Traffic Study

NORTHEAST ARKANSAS DISTRICT FAIRGROUNDS

prepared for:

Vance Construction Solutions, LLC

Highway 49 (Johnson Avenue)
and
Clinton School Road

Craighead County,
Arkansas

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INTRODUCTION

Peters & Associates Engineers, Inc., has conducted a traffic engineering study relating to a proposed Northeast Arkansas District Fairgrounds to be located on the northwest side of Highway 49 (Johnson Avenue), and on the east side of Clinton School Road in Craighead County, Arkansas. The site is currently just outside of the City of Jonesboro city limits. The primary focus of this report is to identify mitigative measures necessary to provide acceptable operation for traffic conditions for the proposed Northeast Arkansas District Fairgrounds development during it peak traffic times during the annual six operating days. The proposed site is shown on the project site plan (a reduced copy of the site plan is included in the Appendix for reference). Methods used to calculate site traffic projections as a part of this study are consistent with a previous study conducted for the fairgrounds by this consultant dated, March 8, 1996.

This is a report of methodology and findings relating to a traffic engineering study undertaken to:

- Evaluate existing traffic conditions at the intersection of Highway 49 and Clinton School Road / Whitley Road.

- Determine projected traffic volumes entering and existing the site and identify the effects on traffic operations for existing traffic in combination with site-generated traffic associated with the Northeast Arkansas District Fairgrounds development as proposed for peak traffic hours of operation during a weekday and during a Saturday.

- Evaluate traffic operations for the study intersection and the access drive intersections proposed to serve the site and make recommendations for mitigative improvements which may be necessary and appropriate for acceptable traffic operations.

In the following sections of this traffic study report are traffic data, study methods, findings and recommendations. The

study is technical in nature. Analysis techniques employed are those most commonly used in the traffic engineering profession for traffic impact analysis. Certain data and calculations relative to traffic operational analysis are referenced in the report. Complete calculations and data are included in the Appendix of the report.

THE SITE

The location of the development is in Craighead County, just outside of the city limits of Jonesboro, Arkansas. The Northeast Arkansas District Fairgrounds is proposed to be located on the northwest side of Highway 49 (Johnson Avenue), and on the east side of Clinton School Road. The proposed development site location and vicinity are shown on Figures 1 and 2, which follow.

The Northeast Arkansas District Fairgrounds is expected to fully operate six consecutive days per year annually starting the third Monday in September. Only a portion of the site will be open other times of the year for events such as livestock shows and exhibitions such as the Buffalo Island Livestock Show but the traffic volumes generated by these events are typically minimal and have not been addressed as a part of this study. Also, there will be year round daily activity on the eastern portion of the fair property, but traffic volumes associated with these activities are also expected to be low with minimal traffic impact.

Access to the Northeast Arkansas District Fairgrounds site, as shown on the site plan, is proposed from four access drives. The main access drive (Drive A) is proposed to intersect Highway 49 along the east edge of the site. Drive A is proposed as a fully-directional access drive located approximately 4,160 feet north of Clinton School Road. The other three access drives (Drives B, C and D) are proposed to intersect Clinton School Road along the west edge of the site. All three of these drives are proposed to be fully-directional and will serve access for staff, volunteers and exhibit workers. Access drives on Clinton School Road are expected to have very low volume.

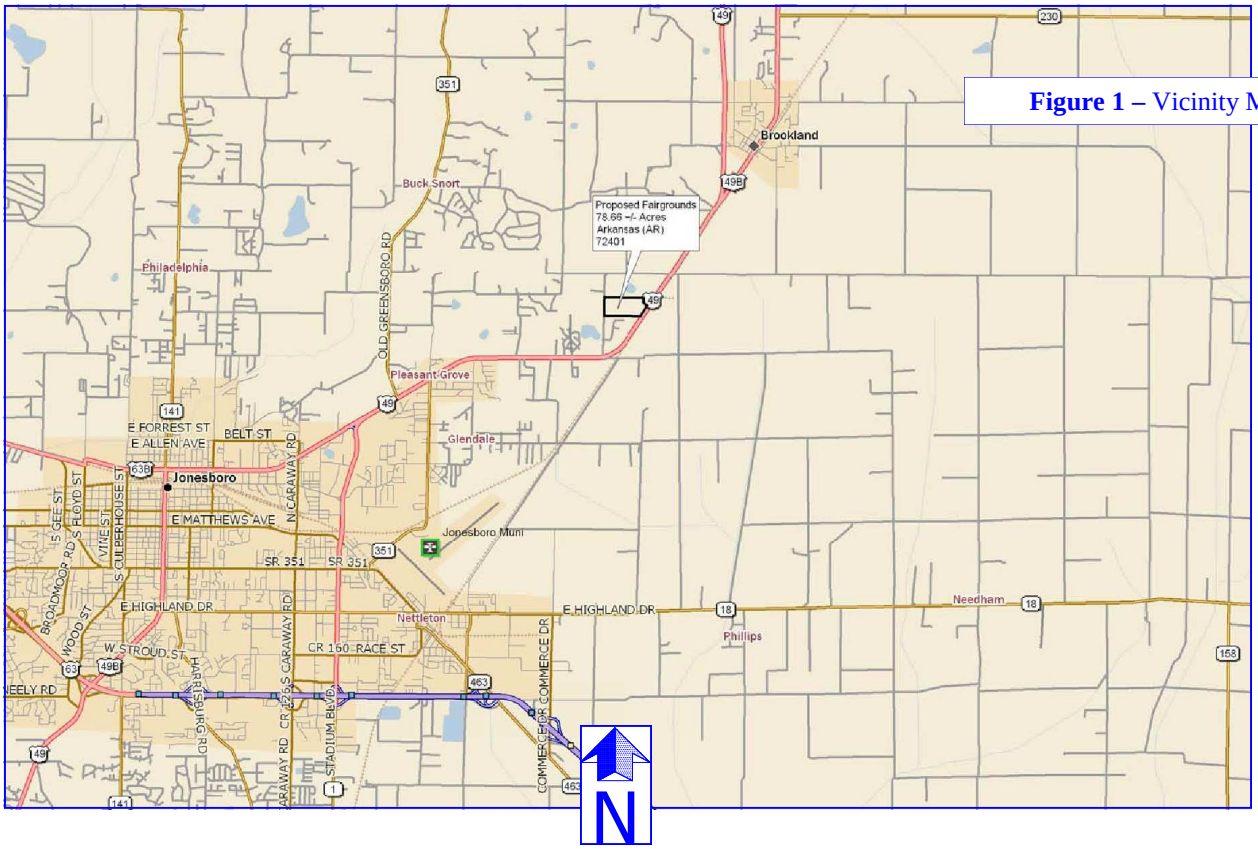


Figure 1 – Vicinity Map

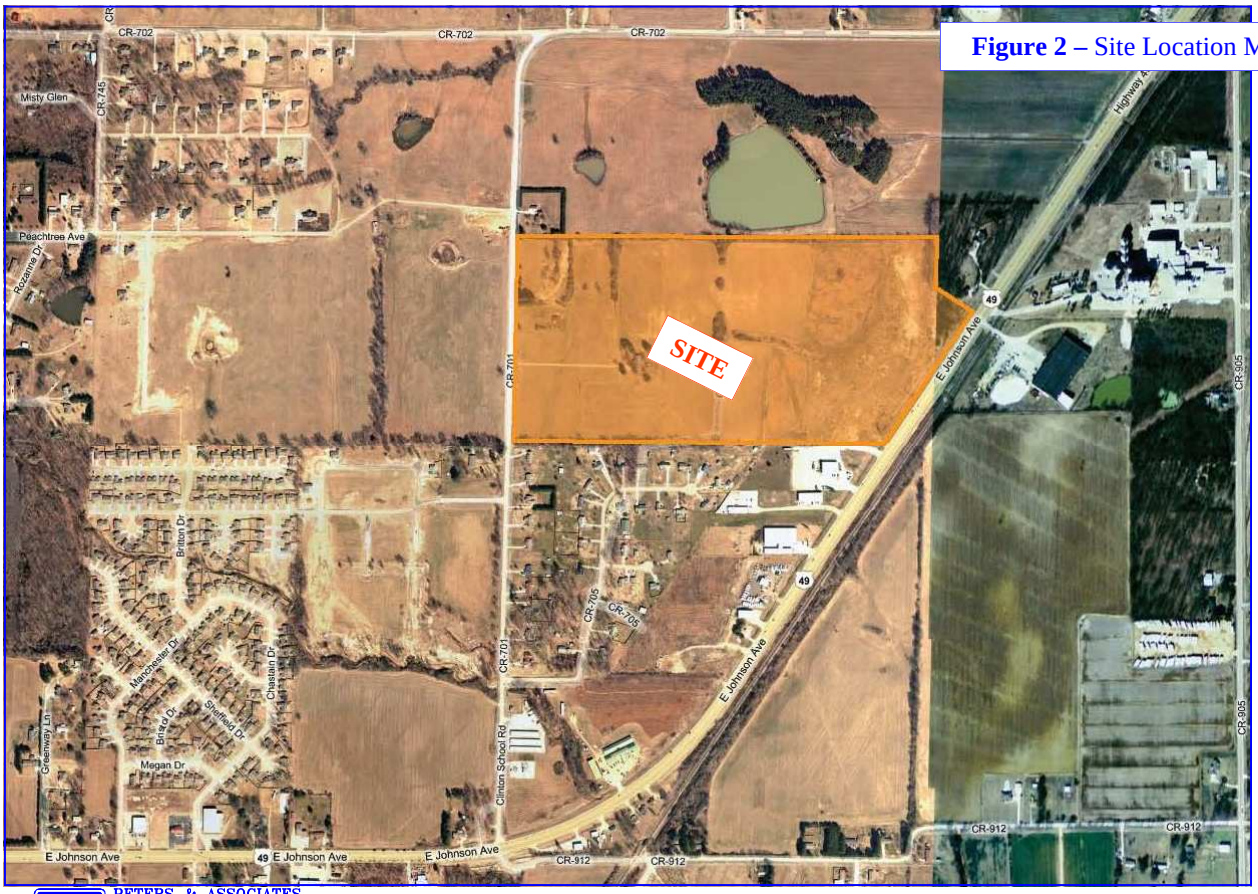


Figure 2 – Site Location Map

STREET SYSTEM

Highway 49, also Johnson Avenue, at the site is a 55-foot wide five-lane highway consisting of two northbound lanes, two southbound lanes and a bi-directional center left-turn lane. The speed limit in the vicinity of the site is 55 miles per hour. This asphalt roadway is constructed with approximate 8-foot shoulders and drainage ditches and there are no sidewalks in the vicinity of the study area.

Clinton School Road, in the vicinity of the study area is a two-lane roadway consisting of a northbound lane and a southbound lane. At Highway 49, Clinton School Road is asphalt. In the immediate vicinity of the site, along the site frontage, Clinton School Road is unpaved. There are no sidewalks along Clinton School Road and the speed limit is 30 mile per hour.

There are no County, City or AHTD planned roadway improvements in the immediate vicinity of the site.

The following photos show the general layout of Highway 49 and Clinton School Road in the vicinity of the study area. Photos were taken at locations as indicated on the captions.

Looking northeast on Highway 49
toward Clinton School Road / Whitley Road.

Looking north on Highway 49
at the site.

Looking south on Highway 49
at the site.

Looking south on Clinton School Road
toward Highway 49.

Looking north on Clinton School Road
at the site.

EXISTING TRAFFIC CONDITIONS

Hourly, 24-hour traffic typical weekday and Saturday counts were made at the following locations in the vicinity of the site as a part of this study:

STREET	DAY	24-HOUR VOLUME	TABLE & CHART
Hwy 49 at the Site (Two-Way)	Weekday	18,041	Table 1/Chart 1
	Saturday	16,175	Table 2/Chart 2
Clinton School Road at the Site (Two-Way)	Weekday	409	Table 3/Chart 3
	Saturday	474	Table 4/Chart 4
Clinton School Road / Whitley Road Approaches to Hwy 49	Weekday	892	Table 5/Chart 5
	Saturday	686	Table 6/Chart 6

Hourly, 24-hour traffic count data for these locations are summarized on Tables and Charts 1 thru 6. These 24-hour counts were made using automatic recording count equipment which provide hourly, directional traffic counts. These counts were conducted on Saturday, March 12, 2011 and Monday, March 14, 2011 while local schools were in session.

Other traffic count data collected as a part of this study include weekday AM and PM peak hours vehicle turning movement counts at the intersection of Highway 49 and Clinton School Road / Whitley Road. These turning movement counts were made Monday, March 14, 2011 while local schools were in session with electronic count boards based on manual entry of observed vehicle turning movements at the intersection of Highway 49 and Clinton School Road / Whitley Road.

The peak hours vehicle turning movement count data at the intersection of Highway 49 and Clinton School Road are summarized in the following peak hour turning movement Charts 7 and 8 and are presented in more detail in the Appendix of this report.

The existing study peak hours vehicle turning movement count data at the intersection of Highway 49 and Clinton School Road / Whitley Road are shown on Figure 3, "Weekday Existing Traffic Volumes - Entering and Exiting Peak Hours," and Figure 3A, "Saturday Existing Traffic Volumes - Entering and Exiting Peak Hours."

WEEKDAY	Hwy 49 at the Site		
TIME	Northbound	Southbound	NB + SB
01:00 PM	651	442	1093
02:00 PM	746	459	1205
03:00 PM	819	503	1322
04:00 PM	786	593	1379
05:00 PM	856	577	1433
06:00 PM	580	467	1047
07:00 PM	379	277	656
08:00 PM	321	227	548
09:00 PM	254	217	471
10:00 PM	142	160	302
11:00 PM	113	102	215
12:00 AM	90	75	165
01:00 AM	54	48	102
02:00 AM	21	31	52
03:00 AM	34	38	72
04:00 AM	35	36	71
05:00 AM	135	213	348
06:00 AM	297	425	722
07:00 AM	531	1032	1563
08:00 AM	349	800	1149
09:00 AM	379	630	1009
10:00 AM	471	548	1019
11:00 AM	485	525	1010
12:00 PM	531	556	1087
24-Hour Total:	**9059**	**8982**	**18041**

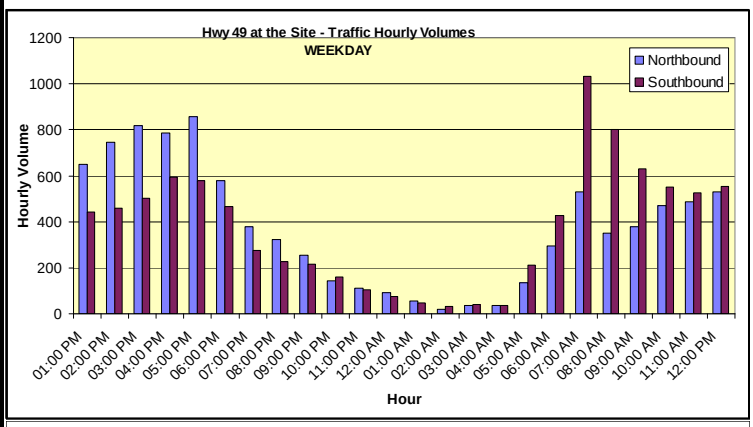


Table 1—Chart 1 WEEKDAY
24-Hour Traffic Counts - Highway 49 at the Site

SATURDAY	Hwy 49 at the Site		
TIME	Northbound	Southbound	NB + SB
01:00 PM	579	628	1207
02:00 PM	695	638	1333
03:00 PM	708	626	1334
04:00 PM	700	633	1333
05:00 PM	692	581	1273
06:00 PM	645	564	1209
07:00 PM	572	334	906
08:00 PM	455	230	685
09:00 PM	308	215	523
10:00 PM	245	158	403
11:00 PM	160	101	261
12:00 AM	123	63	186
01:00 AM	74	30	104
02:00 AM	43	40	83
03:00 AM	27	26	53
04:00 AM	29	36	65
05:00 AM	58	101	159
06:00 AM	94	100	194
07:00 AM	103	186	289
08:00 AM	122	275	397
09:00 AM	224	424	648
10:00 AM	412	663	1075
11:00 AM	467	697	1164
12:00 PM	577	713	1290
24-Hour Total:	**8113**	**8062**	**16175**

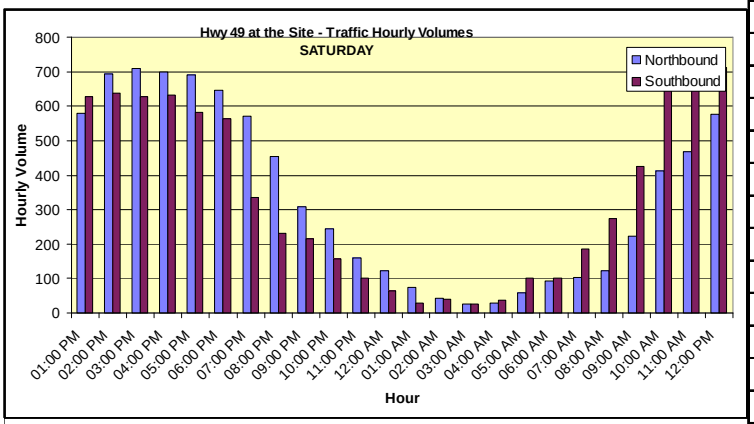


Table 2—Chart 2 SATURDAY
24-Hour Traffic Counts - Highway 49 at the Site

WEEKDAY	Clinton School Road, Just North of Hwy 49		
TIME	Northbound	Southbound	NB + SB
01:00 PM	12	8	20
02:00 PM	10	8	18
03:00 PM	11	14	25
04:00 PM	27	12	39
05:00 PM	23	12	35
06:00 PM	12	22	34
07:00 PM	6	10	16
08:00 PM	9	13	22
09:00 PM	6	8	14
10:00 PM	5	1	6
11:00 PM	0	7	7
12:00 AM	0	0	0
01:00 AM	0	0	0
02:00 AM	1	2	3
03:00 AM	1	0	1
04:00 AM	1	0	1
05:00 AM	3	0	3
06:00 AM	13	0	13
07:00 AM	9	15	24
08:00 AM	12	13	25
09:00 AM	19	8	27
10:00 AM	9	12	21
11:00 AM	10	8	18
12:00 PM	16	18	34
24-Hour Total:	**215**	**194**	**409**

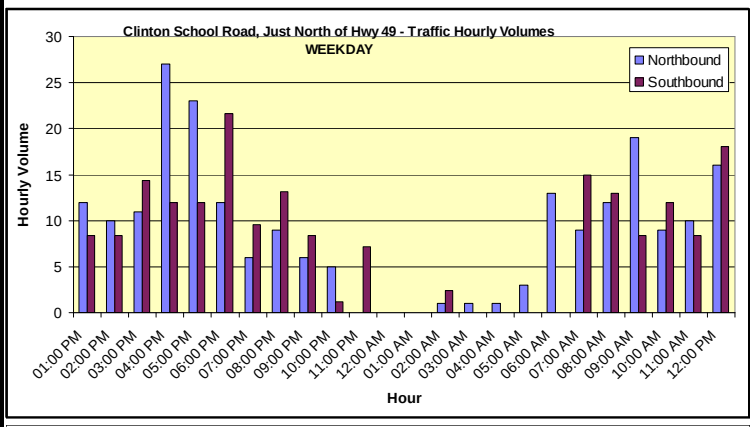


Table 3—Chart 3 WEEKDAY
24-Hour Traffic Counts - Clinton School Road at the Site

SATURDAY	Clinton School Road, Just North of Hwy 49		
TIME	Northbound	Southbound	NB + SB
01:00 PM	20	26	46
02:00 PM	14	14	28
03:00 PM	17	23	40
04:00 PM	18	15	33
05:00 PM	15	16	31
06:00 PM	12	15	27
07:00 PM	4	12	16
08:00 PM	9	1	10
09:00 PM	4	12	16
10:00 PM	3	8	11
11:00 PM	3	2	5
12:00 AM	1	5	6
01:00 AM	0	2	2
02:00 AM	0	3	3
03:00 AM	2	2	4
04:00 AM	3	0	3
05:00 AM	4	1	5
06:00 AM	5	3	8
07:00 AM	8	5	13
08:00 AM	10	9	19
09:00 AM	20	18	38
10:00 AM	26	19	45
11:00 AM	20	11	31
12:00 PM	20	14	34
24-Hour Total:	**238**	**236**	**474**

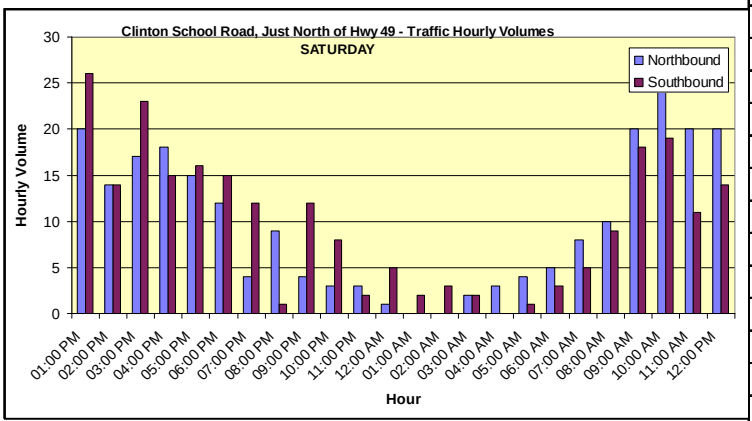


Table 4—Chart 4 SATURDAY
24-Hour Traffic Counts - Clinton School Road at the Site

WEEKDAY	Clinton School/Whitley Roads Appr. to Hwy 49		
TIME	Northbound	Southbound	NB + SB
01:00 PM	20	8	28
02:00 PM	33	8	41
03:00 PM	66	14	80
04:00 PM	101	12	113
05:00 PM	134	12	146
06:00 PM	27	22	49
07:00 PM	26	10	36
08:00 PM	21	13	34
09:00 PM	18	8	26
10:00 PM	13	1	14
11:00 PM	14	7	21
12:00 AM	6	0	6
01:00 AM	2	0	2
02:00 AM	0	2	2
03:00 AM	0	0	0
04:00 AM	0	0	0
05:00 AM	9	0	9
06:00 AM	20	0	20
07:00 AM	70	15	85
08:00 AM	40	13	53
09:00 AM	24	8	32
10:00 AM	18	12	30
11:00 AM	21	8	29
12:00 PM	15	18	33
24-Hour Total:	**698**	**194**	**892**

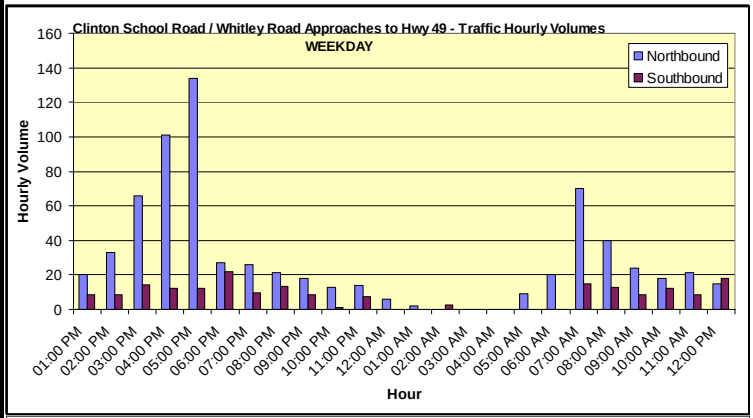


Table 5—Chart 5 WEEKDAY
24-Hour Traffic Counts
Clinton School Road/Whitley Road Approach to Highway 49

SATURDAY	Clinton School/Whitley Roads Appr. to Hwy 49		
TIME	Northbound	Southbound	NB + SB
01:00 PM	36	26	62
02:00 PM	37	14	51
03:00 PM	31	23	54
04:00 PM	41	15	56
05:00 PM	32	16	48
06:00 PM	28	15	43
07:00 PM	24	12	36
08:00 PM	13	1	14
09:00 PM	20	12	32
10:00 PM	16	8	24
11:00 PM	8	2	10
12:00 AM	10	5	15
01:00 AM	7	2	9
02:00 AM	2	3	5
03:00 AM	1	2	3
04:00 AM	3	0	3
05:00 AM	5	1	6
06:00 AM	18	3	21
07:00 AM	9	5	14
08:00 AM	10	9	19
09:00 AM	12	18	30
10:00 AM	18	19	37
11:00 AM	29	11	40
12:00 PM	40	14	54
24-Hour Total:	**450**	**236**	**686**

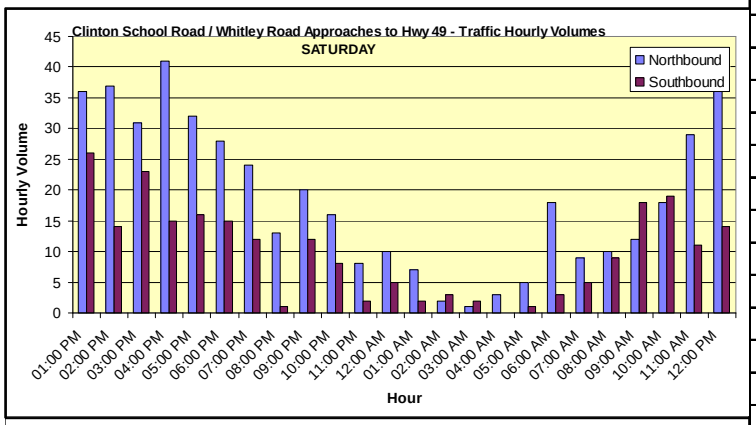


Table 6—Chart 6 SATURDAY
24-Hour Traffic Counts
Clinton School Road/Whitley Road Approach to Highway 49

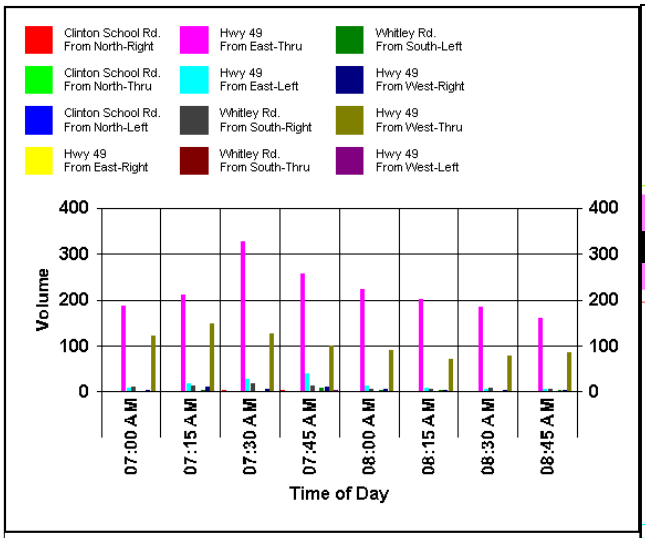


Chart 7
AM Weekday Peak Hours
Turning Movement Count Data
Highway 49 and Clinton School Road/Whitley Road

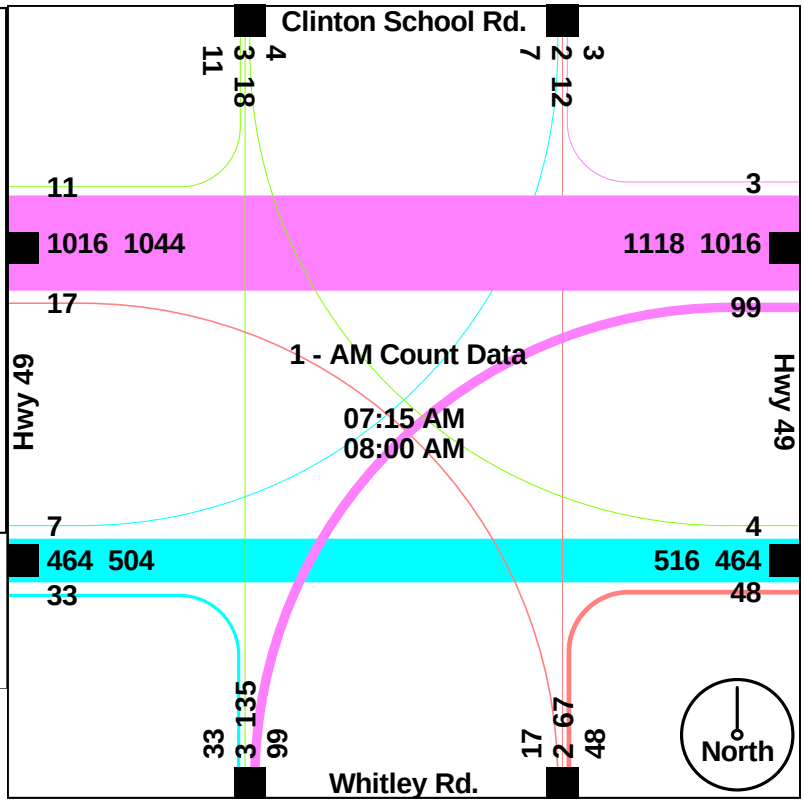
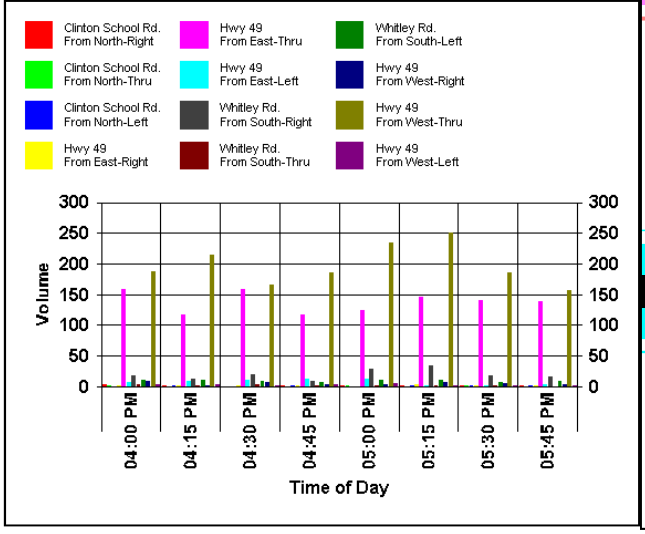
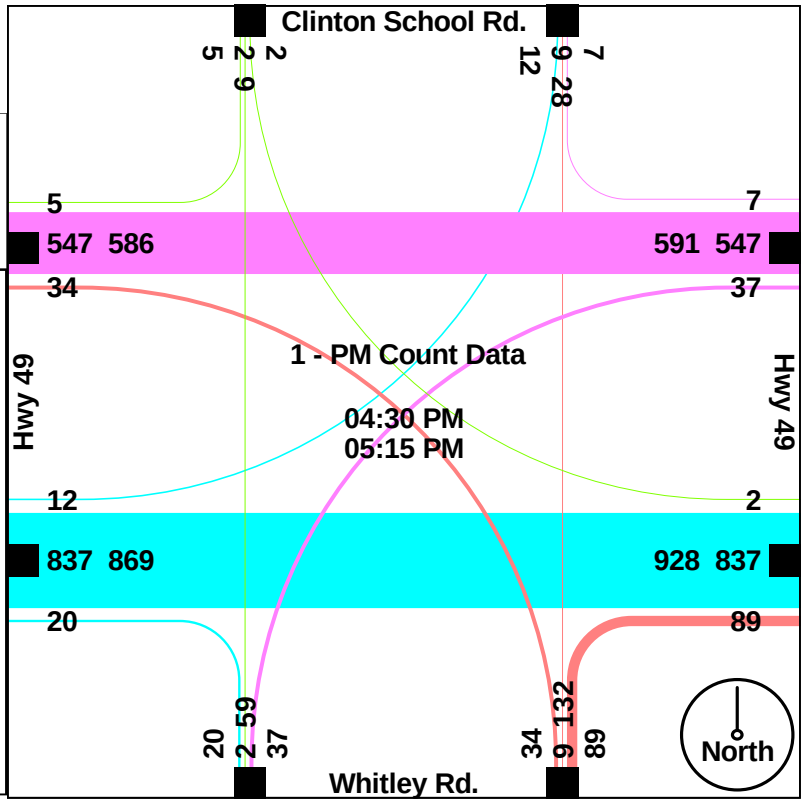


Chart 8
PM Weekday Peak Hours
Turning Movement Count Data
Highway 49 and Clinton School Road/Whitley Road





TRIP GENERATION and SITE TRAFFIC PROJECTIONS

Projected traffic volumes for this site have been calculated as a part of this study by using the existing Northeast Arkansas District Fairgrounds 2010 fair attendance records for the peak weekday (Friday) and for Saturday. The 2010 attendance is summarized for these two days as follows:

- Friday weekday attendance (5:00 PM - 11:00 PM) = 9,000 attendance.
- Saturday attendance (12:00 PM - 11:00 PM) = 20,000 attendance (record).

