0.44	0.44
Clearance Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				344	308		295	2379			1553	695
v/s Ratio Prot					c0.14		c0.09	0.29			c0.27	
v/s Ratio Perm				0.10								0.13
v/c Ratio				0.53	0.73		0.56	0.43			0.61	0.29
Uniform Delay, d1				32.6	34.0		34.4	6.8			19.3	16.3
Progression Factor				1.00	1.00		1.04	0.63			0.46	0.21
Incremental Delay, d2				1.6	8.7		1.3	0.3			1.4	0.8
Delay (s)				34.2	42.7		37.1	4.6			10.3	4.2
Level of Service				C	D		D	A			B	A
Approach Delay (s)		0.0			39.6			9.1			8.4	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	470	482	718	264	368	755
v/c Ratio	0.89	0.80	0.79	0.57	0.85	0.38
Control Delay	50.4	29.0	39.1	26.8	35.5	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.4	29.0	39.1	26.8	35.5	2.3
Queue Length 50th (ft)	249	156	204	94	185	37
Queue Length 95th (ft)	#418	#315	#292	176	#362	44
Internal Link Dist (ft)	923		509			631
Turn Bay Length (ft)				25		
Base Capacity (vph)	552	619	910	462	433	2011
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	0.85	0.78	0.79	0.57	0.85	0.38

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												
Volume (vph)	429	4	443	0	0	0	0	661	243	339	695	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	1.00	0.95	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1775	1583					3539	1583	1770	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1775	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	466	4	482	0	0	0	0	718	264	368	755	0
RTOR Reduction (vph)	0	0	129	0	0	0	0	0	55	0	0	0
Lane Group Flow (vph)	0	470	353	0	0	0	0	718	209	368	755	0
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)		26.9	26.9					23.1	23.1	22.0	51.1	
Effective Green, g (s)		26.9	26.9					23.1	23.1	22.0	51.1	
Actuated g/C Ratio		0.30	0.30					0.26	0.26	0.24	0.57	
Clearance Time (s)		6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		531	473					908	406	433	2009	
v/s Ratio Prot								c0.20		c0.21	0.21	
v/s Ratio Perm		0.26	0.22						0.13			
v/c Ratio		0.89	0.75					0.79	0.51	0.85	0.38	
Uniform Delay, d1		30.1	28.5					31.2	28.6	32.4	10.7	
Progression Factor		1.00	1.00					1.00	1.00	0.54	0.17	
Incremental Delay, d2		16.1	6.3					7.0	4.6	12.3	0.4	
Delay (s)		46.2	34.8					38.2	33.3	29.9	2.2	
Level of Service		D	C					D	C	C	A	
Approach Delay (s)		40.4			0.0			36.8			11.3	
Approach LOS		D			A			D			B	

Intersection Summary				
HCM Average Control Delay	28.6	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.84			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0	
Intersection Capacity Utilization	76.0%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	8	113	104	130	40	80	164	384	170	98	351
v/c Ratio	0.03	0.40	0.34	0.49	0.09	0.18	0.29	0.25	0.22	0.20	0.23
Control Delay	25.9	16.1	9.1	33.5	17.6	6.7	12.1	15.5	4.3	11.1	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	16.1	9.1	33.5	17.6	6.7	12.1	15.5	4.3	11.1	15.9
Queue Length 50th (ft)	1	15	0	22	9	0	29	52	0	17	47
Queue Length 95th (ft)	7	55	35	#53	35	30	66	92	37	43	85
Internal Link Dist (ft)		1045			448			889			338
Turn Bay Length (ft)	250						350		150	150	
Base Capacity (vph)	265	544	536	265	600	564	560	1552	789	499	1495
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.21	0.19	0.49	0.07	0.14	0.29	0.25	0.22	0.20	0.23