Special events such as those anticipated at the Northeast Arkansas District Fairgrounds typically have more than one person per vehicle arriving and departing. The Northeast Arkansas District Fairgrounds facility plans to provide accommodations of on-site parking for approximately 2,600 vehicles (plus additional parking for staff, exhibitors, etc.). If all 9,000 attendees (Friday) were to be at the fairgrounds at the same time and were parked on-site then 9,000 (attendees) divided by 2,600 (parking spaces) yields an occupancy rate of 3.5 persons per vehicle. However, not all 9,000 attendees are expected to be on-site at the same time, but rather some will arrive and depart before others arrive at the site. Accordingly, vehicle occupancy of some value less than 3.5 per vehicle is reasonable to assume.

According to the Federal Highway Administration (FHWA) publication, *Managing Travel for Planned Special Events*, in Chapter 5, "Event Operations Planning - Event Traffic Generation," (a copy of this section is included in the Appendix of this report), states a typical process for forecasting event traffic generation based on anticipated event attendance including the following:

- Continuous events, such as fairs and festivals, often run for two or more days. Attendance generally fluctuates greatly from day to day, with Saturday operations yielding the highest daily attendance.

- Vehicle occupancy factors can serve as the basis for estimating event-generated traffic. Table 5-14 (included in the Appendix) lists average vehicle occupancy factors for select discrete/recurring events at a permanent venue and continuous events.
- A vehicle occupancy factor of 2.5 persons per vehicle represents a common assumption, however for forecasting purposes, practitioners should consider a range of factors from 2.2 to 2.8 depending on local conditions.

Based on this research by FHWA, vehicle occupancy and resulting projected traffic volumes were calculated as follows:

Friday Weekday 24-Hour Calculations

- 24-Hour Calculation: 9,000 attendance at 2.22 average people per vehicle = 4,054 vehicles. Each vehicle will enter the site and exit the site which calculates to 8,108 vehicle trips (two-way).
- Weekday Entering Peak Hour (6:00 - 7:00 PM)
  - Entering Volume = 20% of 24-hour volume = 1,620 entering vehicles.
  - Exiting Volume = 4% of 24-hour volume = 324 exiting vehicles.
- Weekday Exiting Peak Hour (10:00 - 11:00 PM)
  - Entering Volume = 3% of 24-hour volume = 243 entering vehicles.
  - Exiting Volume = 24% of 24-hour volume = 1,945 exiting vehicles.

Saturday 24-Hour Calculations

Some attendees arrive via bus on the peak Saturday. This has been taken into consideration as a part of the traffic volume calculations associated with the attendance.

- 24-Hour Calculation: 20,000 attendees less approximately 1,500 via bus calculates to 18,500 attendance at 3.0 average people per vehicle = 6,167 vehicles. Each vehicle will enter the site and exit the site which calculates to 12,333 vehicle trips (two-way).

- Saturday Entering Peak Hour (1:00 PM - 2:00 PM)
  - Entering Volume = 12% of 24-hour volume = 1,480 entering vehicles.
  - Exiting Volume = 3% of 24-hour volume = 370 exiting vehicles.
- Saturday Exiting Peak Hour (10:00 - 11:00 PM)
  - Entering Volume = 2% of 24-hour volume = 246 entering vehicles.
  - Exiting Volume = 15% of 24-hour volume = 1,850 exiting vehicles.

Results of these calculations are summarized on Table 7, "Summary of Trip-Generation."

WEEKDAY		6-HOUR TWO-WAY WEEKDAY VOLUME	ENTERING PEAK HOUR VOL 6:00 - 7:00 PM		EXITING PEAK HOUR VOL 10:00 - 11:00 PM	
PROPOSED LAND USE	APPROXIMATE SIZE		ENTER	EXIT	ENTER	EXIT
Fairgrounds	78.66 Acres	8,108	1620	324	243	1945
	TOTAL ENTERING + EXITING		1,944		2,188	
SATURDAY		**11-HOUR TWO-WAY SATURDAY VOLUME**	**ENTERING PEAK HOUR VOL 1:00 - 2:00 PM**		**EXITING PEAK HOUR VOL 10:00 - 11:00 PM**	
PROPOSED LAND USE	APPROXIMATE SIZE		ENTER	EXIT	ENTER	EXIT
Fairgrounds	78.66 Acres	12,333	1480	370	246	1850
	TOTAL ENTERING + EXITING		1,850		2,096	

Table 7 – Summary of Trip-Generation

TRAFFIC VOLUME ASSIGNMENTS

Once projected peak hour traffic was estimated for the site, directional distributions were made to reflect the percent of anticipated left and right-turns at the study intersections. Directional distribution percentages used in this study are shown on Figure 4, "Directional Distribution - Site Traffic." The directional distribution percentages for site traffic have been equated to percentage turns for each movement at the study intersections. The majority of site traffic is expected to arrive and depart the fairgrounds site via the main access drive on Highway 49 (90 percent). It was assumed as part of this study that only 10 percent (7 percent from the south and 3 percent from the north) of the traffic associated with the site (includes staff, exhibitors, etc) will access the site via Clinton School Road. These values are shown on:

- Figure 5, "Entering Traffic Percentage Turns"
- Figure 6, "Exiting Traffic Percentage Turns."

The projected traffic volumes shown on Figure 7, "Weekday Site-Generated Traffic Volumes - Entering and Exiting Peak Hours," and Figure 7A, "Saturday Site-Generated Traffic Volumes - Entering and Exiting Peak Hours," result from applying the projected entering and exiting percentages shown on Figures 5 and 6 to the corresponding projected site-generated traffic volumes summarized on Table 7, "Summary of Trip-Generation."

The site-generated traffic volumes shown on Figures 7 and 7A and existing background traffic volumes shown on Figures 3 and 3A have been combined and the results are depicted on Figure 8, "Weekday Projected Traffic Volumes - Entering and Exiting Peak Hours," and Figure 8A, "Saturday Projected Traffic Volumes - Entering and Exiting Peak Hours."

Traffic volumes shown on Figures 8 and 8A are the values used in capacity and level of service calculations conducted as a part of this study. The effect of existing background traffic (i.e. the adjacent street non-site traffic which exists) and projected traffic associated with the site development have thus been accounted for in this analysis.

CAPACITY and LEVEL OF SERVICE

Generally, the "capacity" of a street is a measure of its ability to accommodate a certain magnitude of moving vehicles. It is a rate as opposed to a quantity, measured in terms of vehicles per hour. More specifically, street capacity refers to the maximum number of vehicles that a street element (e.g. an intersection) can be expected to accommodate in a given time period under the prevailing roadway and traffic conditions.

The measure of operation of intersections is the average length of time an approaching vehicle is delayed before it can proceed through an intersection when compared to free flowing conditions. The delay is measured in seconds per vehicle. Intersection Level of Service (LOS) is represented by the letter grades A (best) through F (worst). The LOS at an intersection as defined in the Highway Capacity Manual is shown in the following table.

Level of Service Criteria

Level of Service	Signalized Intersections Average Control Delay (seconds/vehicle)	Unsignalized Intersections Average Control Delay (seconds/vehicle)
A	0 to 10	0 to 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Traffic operational calculations were performed as a part of this study for the following traffic operating conditions:

- Existing Traffic Conditions

  Existing traffic volumes, lane geometry and traffic control.

- Projected Traffic Conditions - Existing Lane Geometry

  Projected traffic volumes, existing lane geometry plus the addition access drives.

- Projected Traffic Conditions - With Southbound Right-Turn Lane

  Projected traffic volumes, plus the addition of access drives and a southbound right-turn lane on Highway 49 at Drive A.

- Projected Traffic Conditions - With Southbound Right-Turn Lane and Improved Traffic Control

  Projected traffic volumes, plus the addition of access drives, a southbound right-turn lane on Highway 49 at Drive A, police intersection control at the intersection of Highway 49 at Drive A and traffic signal control at the intersection of Highway 49 and Clinton School Road / Whitney Road.

This analysis was performed using Synchro Version 6, 2003. This computer program has been proven to be reliable when used to analyze capacity and levels of traffic service under various operating conditions. Detailed capacity calculations are included in the Appendix. The fairgrounds peak weekday (Friday) entering and exiting and the Saturday peak entering and exiting peak traffic periods for each study intersection was used for these calculations. Factors included in the analysis are as follows:

- Existing traffic volumes and patterns.
- Directional distribution of projected traffic volumes.
- Existing and proposed intersection geometry (including elements such as turn lanes, curb radii, etc.).
- Existing background traffic volumes and projected site-generated volumes for projected traffic conditions.
- Existing or proposed traffic control.

CAPACITY ANALYSIS

Level of Service Analysis Results

Existing Traffic Conditions

Capacity and level of service analysis was performed for existing traffic volumes, lane geometry and traffic control for the fairgrounds peak weekday (Friday) entering and exiting and the Saturday peak entering and exiting peak traffic hours for the intersections of Highway 49 and Clinton School Road / Whitley Road.

As indicated in Table 8, "Level of Service Summary – Existing Traffic Conditions," all vehicle movements for existing traffic conditions at the study intersection presently operate at what calculates as an acceptable LOS "C" or better for the study peak hours with the existing "Stop" sign control.

EXISTING TRAFFIC CONDITIONS			Traffic Control	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	Overall Intersection
INTERSECTION	DAY	PEAK HR		PEAK HOUR - LEVEL OF SERVICE												
Highway 49 and Clinton School Road / Whitley Road	WEEKDAY	Entering	"STOP" SIGN	A	A		A	A		C			C			n/a
		Exiting		A	A		A	A		A			B			n/a
	SATURDAY	Entering		A	A		A	A		B			B			n/a
		Exiting		A	A		A	A		B			B			n/a

Table 8 - Level of Service Summary - Existing Traffic Conditions

Projected Traffic Conditions

Capacity and LOS analysis was performed for three projected traffic conditions for the fairgrounds peak weekday (Friday) entering and exiting and the Saturday peak entering and exiting peak traffic hours for the following intersections:

- Highway 49 and Clinton School Road.
- Highway 49 and Drive A.
- Clinton School Road and Drive B.
- Clinton School Road and Drive C.
- Clinton School Road and Drive D.

Traffic volumes used for these projected traffic conditions are shown on Figure 8, "Weekday Projected Traffic Volumes - Entering and Exiting Peak Hours," and Figure 8A, "Saturday Projected Traffic Volumes - Entering and Exiting Peak Hours."

The operating conditions projected to exist at the study intersections are summarized in the following tables:

- Table 9, "Level of Service Summary - Projected Traffic Conditions - Existing Lane Geometry."
- Table 10, "Level of Service Summary - Projected Traffic Conditions - With Southbound Right-Turn Lane."
- Table 11, "Level of Service Summary - Projected Traffic Conditions - With Southbound Right-Turn Lane and Improved Traffic Control."

As indicated in Tables 9, 10 and 11, the intersections of Clinton School Road and Drives B, C and D are expected to operate at what calculates to an acceptable LOS "A" for each of the peak hour study hours with Stop" sign control. However, as indicated in Tables 9 and 10, there are several vehicle movements for these projected traffic conditions at the study intersections of Highway 49 and Clinton School Road / Whitney Road and Highway 49 and Drive A ex-

PROJECTED TRAFFIC CONDITIONS EXISTING LANE GEOMETRY PLUS ACCESS DRIVES			Traffic Control	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	Overall Intersection
INTERSECTION	DAY	PEAK HR		PEAK HOUR - LEVEL OF SERVICE												
Highway 49 and Clinton School Road / Whitley Road	WEEKDAY	Entering	"STOP" SIGN	A	A		B	A		F			F			n/a
		Exiting		B	A		A	A		C			F			n/a
	SATURDAY	Entering		B	A		B	A		F			F			n/a
		Exiting		B	A		A	A		C			F			n/a
Highway 49 and Drive A	WEEKDAY	Entering	"STOP" SIGN	F		C				F	A			A		n/a
		Exiting		F		F				A	A			A		n/a
	SATURDAY	Entering		F		C				F	A			A		n/a
		Exiting		F		F				A	A			A		n/a
Clinton School Road and Drive B	WEEKDAY	Entering	"STOP" SIGN				A		A		A		A			n/a
		Exiting					A		A		A		A			n/a
	SATURDAY	Entering					A		A		A		A			n/a
		Exiting					A		A		A		A			n/a
Clinton School Road and Drive C	WEEKDAY	Entering	"STOP" SIGN				A		A		A		A			n/a
		Exiting					A		A		A		A			n/a
	SATURDAY	Entering					A		A		A		A			n/a
		Exiting					A		A		A		A			n/a
Clinton School Road and Drive D	WEEKDAY	Entering	"STOP" SIGN				A		A		A		A			n/a
		Exiting					A		A		A		A			n/a
	SATURDAY	Entering					A		A		A		A			n/a
		Exiting					A		A		A		A			n/a

Table 9 - Level of Service Summary - Projected Traffic Conditions - Existing Lane Geometry

PROJECTED TRAFFIC CONDITIONS PLUS SOUTHBOUND RIGHT-TURN LANE AT DRIVE A			Traffic Control	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	Overall Intersection
INTERSECTION	DAY	PEAK HR		PEAK HOUR - LEVEL OF SERVICE												
Highway 49 and Clinton School Road / Whitley Road	WEEKDAY	Entering	"STOP" SIGN	A	A		B	A		F			F			n/a
		Exiting		B	A		A	A		C			F			n/a
	SATURDAY	Entering		B	A		B	A		F			F			n/a
		Exiting		B	A		A	A		C			F			n/a
Highway 49 and Drive A	WEEKDAY	Entering	"STOP" SIGN	F		B				F	A			A	A	n/a
		Exiting		F		F				A	A			A	A	n/a
	SATURDAY	Entering		F		F				F	A			A	A	n/a
		Exiting		F		F				A	A			A	A	n/a
Clinton School Road and Drive B	WEEKDAY	Entering	"STOP" SIGN				A		A		A		A			n/a
		Exiting					A		A		A		A			n/a
	SATURDAY	Entering					A		A		A		A			n/a
		Exiting					A		A		A		A			n/a
Clinton School Road and Drive C	WEEKDAY	Entering	"STOP" SIGN				A		A		A		A			n/a
		Exiting					A		A		A		A			n/a
	SATURDAY	Entering					A		A		A		A			n/a
		Exiting					A		A		A		A			n/a
Clinton School Road and Drive D	WEEKDAY	Entering	"STOP" SIGN				A		A		A		A			n/a
		Exiting					A		A		A		A			n/a
	SATURDAY	Entering					A		A		A		A			n/a
		Exiting					A		A		A		A			n/a

Table 10 - Level of Service Summary - Projected Traffic Conditions With Southbound Right-Turn Lane

PROJECTED TRAFFIC CONDITIONS PLUS SOUTHBOUND RIGHT-TURN LANE AT DRIVE A AND IMPROVED TRAFFIC CONTROL			Traffic Control	EB LT	EB TH	EB RT	WB LT	WB TH	WB RT	NB LT	NB TH	NB RT	SB LT	SB TH	SB RT	Overall Intersection
INTERSECTION	DAY	PEAK HR		PEAK HOUR - LEVEL OF SERVICE												
Highway 49 and Clinton School Road / Whitley Road	WEEKDAY	Entering	SIGNAL	A	A		A	A		B			B			**A**
		Exiting		A	A		A	A		A			B			**A**
	SATURDAY	Entering		A	B		A	A		B			B			**B**
		Exiting		A	A		A	B		A			A			**B**
Highway 49 and Drive A	WEEKDAY	Entering	POLICE	F		E				F	A			A	A	**D**
		Exiting		A		B				C	C			C	C	**B**
	SATURDAY	Entering		F		E				F	A			A	A	**E**
		Exiting		B		C				C	B			B	B	**B**
Clinton School Road and Drive B	WEEKDAY	Entering	"STOP" SIGN				A		A		A		A			**n/a**
		Exiting					A		A		A		A			**n/a**
	SATURDAY	Entering					A		A		A		A			**n/a**
		Exiting					A		A		A		A			**n/a**
Clinton School Road and Drive C	WEEKDAY	Entering	"STOP" SIGN				A		A		A		A			**n/a**
		Exiting					A		A		A		A			**n/a**
	SATURDAY	Entering					A		A		A		A			**n/a**
		Exiting					A		A		A		A			**n/a**
Clinton School Road and Drive D	WEEKDAY	Entering	"STOP" SIGN				A		A		A		A			**n/a**
		Exiting					A		A		A		A			**n/a**
	SATURDAY	Entering					A		A		A		A			**n/a**
		Exiting					A		A		A		A			**n/a**

Table 11 - Level of Service Summary - Projected Traffic Conditions
With Southbound Right-Turn Lane and Improved Traffic Control

pected to operate at what calculates as an unacceptable LOS "F" during several of the peak study hours with "Stop" sign control.

As indicated on Table 11, "Level of Service Summary - Projected Traffic Conditions - With Southbound Right-Turn Lane and Improved Traffic Control," all of the vehicle movements at the intersection of Highway 49 and Clinton School Road / Whitley Road are expected to operate at what calculates to an acceptable LOS "B" or better for each of the peak hour study hours with signal control. Although the intersection of Highway 49 and Drive A is still expected to have some vehicle movements for these projected traffic conditions with delay that calculates as less than LOS "D" during the peak study hours with intersection police control, this is not abnormal for an event this size with so many vehicles accessing the site in a short amount of time. Police control attentive to high vehicle volume exiting movements could avert excessive delay. Intersection police control and the addition of a southbound right-turn lane on Highway 49 at Drive A would not only add needed safety for these intersections, but would also add convenience to site entering and exiting vehicles during the peak traffic times.

TRAFFIC SIGNAL WARRANTS ANALYSIS

In evaluating the need for a traffic signal, certain established warrants must be examined by a comprehensive investigation of traffic conditions and physical characteristics of the location. The decision to install a traffic signal at a particular location must be evaluated quantitatively relative to these warrants. These warrants, as specified in the Manual on Uniform Traffic Control Devices (MUTCD), are described in detail in the appendix of this report. They are summarized as follows:

- **Warrant One: Eight-Hour Vehicular Volume**
- **Warrant Two: Four-Hour Vehicular Volume**
- **Warrant Three: Peak Hour**
- **Warrant Four: Pedestrian Volume**
- **Warrant Five: School Crossing**
- **Warrant Six: Coordinated Signal System**
- **Warrant Seven: Crash Experience**
- **Warrant Eight: Roadway Network**

Traffic signal warrants analysis was made for existing traffic volumes and projected traffic volumes for the intersection of Highway 49 and Clinton School Road / Whitney Road and for projected traffic volumes for the intersection of Highway 49 and Drive A.

Based on volume criteria set out in the MUTCD, it was found that traffic signal warrants are met for existing traffic conditions and are expected to continue to be met for projected traffic conditions at the intersection of Highway 49 and Clinton School Road / Whitney Road. Traffic signal control is recommended with existing traffic volumes at the intersection of Highway 49 and Clinton School Road / Whitney Road. Details of the traffic signal warrants analysis for existing and projected traffic conditions are as follows:

Existing Traffic Conditions

It was found that traffic signal warrants are currently met for the intersection of Highway 49 and Clinton School Road / Whitney Road with existing traffic volumes. Volumes are currently sufficient at this intersection to satisfy Warrants 2 and 3. The traffic signal warrants analysis results for this intersection are summarized in Table 12, "Traffic Signal Warrants Results - Highway 49 and Clinton School Road / Whitney Road - Existing Conditions."

FINAL RESULTS: **Traffic Signal Warrants Analysis**

Existing Traffic

Hour warrant was met:

Major St.: Hwy 49
Minor St.: Clinton School/Whitley

			VOLUME		COMB.			4 Hr.	Peak
			420	630	336		504		
			105	52	84		41		
	SUM	MAX.			#8-1		#8-2		
HOUR	MAJOR	MINOR	1A	1B		1AB		2	3
7:00	1563	70	0	1	0	0	1	1	0
8:00	1149	40	0	0	0	0	0	0	0
9:00	1009	24	0	0	0	0	0	0	0
10:00	1019	18	0	0	0	0	0	0	0
11:00	1010	21	0	0	0	0	0	0	0
12:00	1087	18	0	0	0	0	0	0	0
13:00	1093	20	0	0	0	0	0	0	0
14:00	1205	33	0	0	0	0	0	0	0
15:00	1322	66	0	1	0	0	1	1	0
16:00	1379	101	0	1	1	1	1	1	1
17:00	1433	134	1	1	1	1	1	1	1
18:00	1047	27	0	0	0	0	0	0	0
19:00	656	26	0	0	0	0	0	0	0
20:00	548	21	0	0	0	0	0	0	0
21:00	471	18	0	0	0	0	0	0	0
			1	4		2		4	2

This intersection SATISFIES the warrants for signalization as outlined in the "M.U.T.C.D."

Table 12
Traffic Signal Warrants Results
Highway 49 and
Clinton School Road / Whitley Road
Existing Traffic Conditions

Additionally, Warrant 7, "Crash Experience," was examined for this intersection. *The Crash Experience signal warrant conditions are intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal.* There are three criteria relating to Warrant 7 as follows:

A. Adequate trial of alternatives has failed to reduce the crash frequency.
B. Five or more reported crashes within a 12-month period.
C. Traffic volume.

As shown in the following accident summary provided by the City of Jonesboro Police Department, there have been five reported crashes at this existing "Stop" sign controlled intersection within a 12-month period (2010), involving personal injury or property damage. These five reported crashes show that two of the three criteria are met with existing traffic conditions as follows:

A. Adequate trial of alternatives has failed to reduce the crash frequency.
B. Five or more reported crashes within a 12-month period.

This satisfies two of the criteria for Warrant 7 for existing conditions. With additional traffic associated with the fair, the Warrant 7 volume criteria is also expected to be met for this intersection.

The location of the intersection of Highway 49 and Clinton School Road / Whitney Road is at the west edge of a southbound curved alignment to the right on Highway 49 with a speed limit of 55 miles per hour. This curved highway alignment approach to Clinton School Road / Whitney Road may be a contributing factor in the cause of accidents that have occurred at this intersection. Traffic signal control, with adequate advance warning for southbound Highway 49 traffic should result in a reduction of accident occurrence.

Highway 49 and Clinton School Road Reported Crashes with Existing "Stop" Sign Control

ACCDATE	ACCTIME	STREET1	STREET2	Location	NUMVEH	SEVERITY	DAMEST	DOW
01/29/2010	10:18:00 AM	JOHNSON	CLINTON SCHOOL	JOHNSON & CLINTON SCHOOL	1	5	10000	FRI
03/29/2010	9:20:00 AM	JOHNSON	CLINTON SCHOOL	JOHNSON & CLINTON SCHOOL	2	5	2300	MON
07/25/2010	12:19:00 PM	JOHNSON	CLINTON SCHOOL	JOHNSON & CLINTON SCHOOL	2	4	6500	SUN
07/30/2010	5:17:00 PM	JOHNSON	CLINTON SCHOOL	JOHNSON & CLINTON SCHOOL	3	5	4500	FRI
01/08/2010	6:36:00 PM	JOHNSON	CR 912	JOHNSON & CR 912	2	5	5500	FRI

Source: City of Jonesboro Police Department

It was found that two traffic signal warrants are projected to continue to be met during the peak fair days for the intersection of Highway 49 and Clinton School Road / Whitney Road with the development of the fairgrounds as proposed. Volumes are projected to continue to be sufficient at this intersection to satisfy Warrants 2 and 3 and are expected to be only two hours short of satisfying Warrant 1B. The traffic signal warrants analysis results for this intersection are summarized in Table 13, "Traffic Signal Warrants Results - Highway 49 and Clinton School Road / Whitney Road - Projected Weekday Peak Fairgrounds Traffic Conditions."

Additionally, Warrant 7, "Crash Experience," was examined for this intersection. With additional traffic associated with the fairgrounds development as proposed, the volumes criteria is expected to also be met. This is expected to satisfy all of the criteria for Warrant 7 for projected conditions.

FINAL RESULTS: **Traffic Signal Warrants Analysis**

Projected Traffic During Fair

Major St.: Hwy 49

Minor St.: Clinton School/Whitley

			VOLUME		COMB.			4 Hr.	Peak
			420	630	336		504		
			105	52	84		41		
	SUM	MAX.			#8-1		#8-2		
HOUR	MAJOR	MINOR	1A	1B		1AB		2	3
7:00	1567	70	0	1	0	0	1	1	0
8:00	1158	40	0	0	0	0	0	0	0
9:00	1022	24	0	0	0	0	0	0	0
10:00	1037	18	0	0	0	0	0	0	0
11:00	1032	22	0	0	0	0	0	0	0
12:00	1141	20	0	0	0	0	0	0	0
13:00	1148	22	0	0	0	0	0	0	0
14:00	1263	35	0	0	0	0	0	0	0
15:00	1473	72	0	1	0	0	1	1	0
16:00	1706	114	1	1	1	1	1	1	1
17:00	1924	156	1	1	1	1	1	1	1
18:00	1722	56	0	1	0	0	1	0	0
19:00	1156	45	0	0	0	0	1	0	0
20:00	1003	42	0	0	0	0	1	0	0
21:00	988	57	0	1	0	0	1	0	0
			2	6		2		4	2

Hour warrant was met:

This intersection SATISFIES the warrants for signalization as outlined in the "M.U.T.C.D."

Table 13
Traffic Signal Warrants Results
Highway 49 and
Clinton School Road / Whitley Road
Projected Traffic Conditions

It was found that traffic signal warrants are projected to be met during the peak fair days for the intersection of Highway 49 and Drive A with the development of the fairgrounds as proposed. Volumes are projected to be sufficient at this intersection to satisfy Warrants 2 and 3 and are expected to be only two hours short of satisfying Warrant 1B. The traffic signal warrants analysis results for this intersection are summarized in Table 14, "Traffic Signal Warrants Results - Highway 49 and Drive A - Projected Weekday Peak Fairgrounds Traffic Conditions." However, the volumes are not expected to be sufficient to meet traffic signal warrants on the other days throughout the year at this intersection. Traffic signal would not be appropriate for only six days a year. However, intersection police control at the at the intersection of Highway 49 and Drive A would be appropriate during the annual six days of the peak fair days.

FINAL RESULTS: **Traffic Signal Warrants Analysis**

Projected Traffic Wkdy During Fair

Hour warrant was met:

Major St.: Hwy 49
Minor St.: Drive A

			VOLUME		COMB.			4 Hr.	Peak
			420	630	336		504		
			105	52	84		41		
	SUM	MAX.			#8-1		#8-2		
HOUR	MAJOR	MINOR	1A	1B	1AB			2	3
7:00	1567	2	0	0	0	0	0	0	0
8:00	1157	3	0	0	0	0	0	0	0
9:00	1021	5	0	0	0	0	0	0	0
10:00	1035	6	0	0	0	0	0	0	0
11:00	1029	8	0	0	0	0	0	0	0
12:00	1143	16	0	0	0	0	0	0	0
13:00	1150	16	0	0	0	0	0	0	0
14:00	1299	19	0	0	0	0	0	0	0
15:00	1501	35	0	0	0	0	0	0	0
16:00	1794	63	0	1	0	0	1	1	0
17:00	2112	71	0	1	0	0	1	1	0
18:00	1801	111	1	1	1	1	1	1	1
19:00	1297	111	1	1	1	1	1	1	1
20:00	888	190	1	1	1	1	1	1	1
21:00	660	316	1	1	1	1	1	1	1
			4	6		4		6	4

This intersection SATISFIES the warrants for signalization as outlined in the "M.U.T.C.D."

Table 14
Traffic Signal Warrants Results
Highway 49 and Drive A
Projected Traffic Conditions

FINDINGS and RECOMMENDATIONS

Findings of this study are summarized as follows:

- Capacity and level of service analysis was performed for existing traffic volumes, lane geometry and traffic control for the fairgrounds peak weekday (Friday) entering and exiting and the Saturday peak entering and exiting peak traffic hours for the intersections of Highway 49 and Clinton School Road / Whitley Road. All vehicle movements for existing traffic conditions at the study intersection presently operate at what calculates as an acceptable LOS "C" or better for the study peak hours with the existing "Stop" sign control.

- It was found that traffic signal warrants are currently met for the intersection of Highway 49 and Clinton School Road / Whitney Road with existing traffic volumes. Traffic signal warrants will continue to be met for this intersection for projected traffic conditions with the addition of the fairgrounds generated traffic volumes.

- Traffic volumes are sufficient to meet traffic signal warrants during the six days of the peak fair days at the at the intersection of Highway 49 and Drive A, but the volumes are not expected to be sufficient to meet traffic signal warrants on the other days throughout the year. Traffic signal would not be appropriate for only six days a year. However, intersection police control at the at the intersections of Highway 49 and Drive A would be appropriate during the annual six days of the peak fair days and has been included in the analysis for the projected traffic conditions.

- Capacity and LOS analysis was performed for three projected traffic conditions for the fairgrounds peak weekday (Friday) entering and exiting and the Saturday peak entering and exiting peak traffic hours for the study intersections. For all three projected traffic conditions, the intersections of Clinton School Road and Drives B, C and D are expected to operate at what calculates to an

acceptable LOS “A” for each of the peak hour study hours with “Stop” sign control. However, there are several vehicle movements for these projected traffic conditions at the study intersections of Highway 49 and Clinton School Road / Whitney Road and Highway 49 and Drive A expected to operate at what calculates as an unacceptable LOS “F” during several of the peak study hours with “Stop” sign control.

- For projected traffic conditions, all of the vehicle movements at the intersection of Highway 49 and Clinton School Road / Whitley Road are expected to operate at what calculates to an acceptable LOS “B” or better for each of the peak hour study hours with signal control. The intersection of Highway 49 and Drive A is still expected to have some vehicle movements for these peak event projected traffic conditions with delay that calculates as less than LOS “D” during the peak study hours with intersection police control. This is not abnormal for an event this size with so many vehicles accessing the site in a short amount of time. Intersection police control and the addition of a southbound right-turn lane on Highway 49 at Drive A would not only add needed safety for these intersections, but would also add convenience and reduce delay for site entering and exiting vehicles during the peak traffic times.

Recommendations of this study are summarized as follows:

- It is recommended to install a traffic signal at the intersection of Highway 49 and Clinton School Road / Whitney Road. Traffic signal warrants are currently met with existing traffic volumes. The recommended signal control at this intersection would allow acceptable traffic operations and add needed safety and convenience for this intersection.

- Traffic signal design at Highway 49 and Clinton School Road / Whitney Road must conform to AHTD and Craighead County design standards and will require approval by AHTD and the County.

- It is recommended that Highway 49 be widened at the southbound approach to Drive A to accommodate the addition of an approximate 250-foot plus taper southbound right-turn lane coincident with the site development.

- It is recommended that intersection police control be used at the at the intersection of Highway 49 and Drive A during the annual six peak fair days.

- The new access drive intersection along Highway 49 must conform to AHTD and Craighead County design standards and will require approval by AHTD and the County.

- The new access drive intersections along Clinton School Road must conform to Craighead County design standards and will require approval by the County.

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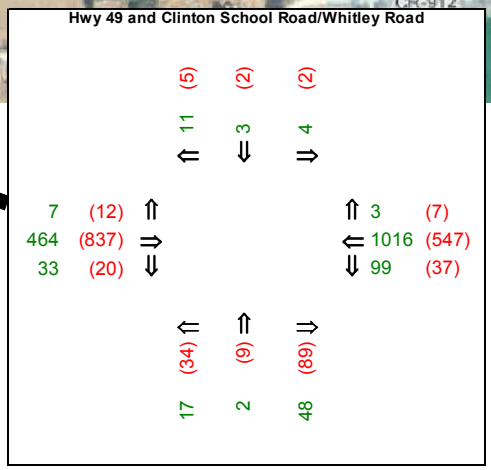
FIGURES

KEY

Entering Peak Hr. 6:00–7:00 PM (Exiting Peak Hr.) (10:00–11:00 PM)

NORTH



NOTE:
These turning movement counts were made Monday, March 14, 2011 while local schools were in session with electronic count boards based on manual entry of observed vehicle turning movements at the intersection of Highway 49 and Clinton School Road / Whitley Road.

PROJECT No. P1501
DATE: 3-22-2011

PETERS & ASSOCIATES
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NORTHEAST ARKANSAS DISTRICT FAIRGROUNDS

HIGHWAY 49 AND CLINTON SCHOOL ROAD
CRAIGHEAD COUNTY, ARKANSAS

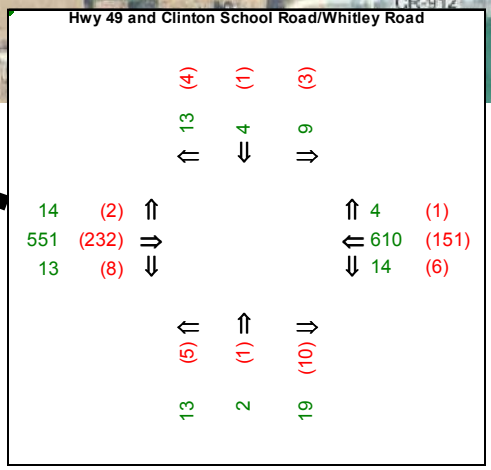
WEEKDAY EXISTING
TRAFFIC VOLUMES
ENTERING AND EXITING PEAK HOURS

FIGURE No.
3

KEY

Entering Peak Hr. 1:00–2:00 PM (Exiting Peak Hr.) (10:00–11:00 PM)

NORTH



NOTE:
These turning movement counts were made Saturday, March 12, 2011 with electronic count boards based on manual entry of observed vehicle turning movements at the intersection of Highway 49 and Clinton School Road / Whitley Road.

PROJECT No. P1501
DATE: 3-22-2011

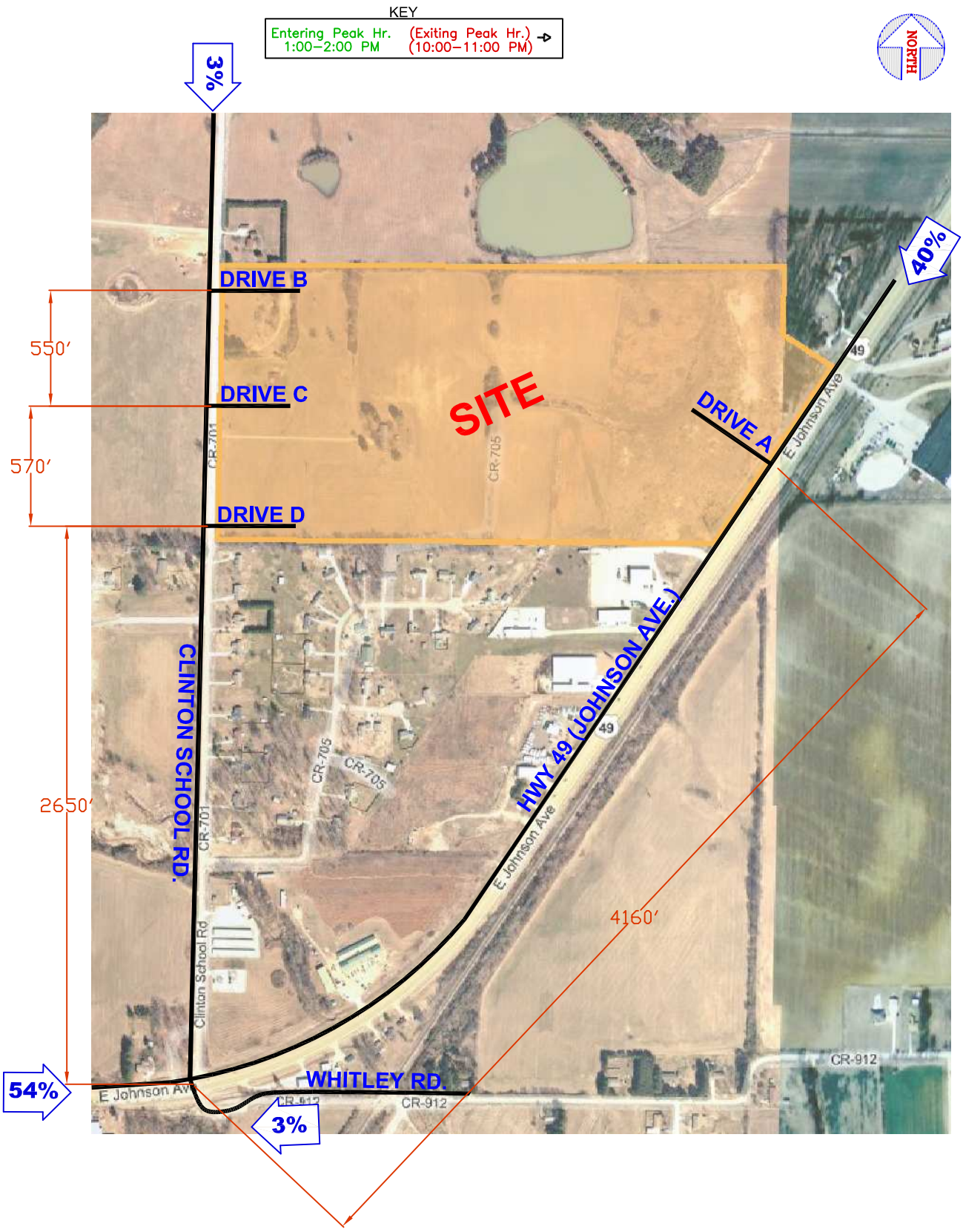
PETERS & ASSOCIATES
ENGINEERS, INC.

NORTHEAST ARKANSAS DISTRICT FAIRGROUNDS

HIGHWAY 49 AND CLINTON SCHOOL ROAD
CRAIGHEAD COUNTY, ARKANSAS

SATURDAY EXISTING
TRAFFIC VOLUMES
ENTERING AND EXITING PEAK HOURS

FIGURE No.
3A



BASIS OF ASSUMED DIRECTIONAL DISTRIBUTION:
1. INPUT FROM FAIR BOARD.
2. EXISTING TRAFFIC PATTERNS.

PROJECT No. P1501
DATE: 3-22-2011

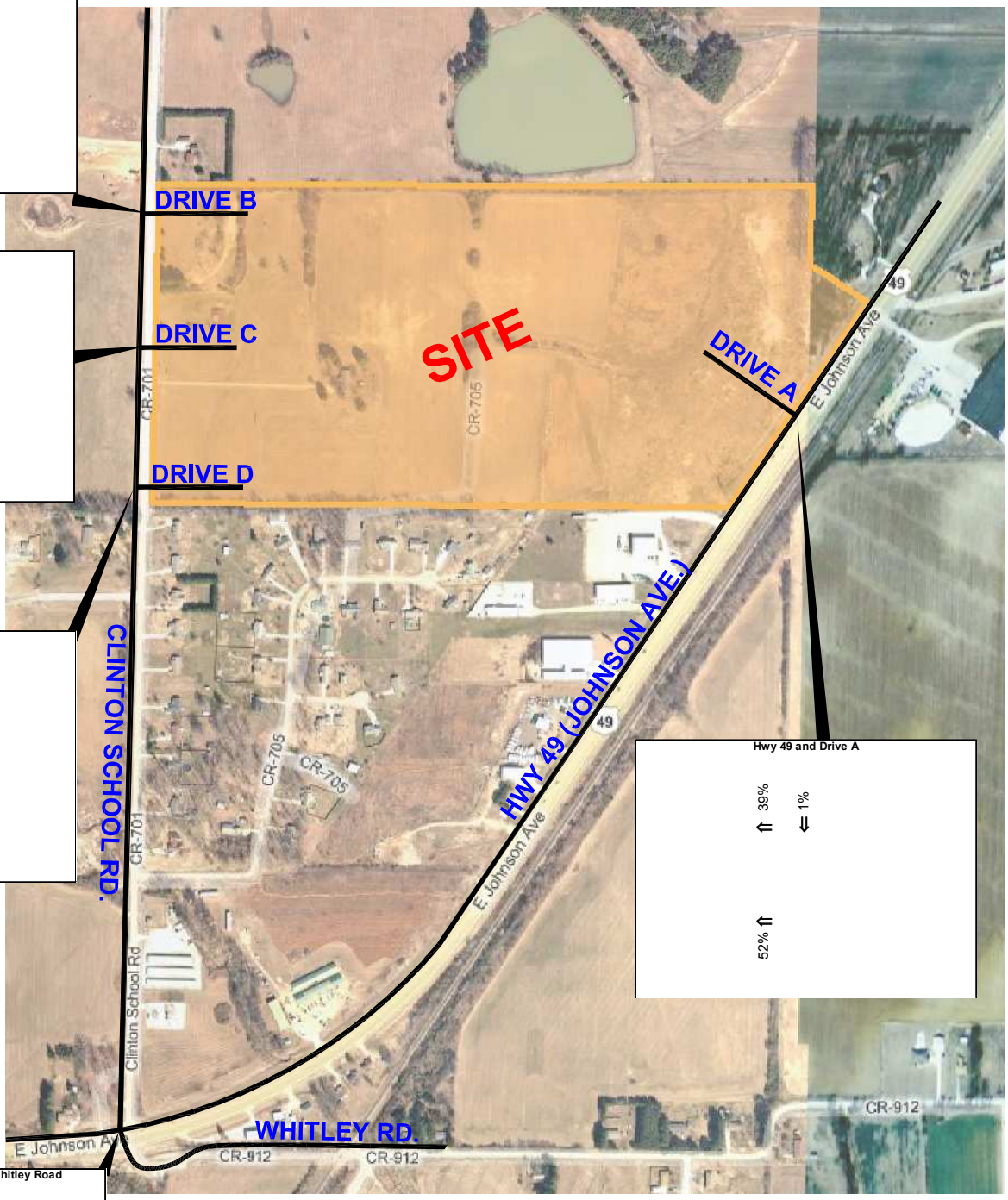
PETERS & ASSOCIATES
ENGINEERS, INC.

NORTHEAST ARKANSAS DISTRICT FAIRGROUNDS

HIGHWAY 49 AND CLINTON SCHOOL ROAD
CRAIGHEAD COUNTY, ARKANSAS

DIRECTIONAL DISTRIBUTION
SITE TRAFFIC

FIGURE No.
4



BASIS OF ASSUMED DIRECTIONAL DISTRIBUTION:
1. INPUT FROM FAIR BOARD.
2. EXISTING TRAFFIC PATTERNS.

PROJECT No. P1501
DATE: 3-22-2011

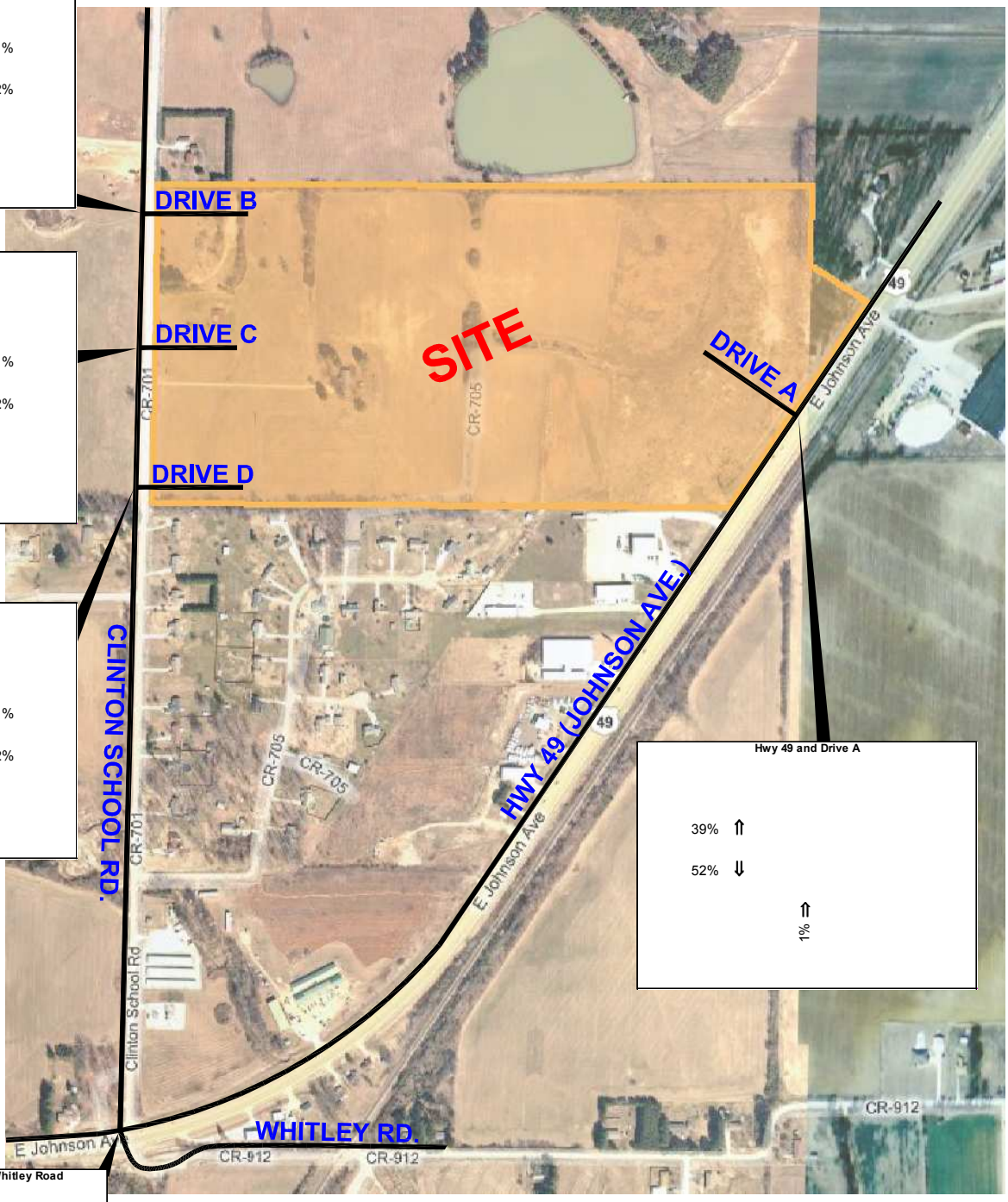
PETERS & ASSOCIATES
ENGINEERS, INC.

NORTHEAST ARKANSAS DISTRICT FAIRGROUNDS

HIGHWAY 49 AND CLINTON SCHOOL ROAD
CRAIGHEAD COUNTY, ARKANSAS

ENTERING TRAFFIC PERCENTAGE TURNS

FIGURE No. 5



BASIS OF ASSUMED DIRECTIONAL DISTRIBUTION:
1. INPUT FROM FAIR BOARD.
2. EXISTING TRAFFIC PATTERNS.

PROJECT No. P1501
DATE: 3-22-2011

PETERS & ASSOCIATES
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NORTHEAST ARKANSAS DISTRICT FAIRGROUNDS

HIGHWAY 49 AND CLINTON SCHOOL ROAD
CRAIGHEAD COUNTY, ARKANSAS

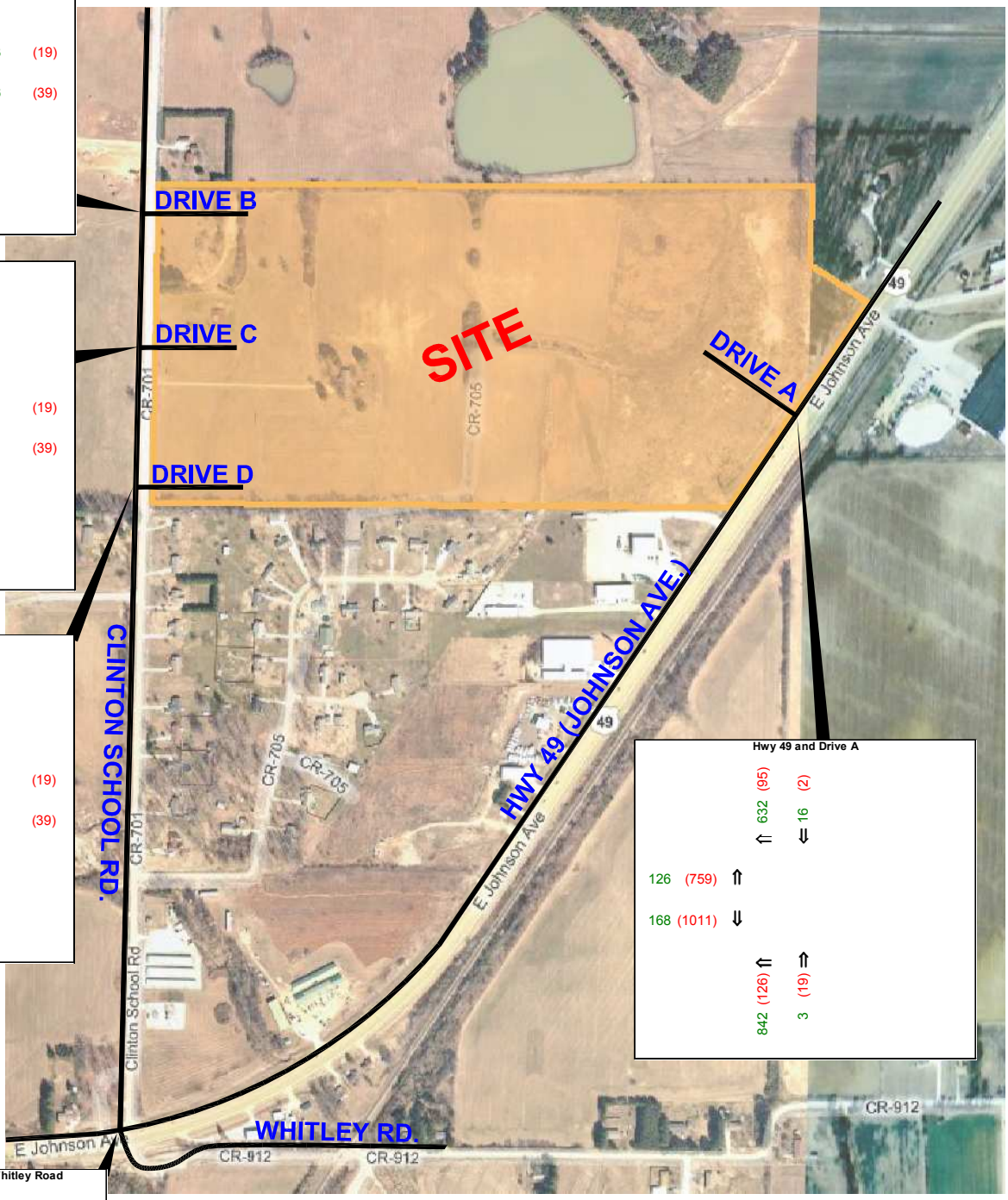
EXITING TRAFFIC
PERCENTAGE TURNS

FIGURE No.
6

KEY

Entering Peak Hr. 6:00–7:00 PM (Exiting Peak Hr.) (10:00–11:00 PM)

NORTH



Clinton School Road and Drive B

	⇑ 3	(19)
	⇓ 6	(39)
⇑ 6	(39)	
⇒ 32	(5)	
	⇓ 32	(2)
	⇒ 16	
	⇑ (5)	

Clinton School Road and Drive C

	⇑ 3	(19)
	⇓ 6	(39)
⇑ 36	(24)	
⇒ 32	(5)	
	⇓ 32	(2)
	⇒ 16	
	⇑ (5)	

Clinton School Road and Drive D

	⇑ 3	(19)
	⇓ 6	(39)
⇑ 65	(10)	
⇒ 32	(5)	
	⇓ 32	(2)
	⇒ 13	
	⇑ (78)	

Hwy 49 and Drive A

	⇐ 632	(95)
	⇓ 16	(2)
126	(759)	⇑
168	(1011)	⇓
⇐ 842	(126)	
⇑ 3	(19)	

Hwy 49 and Clinton School Road/Whitley Road

		⇑ 16	(2)		
65	(10) ⇑	⇐ 162	(973)		
810	(122) ⇒	⇓ 6	(39)		
				⇑ (2)	⇒ (5)
				16	32
⇐ 13	(78)				
⇓ 3	(19)				
⇒ 3	(19)				