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												
Volume (vph)	7	45	155	120	37	74	151	353	156	90	306	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.92	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	1619	1504	3433	1863	1583	1770	3539	1583	1770	3512	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.54	1.00	1.00	0.52	1.00	
Satd. Flow (perm)	3433	1619	1504	3433	1863	1583	1009	3539	1583	977	3512	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	49	168	130	40	80	164	384	170	98	333	18
RTOR Reduction (vph)	0	54	88	0	0	65	0	0	110	0	5	0
Lane Group Flow (vph)	8	59	16	130	40	15	164	384	60	98	346	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8	2		2	6		
Actuated Green, G (s)	0.7	9.4	9.4	3.0	11.7	11.7	25.5	21.7	21.7	23.9	20.9	
Effective Green, g (s)	0.7	9.4	9.4	3.0	11.7	11.7	25.5	21.7	21.7	23.9	20.9	
Actuated g/C Ratio	0.01	0.15	0.15	0.05	0.19	0.19	0.42	0.36	0.36	0.39	0.34	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	39	249	231	169	357	303	468	1257	562	421	1201	
v/s Ratio Prot	0.00	c0.04		c0.04	0.02		c0.02	0.11		0.01	0.10	
v/s Ratio Perm			0.01			0.01	c0.12		0.04	0.08		
v/c Ratio	0.21	0.24	0.07	0.77	0.11	0.05	0.35	0.31	0.11	0.23	0.29	
Uniform Delay, d1	29.9	22.7	22.1	28.7	20.4	20.2	12.4	14.2	13.2	12.6	14.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.6	0.5	0.1	18.8	0.1	0.1	0.5	0.6	0.4	0.3	0.6	
Delay (s)	32.5	23.2	22.2	47.5	20.5	20.2	12.8	14.9	13.6	12.9	15.3	
Level of Service	C	C	C	D	C	C	B	B	B	B	B	
Approach Delay (s)		23.1			34.4			14.1			14.7	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	61.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	180	237	185	482	349	283
v/c Ratio	0.53	0.48	0.63	0.22	0.29	0.39
Control Delay	26.7	6.7	26.7	1.1	16.3	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.7	6.7	26.7	1.1	16.3	4.5
Queue Length 50th (ft)	59	0	70	0	47	0
Queue Length 95th (ft)	102	45	m#136	12	86	48
Internal Link Dist (ft)		1217		631	889	
Turn Bay Length (ft)						150
Base Capacity (vph)	472	596	295	2150	1207	727
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	0.38	0.40	0.63	0.22	0.29	0.39

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												
Volume (vph)	0	0	0	166	1	217	170	443	0	0	321	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor				1.00	1.00		1.00	0.95			0.95	1.00
Frt				1.00	0.85		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1585		1770	3539			3539	1583
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	1585		1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	180	1	236	185	482	0	0	349	283
RTOR Reduction (vph)	0	0	0	0	191	0	0	0	0	0	0	186
Lane Group Flow (vph)	0	0	0	180	46	0	185	482	0	0	349	97
Turn Type				Perm	NA		Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8								6
Actuated Green, G (s)				11.5	11.5		10.0	36.5			20.5	20.5
Effective Green, g (s)				11.5	11.5		10.0	36.5			20.5	20.5
Actuated g/C Ratio				0.19	0.19		0.17	0.61			0.34	0.34
Clearance Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				339	304		295	2153			1209	541
v/s Ratio Prot					0.03		c0.10	0.14			c0.10	
v/s Ratio Perm				c0.10								0.06
v/c Ratio				0.53	0.15		0.63	0.22			0.29	0.18
Uniform Delay, d1				21.8	20.2		23.3	5.3			14.4	13.8
Progression Factor				1.00	1.00		0.70	0.14			1.00	1.00
Incremental Delay, d2				1.6	0.2		3.8	0.2			0.6	0.7
Delay (s)				23.4	20.4		20.0	1.0			15.0	14.6
Level of Service				C	C		B	A			B	B
Approach Delay (s)		0.0			21.7			6.3			14.8	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	285	157	382	74	143	386
v/c Ratio	0.71	0.33	0.29	0.12	0.57	0.19
Control Delay	31.0	5.7	16.3	7.0	29.5	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	5.7	16.3	7.0	29.5	2.9
Queue Length 50th (ft)	93	0	55	3	57	26
Queue Length 95th (ft)	160	37	91	29	#111	34
Internal Link Dist (ft)	923		509			631
Turn Bay Length (ft)				25		
Base Capacity (vph)	472	537	1315	627	266	2023
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	0.60	0.29	0.29	0.12	0.54	0.19