PROJECT No. P1501
DATE: 3-22-2011

PETERS & ASSOCIATES
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NORTHEAST ARKANSAS DISTRICT FAIRGROUNDS

HIGHWAY 49 AND CLINTON SCHOOL ROAD
CRAIGHEAD COUNTY, ARKANSAS

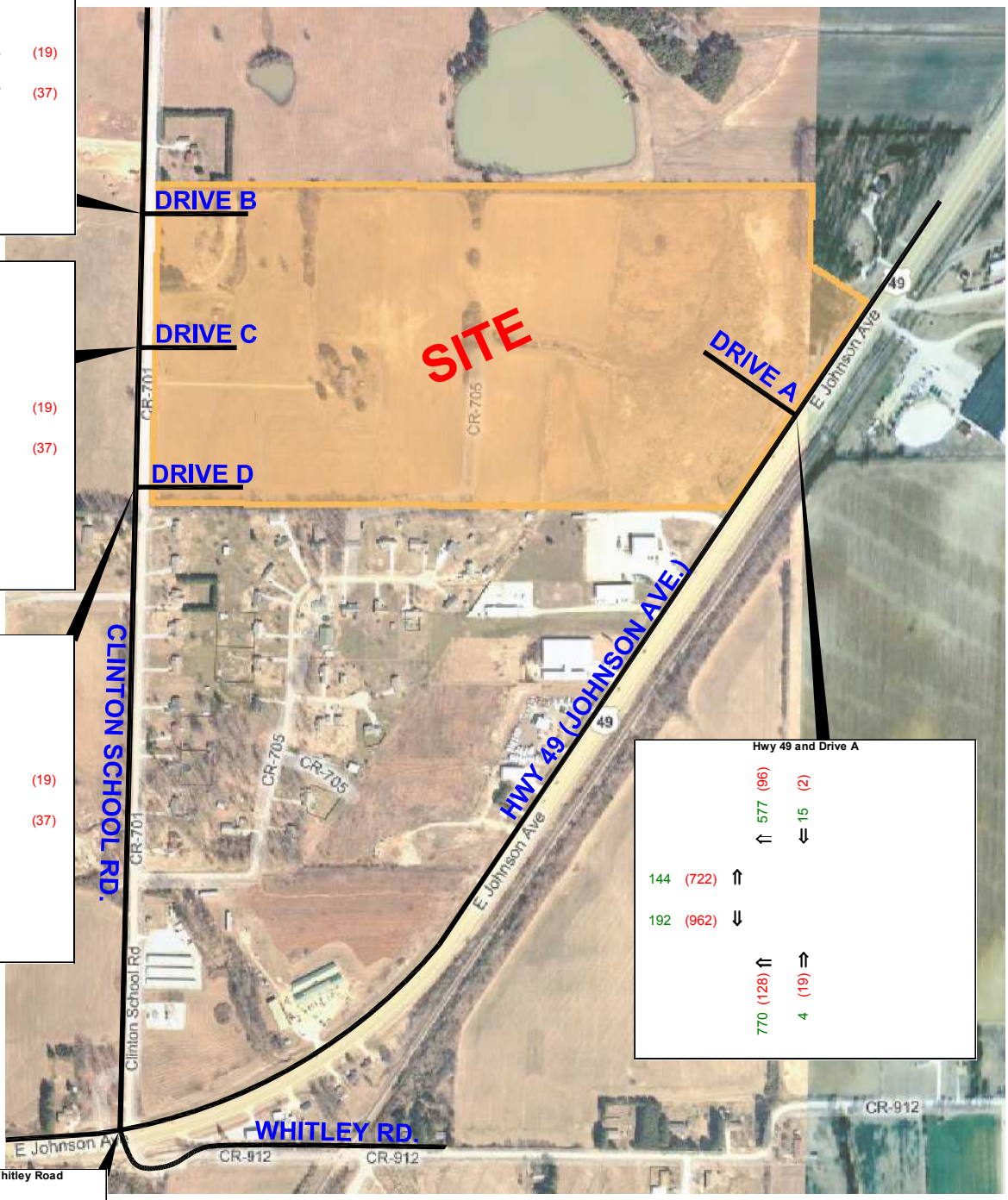
WEEKDAY SITE-GENERATED
TRAFFIC VOLUMES
ENTERING AND EXITING PEAK HOURS

FIGURE No.
7

KEY

Entering Peak Hr. 1:00–2:00 PM (Exiting Peak Hr.) (10:00–11:00 PM)

NORTH



Clinton School Road and Drive B

		⇑ 4	(19)
		⇓ 7	(37)
⇑ 7	(37)		
⇒ 30	(5)		
⇓ 30	(5)		
⇒ 15	(2)		

Clinton School Road and Drive C

		⇑ 4	(19)
		⇓ 7	(37)
⇑ 33	(23)		
⇒ 30	(5)		
⇓ 22	(39)		
⇒ 15	(2)		

Clinton School Road and Drive D

		⇑ 4	(19)
		⇓ 7	(37)
⇑ 59	(10)		
⇒ 30	(5)		
⇓ 15	(74)		
⇒ 15	(2)		

Hwy 49 and Drive A

		⇐ 577	(96)
		⇓ 15	(2)
144	(722) ⇑		
192	(962) ⇓		
⇐ 770	(128)		
⇑ 4	(19)		

Hwy 49 and Clinton School Road/Whitley Road

		⇐ 15	⇓ 4	⇒ 4
59	(10) ⇑			⇑ 15 (2)
740	(123) ⇒			⇐ 185 (925)
				⇓ 7 (37)
		⇑ 15	(2)	
		⇒ 30	(5)	

(74) (19) (19)

PROJECT No. P1501
DATE: 3-22-2011

PETERS & ASSOCIATES
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NORTHEAST ARKANSAS DISTRICT FAIRGROUNDS

HIGHWAY 49 AND CLINTON SCHOOL ROAD
CRAIGHEAD COUNTY, ARKANSAS

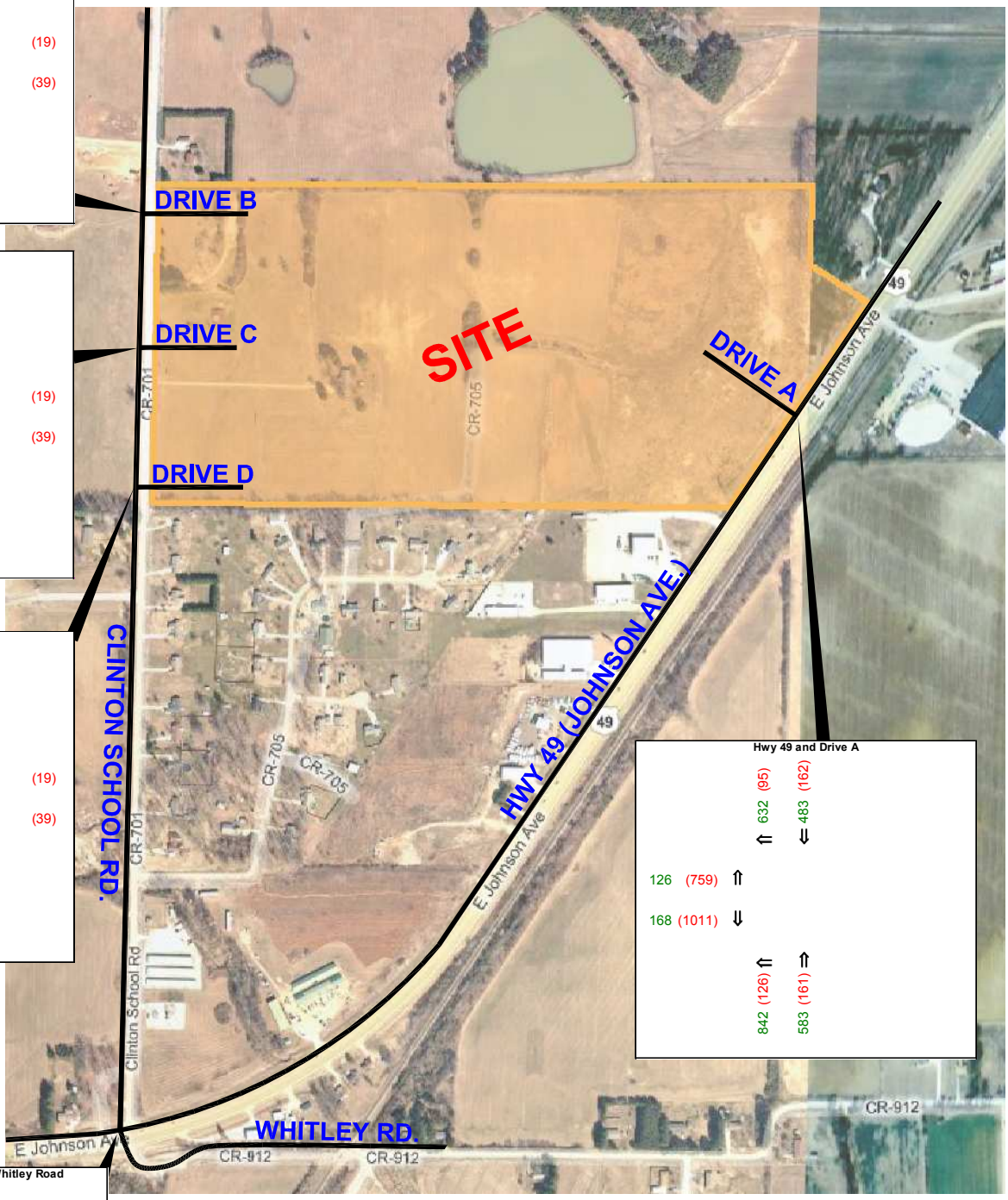
SATURDAY SITE-GENERATED
TRAFFIC VOLUMES
ENTERING AND EXITING PEAK HOURS

FIGURE No.
7A

KEY

Entering Peak Hr. 6:00–7:00 PM (Exiting Peak Hr.) (10:00–11:00 PM)

NORTH



Clinton School Road and Drive B

	⇑ 3	(19)
	⇓ 6	(39)
⇑ 18	(44) ⇒ 32	(5)
⇓ 54	⇒ 16	(2)
	⇓	(6)

Clinton School Road and Drive C

	⇑ 3	(19)
	⇓ 6	(39)
⇑ 48	(29) ⇒ 32	(5)
⇓ 45	⇒ 16	(2)
	⇓	(42)

Clinton School Road and Drive D

	⇑ 3	(19)
	⇓ 6	(39)
⇑ 77	(15) ⇒ 32	(5)
⇓ 35	⇒ 16	(2)
	⇓	(79)

Hwy 49 and Drive A

	⇐ 632	(95)
126	(759) ⇑	
168	(1011) ⇓	
⇐ 842	(126)	⇑ 583 (161)
		⇓ 483 (162)

Hwy 49 and Clinton School Road/Whitley Road

		⇐ 24	⇓ 6	⇒ 7	
		(83)	(21)	(21)	
72	(22) ⇑				⇑ 19 (9)
1274	(959) ⇒				⇐ 1178 (1520)
33	(20) ⇓				⇓ 105 (76)
		⇐ 17	⇑ 18	⇒ 80	
		(34)	(11)	(94)	

NOTE:
VOLUMES SHOWN ARE COMBINED EXISTING TRAFFIC PLUS SITE-GENERATED TRAFFIC.

PROJECT No. P1501
DATE: 3-22-2011

PETERS & ASSOCIATES
ENGINEERS, INC.

NORTHEAST ARKANSAS DISTRICT FAIRGROUNDS

HIGHWAY 49 AND CLINTON SCHOOL ROAD
CRAIGHEAD COUNTY, ARKANSAS

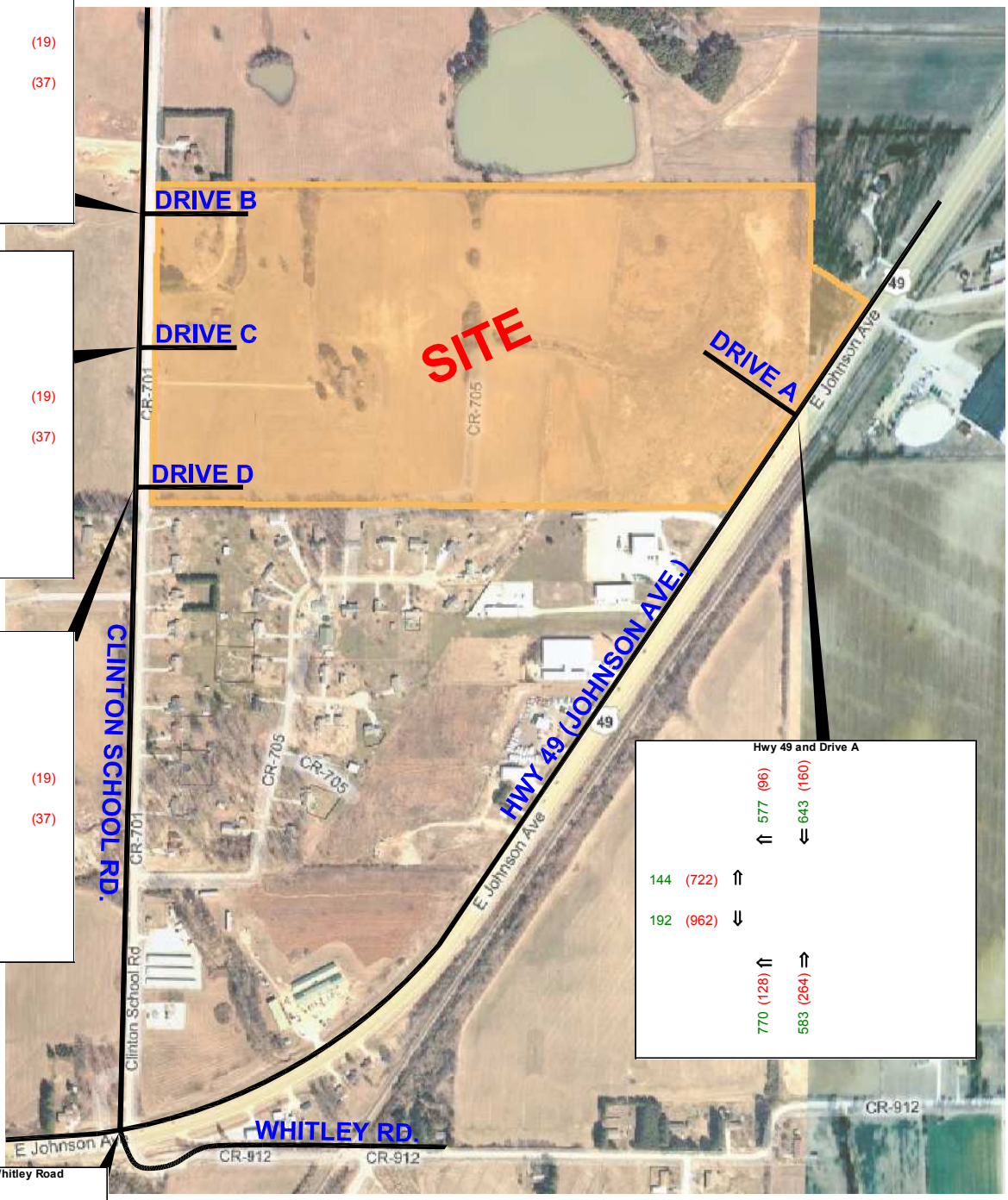
WEEKDAY PROJECTED TRAFFIC VOLUMES ENTERING AND EXITING PEAK HOURS

FIGURE No. 8

KEY

Entering Peak Hr. 1:00–2:00 PM (Exiting Peak Hr.) (10:00–11:00 PM)

NORTH



Clinton School Road and Drive B

	⇑ 4	(19)
	⇓ 7	(37)
27 (40) ⇑	30 (5) ⇒	
56 (13) ⇓	15 (2) ⇒	

Clinton School Road and Drive C

	⇑ 4	(19)
	⇓ 7	(37)
53 (26) ⇑	30 (5) ⇒	
48 (47) ⇓	15 (2) ⇒	

Clinton School Road and Drive D

	⇑ 4	(19)
	⇓ 7	(37)
79 (13) ⇑	30 (5) ⇒	
41 (82) ⇓	15 (2) ⇒	

Hwy 49 and Drive A

144 (722) ⇑	⇐ 577	(96)
192 (962) ⇓	⇓ 643	(160)
770 (128) ⇐	⇑ 583	(264)

Hwy 49 and Clinton School Road/Whitley Road

	28 (78) ⇐	8 (20) ⇓ 13 (22) ⇒
73 (12) ⇑		⇑ 19 (3)
1291 (355) ⇒		⇐ 795 (1076)
13 (8) ⇓		⇓ 21 (43)
	13 (5) ⇐	17 (3) ⇑ 49 (15) ⇒

NOTE:
VOLUMES SHOWN ARE COMBINED EXISTING TRAFFIC PLUS SITE-GENERATED TRAFFIC.

PROJECT No. P1501
DATE: 3-22-2011

PETERS & ASSOCIATES
ENGINEERS, INC.

NORTHEAST ARKANSAS DISTRICT FAIRGROUNDS

HIGHWAY 49 AND CLINTON SCHOOL ROAD
CRAIGHEAD COUNTY, ARKANSAS

SATURDAY PROJECTED TRAFFIC VOLUMES
ENTERING AND EXITING PEAK HOURS

FIGURE No.
8A

PETERS & ASSOCIATES
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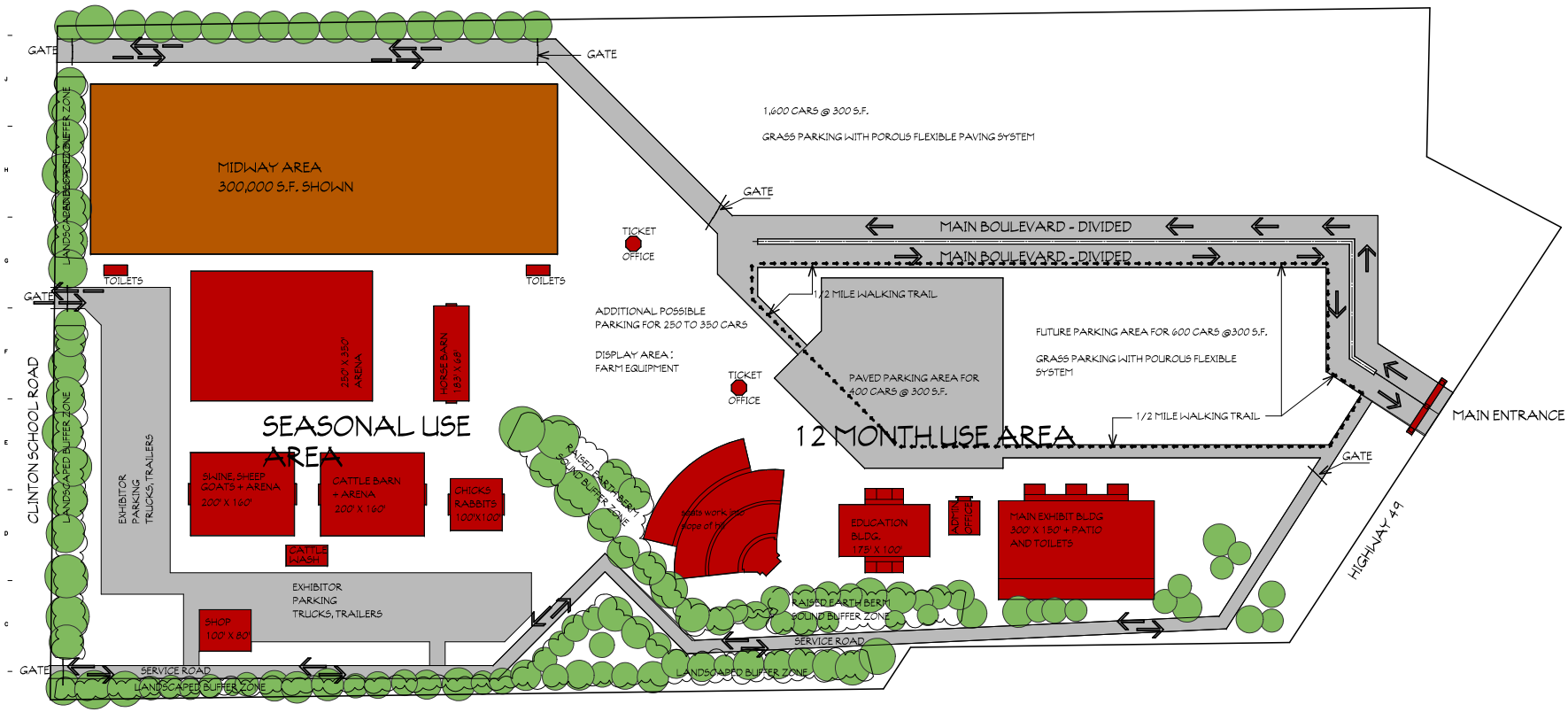
APPENDIX

Site Plan



REVISED – PRELIMINARY
AS OF FEB. 10, 2011

0' 50' 100' 250' 500'
GRAPHIC SCALE

A01	site study
SCALE 1" - 100'	CONTENT activity area and flow layout

GENERAL NOTES

01 ALL WORK AND MATERIALS ARE TO COMPLY WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES AND ORDINANCES.

02 IN CASE OF DISCREPANCY BETWEEN APPLICABLE CODE AND THE DRAWINGS AND/OR SPECIFICATIONS OR DISCREPANCY BETWEEN DRAWINGS AND SPECIFICATIONS, THE CONTRACTOR SHALL COMPLY WITH THE MOST STRINGENT REQUIREMENT.

03 THE DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS PREPARED BY THE ARCHITECT FOR THIS PROJECT ARE INSTRUMENTS OF THE ARCHITECT'S SERVICE FOR USE SOLELY WITH RESPECT TO THIS PROJECT AND THE ARCHITECT SHALL BE DEEMED THE AUTHOR OF THESE DOCUMENTS AND SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT. THE OWNER IS PERMITTED TO RETAIN COPIES OF THE ARCHITECT'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS FOR INFORMATION AND REFERENCE IN CONNECTION WITH THE OWNER'S USE AND OCCUPANCY OF THE PROJECT. THE ARCHITECT'S DRAWINGS, SPECIFICATIONS OR OTHER DOCUMENTS WHICH HAVE BEEN PREPARED FOR THIS PROJECT SHALL NOT BE USED BY THE OWNER OR OTHERS ON OTHER PROJECTS EXCEPT BY AGREEMENT IN WRITING AND WITH APPROPRIATE COMPENSATION TO THE ARCHITECT. THE PROJECT NAME AND LOCATION IDENTIFIED IN THE TITLE BLOCK OF THESE DRAWINGS SHALL SERVE TO IDENTIFY THIS "PROJECT" FOR PURPOSES OF THIS NOTE. P. IN THE OPINION OF THE ARCHITECT, THE TITLE BLOCK IDENTIFICATION OF THE PROJECT HAS BEEN ALTERED FOR USE ON A DIFFERENT SITE, IT WILL BE CONSIDERED A VIOLATION OF THE ARCHITECT'S RESERVED RIGHTS OF OWNERSHIP OF THE DOCUMENTS.

PLOTTED 02/08/11
WILLIAM M. WAGE ARCHITECT

ASSOCIATED ENGINEERING AND TESTING, LLC
Civil Engineering, Land Surveying
103 South Church Street - Jonesboro, Arkansas

No.	Revisions/Submissions	Date

WMW Architecture Planning Interior Design
WILLIAM M. WAGE Architect
101 S. CHURCH ST., STE 207 – JONESBORO, AR 72403
TEL: 870.336.3999
Member American Institute of Architects

NORTHEAST ARKANSAS DISTRICT FAIRGROUNDS RELOCATION
CRAIGHEAD COUNTY FAIR ASSOCIATION
JONESBORO, ARKANSAS

Drawing Title
SITE PLAN STUDY
ACCESS/AREA STUDY

Seal

Scale	Date
AS SHOWN	01/27/11
Proj. No. 1102	File No. 1102AS-A1.1
Drawn By WMW	Reviewed WMW

Drawing No. **A1.1**

WILLIAM M. WAGE ARCHITECT
ARKANSAS REG. NO. 721

PROJECT NORTH

PETERS & ASSOCIATES
ENGINEERS, INC.

Trip-Generation Data

Northeast Arkansas District Fairgrounds Relocation
Craighead County, Arkansas

P1501

WEEKDAY		6-HOUR TWO-WAY WEEKDAY VOLUME	ENTERING PEAK HOUR VOL 6:00 - 7:00 PM		EXITING PEAK HOUR VOL 10:00 - 11:00 PM	
PROPOSED LAND USE	APPROXIMATE SIZE		ENTER	EXIT	ENTER	EXIT
Fairgrounds	78.66 Acres	8,108	1620	324	243	1945
	TOTAL ENTERING + EXITING		1,944		2,188	

SATURDAY		11-HOUR TWO-WAY SATURDAY VOLUME	ENTERING PEAK HOUR VOL 1:00 - 2:00 PM		EXITING PEAK HOUR VOL 10:00 - 11:00 PM	
PROPOSED LAND USE	APPROXIMATE SIZE		ENTER	EXIT	ENTER	EXIT
Fairgrounds	78.66 Acres	12,333	1480	370	246	1850
	TOTAL ENTERING + EXITING		1,850		2,096	

http://lctr.eng.fiu.edu/re-project-link/project082903.htm

Vehicle Occupancy Data Collection Methods

- **Sponsor: Florida Department of Transportation**
- **Contact: Dr. Albert Gan, 305-348-3116, gana@fiu.edu**

Traditionally, vehicle occupancy rates are used to convert person trips to vehicle trips in the four-step travel demand forecasting process and to determine the required parking spaces for fixed-seat facilities such as sporting facilities and performing centers.

http://ops.fhwa.dot.gov/publications/fhwaop04010/chapter5_03.htm
Managing Travel for Planned Special Events

Federal Highway Administration
1200 New Jersey Ave., SE
Washington, DC 20590

Chapter Five. Event Operations Planning

Event Traffic Generation

Unlike other traffic generators such as commercial developments, planned special event practitioners typically have advance knowledge of event attendance and, in turn, can develop traffic generation estimates via vehicle occupancy factors. On the other hand, traffic generation rates, based on event traffic volume or parking occupancy data, may not be appropriate for transfer and application from one special event to another. Too many variables exist with regard to event category, event logistics, event popularity, weather, and parking characteristics. Event operations and other external variables affect any application of historical data to future events.

Table 5-13 outlines a two-step process for forecasting event traffic generation. Input data includes a modal split estimate since the traffic generation forecast aims to estimate the number of event-generated trips by personal automobile. In the absence of a daily attendance estimate, practitioners can use percentage of venue capacity as a base. However, many continuous events or street use events do not have a pre-specified venue capacity. Continuous events, such as fairs and festivals, often run for two or more days. Attendance generally fluctuates greatly from day to day, with Saturday operations yielding the highest daily attendance. A study of two-day (Saturday/Sunday) festivals in West Virginia indicated 58 percent of the total festival attendance was on Saturday.[18] The same study noted the following total event attendance distribution for three-day festivals: 20 percent on Friday, 50 percent on Saturday, and 30 percent on Sunday. It should be recognized that daily attendance reflects scheduled headline entertainment or other main festival events.

Vehicle occupancy factors can serve as the basis for estimating event-generated traffic. Table 5-14 lists average vehicle occupancy factors for select discrete/recurring events at a permanent venue and continuous events. A discrete/recurring event at a permanent venue that occurs on the weekend will likely have a higher vehicle occupancy factor due to families and groups of tailgaters. A vehicle occupancy factor of 2.5 persons per vehicle

represents a common assumption, however for forecasting purposes, practitioners should consider a range of factors from 2.2 to 2.8 depending on local conditions.[15]

(15. Grava, S. and F. Nangle, "Get Me to the Ball Game on Time – Access Time Patterns at Baseball Stadia," Preprint No. 00395, Prepared for the 2000 Annual Meeting of the Transportation Research Board, National Research Council, Washington, D.C., January 9–13, 2000.)

Table 5-14a. Example Planned Special Event Vehicle Occupancy Factors: Discrete/Recurring Event at a Permanent Venue

Event	Attendance	Average Vehicle Occupancy
San Francisco Giants baseball games – August 2000 [14]	38,000 – 41,000 (capacity 41,000)	2.8 persons per automobile
Anaheim Angels weeknight baseball game – July 1997[15]	18,197 (capacity 37,000)	2.6 persons per automobile
Cleveland Indians Saturday baseball game – July 1997[15]	43,070 (capacity 43,368)	2.64 persons per automobile
New York Mets weeknight baseball game – June 1997 [15]	18,000 (capacity 56,500)	2.31 persons per automobile
San Diego Padres weekday baseball game – April/May 1998[16]	Unknown	2.3 persons per automobile
San Diego Padres weeknight baseball game – April/May 1998[16]	Unknown	2.5 persons per automobile
San Diego Padres weekend evening baseball game – April/May 1998[16]	Unknown	3.0–3.1 persons per automobile
Denver Broncos football games – 1998/2001[19]	76,000	3.0 persons per automobile on-site; 2.3 persons per

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Vehicle Turning Movement Count Data

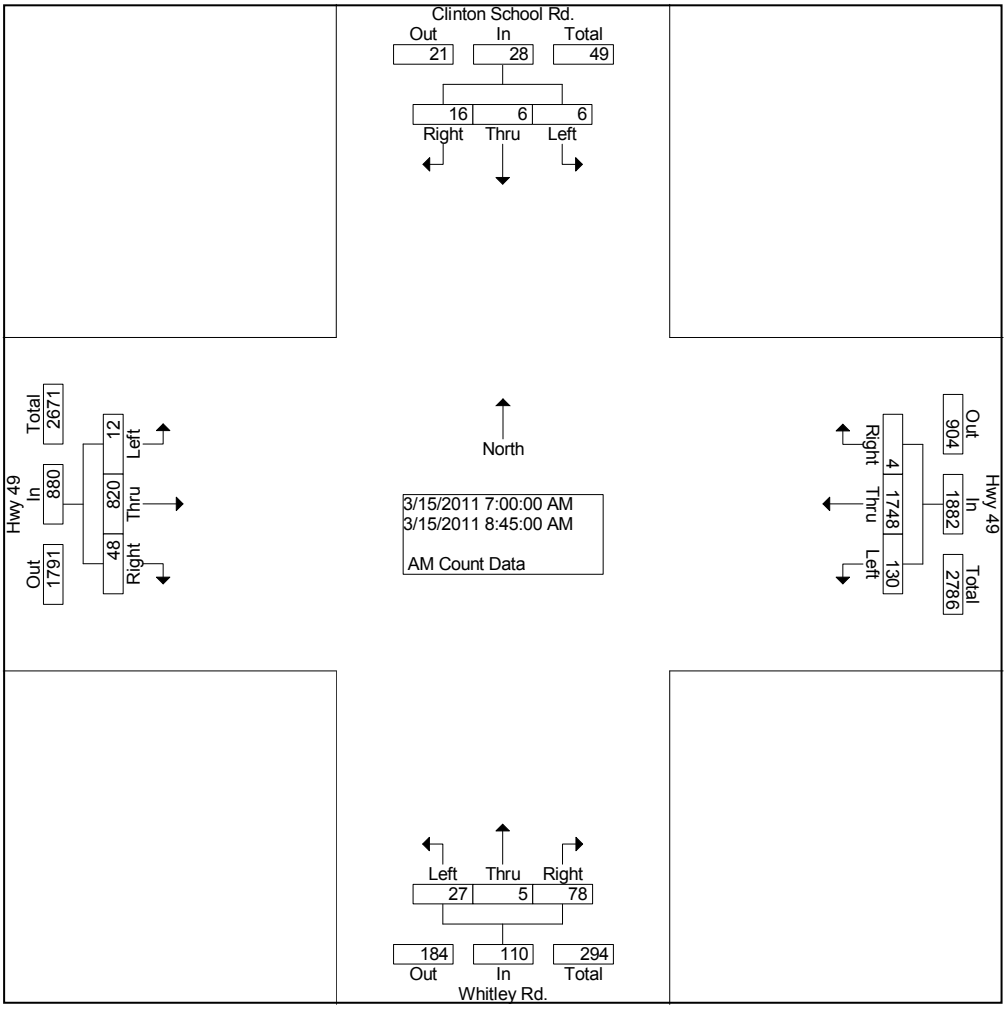
Peters & Associates Engineers, Inc.
Peak Hours Turning Movement Count Data

AM Hour Turning Movement Count Data
Hwy 49 and Clinton School Rd/Whitley Rd
Craighead County
P-1501

File Name : AM-TM
Site Code : 00000000
Start Date : 03/15/2011
Page No : 1

Groups Printed- AM Count Data

	Clinton School Rd. From North				Hwy 49 From East				Whitley Rd. From South				Hwy 49 From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	0	1	0	1	0	186	8	194	10	1	2	13	4	121	0	125	333
07:15 AM	2	1	0	3	0	210	17	227	12	0	4	16	11	148	1	160	406
07:30 AM	3	1	1	5	0	326	28	354	18	0	1	19	6	126	0	132	510
07:45 AM	4	1	1	6	1	256	40	297	12	2	8	22	10	100	4	114	439
Total	9	4	2	15	1	978	93	1072	52	3	15	70	31	495	5	531	1688
08:00 AM	2	0	2	4	2	224	14	240	6	0	4	10	6	90	2	98	352
08:15 AM	1	0	1	2	1	201	9	211	5	1	3	9	4	72	1	77	299
08:30 AM	2	1	1	4	0	184	7	191	8	0	2	10	3	78	2	83	288
08:45 AM	2	1	0	3	0	161	7	168	7	1	3	11	4	85	2	91	273
Total	7	2	4	13	3	770	37	810	26	2	12	40	17	325	7	349	1212
Grand Total	16	6	6	28	4	1748	130	1882	78	5	27	110	48	820	12	880	2900
Apprch %	57.1	21.4	21.4		0.2	92.9	6.9		70.9	4.5	24.5		5.5	93.2	1.4		
Total %	0.6	0.2	0.2	1.0	0.1	60.3	4.5	64.9	2.7	0.2	0.9	3.8	1.7	28.3	0.4	30.3	

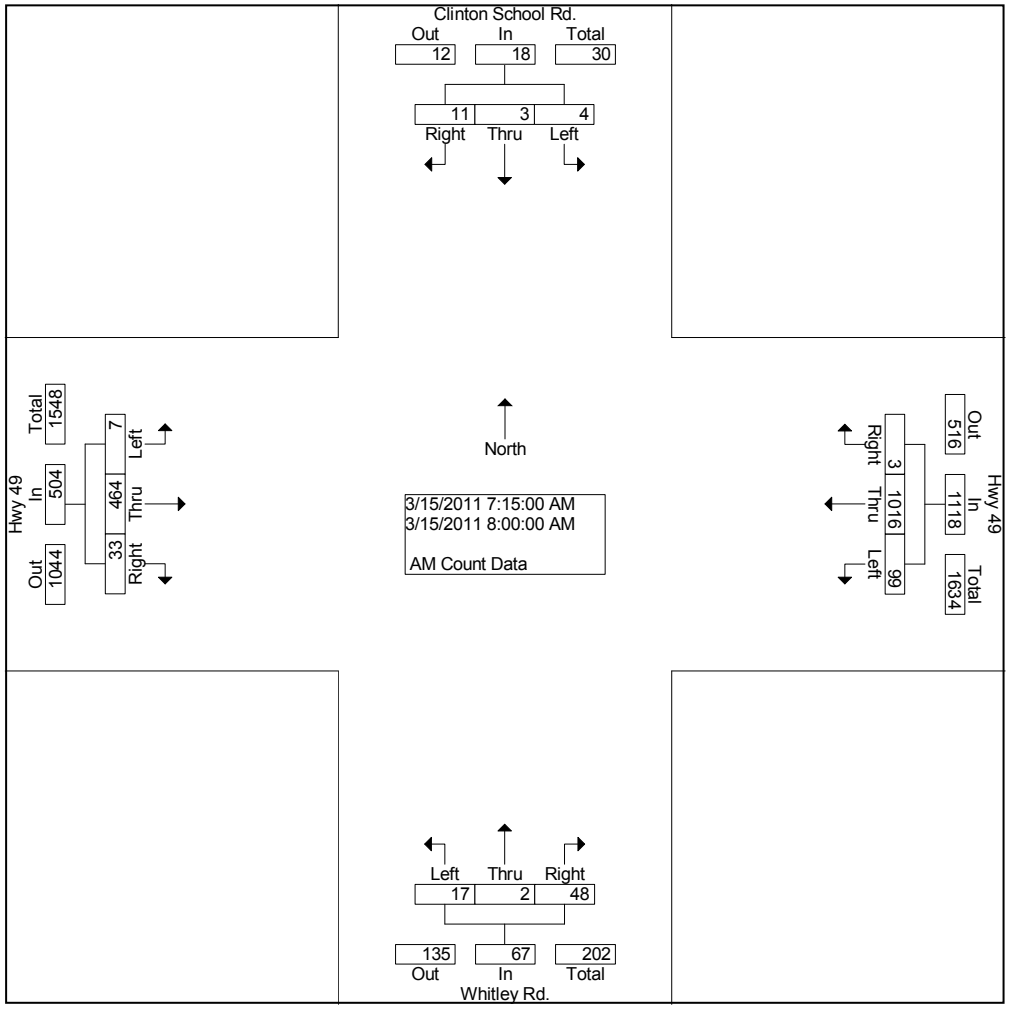


Peters & Associates Engineers, Inc.
Peak Hours Turning Movement Count Data

AM Hour Turning Movement Count Data
Hwy 49 and Clinton School Rd/Whitley Rd
Craighead County
P-1501

File Name : AM-TM
Site Code : 00000000
Start Date : 03/15/2011
Page No : 2

	Clinton School Rd. From North				Hwy 49 From East				Whitley Rd. From South				Hwy 49 From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Intersection 07:15 AM																	
Volume	11	3	4	18	3	1016	99	1118	48	2	17	67	33	464	7	504	1707
Percent	61.1	16.7	22.2		0.3	90.9	8.9		71.6	3.0	25.4		6.5	92.1	1.4		
07:30 Volume	3	1	1	5	0	326	28	354	18	0	1	19	6	126	0	132	510
Peak Factor																	0.837
High Int.	07:45 AM				07:30 AM				07:45 AM				07:15 AM				
Volume	4	1	1	6	0	326	28	354	12	2	8	22	11	148	1	160	
Peak Factor				0.750				0.790				0.761				0.788	



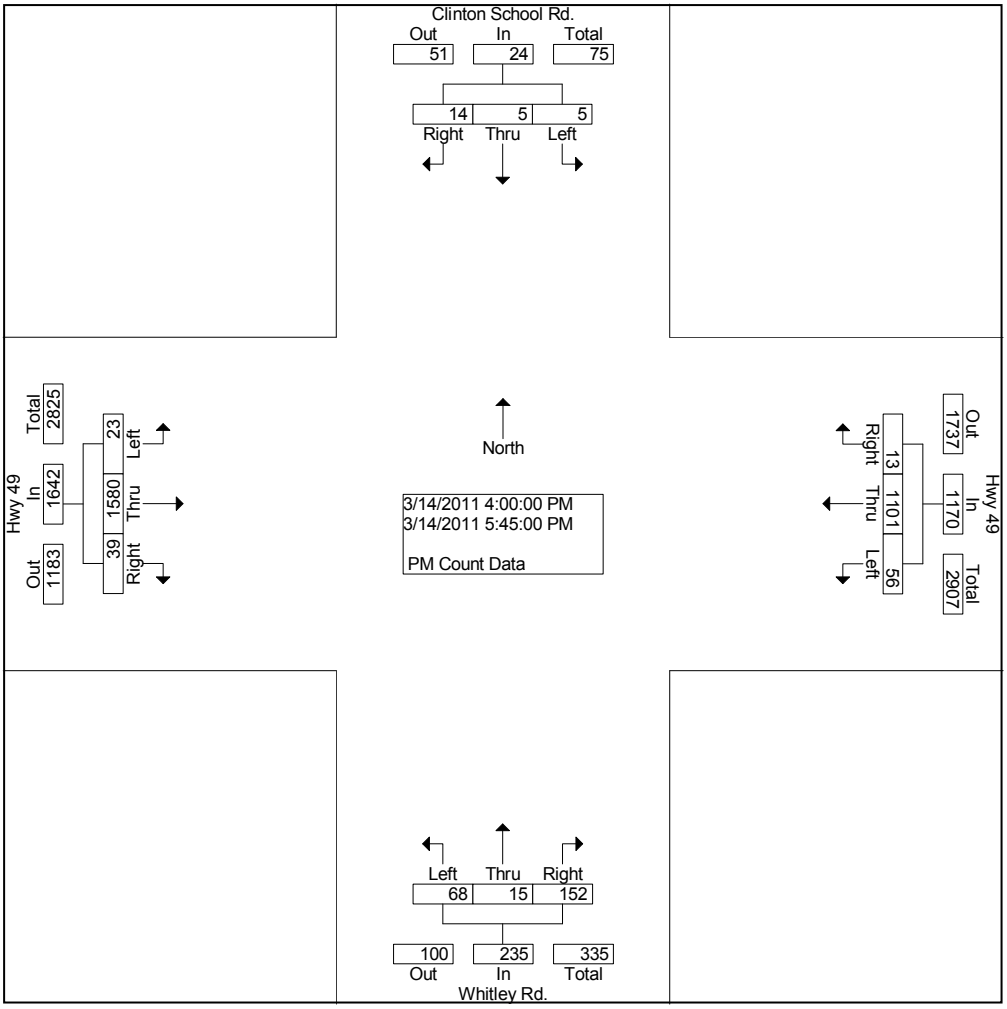
Peters & Associates Engineers, Inc.
Peak Hours Turning Movement Count Data

PM Hour Turning Movement Count Data
Hwy 49 and Clinton School Rd/Whitley R
Craighead County
P-1501

File Name : PM-TM
Site Code : 00000000
Start Date : 03/14/2011
Page No : 1

Groups Printed- PM Count Data

	Clinton School Rd. From North				Hwy 49 From East				Whitley Rd. From South				Hwy 49 From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
04:00 PM	4	2	0	6	1	159	6	166	17	3	10	30	8	187	3	198	400
04:15 PM	2	0	1	3	1	116	8	125	13	2	10	25	2	214	4	220	373
04:30 PM	0	0	0	0	1	159	10	170	19	3	8	30	7	166	1	174	374
04:45 PM	2	0	1	3	2	117	13	132	8	2	6	16	4	186	4	194	345
Total	8	2	2	12	5	551	37	593	57	10	34	101	21	753	12	786	1492
05:00 PM	1	2	0	3	0	125	12	137	29	2	10	41	3	234	5	242	423
05:15 PM	2	0	1	3	4	146	2	152	33	2	10	45	6	251	2	259	459
05:30 PM	1	1	1	3	2	141	2	145	18	1	6	25	5	186	2	193	366
05:45 PM	2	0	1	3	2	138	3	143	15	0	8	23	4	156	2	162	331
Total	6	3	3	12	8	550	19	577	95	5	34	134	18	827	11	856	1579
Grand Total	14	5	5	24	13	1101	56	1170	152	15	68	235	39	1580	23	1642	3071
Apprch %	58.3	20.8	20.8		1.1	94.1	4.8		64.7	6.4	28.9		2.4	96.2	1.4		
Total %	0.5	0.2	0.2	0.8	0.4	35.9	1.8	38.1	4.9	0.5	2.2	7.7	1.3	51.4	0.7	53.5	

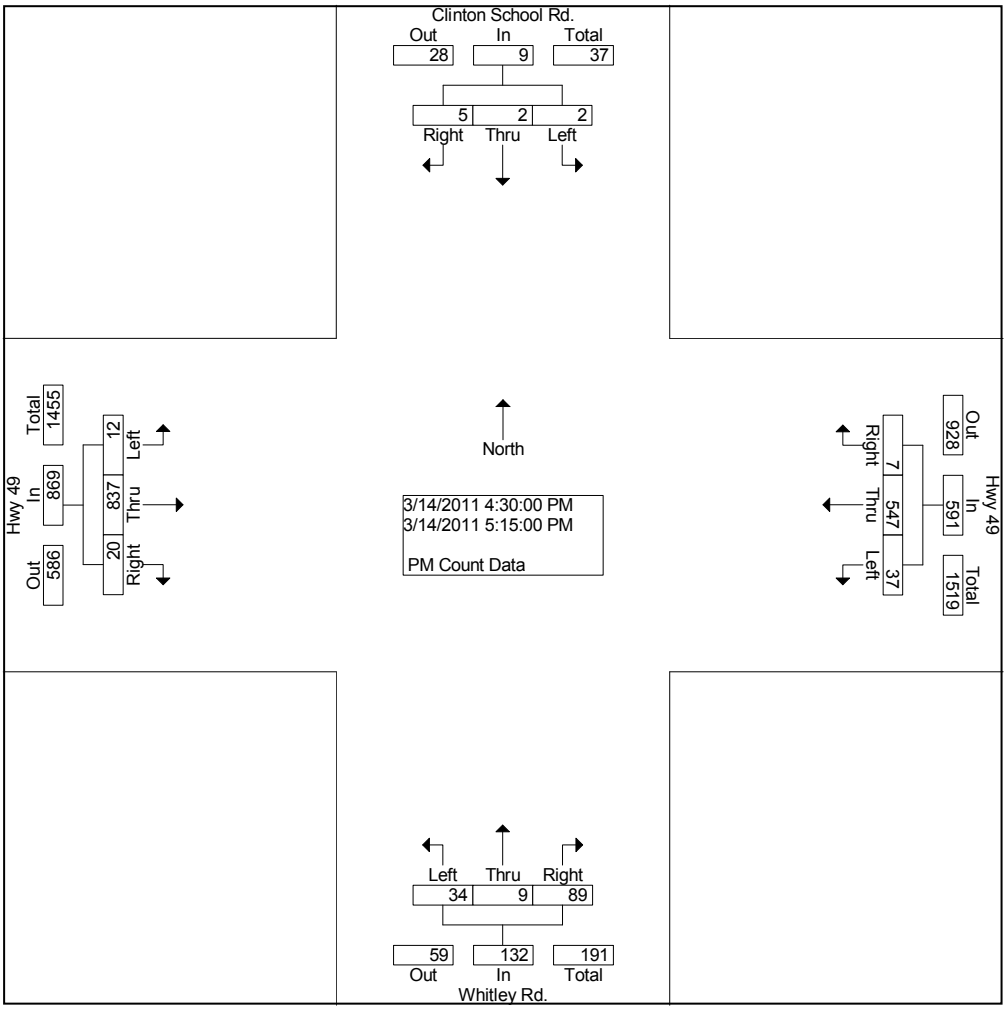


Peters & Associates Engineers, Inc.
Peak Hours Turning Movement Count Data

PM Hour Turning Movement Count Data
Hwy 49 and Clinton School Rd/Whitley R
Craighead County
P-1501

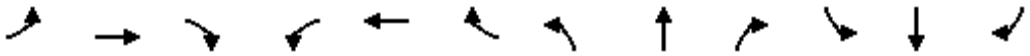
File Name : PM-TM
Site Code : 00000000
Start Date : 03/14/2011
Page No : 2

	Clinton School Rd. From North				Hwy 49 From East				Whitley Rd. From South				Hwy 49 From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection 04:30 PM																	
Volume	5	2	2	9	7	547	37	591	89	9	34	132	20	837	12	869	1601
Percent	55.6	22.2	22.2		1.2	92.6	6.3		67.4	6.8	25.8		2.3	96.3	1.4		
05:15 Volume	2	0	1	3	4	146	2	152	33	2	10	45	6	251	2	259	459
Peak Factor																	0.872
High Int.	04:45 PM				04:30 PM				05:15 PM				05:15 PM				
Volume	2	0	1	3	1	159	10	170	33	2	10	45	6	251	2	259	
Peak Factor				0.750				0.869				0.733				0.839	



PETERS & ASSOCIATES
ENGINEERS, INC.

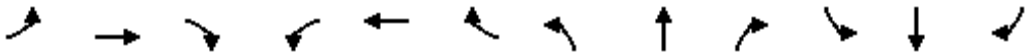
Capacity & Level of Service Calculations



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	10	558	12	12	453	2	9	2	16	6	5	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	607	13	13	492	2	10	2	17	7	5	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	495			620			922	1155	310	863	1161	247
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	495			620			922	1155	310	863	1161	247
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			95	99	97	97	97	98
cM capacity (veh/h)	1065			957			213	191	686	236	189	753

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	11	404	215	13	328	166	29	24
Volume Left	11	0	0	13	0	0	10	7
Volume Right	0	0	13	0	0	2	17	12
cSH	1065	1700	1700	957	1700	1700	355	331
Volume to Capacity	0.01	0.24	0.13	0.01	0.19	0.10	0.08	0.07
Queue Length 95th (ft)	1	0	0	1	0	0	7	6
Control Delay (s)	8.4	0.0	0.0	8.8	0.0	0.0	16.1	16.7
Lane LOS	A			A			C	C
Approach Delay (s)	0.1			0.2			16.1	16.7
Approach LOS							C	C

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	25.8%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	4	133	8	6	153	1	4	1	8	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	145	9	7	166	1	4	1	9	1	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	167			153			255	338	77	270	342	84
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	167			153			255	338	77	270	342	84
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	99	100	100	100
cM capacity (veh/h)	1408			1425			671	577	969	650	575	959

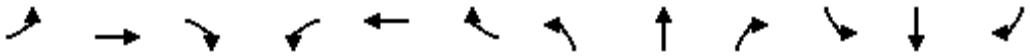
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	96	57	7	111	57	14	3
Volume Left	4	0	0	7	0	0	4	1
Volume Right	0	0	9	0	0	1	9	1
cSH	1408	1700	1700	1425	1700	1700	815	694
Volume to Capacity	0.00	0.06	0.03	0.00	0.07	0.03	0.02	0.00
Queue Length 95th (ft)	0	0	0	0	0	0	1	0
Control Delay (s)	7.6	0.0	0.0	7.5	0.0	0.0	9.5	10.2
Lane LOS	A			A			A	B
Approach Delay (s)	0.2			0.3			9.5	10.2
Approach LOS							A	B

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	15.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	2	232	8	6	151	1	5	1	10	3	1	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	252	9	7	164	1	5	1	11	3	1	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	165			261			361	439	130	320	443	83
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	165			261			361	439	130	320	443	83
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	100	99	99	100	100
cM capacity (veh/h)	1410			1301			564	507	895	598	504	960

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	2	168	93	7	109	56	17	9
Volume Left	2	0	0	7	0	0	5	3
Volume Right	0	0	9	0	0	1	11	4
cSH	1410	1700	1700	1301	1700	1700	727	717
Volume to Capacity	0.00	0.10	0.05	0.01	0.06	0.03	0.02	0.01
Queue Length 95th (ft)	0	0	0	0	0	0	2	1
Control Delay (s)	7.6	0.0	0.0	7.8	0.0	0.0	10.1	10.1
Lane LOS	A			A			B	B
Approach Delay (s)	0.1			0.3			10.1	10.1
Approach LOS							B	B

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	16.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	2	232	8	6	151	1	5	1	10	3	1	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	252	9	7	164	1	5	1	11	3	1	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	165			261			361	439	130	320	443	83
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	165			261			361	439	130	320	443	83
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	100	99	99	100	100
cM capacity (veh/h)	1410			1301			564	507	895	598	504	960

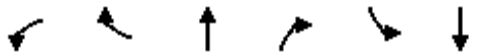
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	2	168	93	7	109	56	17	9
Volume Left	2	0	0	7	0	0	5	3
Volume Right	0	0	9	0	0	1	11	4
cSH	1410	1700	1700	1301	1700	1700	727	717
Volume to Capacity	0.00	0.10	0.05	0.01	0.06	0.03	0.02	0.01
Queue Length 95th (ft)	0	0	0	0	0	0	2	1
Control Delay (s)	7.6	0.0	0.0	7.8	0.0	0.0	10.1	10.1
Lane LOS	A			A			B	B
Approach Delay (s)	0.1			0.3			10.1	10.1
Approach LOS							B	B

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	16.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	75	1368	12	18	615	18	6	18	48	9	8	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	82	1487	13	20	668	20	7	20	52	10	9	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	688			1500			2060	2384	750	1686	2380	344
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	688			1500			2060	2384	750	1686	2380	344
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			96			69	33	85	56	70	96
cM capacity (veh/h)	902			443			21	29	354	22	29	652

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	82	991	509	20	446	242	78	45
Volume Left	82	0	0	20	0	0	7	10
Volume Right	0	0	13	0	0	20	52	26
cSH	902	1700	1700	443	1700	1700	70	57
Volume to Capacity	0.09	0.58	0.30	0.04	0.26	0.14	1.12	0.78
Queue Length 95th (ft)	7	0	0	3	0	0	149	84
Control Delay (s)	9.4	0.0	0.0	13.5	0.0	0.0	247.2	174.9
Lane LOS	A			B			F	F
Approach Delay (s)	0.5			0.4			247.2	174.9
Approach LOS							F	F

Intersection Summary			
Average Delay	11.7		
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	6	3	77	32	16	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	3	84	35	17	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	174	101			118	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	174	101			118	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	806	954			1470	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	10	118	55
Volume Left	7	0	17
Volume Right	3	35	0
cSH	850	1700	1470
Volume to Capacity	0.01	0.07	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.3	0.0	2.4
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	2.4
Approach LOS	A		

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization		19.4%	ICU Level of Service
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	39	19	48	32	16	45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	21	52	35	17	49
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	153	70			87	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	153	70			87	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	98			99	
cM capacity (veh/h)	829	993			1509	

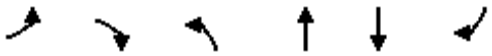
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	87	66
Volume Left	42	0	17
Volume Right	21	35	0
cSH	876	1700	1509
Volume to Capacity	0.07	0.05	0.01
Queue Length 95th (ft)	6	0	1
Control Delay (s)	9.4	0.0	2.0
Lane LOS	A		A
Approach Delay (s)	9.4	0.0	2.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	19.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	6	3	18	32	16	54
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	3	20	35	17	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	130	37			54	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	130	37			54	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	854	1035			1551	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	10	54	76
Volume Left	7	0	17
Volume Right	3	35	0
cSH	907	1700	1551
Volume to Capacity	0.01	0.03	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.0	0.0	1.7
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	1.7
Approach LOS	A		

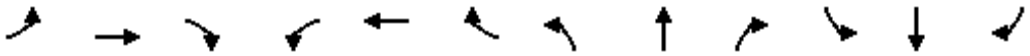
Intersection Summary			
Average Delay		1.6	
Intersection Capacity Utilization		20.4%	ICU Level of Service
Analysis Period (min)		15	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	126	168	842	583	483	632
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	137	183	915	634	525	687
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3016	606	1212			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3016	606	1212			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	59	0			
cM capacity (veh/h)	0	440	571			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	137	183	915	317	317	350	862
Volume Left	137	0	915	0	0	0	0
Volume Right	0	183	0	0	0	0	687
cSH	0	440	571	1700	1700	1700	1700
Volume to Capacity	Err	0.41	1.60	0.19	0.19	0.21	0.51
Queue Length 95th (ft)	Err	50	1247	0	0	0	0
Control Delay (s)	Err	18.9	298.0	0.0	0.0	0.0	0.0
Lane LOS	F	C	F				
Approach Delay (s)	Err		176.1			0.0	
Approach LOS	F						

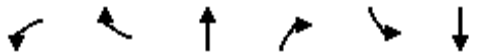
Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	97.3%	ICU Level of Service	F
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	14	255	8	45	1126	3	4	3	13	20	20	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	277	9	49	1224	3	4	3	14	22	22	86
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1227			286			1118	1637	143	1508	1640	614
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1227			286			1118	1637	143	1508	1640	614
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			96			96	97	98	71	77	80
cM capacity (veh/h)	564			1273			101	93	879	76	93	435

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	15	185	101	49	816	411	22	129
Volume Left	15	0	0	49	0	0	4	22
Volume Right	0	0	9	0	0	3	14	86
cSH	564	1700	1700	1273	1700	1700	231	180
Volume to Capacity	0.03	0.11	0.06	0.04	0.48	0.24	0.09	0.72
Queue Length 95th (ft)	2	0	0	3	0	0	8	112
Control Delay (s)	11.6	0.0	0.0	7.9	0.0	0.0	22.2	64.0
Lane LOS	B			A			C	F
Approach Delay (s)	0.6			0.3			22.2	64.0
Approach LOS							C	F

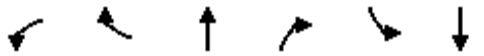
Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	53.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	39	19	15	5	2	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	21	16	5	2	86
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	109	19			22	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	109	19			22	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	98			100	
cM capacity (veh/h)	887	1059			1594	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	22	88
Volume Left	42	0	2
Volume Right	21	5	0
cSH	937	1700	1594
Volume to Capacity	0.07	0.01	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.1	0.0	0.2
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	0.2
Approach LOS	A		

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	15.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	39	19	29	5	2	42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	21	32	5	2	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	84	34			37	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	84	34			37	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	98			100	
cM capacity (veh/h)	916	1039			1574	

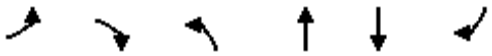
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	37	48
Volume Left	42	0	2
Volume Right	21	5	0
cSH	953	1700	1574
Volume to Capacity	0.07	0.02	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.0	0.0	0.3
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	0.3
Approach LOS	A		

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	13.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	39	19	44	5	2	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	21	48	5	2	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	61	51			53	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	51			53	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			100	
cM capacity (veh/h)	944	1018			1552	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	53	9
Volume Left	42	0	2
Volume Right	21	5	0
cSH	967	1700	1552
Volume to Capacity	0.07	0.03	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.0	0.0	1.8
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	1.8
Approach LOS	A		

Intersection Summary			
Average Delay		4.7	
Intersection Capacity Utilization		13.3%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	759	1011	128	161	162	95
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	825	1099	139	175	176	103
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	593	140	279			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	593	140	279			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	0	89			
cM capacity (veh/h)	389	883	1280			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	825	1099	139	88	88	117	162
Volume Left	825	0	139	0	0	0	0
Volume Right	0	1099	0	0	0	0	103
cSH	389	883	1280	1700	1700	1700	1700
Volume to Capacity	2.12	1.24	0.11	0.05	0.05	0.07	0.10
Queue Length 95th (ft)	1492	947	9	0	0	0	0
Control Delay (s)	535.4	137.0	8.2	0.0	0.0	0.0	0.0
Lane LOS	F	F	A				
Approach Delay (s)	307.9		3.6			0.0	
Approach LOS	F						

Intersection Summary			
Average Delay	235.7		
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	73	1291	13	21	795	19	13	17	49	13	8	28
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	79	1403	14	23	864	21	14	18	53	14	9	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	885			1417			2082	2499	709	1843	2496	442
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	885			1417			2082	2499	709	1843	2496	442
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			95			24	24	86	0	64	95
cM capacity (veh/h)	761			477			19	24	377	13	24	563