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												
Volume (vph)	262	0	144	0	0	0	0	351	68	132	355	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	1.00	0.95	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					3539	1583	1770	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1770	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	285	0	157	0	0	0	0	382	74	143	386	0
RTOR Reduction (vph)	0	0	121	0	0	0	0	0	40	0	0	0
Lane Group Flow (vph)	0	285	36	0	0	0	0	382	34	143	386	0
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)		13.7	13.7					21.1	21.1	7.2	34.3	
Effective Green, g (s)		13.7	13.7					21.1	21.1	7.2	34.3	
Actuated g/C Ratio		0.23	0.23					0.35	0.35	0.12	0.57	
Clearance Time (s)		6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		404	361					1245	557	212	2023	
v/s Ratio Prot								c0.11		c0.08	0.11	
v/s Ratio Perm		0.16	0.02						0.02			
v/c Ratio		0.71	0.10					0.31	0.06	0.67	0.19	
Uniform Delay, d1		21.3	18.3					14.1	12.9	25.3	6.2	
Progression Factor		1.00	1.00					1.00	1.00	0.85	0.39	
Incremental Delay, d2		5.5	0.1					0.6	0.2	7.9	0.2	
Delay (s)		26.8	18.4					14.8	13.1	29.3	2.6	
Level of Service		C	B					B	B	C	A	
Approach Delay (s)		23.8			0.0			14.5			9.8	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	15.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	29	340	322	361	118	214	409	695	345	195	597
v/c Ratio	0.19	0.93	0.60	0.91	0.21	0.34	0.89	0.59	0.46	0.69	0.72
Control Delay	44.4	61.7	9.0	68.7	26.6	5.7	37.9	13.3	2.3	44.6	37.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.4	61.7	9.0	68.7	26.6	5.7	37.9	13.3	2.3	44.6	37.4
Queue Length 50th (ft)	8	153	0	106	53	0	98	72	2	96	163
Queue Length 95th (ft)	22	#326	75	#192	99	53	#378	112	4	#179	223
Internal Link Dist (ft)		1045			448			889			338
Turn Bay Length (ft)	250						350		150	150	
Base Capacity (vph)	153	371	545	396	559	625	460	1180	758	281	824
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.92	0.59	0.91	0.21	0.34	0.89	0.59	0.46	0.69	0.72

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												
Volume (vph)	27	115	494	332	109	197	376	639	317	179	522	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.91	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	1602	1504	3433	1863	1583	1770	3539	1583	1770	3513	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.43	1.00	1.00	0.42	1.00	
Satd. Flow (perm)	3433	1602	1504	3433	1863	1583	794	3539	1583	776	3513	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	125	537	361	118	214	409	695	345	195	567	30
RTOR Reduction (vph)	0	69	263	0	0	150	0	0	239	0	5	0
Lane Group Flow (vph)	29	271	59	361	118	64	409	695	106	195	592	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8	2		2	6		
Actuated Green, G (s)	2.4	16.6	16.6	12.8	27.0	27.0	27.6	27.6	27.6	18.6	18.6	
Effective Green, g (s)	2.4	16.6	16.6	12.8	27.0	27.0	27.6	27.6	27.6	18.6	18.6	
Actuated g/C Ratio	0.03	0.18	0.18	0.14	0.30	0.30	0.31	0.31	0.31	0.21	0.21	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	92	295	277	488	559	475	439	1085	485	260	726	
v/s Ratio Prot	0.01	c0.17		c0.11	0.06		c0.19	0.20		0.08	c0.17	
v/s Ratio Perm			0.04			0.04	c0.10		0.07	0.08		
v/c Ratio	0.32	0.92	0.21	0.74	0.21	0.14	0.93	0.64	0.22	0.75	0.82	
Uniform Delay, d1	43.0	36.0	31.2	37.0	23.5	23.0	29.8	26.9	23.2	32.0	34.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.51	0.45	0.23	1.00	1.00	
Incremental Delay, d2	2.0	31.5	0.4	5.8	0.2	0.1	23.9	2.5	0.9	11.5	9.8	
Delay (s)	45.0	67.5	31.6	42.8	23.7	23.1	39.0	14.7	6.3	43.5	43.9	
Level of Service	D	E	C	D	C	C	D	B	A	D	D	
Approach Delay (s)		49.8			33.5			19.6			43.8	
Approach LOS		D			C			B			D	