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	79	936	482	23	576	309	86	53
Volume Left	79	0	0	23	0	0	14	14
Volume Right	0	0	14	0	0	21	53	30
cSH	761	1700	1700	477	1700	1700	52	37
Volume to Capacity	0.10	0.55	0.28	0.05	0.34	0.18	1.66	1.46
Queue Length 95th (ft)	9	0	0	4	0	0	205	141
Control Delay (s)	10.3	0.0	0.0	12.9	0.0	0.0	495.1	481.1
Lane LOS	B			B			F	F
Approach Delay (s)	0.5			0.3			495.1	481.1
Approach LOS							F	F

Intersection Summary			
Average Delay	27.2		
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	7	4	79	30	15	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	4	86	33	16	45
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	179	102			118	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179	102			118	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	801	953			1470	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	118	61
Volume Left	8	0	16
Volume Right	4	33	0
cSH	850	1700	1470
Volume to Capacity	0.01	0.07	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.3	0.0	2.1
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	2.1
Approach LOS	A		

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization		19.7%	ICU Level of Service
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	7	4	53	30	15	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	4	58	33	16	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	159	74			90	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	159	74			90	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	823	988			1505	

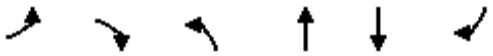
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	90	68
Volume Left	8	0	16
Volume Right	4	33	0
cSH	876	1700	1505
Volume to Capacity	0.01	0.05	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.2	0.0	1.8
Lane LOS	A		A
Approach Delay (s)	9.2	0.0	1.8
Approach LOS	A		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	20.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	7	4	27	30	15	56
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	4	29	33	16	61
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	139	46			62	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	139	46			62	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	845	1024			1541	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	62	77
Volume Left	8	0	16
Volume Right	4	33	0
cSH	902	1700	1541
Volume to Capacity	0.01	0.04	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.0	0.0	1.6
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	1.6
Approach LOS	A		

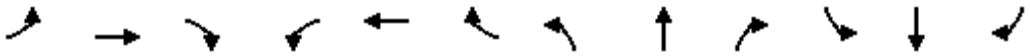
Intersection Summary			
Average Delay		1.5	
Intersection Capacity Utilization		20.4%	ICU Level of Service
Analysis Period (min)		15	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	144	192	770	583	643	577
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	157	209	837	634	699	627
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	3003	663	1326			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3003	663	1326			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	48	0			
cM capacity (veh/h)	0	404	517			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	157	209	837	317	317	466	860
Volume Left	157	0	837	0	0	0	0
Volume Right	0	209	0	0	0	0	627
cSH	0	404	517	1700	1700	1700	1700
Volume to Capacity	Err	0.52	1.62	0.19	0.19	0.27	0.51
Queue Length 95th (ft)	Err	72	1169	0	0	0	0
Control Delay (s)	Err	23.1	308.1	0.0	0.0	0.0	0.0
Lane LOS	F	C	F				
Approach Delay (s)	Err		175.4			0.0	
Approach LOS	F						

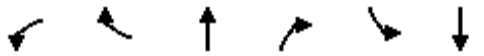
Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	12	355	8	43	1076	3	5	3	15	22	20	78
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	386	9	47	1170	3	5	3	16	24	22	85
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1173			395			1190	1683	197	1502	1685	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1173			395			1190	1683	197	1502	1685	586
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			96			94	96	98	69	75	81
cM capacity (veh/h)	591			1161			90	88	811	76	87	453

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	13	257	137	47	780	393	25	130
Volume Left	13	0	0	47	0	0	5	24
Volume Right	0	0	9	0	0	3	16	85
cSH	591	1700	1700	1161	1700	1700	212	174
Volume to Capacity	0.02	0.15	0.08	0.04	0.46	0.23	0.12	0.75
Queue Length 95th (ft)	2	0	0	3	0	0	10	120
Control Delay (s)	11.2	0.0	0.0	8.2	0.0	0.0	24.2	70.1
Lane LOS	B			A			C	F
Approach Delay (s)	0.4			0.3			24.2	70.1
Approach LOS							C	F

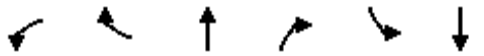
Intersection Summary				
Average Delay	5.8			
Intersection Capacity Utilization	51.4%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	37	19	13	5	2	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	21	14	5	2	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	110	17			20	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	110	17			20	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	98			100	
cM capacity (veh/h)	885	1062			1597	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	61	20	91
Volume Left	40	0	2
Volume Right	21	5	0
cSH	938	1700	1597
Volume to Capacity	0.06	0.01	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.1	0.0	0.2
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	0.2
Approach LOS	A		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	37	19	26	5	2	47
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	21	28	5	2	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	86	31			34	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	86	31			34	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			100	
cM capacity (veh/h)	913	1043			1578	

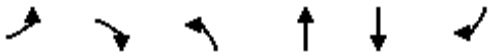
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	61	34	53
Volume Left	40	0	2
Volume Right	21	5	0
cSH	954	1700	1578
Volume to Capacity	0.06	0.02	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.0	0.0	0.3
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	0.3
Approach LOS	A		

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	14.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	37	19	40	5	2	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	21	43	5	2	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	65	46			49	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	65	46			49	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			100	
cM capacity (veh/h)	940	1023			1558	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	61	49	16
Volume Left	40	0	2
Volume Right	21	5	0
cSH	966	1700	1558
Volume to Capacity	0.06	0.03	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.0	0.0	1.0
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	1.0
Approach LOS	A		

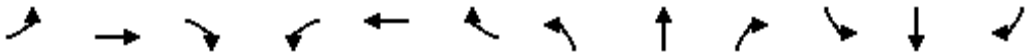
Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization		13.3%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	722	962	128	264	160	96
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	785	1046	139	287	174	104
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	648	139	278			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	648	139	278			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	0	89			
cM capacity (veh/h)	359	884	1281			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	785	1046	139	143	143	116	162
Volume Left	785	0	139	0	0	0	0
Volume Right	0	1046	0	0	0	0	104
cSH	359	884	1281	1700	1700	1700	1700
Volume to Capacity	2.18	1.18	0.11	0.08	0.08	0.07	0.10
Queue Length 95th (ft)	1456	809	9	0	0	0	0
Control Delay (s)	565.5	112.6	8.2	0.0	0.0	0.0	0.0
Lane LOS	F	F	A				
Approach Delay (s)	306.8		2.7			0.0	
Approach LOS	F						

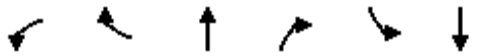
Intersection Summary			
Average Delay	222.0		
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	75	1368	12	18	615	18	6	18	48	9	8	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	82	1487	13	20	668	20	7	20	52	10	9	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	688			1500			2060	2384	750	1686	2380	344
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	688			1500			2060	2384	750	1686	2380	344
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			96			69	33	85	56	70	96
cM capacity (veh/h)	902			443			21	29	354	22	29	652

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	82	991	509	20	446	242	78	45
Volume Left	82	0	0	20	0	0	7	10
Volume Right	0	0	13	0	0	20	52	26
cSH	902	1700	1700	443	1700	1700	70	57
Volume to Capacity	0.09	0.58	0.30	0.04	0.26	0.14	1.12	0.78
Queue Length 95th (ft)	7	0	0	3	0	0	149	84
Control Delay (s)	9.4	0.0	0.0	13.5	0.0	0.0	247.2	174.9
Lane LOS	A			B			F	F
Approach Delay (s)	0.5			0.4			247.2	174.9
Approach LOS							F	F

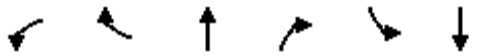
Intersection Summary			
Average Delay	11.7		
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	6	3	77	32	16	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	3	84	35	17	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	174	101			118	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	174	101			118	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	806	954			1470	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	10	118	55
Volume Left	7	0	17
Volume Right	3	35	0
cSH	850	1700	1470
Volume to Capacity	0.01	0.07	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.3	0.0	2.4
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	2.4
Approach LOS	A		

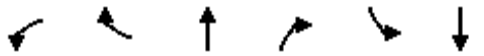
Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization		19.4%	ICU Level of Service
Analysis Period (min)		15	



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	39	19	48	32	16	45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	21	52	35	17	49
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	153	70			87	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	153	70			87	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	98			99	
cM capacity (veh/h)	829	993			1509	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	87	66
Volume Left	42	0	17
Volume Right	21	35	0
cSH	876	1700	1509
Volume to Capacity	0.07	0.05	0.01
Queue Length 95th (ft)	6	0	1
Control Delay (s)	9.4	0.0	2.0
Lane LOS	A		A
Approach Delay (s)	9.4	0.0	2.0
Approach LOS	A		

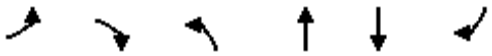
Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	19.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	6	3	18	32	16	54
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	3	20	35	17	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	130	37			54	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	130	37			54	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	854	1035			1551	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	10	54	76
Volume Left	7	0	17
Volume Right	3	35	0
cSH	907	1700	1551
Volume to Capacity	0.01	0.03	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.0	0.0	1.7
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	1.7
Approach LOS	A		

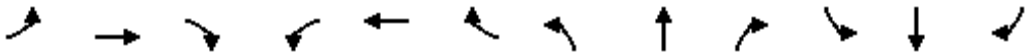
Intersection Summary			
Average Delay		1.6	
Intersection Capacity Utilization		20.4%	ICU Level of Service
Analysis Period (min)		15	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	126	168	842	583	483	632
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	137	183	915	634	525	687
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2672	262	1212			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2672	262	1212			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	75	0			
cM capacity (veh/h)	0	736	571			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	137	183	915	317	317	262	262	687
Volume Left	137	0	915	0	0	0	0	0
Volume Right	0	183	0	0	0	0	0	687
cSH	0	736	571	1700	1700	1700	1700	1700
Volume to Capacity	Err	0.25	1.60	0.19	0.19	0.15	0.15	0.40
Queue Length 95th (ft)	Err	24	1247	0	0	0	0	0
Control Delay (s)	Err	11.5	298.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	F	B	F					
Approach Delay (s)	Err		176.1			0.0		
Approach LOS	F							

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	14	255	8	45	1126	3	4	3	13	20	20	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	277	9	49	1224	3	4	3	14	22	22	86
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1227			286			1118	1637	143	1508	1640	614
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1227			286			1118	1637	143	1508	1640	614
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			96			96	97	98	71	77	80
cM capacity (veh/h)	564			1273			101	93	879	76	93	435

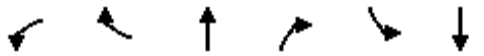
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	15	185	101	49	816	411	22	129
Volume Left	15	0	0	49	0	0	4	22
Volume Right	0	0	9	0	0	3	14	86
cSH	564	1700	1700	1273	1700	1700	231	180
Volume to Capacity	0.03	0.11	0.06	0.04	0.48	0.24	0.09	0.72
Queue Length 95th (ft)	2	0	0	3	0	0	8	112
Control Delay (s)	11.6	0.0	0.0	7.9	0.0	0.0	22.2	64.0
Lane LOS	B			A			C	F
Approach Delay (s)	0.6			0.3			22.2	64.0
Approach LOS							C	F

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	53.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	39	19	15	5	2	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	21	16	5	2	86
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	109	19			22	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	109	19			22	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	98			100	
cM capacity (veh/h)	887	1059			1594	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	22	88
Volume Left	42	0	2
Volume Right	21	5	0
cSH	937	1700	1594
Volume to Capacity	0.07	0.01	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.1	0.0	0.2
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	0.2
Approach LOS	A		

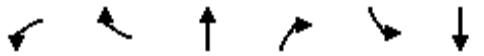
Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	15.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	39	19	29	5	2	42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	21	32	5	2	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	84	34			37	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	84	34			37	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	98			100	
cM capacity (veh/h)	916	1039			1574	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	37	48
Volume Left	42	0	2
Volume Right	21	5	0
cSH	953	1700	1574
Volume to Capacity	0.07	0.02	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.0	0.0	0.3
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	0.3
Approach LOS	A		

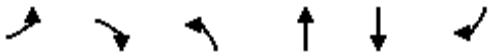
Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	13.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	39	19	44	5	2	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	21	48	5	2	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	61	51			53	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	51			53	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			100	
cM capacity (veh/h)	944	1018			1552	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	53	9
Volume Left	42	0	2
Volume Right	21	5	0
cSH	967	1700	1552
Volume to Capacity	0.07	0.03	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.0	0.0	1.8
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	1.8
Approach LOS	A		

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	759	1011	128	161	162	95
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	825	1099	139	175	176	103
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	542	88	279			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	542	88	279			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	0	89			
cM capacity (veh/h)	419	953	1280			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	825	1099	139	88	88	88	88	103
Volume Left	825	0	139	0	0	0	0	0
Volume Right	0	1099	0	0	0	0	0	103
cSH	419	953	1280	1700	1700	1700	1700	1700
Volume to Capacity	1.97	1.15	0.11	0.05	0.05	0.05	0.05	0.06
Queue Length 95th (ft)	1405	785	9	0	0	0	0	0
Control Delay (s)	465.5	99.5	8.2	0.0	0.0	0.0	0.0	0.0
Lane LOS	F	F	A					
Approach Delay (s)	256.4		3.6			0.0		
Approach LOS	F							

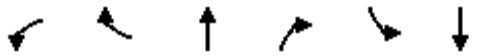
Intersection Summary			
Average Delay	196.4		
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	79	1417	23	885	85	53
v/c Ratio	0.32	0.81	0.16	0.51	0.15	0.09
Control Delay	11.3	14.4	9.7	9.1	9.8	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.3	14.4	9.7	9.1	9.8	7.9
Queue Length 50th (ft)	12	155	3	76	12	5
Queue Length 95th (ft)	36	227	14	114	36	23
Internal Link Dist (ft)		1103		4046	1523	2557
Turn Bay Length (ft)						
Base Capacity (vph)	258	1840	149	1836	571	564
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.77	0.15	0.48	0.15	0.09

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3534		1770	3527			1692			1698	
Flt Permitted	0.26	1.00		0.17	1.00			0.96			0.94	
Satd. Flow (perm)	487	3534		314	3527			1646			1618	
Volume (vph)	73	1291	13	21	795	19	13	17	49	13	8	28
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)	79	1403	14	23	864	21	14	18	53	14	9	30
RTOR Reduction (vph)	0	2	0	0	4	0	0	19	0	0	20	0
Lane Group Flow (vph)	79	1415	0	23	881	0	0	66	0	0	33	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.7	23.7		23.7	23.7			16.1			16.1	
Effective Green, g (s)	23.7	23.7		23.7	23.7			16.1			16.1	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.34			0.34	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	241	1752		156	1749			554			545	
v/s Ratio Prot		c0.40			0.25							
v/s Ratio Perm	0.16			0.07				c0.04			0.02	
v/c Ratio	0.33	0.81		0.15	0.50			0.12			0.06	
Uniform Delay, d1	7.3	10.1		6.6	8.1			11.0			10.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.8	2.8		0.4	0.2			0.4			0.2	
Delay (s)	8.1	13.0		7.0	8.3			11.4			10.9	
Level of Service	A	B		A	A			B			B	
Approach Delay (s)		12.7			8.3			11.4			10.9	
Approach LOS		B			A			B			B	

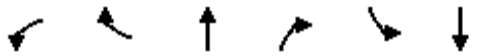
Intersection Summary			
HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	47.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	7	4	79	30	15	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	4	86	33	16	45
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	179	102			118	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179	102			118	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	801	953			1470	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	118	61
Volume Left	8	0	16
Volume Right	4	33	0
cSH	850	1700	1470
Volume to Capacity	0.01	0.07	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.3	0.0	2.1
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	2.1
Approach LOS	A		

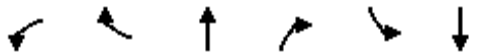
Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization		19.7%	ICU Level of Service A
Analysis Period (min)		15	



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	7	4	53	30	15	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	4	58	33	16	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	159	74			90	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	159	74			90	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	823	988			1505	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	90	68
Volume Left	8	0	16
Volume Right	4	33	0
cSH	876	1700	1505
Volume to Capacity	0.01	0.05	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.2	0.0	1.8
Lane LOS	A		A
Approach Delay (s)	9.2	0.0	1.8
Approach LOS	A		

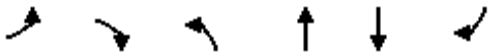
Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	20.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	7	4	27	30	15	56
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	4	29	33	16	61
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	139	46			62	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	139	46			62	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	845	1024			1541	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	62	77
Volume Left	8	0	16
Volume Right	4	33	0
cSH	902	1700	1541
Volume to Capacity	0.01	0.04	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.0	0.0	1.6
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	1.6
Approach LOS	A		

Intersection Summary			
Average Delay		1.5	
Intersection Capacity Utilization		20.4%	ICU Level of Service
Analysis Period (min)		15	

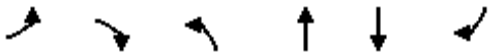


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	157	209	837	634	699	627
v/c Ratio	0.86	0.60	1.41	0.21	0.23	0.44
Control Delay	103.2	15.0	210.8	2.4	2.5	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.2	15.0	210.8	2.4	2.5	1.1
Queue Length 50th (ft)	153	0	~505	51	57	0
Queue Length 95th (ft)	#279	81	#764	63	70	16
Internal Link Dist (ft)	482			4046	2504	
Turn Bay Length (ft)						
Base Capacity (vph)	189	356	595	2985	2985	1433
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	0.83	0.59	1.41	0.21	0.23	0.44

Intersection Summary

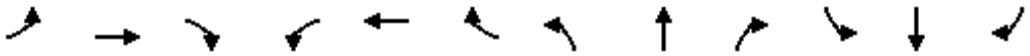
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
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	0.38	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	707	3539	3539	1583
Volume (vph)	144	192	770	583	643	577
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	209	837	634	699	627
RTOR Reduction (vph)	0	187	0	0	0	98
Lane Group Flow (vph)	157	22	837	634	699	529
Turn Type		Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	15.4	15.4	126.0	126.0	126.0	126.0
Effective Green, g (s)	15.4	15.4	126.0	126.0	126.0	126.0
Actuated g/C Ratio	0.10	0.10	0.84	0.84	0.84	0.84
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	182	163	596	2985	2985	1335
v/s Ratio Prot	c0.09			0.18	0.20	
v/s Ratio Perm		0.01	c1.18			0.33
v/c Ratio	0.86	0.13	1.40	0.21	0.23	0.40
Uniform Delay, d1	66.0	60.9	11.7	2.2	2.3	2.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	31.8	0.4	191.9	0.2	0.2	0.9
Delay (s)	97.8	61.3	203.6	2.4	2.5	3.6
Level of Service	F	E	F	A	A	A
Approach Delay (s)	76.9			116.9	3.0	
Approach LOS	E			F	A	

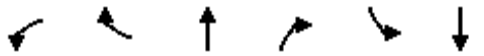
Intersection Summary			
HCM Average Control Delay	64.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	149.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	12	355	8	43	1076	3	5	3	15	22	20	78
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	386	9	47	1170	3	5	3	16	24	22	85
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1173			395			1190	1683	197	1502	1685	586
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1173			395			1190	1683	197	1502	1685	586
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			96			94	96	98	69	75	81
cM capacity (veh/h)	591			1161			90	88	811	76	87	453

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	13	257	137	47	780	393	25	130
Volume Left	13	0	0	47	0	0	5	24
Volume Right	0	0	9	0	0	3	16	85
cSH	591	1700	1700	1161	1700	1700	212	174
Volume to Capacity	0.02	0.15	0.08	0.04	0.46	0.23	0.12	0.75
Queue Length 95th (ft)	2	0	0	3	0	0	10	120
Control Delay (s)	11.2	0.0	0.0	8.2	0.0	0.0	24.2	70.1
Lane LOS	B			A			C	F
Approach Delay (s)	0.4			0.3			24.2	70.1
Approach LOS							C	F

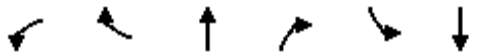
Intersection Summary				
Average Delay	5.8			
Intersection Capacity Utilization	51.4%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	37	19	13	5	2	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	21	14	5	2	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	110	17			20	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	110	17			20	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	98			100	
cM capacity (veh/h)	885	1062			1597	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	61	20	91
Volume Left	40	0	2
Volume Right	21	5	0
cSH	938	1700	1597
Volume to Capacity	0.06	0.01	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.1	0.0	0.2
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	0.2
Approach LOS	A		

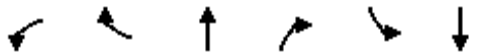
Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	37	19	26	5	2	47
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	21	28	5	2	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	86	31			34	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	86	31			34	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			100	
cM capacity (veh/h)	913	1043			1578	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	61	34	53
Volume Left	40	0	2
Volume Right	21	5	0
cSH	954	1700	1578
Volume to Capacity	0.06	0.02	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.0	0.0	0.3
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	0.3
Approach LOS	A		

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	14.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	37	19	40	5	2	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	21	43	5	2	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	65	46			49	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	65	46			49	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			100	
cM capacity (veh/h)	940	1023			1558	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	61	49	16
Volume Left	40	0	2
Volume Right	21	5	0
cSH	966	1700	1558
Volume to Capacity	0.06	0.03	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.0	0.0	1.0
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	1.0
Approach LOS	A		

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization		13.3%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	722	962	128	264	160	96
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	785	1046	139	287	174	104
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	596	87	278			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	596	87	278			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	0	89			
cM capacity (veh/h)	388	954	1281			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	785	1046	139	143	143	87	87	104
Volume Left	785	0	139	0	0	0	0	0
Volume Right	0	1046	0	0	0	0	0	104
cSH	388	954	1281	1700	1700	1700	1700	1700
Volume to Capacity	2.02	1.10	0.11	0.08	0.08	0.05	0.05	0.06
Queue Length 95th (ft)	1374	658	9	0	0	0	0	0
Control Delay (s)	492.4	78.5	8.2	0.0	0.0	0.0	0.0	0.0
Lane LOS	F	F	A					
Approach Delay (s)	256.0		2.7			0.0		
Approach LOS	F							

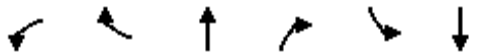
Intersection Summary			
Average Delay	185.3		
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	82	1500	20	688	79	45
v/c Ratio	0.20	0.69	0.14	0.32	0.25	0.14
Control Delay	4.7	7.1	5.7	4.0	13.4	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.7	7.1	5.7	4.0	13.4	11.5
Queue Length 50th (ft)	6	81	1	26	9	4
Queue Length 95th (ft)	21	162	9	54	39	24
Internal Link Dist (ft)		1103		4046	1523	2557
Turn Bay Length (ft)						
Base Capacity (vph)	458	2388	162	2383	582	568
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	0.18	0.63	0.12	0.29	0.14	0.08

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.91			0.92	
Flt Protected	0.95	1.00		0.95	1.00			1.00			0.99	
Satd. Flow (prot)	1770	3535		1770	3524			1690			1699	
Flt Permitted	0.39	1.00		0.17	1.00			0.97			0.92	
Satd. Flow (perm)	727	3535		310	3524			1651			1587	
Volume (vph)	75	1368	12	18	615	18	6	18	48	9	8	24
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)	82	1487	13	20	668	20	7	20	52	10	9	26
RTOR Reduction (vph)	0	1	0	0	3	0	0	25	0	0	21	0
Lane Group Flow (vph)	82	1499	0	20	685	0	0	54	0	0	24	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	24.0	24.0		24.0	24.0			7.0			7.0	
Effective Green, g (s)	24.0	24.0		24.0	24.0			7.0			7.0	
Actuated g/C Ratio	0.62	0.62		0.62	0.62			0.18			0.18	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	447	2175		191	2169			296			285	
v/s Ratio Prot		c0.42			0.19							
v/s Ratio Perm	0.11			0.06				c0.03			0.01	
v/c Ratio	0.18	0.69		0.10	0.32			0.18			0.08	
Uniform Delay, d1	3.3	5.0		3.1	3.6			13.6			13.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	0.9		0.2	0.1			0.3			0.1	
Delay (s)	3.5	5.9		3.3	3.7			13.9			13.5	
Level of Service	A	A		A	A			B			B	
Approach Delay (s)		5.8			3.7			13.9			13.5	
Approach LOS		A			A			B			B	

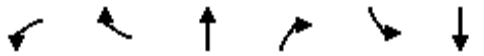
Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	39.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	6	3	77	32	16	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	3	84	35	17	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	174	101			118	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	174	101			118	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	806	954			1470	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	10	118	55
Volume Left	7	0	17
Volume Right	3	35	0
cSH	850	1700	1470
Volume to Capacity	0.01	0.07	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.3	0.0	2.4
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	2.4
Approach LOS	A		

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization		19.4%	ICU Level of Service A
Analysis Period (min)		15	



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	39	19	48	32	16	45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	21	52	35	17	49
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	153	70			87	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	153	70			87	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	98			99	
cM capacity (veh/h)	829	993			1509	

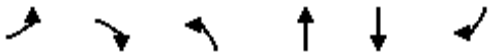
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	87	66
Volume Left	42	0	17
Volume Right	21	35	0
cSH	876	1700	1509
Volume to Capacity	0.07	0.05	0.01
Queue Length 95th (ft)	6	0	1
Control Delay (s)	9.4	0.0	2.0
Lane LOS	A		A
Approach Delay (s)	9.4	0.0	2.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	19.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	6	3	18	32	16	54
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	3	20	35	17	59
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	130	37			54	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	130	37			54	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	854	1035			1551	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	10	54	76
Volume Left	7	0	17
Volume Right	3	35	0
cSH	907	1700	1551
Volume to Capacity	0.01	0.03	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.0	0.0	1.7
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	1.7
Approach LOS	A		

Intersection Summary			
Average Delay		1.6	
Intersection Capacity Utilization		20.4%	ICU Level of Service
Analysis Period (min)		15	

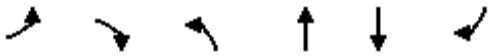


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	137	183	915	634	525	687
v/c Ratio	0.78	0.57	1.27	0.21	0.18	0.48
Control Delay	94.1	15.4	150.3	2.4	2.2	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.1	15.4	150.3	2.4	2.2	1.3
Queue Length 50th (ft)	132	0	~419	51	40	0
Queue Length 95th (ft)	#230	76	#682	63	51	16
Internal Link Dist (ft)	482			4046	2504	
Turn Bay Length (ft)						
Base Capacity (vph)	189	332	719	2999	2999	1446
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	0.72	0.55	1.27	0.21	0.18	0.48

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

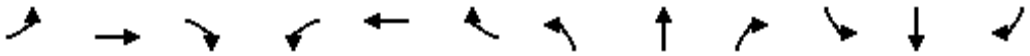


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.46	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	851	3539	3539	1583
Volume (vph)	126	168	842	583	483	632
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	137	183	915	634	525	687
RTOR Reduction (vph)	0	165	0	0	0	105
Lane Group Flow (vph)	137	18	915	634	525	582
Turn Type		Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	14.7	14.7	126.0	126.0	126.0	126.0
Effective Green, g (s)	14.7	14.7	126.0	126.0	126.0	126.0
Actuated g/C Ratio	0.10	0.10	0.85	0.85	0.85	0.85
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	175	156	721	2999	2999	1341
v/s Ratio Prot	c0.08			0.18	0.15	
v/s Ratio Perm		0.01	c1.07			0.37
v/c Ratio	0.78	0.12	1.27	0.21	0.18	0.43
Uniform Delay, d1	65.4	61.1	11.3	2.1	2.0	2.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	20.1	0.3	131.9	0.0	0.0	0.2
Delay (s)	85.5	61.4	143.2	2.1	2.1	3.0
Level of Service	F	E	F	A	A	A
Approach Delay (s)	71.7			85.5	2.6	
Approach LOS	E			F	A	

Intersection Summary			
HCM Average Control Delay	51.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	148.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

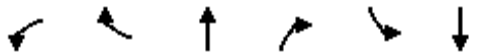
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	15	286	49	1227	21	130
v/c Ratio	0.08	0.16	0.09	0.66	0.05	0.32
Control Delay	5.6	4.4	4.7	8.1	8.1	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	4.4	4.7	8.1	8.1	11.8
Queue Length 50th (ft)	1	10	3	64	1	15
Queue Length 95th (ft)	8	26	15	137	12	46
Internal Link Dist (ft)		1103		4046	1523	2557
Turn Bay Length (ft)						
Base Capacity (vph)	203	2023	615	2029	643	655
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	0.07	0.14	0.08	0.60	0.03	0.20

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.91			0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3523		1770	3538			1679			1682	
Flt Permitted	0.23	1.00		0.58	1.00			0.94			0.95	
Satd. Flow (perm)	428	3523		1074	3538			1590			1610	
Volume (vph)	14	255	8	45	1126	3	4	3	13	20	20	79
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)	15	277	9	49	1224	3	4	3	14	22	22	86
RTOR Reduction (vph)	0	4	0	0	0	0	0	11	0	0	25	0
Lane Group Flow (vph)	15	282	0	49	1227	0	0	10	0	0	105	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.4	17.4		17.4	17.4			7.7			7.7	
Effective Green, g (s)	17.4	17.4		17.4	17.4			7.7			7.7	
Actuated g/C Ratio	0.53	0.53		0.53	0.53			0.23			0.23	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	225	1852		565	1860			370			375	
v/s Ratio Prot		0.08			c0.35							
v/s Ratio Perm	0.04			0.05				0.01			c0.07	
v/c Ratio	0.07	0.15		0.09	0.66			0.03			0.28	
Uniform Delay, d1	3.9	4.0		3.9	5.7			9.8			10.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.1	0.0		0.1	0.9			0.0			0.4	
Delay (s)	4.0	4.1		4.0	6.6			9.8			10.8	
Level of Service	A	A		A	A			A			B	
Approach Delay (s)		4.1			6.5			9.8			10.8	
Approach LOS		A			A			A			B	

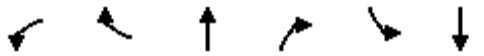
Intersection Summary			
HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	33.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	39	19	15	5	2	79
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	21	16	5	2	86
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	109	19			22	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	109	19			22	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	98			100	
cM capacity (veh/h)	887	1059			1594	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	22	88
Volume Left	42	0	2
Volume Right	21	5	0
cSH	937	1700	1594
Volume to Capacity	0.07	0.01	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.1	0.0	0.2
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	0.2
Approach LOS	A		

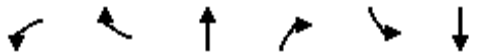
Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	15.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	39	19	29	5	2	42
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	21	32	5	2	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	84	34			37	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	84	34			37	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	98			100	
cM capacity (veh/h)	916	1039			1574	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	37	48
Volume Left	42	0	2
Volume Right	21	5	0
cSH	953	1700	1574
Volume to Capacity	0.07	0.02	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.0	0.0	0.3
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	0.3
Approach LOS	A		

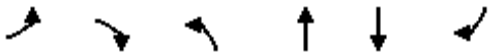
Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	13.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	39	19	44	5	2	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	21	48	5	2	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	61	51			53	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61	51			53	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			100	
cM capacity (veh/h)	944	1018			1552	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	63	53	9
Volume Left	42	0	2
Volume Right	21	5	0
cSH	967	1700	1552
Volume to Capacity	0.07	0.03	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.0	0.0	1.8
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	1.8
Approach LOS	A		

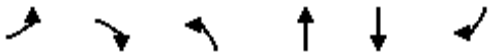
Intersection Summary			
Average Delay		4.7	
Intersection Capacity Utilization		13.3%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	825	1099	139	175	176	103
v/c Ratio	0.68	0.92	0.64	0.27	0.27	0.28
Control Delay	9.8	20.9	43.0	27.4	27.4	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	20.9	43.0	27.4	27.4	8.5
Queue Length 50th (ft)	174	230	63	38	39	0
Queue Length 95th (ft)	307	#697	#124	66	66	39
Internal Link Dist (ft)	482			4046	2504	
Turn Bay Length (ft)						
Base Capacity (vph)	1303	1257	289	856	856	461
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	0.63	0.87	0.48	0.20	0.21	0.22

Intersection Summary

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
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	0.64	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1194	3539	3539	1583
Volume (vph)	759	1011	128	161	162	95
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	825	1099	139	175	176	103
RTOR Reduction (vph)	0	108	0	0	0	84
Lane Group Flow (vph)	825	991	139	175	176	19
Turn Type		Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	45.1	45.1	12.1	12.1	12.1	12.1
Effective Green, g (s)	45.1	45.1	12.1	12.1	12.1	12.1
Actuated g/C Ratio	0.69	0.69	0.19	0.19	0.19	0.19
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1224	1095	222	657	657	294
v/s Ratio Prot	0.47			0.05	0.05	
v/s Ratio Perm		c0.63	c0.12			0.01
v/c Ratio	0.67	0.91	0.63	0.27	0.27	0.07
Uniform Delay, d1	5.8	8.3	24.5	22.7	22.8	21.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	10.6	5.4	0.2	0.2	0.1
Delay (s)	7.3	18.9	29.9	23.0	23.0	22.0
Level of Service	A	B	C	C	C	C
Approach Delay (s)	13.9			26.0	22.6	
Approach LOS	B			C	C	

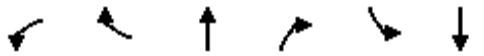
Intersection Summary			
HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	79	1417	23	885	85	53
v/c Ratio	0.32	0.81	0.16	0.51	0.15	0.09
Control Delay	11.3	14.4	9.7	9.1	9.8	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.3	14.4	9.7	9.1	9.8	7.9
Queue Length 50th (ft)	12	155	3	76	12	5
Queue Length 95th (ft)	36	227	14	114	36	23
Internal Link Dist (ft)		1103		4046	1523	2557
Turn Bay Length (ft)						
Base Capacity (vph)	258	1840	149	1836	571	564
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.77	0.15	0.48	0.15	0.09

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.92			0.92	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3534		1770	3527			1692			1698	
Flt Permitted	0.26	1.00		0.17	1.00			0.96			0.94	
Satd. Flow (perm)	487	3534		314	3527			1646			1618	
Volume (vph)	73	1291	13	21	795	19	13	17	49	13	8	28
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)	79	1403	14	23	864	21	14	18	53	14	9	30
RTOR Reduction (vph)	0	2	0	0	4	0	0	19	0	0	20	0
Lane Group Flow (vph)	79	1415	0	23	881	0	0	66	0	0	33	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.7	23.7		23.7	23.7			16.1			16.1	
Effective Green, g (s)	23.7	23.7		23.7	23.7			16.1			16.1	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.34			0.34	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	241	1752		156	1749			554			545	
v/s Ratio Prot		c0.40			0.25							
v/s Ratio Perm	0.16			0.07				c0.04			0.02	
v/c Ratio	0.33	0.81		0.15	0.50			0.12			0.06	
Uniform Delay, d1	7.3	10.1		6.6	8.1			11.0			10.7	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.8	2.8		0.4	0.2			0.4			0.2	
Delay (s)	8.1	13.0		7.0	8.3			11.4			10.9	
Level of Service	A	B		A	A			B			B	
Approach Delay (s)		12.7			8.3			11.4			10.9	
Approach LOS		B			A			B			B	

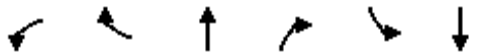
Intersection Summary			
HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	47.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	7	4	79	30	15	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	4	86	33	16	45
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	179	102			118	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179	102			118	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	801	953			1470	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	118	61
Volume Left	8	0	16
Volume Right	4	33	0
cSH	850	1700	1470
Volume to Capacity	0.01	0.07	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.3	0.0	2.1
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	2.1
Approach LOS	A		

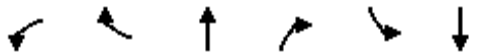
Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization		19.7%	ICU Level of Service A
Analysis Period (min)		15	



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	7	4	53	30	15	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	4	58	33	16	52
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	159	74			90	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	159	74			90	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	823	988			1505	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	90	68
Volume Left	8	0	16
Volume Right	4	33	0
cSH	876	1700	1505
Volume to Capacity	0.01	0.05	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.2	0.0	1.8
Lane LOS	A		A
Approach Delay (s)	9.2	0.0	1.8
Approach LOS	A		

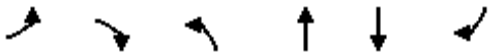
Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	20.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	7	4	27	30	15	56
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	4	29	33	16	61
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	139	46			62	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	139	46			62	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	845	1024			1541	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	12	62	77
Volume Left	8	0	16
Volume Right	4	33	0
cSH	902	1700	1541
Volume to Capacity	0.01	0.04	0.01
Queue Length 95th (ft)	1	0	1
Control Delay (s)	9.0	0.0	1.6
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	1.6
Approach LOS	A		

Intersection Summary			
Average Delay		1.5	
Intersection Capacity Utilization		20.4%	ICU Level of Service
Analysis Period (min)		15	

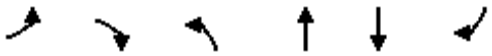


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	157	209	837	634	699	627
v/c Ratio	0.86	0.60	1.41	0.21	0.23	0.44
Control Delay	103.2	15.0	210.8	2.4	2.5	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.2	15.0	210.8	2.4	2.5	1.1
Queue Length 50th (ft)	153	0	~505	51	57	0
Queue Length 95th (ft)	#279	81	#764	63	70	16
Internal Link Dist (ft)	482			4046	2504	
Turn Bay Length (ft)						
Base Capacity (vph)	189	356	595	2985	2985	1433
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	0.83	0.59	1.41	0.21	0.23	0.44

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

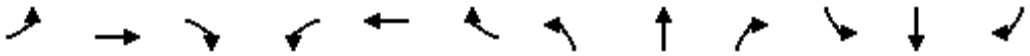


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.38	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	707	3539	3539	1583
Volume (vph)	144	192	770	583	643	577
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	209	837	634	699	627
RTOR Reduction (vph)	0	187	0	0	0	98
Lane Group Flow (vph)	157	22	837	634	699	529
Turn Type		Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	15.4	15.4	126.0	126.0	126.0	126.0
Effective Green, g (s)	15.4	15.4	126.0	126.0	126.0	126.0
Actuated g/C Ratio	0.10	0.10	0.84	0.84	0.84	0.84
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	182	163	596	2985	2985	1335
v/s Ratio Prot	c0.09			0.18	0.20	
v/s Ratio Perm		0.01	c1.18			0.33
v/c Ratio	0.86	0.13	1.40	0.21	0.23	0.40
Uniform Delay, d1	66.0	60.9	11.7	2.2	2.3	2.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	31.8	0.4	191.9	0.2	0.2	0.9
Delay (s)	97.8	61.3	203.6	2.4	2.5	3.6
Level of Service	F	E	F	A	A	A
Approach Delay (s)	76.9			116.9	3.0	
Approach LOS	E			F	A	

Intersection Summary			
HCM Average Control Delay	64.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	149.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

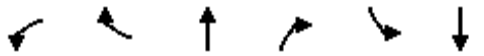
Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	13	395	47	1173	24	131
v/c Ratio	0.08	0.25	0.11	0.75	0.04	0.21
Control Delay	8.3	7.7	7.6	13.6	6.7	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	7.7	7.6	13.6	6.7	8.8
Queue Length 50th (ft)	2	28	6	115	1	16
Queue Length 95th (ft)	9	48	19	173	12	43
Internal Link Dist (ft)		1103		4046	1523	2557
Turn Bay Length (ft)						
Base Capacity (vph)	165	1651	451	1652	616	630
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	0.08	0.24	0.10	0.71	0.04	0.21

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.91			0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1770	3527		1770	3538			1678			1684	
Flt Permitted	0.21	1.00		0.52	1.00			0.96			0.96	
Satd. Flow (perm)	392	3527		967	3538			1625			1631	
Volume (vph)	12	355	8	43	1076	3	5	3	15	22	20	78
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)	13	386	9	47	1170	3	5	3	16	24	22	85
RTOR Reduction (vph)	0	4	0	0	1	0	0	10	0	0	23	0
Lane Group Flow (vph)	13	391	0	47	1172	0	0	14	0	0	108	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.0	19.0		19.0	19.0			16.1			16.1	
Effective Green, g (s)	19.0	19.0		19.0	19.0			16.1			16.1	
Actuated g/C Ratio	0.44	0.44		0.44	0.44			0.37			0.37	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	173	1555		426	1560			607			609	
v/s Ratio Prot		0.11			c0.33							
v/s Ratio Perm	0.03			0.05				0.01			c0.07	
v/c Ratio	0.08	0.25		0.11	0.75			0.02			0.18	
Uniform Delay, d1	7.0	7.6		7.1	10.1			8.5			9.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	0.2	0.1		0.1	2.1			0.1			0.6	
Delay (s)	7.2	7.7		7.2	12.2			8.6			9.7	
Level of Service	A	A		A	B			A			A	
Approach Delay (s)		7.6			12.0			8.6			9.7	
Approach LOS		A			B			A			A	

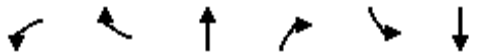
Intersection Summary			
HCM Average Control Delay	10.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	43.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	37	19	13	5	2	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	21	14	5	2	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	110	17			20	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	110	17			20	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	98			100	
cM capacity (veh/h)	885	1062			1597	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	61	20	91
Volume Left	40	0	2
Volume Right	21	5	0
cSH	938	1700	1597
Volume to Capacity	0.06	0.01	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.1	0.0	0.2
Lane LOS	A		A
Approach Delay (s)	9.1	0.0	0.2
Approach LOS	A		

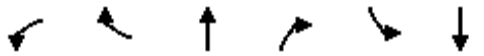
Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	15.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	37	19	26	5	2	47
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	21	28	5	2	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	86	31			34	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	86	31			34	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			100	
cM capacity (veh/h)	913	1043			1578	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	61	34	53
Volume Left	40	0	2
Volume Right	21	5	0
cSH	954	1700	1578
Volume to Capacity	0.06	0.02	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.0	0.0	0.3
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	0.3
Approach LOS	A		

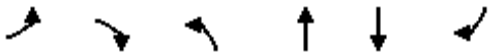
Intersection Summary			
Average Delay		3.8	
Intersection Capacity Utilization		14.1%	ICU Level of Service A
Analysis Period (min)		15	



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	37	19	40	5	2	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	21	43	5	2	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	65	46			49	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	65	46			49	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	98			100	
cM capacity (veh/h)	940	1023			1558	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	61	49	16
Volume Left	40	0	2
Volume Right	21	5	0
cSH	966	1700	1558
Volume to Capacity	0.06	0.03	0.00
Queue Length 95th (ft)	5	0	0
Control Delay (s)	9.0	0.0	1.0
Lane LOS	A		A
Approach Delay (s)	9.0	0.0	1.0
Approach LOS	A		

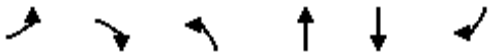
Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization		13.3%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	785	1046	139	287	174	104
v/c Ratio	0.73	0.93	0.45	0.31	0.19	0.21
Control Delay	12.8	22.5	28.6	22.4	21.8	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	22.5	28.6	22.4	21.8	6.7
Queue Length 50th (ft)	177	185	53	54	32	0
Queue Length 95th (ft)	290	#572	105	87	56	35
Internal Link Dist (ft)	482			4046	2504	
Turn Bay Length (ft)						
Base Capacity (vph)	1163	1180	312	925	925	491
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	0.67	0.89	0.45	0.31	0.19	0.21

Intersection Summary

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



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
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	0.64	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1196	3539	3539	1583
Volume (vph)	722	962	128	264	160	96
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	785	1046	139	287	174	104
RTOR Reduction (vph)	0	159	0	0	0	77
Lane Group Flow (vph)	785	887	139	287	174	27
Turn Type		Perm	Perm			Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Actuated Green, G (s)	38.4	38.4	16.5	16.5	16.5	16.5
Effective Green, g (s)	38.4	38.4	16.5	16.5	16.5	16.5
Actuated g/C Ratio	0.61	0.61	0.26	0.26	0.26	0.26
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1081	966	314	928	928	415
v/s Ratio Prot	0.44			0.08	0.05	
v/s Ratio Perm		c0.56	c0.12			0.02
v/c Ratio	0.73	0.92	0.44	0.31	0.19	0.07
Uniform Delay, d1	8.6	10.9	19.4	18.6	18.0	17.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	13.2	4.5	0.9	0.4	0.3
Delay (s)	11.0	24.0	23.8	19.5	18.4	17.7
Level of Service	B	C	C	B	B	B
Approach Delay (s)	18.4			20.9	18.2	
Approach LOS	B			C	B	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	62.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

PETERS & ASSOCIATES
ENGINEERS, INC.

Traffic Signal Warrants

Traffic Signal Warrants Analysis

INTERSECTION CONFIGURATION

CITY: **Jonesboro, AR**
CO.: **Craighead**
HWY.,Mjr.: **Hwy 49**
ST.,Minor: **Clinton School/Whitley**
Existing Traffic

No. Lanes Major: 2 Minor: 1
Accidents > 5/yr? (Y or N) N
Speed =>40, or Pop. < 10 K Y
Factor out "RTs" (Y or N)?: YES
Major: EB N WB N
Minor: NB N SB N

April 4, 2011 Study peformed b RMT

Required Vol. for Warrant:	major	minor
Warrant		
1A	420	105
1B	630	52
1AB (80% 1 & 2)	336	84
	504	41
2 (4 Hr.)	(see formula)	
3 (Peak Hr.)	" "	
Adj. Factor:	0.7	

MAJOR ST. (direction) Direction: EB WB

ENDING TIME	Existing	Factor	man.	100% results	Existing	Factor	man.	100% results	RESULTS SUM
7:00	531			531	1032			1032	1563
8:00	349			349	800			800	1149
9:00	379			379	630			630	1009
10:00	471			471	548			548	1019
11:00	485			485	525			525	1010
12:00	531			531	556			556	1087
13:00	651			651	442			442	1093
14:00	746			746	459			459	1205
15:00	819			819	503			503	1322
16:00	786			786	593			593	1379
17:00	856			856	577			577	1433
18:00	580			580	467			467	1047
19:00	379			379	277			277	656
20:00	321			321	227			227	548
21:00	254			254	217			217	471

MINOR ST. (direction) NB SB

Existing	Factor:	100% man.	100% results	Existing	Factor:	100% man.	100% results	Minor vol. for 4Hr. War. '#2'	Peak Hr. War. "#3
70		70	70	15		15	15	60	75
40		40	40	13		13	13	60	81
24		24	24	8		8	8	60	128
18		18	18	12		12	12	60	125
21		21	21	8		8	8	60	128
15		15	15	18		18	18	60	105
20		20	20	8		8	8	60	101
33		33	33	8		8	8	60	75
66		66	66	14		14	14	60	75
101		101	101	12		12	12	60	75
134		134	134	12		12	12	60	75
27		27	27	22		22	22	60	111
26		26	26	10		10	10	114	220
21		21	21	13		13	13	150	258
18		18	18	8		8	8	180	291

* Note: Manual value is used if available.
Results have been factored for machine count error.

Traffic Signal Warrants Analysis

CITY: **Jonesboro, AR**
CO.: **Craighea**
HWY.,Mjr.: **Hwy 49**
ST.,Minor: **Clinton School/Whitley**
Existing Traffic

Traffic Signal Warrants Analysis

FINAL RESULTS:
Existing Traffic

Hour warrant was met:

Major St.: Hwy 49
Minor St.: Clinton School/Whitley

HOUR	SUM MAJOR	MAX. MINOR	VOLUME 420	630	COMB. 336	504	4 Hr.	Peak
			105	52	84	41		
					#8-1	#8-2		
			1A	1B	1AB		2	3
7:00	1563	70	0	1	0	0 1	1	0
8:00	1149	40	0	0	0	0 0	0	0
9:00	1009	24	0	0	0	0 0	0	0
10:00	1019	18	0	0	0	0 0	0	0
11:00	1010	21	0	0	0	0 0	0	0
12:00	1087	18	0	0	0	0 0	0	0
13:00	1093	20	0	0	0	0 0	0	0
14:00	1205	33	0	0	0	0 0	0	0
15:00	1322	66	0	1	0	0 1	1	0
16:00	1379	101	0	1	1	1 1	1	1
17:00	1433	134	1	1	1	1 1	1	1
18:00	1047	27	0	0	0	0 0	0	0
19:00	656	26	0	0	0	0 0	0	0
20:00	548	21	0	0	0	0 0	0	0
21:00	471	18	0	0	0	0 0	0	0
			1	4		2	4	2

This intersection SATISFIES the warrants for signalization as outlined in the "M.U.T.C.D."

Traffic Signal Warrants Analysis

CITY: **Jonesboro, AR**
CO.: **Craighead**
HWY.,Mjr.: **Hwy 49**
ST.,Minor: **Clinton School/Whitley**
Projected Traffic
During Fair
April 4, 2011 Study peformed b RMT

INTERSECTION CONFIGURATION
No. Lanes Major: 2 Minor: 1
Accidents > 5/yr? (Y or N) N
Speed =>40, or Pop. < 10 K Y
Factor out "RTs" (Y or N)?: YES
Major: EB N WB N
Minor: NB N SB N

Required Vol. for Warrant:	major	minor
Warrant		
1A	420	105
1B	630	52
1AB (80% 1 & 2)	336	84
	504	41
2 (4 Hr.)	(see formula)	
3 (Peak Hr.)	" "	
Adj. Factor:	0.7	

MAJOR ST. (direction)

Direction: EB WB

ENDING TIME	EB Existing + Proj	EB man.	EB Factor 100% results	WB Existing + Proj	WB man.	WB Factor 100% results	RESULTS SUM
7:00	533		533	1034		1034	1567
8:00	353		353	804		804	1158
9:00	386		386	637		637	1022
10:00	480		480	557		557	1037
11:00	496		496	536		536	1032
12:00	564		564	577		577	1141
13:00	684		684	464		464	1148
14:00	779		779	484		484	1263
15:00	923		923	550		550	1473
16:00	1027		1027	679		679	1706
17:00	1250		1250	674		674	1924
18:00	1105		1105	617		617	1722
19:00	729		729	427		427	1156
20:00	518		518	485		485	1003
21:00	342		342	647		647	988

MINOR ST. (direction)

NB SB

	NB Existing + Proj	NB man.	NB Factor 100% results	SB Existing + Proj	SB man.	SB Factor 100% results	Minor vol. for 4Hr. War. '#2'	Peak Hr. War. "#3
7:00	70		70	15		15	60	75
8:00	40		40	13		13	60	75
9:00	24		24	9		9	60	75
10:00	18		18	13		13	60	75
11:00	22		22	10		10	60	75
12:00	17		17	20		20	60	75
13:00	22		22	11		11	60	75
14:00	35		35	11		11	60	75
15:00	72		72	20		20	60	75
16:00	114		114	22		22	60	75
17:00	156		156	23		23	60	75
18:00	56		56	39		39	60	75
19:00	45		45	27		27	60	75
20:00	32		32	42		42	60	75
21:00	23		23	57		57	60	75

* Note: Manual value is used if available.
Results have been factored for machine count error.

Traffic Signal Warrants Analysis

CITY: **Jonesboro, AR**
CO.: **Craighea**
HWY.,Mjr.: **Hwy 49**
ST.,Minor: **Clinton School/Whitley**
Projected Traffic
During Fair

FINAL RESULTS:
Projected Traffic
During Fair
Major St.: Hwy 49
Minor St.: Clinton School/Whitley

Hour warrant was met:

HOUR	SUM MAJOR	MAX. MINOR	VOLUME 1A (420)	VOLUME 1B (630)	COMB. #8-1 1AB (336)	COMB. #8-2 1AB (504)	4 Hr. (105)	Peak (52)
7:00	1567	70	0	1	0	0	1	1	0
8:00	1158	40	0	0	0	0	0	0	0
9:00	1022	24	0	0	0	0	0	0	0
10:00	1037	18	0	0	0	0	0	0	0
11:00	1032	22	0	0	0	0	0	0	0
12:00	1141	20	0	0	0	0	0	0	0
13:00	1148	22	0	0	0	0	0	0	0
14:00	1263	35	0	0	0	0	0	0	0
15:00	1473	72	0	1	0	0	1	1	0
16:00	1706	114	1	1	1	1	1	1	1
17:00	1924	156	1	1	1	1	1	1	1
18:00	1722	56	0	1	0	0	1	0	0
19:00	1156	45	0	0	0	0	1	0	0
20:00	1003	42	0	0	0	0	1	0	0
21:00	988	57	0	1	0	0	1	0	0
			2	6		2		4	2

This intersection SATISFIES the warrants for signalization as outlined in the "M.U.T.C.D."

Traffic Signal Warrants Analysis

CITY: **Jonesboro, AR**
CO.: **Craighead**
HWY.,Mjr.: **Hwy 49**
ST.,Minor: **Drive A**
Projected Traffic
Wkdy During Fair
April 4, 2011 Study peformed b RMT

INTERSECTION CONFIGURATION

No. Lanes Major: 2 Minor: 1
Accidents > 5/yr? (Y or N) N
Speed =>40, or Pop. < 10 K Y
Factor out "RTs" (Y or N)?: YES
Major: NB N SB N
Minor: EB Y WB N

Required Vol. for Warrant:	major	minor
Warrant		
1A	420	105
1B	630	52
1AB (80% 1 & 2)	336	84
	504	41
2 (4 Hr.)	(see formula)	
3 (Peak Hr.)	" "	
Adj. Factor:	0.7	

MAJOR ST. (direction) Direction: NB SB

MINOR ST. (direction) EB WB

ENDING TIME	MAJOR Existing + Proj	MAJOR man.	MAJOR NB results	MAJOR Factor	MAJOR 100% Existing + Proj	MAJOR man.	MAJOR SB results	RESULTS SUM	MINOR Existing + Proj	MINOR man.	MINOR EB results	MINOR Factor	MINOR 100% Existing + Proj	MINOR man.	MINOR WB results	Minor vol. for 4Hr. War. '#2'	Peak Hr. War. "#3
7:00	533		533		1034		1034	1567	2		2		0		0	60	75
8:00	353		353		803		803	1157	3		3		0		0	60	85
9:00	385		385		635		635	1021	5		5		0		0	60	105
10:00	480		480		555		555	1035	6		6		0		0	60	102
11:00	496		496		533		533	1029	8		8		0		0	60	103
12:00	563		563		580		580	1143	16		16		0		0	60	87
13:00	683		683		467		467	1150	16		16		0		0	60	86
14:00	800		800		499		499	1299	19		19		0		0	60	75
15:00	921		921		580		580	1501	35		35		0		0	60	75
16:00	1022		1022		771		771	1794	63		63		0		0	60	75
17:00	1243		1243		869		869	2112	71		71		0		0	60	75
18:00	1010		1010		791		791	1801	111		111		0		0	60	75
19:00	744		744		552		552	1297	111		111		0		0	60	75
20:00	514		514		373		373	888	190		190		0		0	63	142
21:00	361		361		298		298	660	316		316		0		0	113	210

* Note: Manual value is used if available.
Results have been factored for machine count error.

Traffic Signal Warrants Analysis

CITY: **Jonesboro, AR**
CO.: **Craighea**
HWY.,Mjr.: **Hwy 49**
ST.,Minor: **Drive A**
Projected Traffic
Wkdy During Fair

FINAL RESULTS:
Projected Traffic
Wkdy During Fair
Major St.: Hwy 49
Minor St.: Drive A

Hour warrant was met:

HOUR	SUM MAJOR	MAX. MINOR	VOLUME 420	VOLUME 630	COMB. 336	COMB. 504	4 Hr.	Peak
			105	52	84	41		
			1A	1B	#8-1 1AB	#8-2	2	3
7:00	1567	2	0	0	0	0	0	0
8:00	1157	3	0	0	0	0	0	0
9:00	1021	5	0	0	0	0	0	0
10:00	1035	6	0	0	0	0	0	0
11:00	1029	8	0	0	0	0	0	0
12:00	1143	16	0	0	0	0	0	0
13:00	1150	16	0	0	0	0	0	0
14:00	1299	19	0	0	0	0	0	0
15:00	1501	35	0	0	0	0	0	0
16:00	1794	63	0	1	0	0	1	0
17:00	2112	71	0	1	0	0	1	0
18:00	1801	111	1	1	1	1	1	1
19:00	1297	111	1	1	1	1	1	1
20:00	888	190	1	1	1	1	1	1
21:00	660	316	1	1	1	1	1	1
			4	6		4	6	4

This intersection SATISFIES the warrants for signalization as outlined in the "M.U.T.C.D."

CHAPTER 4C. TRAFFIC CONTROL SIGNAL NEEDS STUDIES

Section 4C.01 Studies and Factors for Justifying Traffic Control Signals

Standard:

01 **An engineering study of traffic conditions, pedestrian characteristics, and physical characteristics of the location shall be performed to determine whether installation of a traffic control signal is justified at a particular location.**

02 **The investigation of the need for a traffic control signal shall include an analysis of factors related to the existing operation and safety at the study location and the potential to improve these conditions, and the applicable factors contained in the following traffic signal warrants:**

Warrant 1, Eight-Hour Vehicular Volume
Warrant 2, Four-Hour Vehicular Volume
Warrant 3, Peak Hour
Warrant 4, Pedestrian Volume
Warrant 5, School Crossing
Warrant 6, Coordinated Signal System
Warrant 7, Crash Experience
Warrant 8, Roadway Network
Warrant 9, Intersection Near a Grade Crossing

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

Support:

04 Sections 8C.09 and 8C.10 contain information regarding the use of traffic control signals instead of gates and/or flashing-light signals at highway-rail grade crossings and highway-light rail transit grade crossings, respectively.