Intersection Summary			
HCM Average Control Delay	33.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	183	348	164	1100	1025	440
v/c Ratio	0.48	0.83	0.64	0.48	0.66	0.49
Control Delay	33.9	40.9	42.5	5.3	10.1	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	40.9	42.5	5.3	10.1	1.9
Queue Length 50th (ft)	89	136	102	135	94	2
Queue Length 95th (ft)	146	230	m119	m165	m241	m28
Internal Link Dist (ft)		1217		631	889	
Turn Bay Length (ft)						150
Base Capacity (vph)	472	493	256	2300	1552	904
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	0.39	0.71	0.64	0.48	0.66	0.49

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												
Volume (vph)	0	0	0	168	0	320	151	1012	0	0	943	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor				1.00	1.00		1.00	0.95			0.95	1.00
Frt				1.00	0.85		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1583		1770	3539			3539	1583
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	1583		1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	183	0	348	164	1100	0	0	1025	440
RTOR Reduction (vph)	0	0	0	0	75	0	0	0	0	0	0	210
Lane Group Flow (vph)	0	0	0	183	273	0	164	1100	0	0	1025	230
Turn Type				Perm	NA		Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8								6
Actuated Green, G (s)				19.5	19.5		13.0	58.5			39.5	39.5
Effective Green, g (s)				19.5	19.5		13.0	58.5			39.5	39.5
Actuated g/C Ratio				0.22	0.22		0.14	0.65			0.44	0.44
Clearance Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				384	343		256	2300			1553	695
v/s Ratio Prot					c0.17		c0.09	0.31			c0.29	
v/s Ratio Perm				0.10								0.15
v/c Ratio				0.48	0.80		0.64	0.48			0.66	0.33
Uniform Delay, d1				30.8	33.4		36.3	8.0			19.9	16.6
Progression Factor				1.00	1.00		0.98	0.56			0.41	0.20
Incremental Delay, d2				0.9	12.0		2.6	0.3			1.4	0.8
Delay (s)				31.7	45.4		38.3	4.8			9.5	4.1
Level of Service				C	D		D	A			A	A
Approach Delay (s)		0.0			40.7			9.2			7.9	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	500	482	768	264	400	808
v/c Ratio	0.90	0.80	0.85	0.58	0.97	0.41
Control Delay	51.6	30.6	42.9	27.7	54.1	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.6	30.6	42.9	27.7	54.1	2.5
Queue Length 50th (ft)	266	170	222	97	226	37
Queue Length 95th (ft)	#447	#331	#325	179	#413	44
Internal Link Dist (ft)	923		509			631
Turn Bay Length (ft)				25		
Base Capacity (vph)	572	615	904	456	413	1965
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	0.87	0.78	0.85	0.58	0.97	0.41

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												
Volume (vph)	456	4	443	0	0	0	0	707	243	368	743	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	1.00	0.95	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1775	1583					3539	1583	1770	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1775	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	496	4	482	0	0	0	0	768	264	400	808	0
RTOR Reduction (vph)	0	0	107	0	0	0	0	0	51	0	0	0
Lane Group Flow (vph)	0	500	375	0	0	0	0	768	213	400	808	0
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)		28.0	28.0					23.0	23.0	21.0	50.0	
Effective Green, g (s)		28.0	28.0					23.0	23.0	21.0	50.0	
Actuated g/C Ratio		0.31	0.31					0.26	0.26	0.23	0.56	
Clearance Time (s)		6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		552	492					904	405	413	1966	
v/s Ratio Prot								c0.22		c0.23	0.23	
v/s Ratio Perm		0.28	0.24						0.13			
v/c Ratio		0.91	0.76					0.85	0.53	0.97	0.41	
Uniform Delay, d1		29.7	28.0					31.9	28.8	34.2	11.5	
Progression Factor		1.00	1.00					1.00	1.00	0.53	0.17	
Incremental Delay, d2		18.4	6.9					9.8	4.8	30.9	0.5	
Delay (s)		48.1	34.9					41.7	33.6	48.9	2.4	
Level of Service		D	C					D	C	D	A	
Approach Delay (s)		41.6			0.0			39.6			17.8	
Approach LOS		D			A			D			B	

Intersection Summary			
HCM Average Control Delay	32.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	11	49	258	130	40	80	251	586	170	98	537
v/c Ratio	0.12	0.28	0.52	0.44	0.11	0.21	0.27	0.35	0.20	0.28	0.33
Control Delay	39.5	37.0	8.7	39.8	26.1	8.6	8.5	8.1	0.9	16.5	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	37.0	8.7	39.8	26.1	8.6	8.5	8.1	0.9	16.5	15.4
Queue Length 50th (ft)	5	23	0	32	15	0	20	50	0	28	90
Queue Length 95th (ft)	21	54	35	59	44	36	37	79	7	61	136
Internal Link Dist (ft)		1045			448			889			338
Turn Bay Length (ft)	250						350		150	150	
Base Capacity (vph)	89	373	764	300	463	453	936	1687	844	352	1628
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.13	0.34	0.43	0.09	0.18	0.27	0.35	0.20	0.28	0.33

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	45	237	120	37	74	231	539	156	90	468	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	0.88	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	2787	3433	1863	1583	3433	3539	1583	1770	3512	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.45	1.00	1.00	0.25	1.00	
Satd. Flow (perm)	1770	1863	2787	3433	1863	1583	1634	3539	1583	470	3512	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	49	258	130	40	80	251	586	170	98	509	28
RTOR Reduction (vph)	0	0	222	0	0	64	0	0	102	0	4	0
Lane Group Flow (vph)	11	49	36	130	40	16	251	586	68	98	533	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8	2		2	6		
Actuated Green, G (s)	0.8	11.2	11.2	5.6	16.0	16.0	32.1	32.1	32.1	31.0	31.0	
Effective Green, g (s)	0.8	11.2	11.2	5.6	16.0	16.0	32.1	32.1	32.1	31.0	31.0	
Actuated g/C Ratio	0.01	0.14	0.14	0.07	0.20	0.20	0.40	0.40	0.40	0.39	0.39	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	18	261	390	240	373	317	840	1420	635	298	1361	
v/s Ratio Prot	0.01	c0.03		c0.04	c0.02		0.03	c0.17		0.03	c0.15	
v/s Ratio Perm			0.01			0.01	0.09		0.04	0.10		
v/c Ratio	0.61	0.19	0.09	0.54	0.11	0.05	0.30	0.41	0.11	0.33	0.39	
Uniform Delay, d1	39.4	30.4	30.0	36.0	26.2	25.9	16.9	17.2	15.0	16.6	17.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.47	0.47	0.13	1.00	1.00	
Incremental Delay, d2	48.7	0.4	0.1	2.5	0.1	0.1	0.2	0.8	0.3	0.6	0.8	
Delay (s)	88.1	30.7	30.1	38.4	26.3	25.9	8.1	8.9	2.3	17.2	18.5	
Level of Service	F	C	C	D	C	C	A	A	A	B	B	
Approach Delay (s)		32.2			32.5			7.6			18.3	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM Average Control Delay	17.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	30.0
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	268	336	275	672	488	409
v/c Ratio	0.72	0.63	0.59	0.30	0.46	0.54
Control Delay	40.1	13.1	36.5	6.3	17.2	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	13.1	36.5	6.3	17.2	4.2
Queue Length 50th (ft)	123	34	148	84	70	1
Queue Length 95th (ft)	197	109	229	108	102	9
Internal Link Dist (ft)		1217		631	889	
Turn Bay Length (ft)						150
Base Capacity (vph)	443	586	465	2260	1065	762
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	0.60	0.57	0.59	0.30	0.46	0.54

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	247	1	308	253	618	0	0	449	376
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor				1.00	1.00		1.00	0.95			0.95	1.00
Frt				1.00	0.85		1.00	1.00			1.00	0.85
Flt Protected				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770	1584		1770	3539			3539	1583
Flt Permitted				0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770	1584		1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	268	1	335	275	672	0	0	488	409
RTOR Reduction (vph)	0	0	0	0	200	0	0	0	0	0	0	286
Lane Group Flow (vph)	0	0	0	268	136	0	275	672	0	0	488	123
Turn Type				Perm	NA		Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8								6
Actuated Green, G (s)				16.9	16.9		21.0	51.1			24.1	24.1
Effective Green, g (s)				16.9	16.9		21.0	51.1			24.1	24.1
Actuated g/C Ratio				0.21	0.21		0.26	0.64			0.30	0.30
Clearance Time (s)				6.0	6.0		6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				374	335		465	2261			1066	477
v/s Ratio Prot					0.09		c0.16	0.19			c0.14	
v/s Ratio Perm				c0.15								0.08
v/c Ratio				0.72	0.40		0.59	0.30			0.46	0.26
Uniform Delay, d1				29.3	27.2		25.8	6.4			22.7	21.2
Progression Factor				1.00	1.00		1.19	0.86			0.66	0.54
Incremental Delay, d2				6.4	0.8		1.9	0.3			1.4	1.2
Delay (s)				35.7	28.0		32.5	5.9			16.4	12.7
Level of Service				D	C		C	A			B	B
Approach Delay (s)		0.0			31.4			13.6			14.7	
Approach LOS		A			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	407	233	540	110	202	554
v/c Ratio	0.63	0.33	0.36	0.16	0.36	0.24
Control Delay	34.1	5.1	17.2	9.7	25.8	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	5.1	17.2	9.7	25.8	0.9
Queue Length 50th (ft)	97	0	92	16	56	0
Queue Length 95th (ft)	132	28	145	51	91	20
Internal Link Dist (ft)			509			631
Turn Bay Length (ft)				25		
Base Capacity (vph)	944	935	1502	703	558	2343
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	0.43	0.25	0.36	0.16	0.36	0.24

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	374	0	214	0	0	0	0	497	101	186	510	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97		0.88					0.95	1.00	0.97	0.95	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433		2787					3539	1583	3433	3539	
Flt Permitted	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433		2787					3539	1583	3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	407	0	233	0	0	0	0	540	110	202	554	0
RTOR Reduction (vph)	0	0	189	0	0	0	0	0	30	0	0	0
Lane Group Flow (vph)	407	0	44	0	0	0	0	540	80	202	554	0
Turn Type	custom		custom					NA	Perm	Prot	NA	
Protected Phases								2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	15.0		15.0					34.0	34.0	13.0	53.0	
Effective Green, g (s)	15.0		15.0					34.0	34.0	13.0	53.0	
Actuated g/C Ratio	0.19		0.19					0.42	0.42	0.16	0.66	
Clearance Time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	644		523					1504	673	558	2345	
v/s Ratio Prot								c0.15		c0.06	0.16	
v/s Ratio Perm	c0.12		0.02						0.05			
v/c Ratio	0.63		0.08					0.36	0.12	0.36	0.24	
Uniform Delay, d1	30.0		26.8					15.6	13.9	29.8	5.4	
Progression Factor	1.00		1.00					1.00	1.00	0.81	0.12	
Incremental Delay, d2	2.0		0.1					0.7	0.4	0.4	0.2	
Delay (s)	32.0		26.9					16.3	14.3	24.4	0.8	
Level of Service	C		C					B	B	C	A	
Approach Delay (s)		30.1			0.0			15.9			7.1	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	83	125	832	361	118	214	635	1078	345	195	932
v/c Ratio	0.38	0.54	0.82	0.84	0.42	0.51	0.85	0.76	0.45	0.84	0.85
Control Delay	49.7	53.3	12.7	65.1	48.8	10.3	35.8	19.1	3.5	75.6	44.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.7	53.3	12.7	65.1	48.8	10.3	35.8	19.1	3.5	75.6	44.1
Queue Length 50th (ft)	53	83	24	130	80	0	203	248	8	136	327
Queue Length 95th (ft)	107	142	95	#214	133	66	m#265	m357	m29	#254	#440
Internal Link Dist (ft)		1045			448			889			338
Turn Bay Length (ft)	250						350		150	150	
Base Capacity (vph)	232	271	1058	431	340	464	749	1412	767	242	1102
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.46	0.79	0.84	0.35	0.46	0.85	0.76	0.45	0.81	0.85

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												
Volume (vph)	76	115	765	332	109	197	584	992	317	179	813	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	0.88	0.97	1.00	1.00	0.97	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	2787	3433	1863	1583	3433	3539	1583	1770	3512	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	2787	3433	1863	1583	3433	3539	1583	1770	3512	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	83	125	832	361	118	214	635	1078	345	195	884	48
RTOR Reduction (vph)	0	0	668	0	0	182	0	0	138	0	3	0
Lane Group Flow (vph)	83	125	164	361	118	32	635	1078	207	195	929	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	12.2	13.8	13.8	15.0	16.6	16.6	24.0	42.7	42.7	14.5	33.2	
Effective Green, g (s)	12.2	13.8	13.8	15.0	16.6	16.6	24.0	42.7	42.7	14.5	33.2	
Actuated g/C Ratio	0.11	0.13	0.13	0.14	0.15	0.15	0.22	0.39	0.39	0.13	0.30	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	196	234	350	468	281	239	749	1374	614	233	1060	
v/s Ratio Prot	0.05	c0.07		c0.11	0.06		0.18	c0.30		0.11	c0.26	
v/s Ratio Perm			0.06			0.02			0.13			
v/c Ratio	0.42	0.53	0.47	0.77	0.42	0.14	0.85	0.78	0.34	0.84	0.88	
Uniform Delay, d1	45.6	45.1	44.7	45.8	42.3	40.5	41.2	29.6	23.7	46.6	36.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.68	0.57	0.28	1.00	1.00	
Incremental Delay, d2	1.5	2.3	1.0	7.7	1.0	0.3	5.2	2.6	0.8	22.2	10.1	
Delay (s)	47.1	47.4	45.7	53.5	43.4	40.7	33.4	19.4	7.5	68.8	46.6	
Level of Service	D	D	D	D	D	D	C	B	A	E	D	
Approach Delay (s)		46.0			47.9			21.7			50.4	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM Average Control Delay	37.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	272	491	243	1566	1450	626
v/c Ratio	0.50	0.97	0.95	0.76	1.07	0.79
Control Delay	35.0	70.0	70.2	8.7	60.9	9.7
Queue Delay	0.0	0.0	0.0	0.8	0.0	0.0
Total Delay	35.0	70.0	70.2	9.5	60.9	9.7
Queue Length 50th (ft)	156	324	185	247	~581	22
Queue Length 95th (ft)	239	#541	m#265	275	#724	m95
Internal Link Dist (ft)				631	889	
Turn Bay Length (ft)						150
Base Capacity (vph)	547	509	257	2068	1360	795
Starvation Cap Reductn	0	0	0	222	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.96	0.95	0.85	1.07	0.79

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	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	250	0	452	224	1441	0	0	1334	576
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0		6.0	6.0	6.0			6.0	6.0
Lane Util. Factor				1.00		1.00	1.00	0.95			0.95	1.00
Frt				1.00		0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1770		1583	1770	3539			3539	1583
Flt Permitted				0.95		1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1770		1583	1770	3539			3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	272	0	491	243	1566	0	0	1450	626
RTOR Reduction (vph)	0	0	0	0	0	20	0	0	0	0	0	187
Lane Group Flow (vph)	0	0	0	272	0	471	243	1566	0	0	1450	439
Turn Type				custom		custom	Prot	NA			NA	Perm
Protected Phases							5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)				33.7		33.7	16.0	64.3			42.3	42.3
Effective Green, g (s)				33.7		33.7	16.0	64.3			42.3	42.3
Actuated g/C Ratio				0.31		0.31	0.15	0.58			0.38	0.38
Clearance Time (s)				6.0		6.0	6.0	6.0			6.0	6.0
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)				542		485	257	2069			1361	609
v/s Ratio Prot							c0.14	0.44			c0.41	
v/s Ratio Perm				0.15		c0.30						0.28
v/c Ratio				0.50		0.97	0.95	0.76			1.07	0.72
Uniform Delay, d1				31.3		37.7	46.6	17.0			33.9	28.8
Progression Factor				1.00		1.00	0.80	0.41			0.60	0.33
Incremental Delay, d2				0.7		33.3	28.8	1.5			38.4	4.0
Delay (s)				32.0		70.9	66.1	8.5			58.6	13.6
Level of Service				C		E	E	A			E	B
Approach Delay (s)		0.0			57.1			16.2			45.0	
Approach LOS		A			E			B			D	

Intersection Summary			
HCM Average Control Delay	35.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	711	715	1099	392	567	1154
v/c Ratio	0.84	0.88	0.80	0.59	0.83	0.51
Control Delay	49.5	42.9	35.2	26.1	40.3	4.0
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	49.5	42.9	35.2	26.1	40.3	4.0
Queue Length 50th (ft)	244	213	361	179	223	71
Queue Length 95th (ft)	314	#321	448	283	m220	m69
Internal Link Dist (ft)			509			631
Turn Bay Length (ft)				25		
Base Capacity (vph)	874	838	1381	662	687	2282
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	8	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.85	0.80	0.59	0.83	0.51

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												
Volume (vph)	654	0	658	0	0	0	0	1011	361	522	1062	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97		0.88					0.95	1.00	0.97	0.95	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433		2787					3539	1583	3433	3539	
Flt Permitted	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433		2787					3539	1583	3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	711	0	715	0	0	0	0	1099	392	567	1154	0
RTOR Reduction (vph)	0	0	130	0	0	0	0	0	44	0	0	0
Lane Group Flow (vph)	711	0	585	0	0	0	0	1099	348	567	1154	0
Turn Type	custom		custom					NA	Perm	Prot	NA	
Protected Phases								2		1	6	
Permitted Phases	4		4						2			
Actuated Green, G (s)	27.1		27.1					42.9	42.9	22.0	70.9	
Effective Green, g (s)	27.1		27.1					42.9	42.9	22.0	70.9	
Actuated g/C Ratio	0.25		0.25					0.39	0.39	0.20	0.64	
Clearance Time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	846		687					1380	617	687	2281	
v/s Ratio Prot								c0.31		c0.17	0.33	
v/s Ratio Perm	0.21		c0.21						0.22			
v/c Ratio	0.84		0.85					0.80	0.56	0.83	0.51	
Uniform Delay, d1	39.4		39.5					29.7	26.2	42.2	10.3	
Progression Factor	1.00		1.00					1.00	1.00	0.86	0.35	
Incremental Delay, d2	7.5		9.9					4.8	3.7	2.3	0.2	
Delay (s)	46.9		49.4					34.5	29.9	38.8	3.9	
Level of Service	D		D					C	C	D	A	
Approach Delay (s)		48.2			0.0			33.3			15.4	
Approach LOS		D			A			C			B	

Intersection Summary			
HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			