Guidance:

05 *A traffic control signal should not be installed unless one or more of the factors described in this Chapter are met.*

06 *A traffic control signal should not be installed unless an engineering study indicates that installing a traffic control signal will improve the overall safety and/or operation of the intersection.*

07 *A traffic control signal should not be installed if it will seriously disrupt progressive traffic flow.*

08 *The study should consider the effects of the right-turn vehicles from the minor-street approaches. Engineering judgment should be used to determine what, if any, portion of the right-turn traffic is subtracted from the minor-street traffic count when evaluating the count against the signal warrants listed in Paragraph 2.*

09 *Engineering judgment should also be used in applying various traffic signal warrants to cases where approaches consist of one lane plus one left-turn or right-turn lane. The site-specific traffic characteristics should dictate whether an approach is considered as one lane or two lanes. For example, for an approach with one lane for through and right-turning traffic plus a left-turn lane, if engineering judgment indicates that it should be considered a one-lane approach because the traffic using the left-turn lane is minor, the total traffic volume approaching the intersection should be applied against the signal warrants as a one-lane approach. The approach should be considered two lanes if approximately half of the traffic on the approach turns left and the left-turn lane is of sufficient length to accommodate all left-turn vehicles.*

10 *Similar engineering judgment and rationale should be applied to a street approach with one through/left-turn lane plus a right-turn lane. In this case, the degree of conflict of minor-street right-turn traffic with traffic on the major street should be considered. Thus, right-turn traffic should not be included in the minor-street volume if the movement enters the major street with minimal conflict. The approach should be evaluated as a one-lane approach with only the traffic volume in the through/left-turn lane considered.*

11 *At a location that is under development or construction and where it is not possible to obtain a traffic count that would represent future traffic conditions, hourly volumes should be estimated as part of an engineering study for comparison with traffic signal warrants. Except for locations where the engineering study uses the satisfaction of Warrant 8 to justify a signal, a traffic control signal installed under projected conditions should have an engineering study done within 1 year of putting the signal into stop-and-go operation to determine if the signal is justified. If not justified, the signal should be taken out of stop-and-go operation or removed.*

12 *For signal warrant analysis, a location with a wide median, even if the median width is greater than 30 feet, should be considered as one intersection.*

Option:

13 At an intersection with a high volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher of the major-street left-turn volumes as the "minor-street" volume and the corresponding single direction of opposing traffic on the major street as the "major-street" volume.

14 For signal warrants requiring conditions to be present for a certain number of hours in order to be satisfied, any four sequential 15-minute periods may be considered as 1 hour if the separate 1-hour periods used in the warrant analysis do not overlap each other and both the major-street volume and the minor-street volume are for the same specific one-hour periods.

15 For signal warrant analysis, bicyclists may be counted as either vehicles or pedestrians.

Support:

16 When performing a signal warrant analysis, bicyclists riding in the street with other vehicular traffic are usually counted as vehicles and bicyclists who are clearly using pedestrian facilities are usually counted as pedestrians.

Option:

17 Engineering study data may include the following:

A. The number of vehicles entering the intersection in each hour from each approach during 12 hours of an average day. It is desirable that the hours selected contain the greatest percentage of the 24-hour traffic volume.
B. Vehicular volumes for each traffic movement from each approach, classified by vehicle type (heavy trucks, passenger cars and light trucks, public-transit vehicles, and, in some locations, bicycles), during each 15-minute period of the 2 hours in the morning and 2 hours in the afternoon during which total traffic entering the intersection is greatest.
C. Pedestrian volume counts on each crosswalk during the same periods as the vehicular counts in Item B and during hours of highest pedestrian volume. Where young, elderly, and/or persons with physical or visual disabilities need special consideration, the pedestrians and their crossing times may be classified by general observation.
D. Information about nearby facilities and activity centers that serve the young, elderly, and/or persons with disabilities, including requests from persons with disabilities for accessible crossing improvements at the location under study. These persons might not be adequately reflected in the pedestrian volume count if the absence of a signal restrains their mobility.
E. The posted or statutory speed limit or the 85th-percentile speed on the uncontrolled approaches to the location.
F. A condition diagram showing details of the physical layout, including such features as intersection geometrics, channelization, grades, sight-distance restrictions, transit stops and routes, parking conditions, pavement markings, roadway lighting, driveways, nearby railroad crossings, distance to nearest traffic control signals, utility poles and fixtures, and adjacent land use.
G. A collision diagram showing crash experience by type, location, direction of movement, severity, weather, time of day, date, and day of week for at least 1 year.

18 The following data, which are desirable for a more precise understanding of the operation of the intersection, may be obtained during the periods described in Item B of Paragraph 17:

A. Vehicle-hours of stopped time delay determined separately for each approach.
B. The number and distribution of acceptable gaps in vehicular traffic on the major street for entrance from the minor street.
C. The posted or statutory speed limit or the 85th-percentile speed on controlled approaches at a point near to the intersection but unaffected by the control.
D. Pedestrian delay time for at least two 30-minute peak pedestrian delay periods of an average weekday or like periods of a Saturday or Sunday.
E. Queue length on stop-controlled approaches.

Section 4C.02 Warrant 1, Eight-Hour Vehicular Volume

Support:

01 The Minimum Vehicular Volume, Condition A, is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

02 The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

03 It is intended that Warrant 1 be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.

Standard:

04 **The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:**

A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; or

B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

In applying each condition the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours.

Option:

05 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 70 percent columns in Table 4C-1 may be used in place of the 100 percent columns.

Guidance:

06 *The combination of Conditions A and B is intended for application at locations where Condition A is not satisfied and Condition B is not satisfied and should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.*

Standard:

07 **The need for a traffic control signal shall be considered if an engineering study finds that both of the following conditions exist for each of any 8 hours of an average day:**

A. The vehicles per hour given in both of the 80 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; and

B. The vehicles per hour given in both of the 80 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

These major-street and minor-street volumes shall be for the same 8 hours for each condition; however, the 8 hours satisfied in Condition A shall not be required to be the same 8 hours satisfied in Condition B. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume

[b] Used for combination of Conditions A and B after adequate trial of other remedial measures

[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Option:

08 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 56 percent columns in Table 4C-1 may be used in place of the 80 percent columns.

Section 4C.03 Warrant 2, Four-Hour Vehicular Volume

Support:

01 The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Standard:

02 **The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) all fall above the applicable curve in Figure 4C-1 for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.**

Option:

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-2 may be used in place of Figure 4C-1.

Section 4C.04 Warrant 3, Peak Hour

Support:

01 The Peak Hour signal warrant is intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street.

Standard:

02 **This signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time.**

03 **The need for a traffic control signal shall be considered if an engineering study finds that the criteria in either of the following two categories are met:**

A. If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:

1. The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach; and

2. The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes; and

3. The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

B. The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 for the existing combination of approach lanes.

Option:

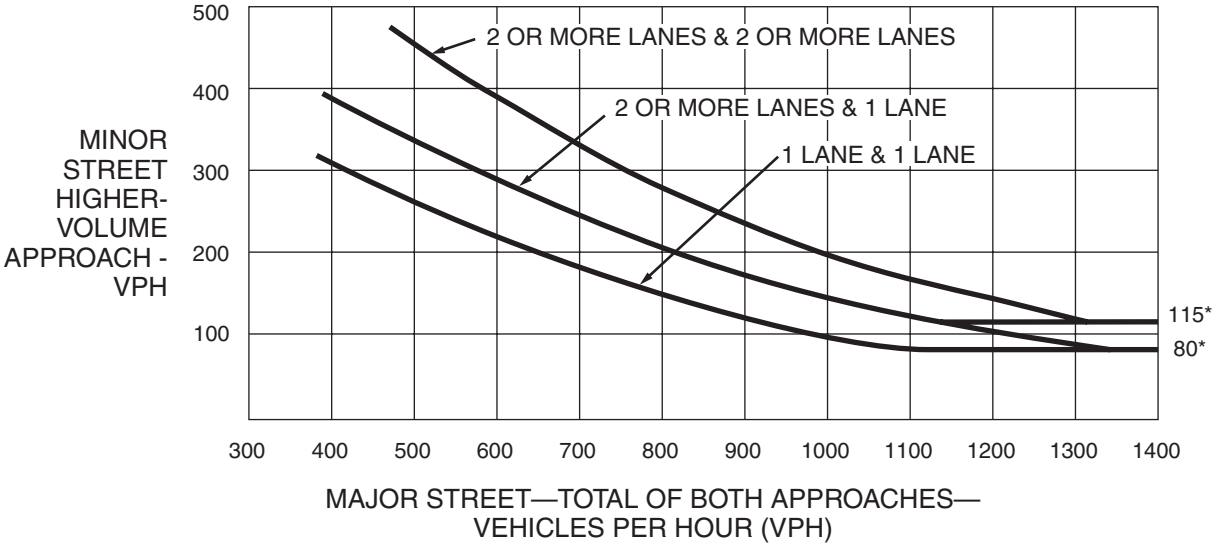
04 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-4 may be used in place of Figure 4C-3 to evaluate the criteria in the second category of the Standard.

05 If this warrant is the only warrant met and a traffic control signal is justified by an engineering study, the traffic control signal may be operated in the flashing mode during the hours that the volume criteria of this warrant are not met.

Guidance:

06 *If this warrant is the only warrant met and a traffic control signal is justified by an engineering study, the traffic control signal should be traffic-actuated.*

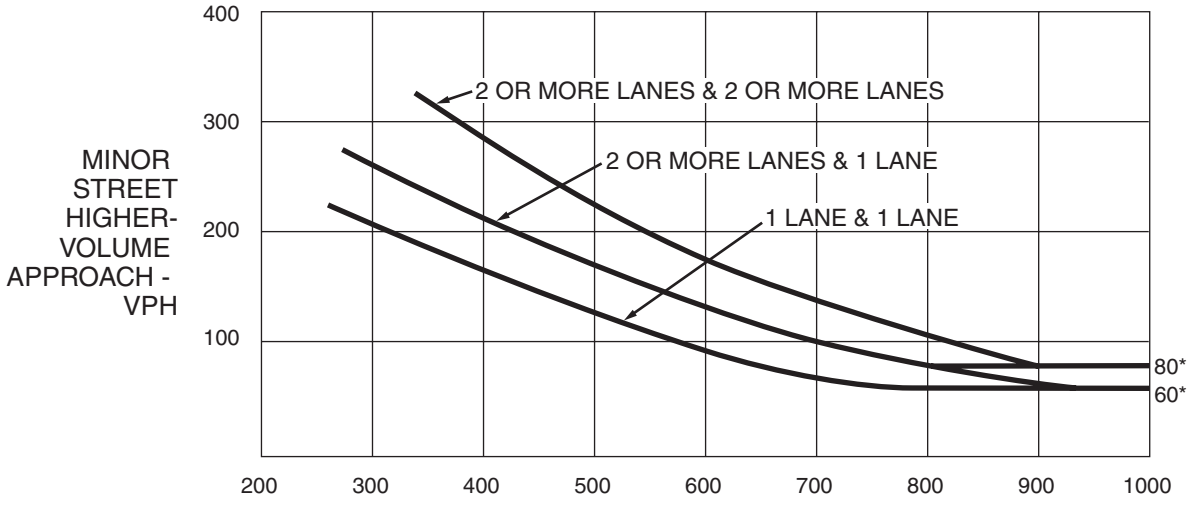
Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

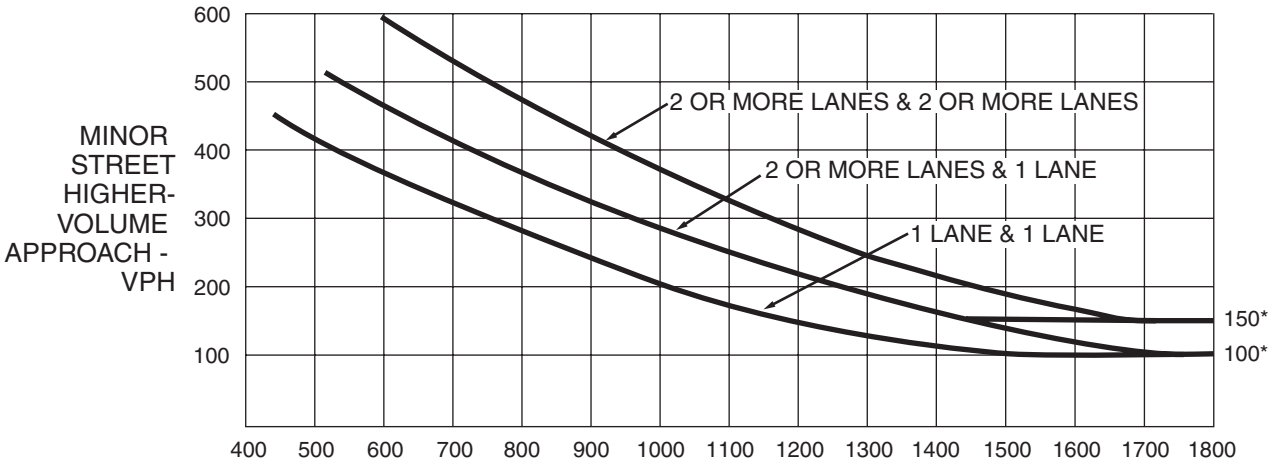
Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

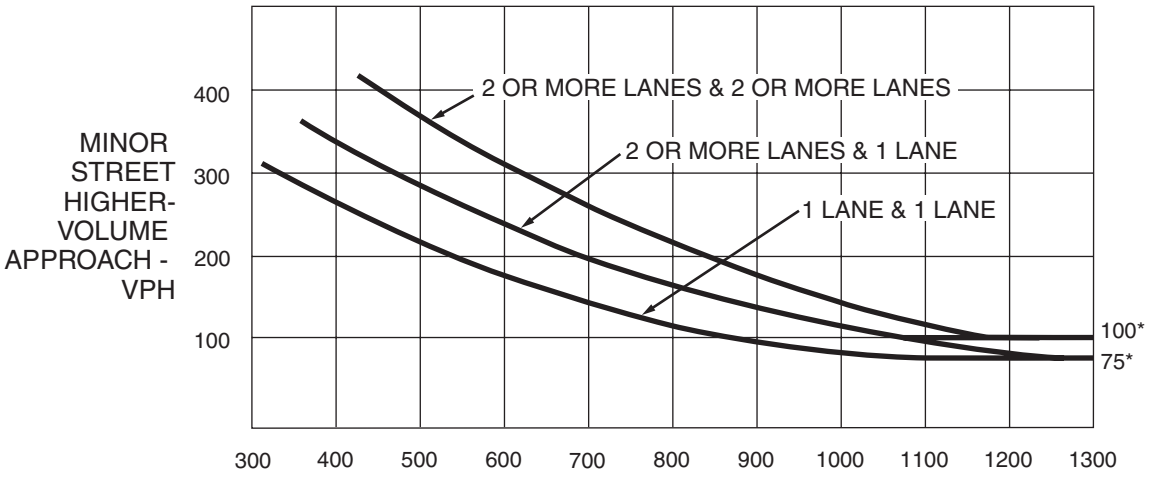
Figure 4C-3. Warrant 3, Peak Hour



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

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Section 4C.05 Warrant 4, Pedestrian Volume

Support:

01 The Pedestrian Volume signal warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

Standard:

02 **The need for a traffic control signal at an intersection or midblock crossing shall be considered if an engineering study finds that one of the following criteria is met:**

- **A. For each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) all fall above the curve in Figure 4C-5; or**
- **B. For 1 hour (any four consecutive 15-minute periods) of an average day, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) falls above the curve in Figure 4C-7.**

Option:

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 35 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-6 may be used in place of Figure 4C-5 to evaluate Criterion A in Paragraph 2, and Figure 4C-8 may be used in place of Figure 4C-7 to evaluate Criterion B in Paragraph 2.

Standard:

04 **The Pedestrian Volume signal warrant shall not be applied at locations where the distance to the nearest traffic control signal or STOP sign controlling the street that pedestrians desire to cross is less than 300 feet, unless the proposed traffic control signal will not restrict the progressive movement of traffic.**

05 **If this warrant is met and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E.**

Guidance:

06 *If this warrant is met and a traffic control signal is justified by an engineering study, then:*

- *A. If it is installed at an intersection or major driveway location, the traffic control signal should also control the minor-street or driveway traffic, should be traffic-actuated, and should include pedestrian detection.*
- *B. If it is installed at a non-intersection crossing, the traffic control signal should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs, and should be pedestrian-actuated. If the traffic control signal is installed at a non-intersection crossing, at least one of the signal faces should be over the traveled way for each approach, parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the crosswalk or site accommodations should be made through curb extensions or other techniques to provide adequate sight distance, and the installation should include suitable standard signs and pavement markings.*
- *C. Furthermore, if it is installed within a signal system, the traffic control signal should be coordinated.*

Option:

07 The criterion for the pedestrian volume crossing the major street may be reduced as much as 50 percent if the 15th-percentile crossing speed of pedestrians is less than 3.5 feet per second.

08 A traffic control signal may not be needed at the study location if adjacent coordinated traffic control signals consistently provide gaps of adequate length for pedestrians to cross the street.

Section 4C.06 Warrant 5, School Crossing

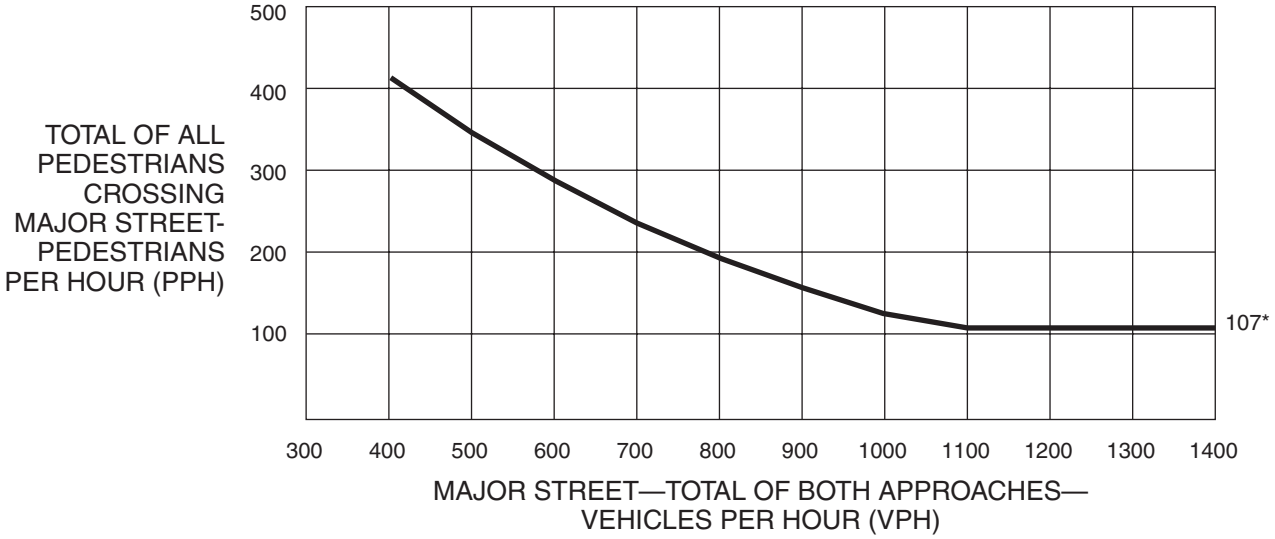
Support:

01 The School Crossing signal warrant is intended for application where the fact that schoolchildren cross the major street is the principal reason to consider installing a traffic control signal. For the purposes of this warrant, the word “schoolchildren” includes elementary through high school students.

Standard:

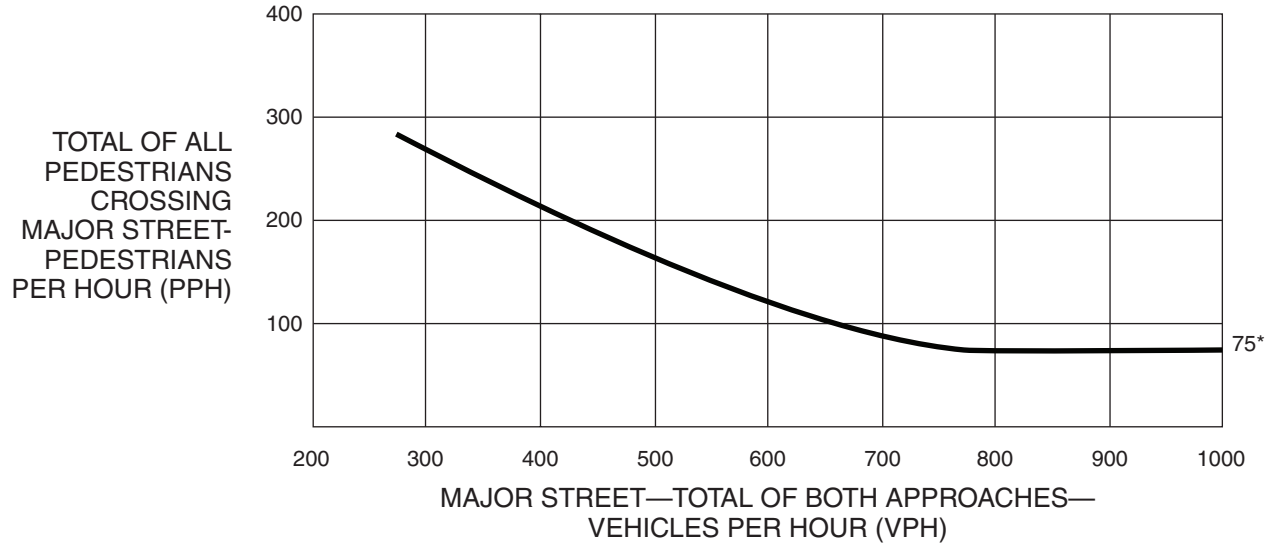
02 **The need for a traffic control signal shall be considered when an engineering study of the frequency and adequacy of gaps in the vehicular traffic stream as related to the number and size of groups of schoolchildren at an established school crossing across the major street shows that the number of adequate gaps in the traffic stream during the period when the schoolchildren are using the crossing is less than the number of minutes in the same period (see Section 7A.03) and there are a minimum of 20 schoolchildren during the highest crossing hour.**

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume



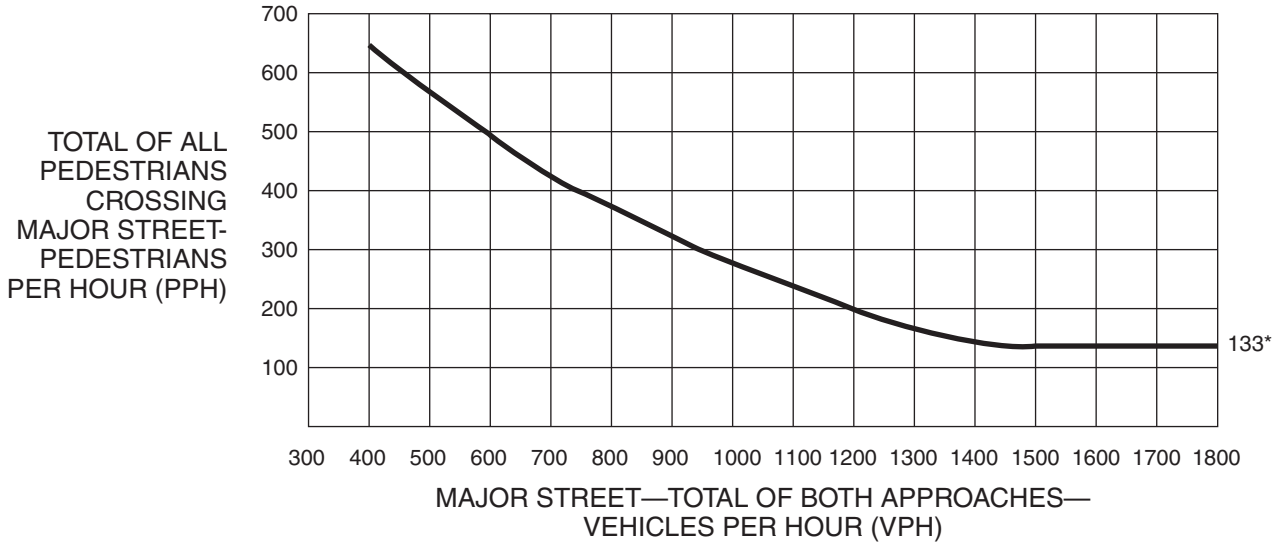
*Note: 107 pph applies as the lower threshold volume.

Figure 4C-6. Warrant 4, Pedestrian Four-Hour Volume (70% Factor)



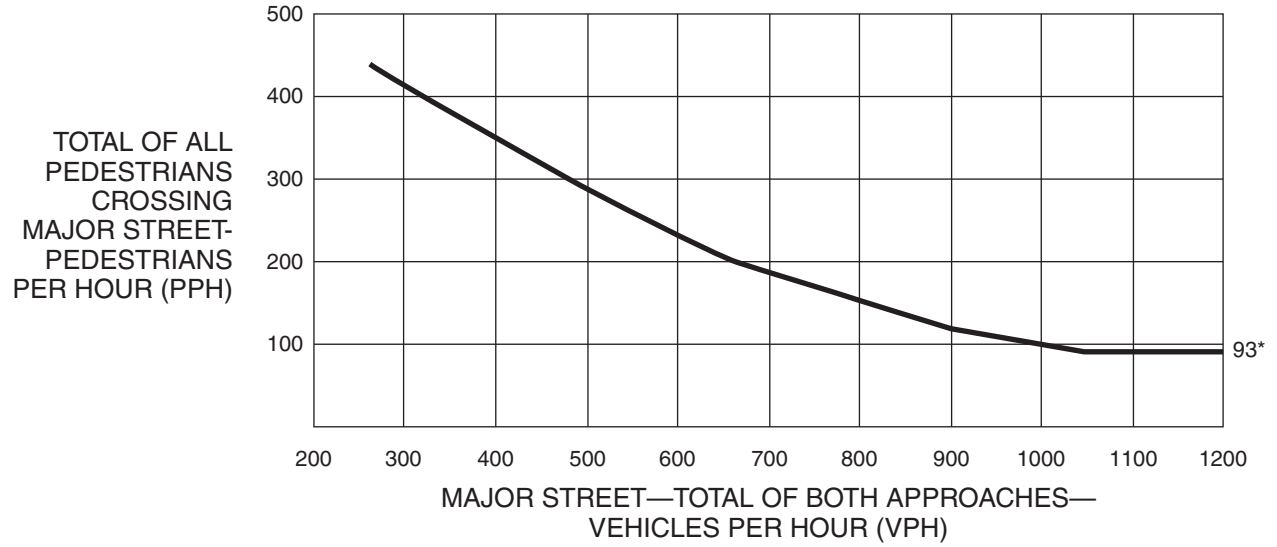
*Note: 75 pph applies as the lower threshold volume.

Figure 4C-7. Warrant 4, Pedestrian Peak Hour



*Note: 133 pph applies as the lower threshold volume.

Figure 4C-8. Warrant 4, Pedestrian Peak Hour (70% Factor)



*Note: 93 pph applies as the lower threshold volume.

03 **Before a decision is made to install a traffic control signal, consideration shall be given to the implementation of other remedial measures, such as warning signs and flashers, school speed zones, school crossing guards, or a grade-separated crossing.**

04 **The School Crossing signal warrant shall not be applied at locations where the distance to the nearest traffic control signal along the major street is less than 300 feet, unless the proposed traffic control signal will not restrict the progressive movement of traffic.**

Guidance:

05 *If this warrant is met and a traffic control signal is justified by an engineering study, then:*

A. If it is installed at an intersection or major driveway location, the traffic control signal should also control the minor-street or driveway traffic, should be traffic-actuated, and should include pedestrian detection.

B. If it is installed at a non-intersection crossing, the traffic control signal should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs, and should be pedestrian-actuated. If the traffic control signal is installed at a non-intersection crossing, at least one of the signal faces should be over the traveled way for each approach, parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the crosswalk or site accommodations should be made through curb extensions or other techniques to provide adequate sight distance, and the installation should include suitable standard signs and pavement markings.

C. Furthermore, if it is installed within a signal system, the traffic control signal should be coordinated.

Section 4C.07 Warrant 6, Coordinated Signal System

Support:

01 Progressive movement in a coordinated signal system sometimes necessitates installing traffic control signals at intersections where they would not otherwise be needed in order to maintain proper platooning of vehicles.

Standard:

02 **The need for a traffic control signal shall be considered if an engineering study finds that one of the following criteria is met:**

A. On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.

B. On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.

Guidance:

03 *The Coordinated Signal System signal warrant should not be applied where the resultant spacing of traffic control signals would be less than 1,000 feet.*

Section 4C.08 Warrant 7, Crash Experience

Support:

01 The Crash Experience signal warrant conditions are intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal.

Standard:

02 **The need for a traffic control signal shall be considered if an engineering study finds that all of the following criteria are met:**

A. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency; and

B. Five or more reported crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period, each crash involving personal injury or property damage apparently exceeding the applicable requirements for a reportable crash; and

C. For each of any 8 hours of an average day, the vehicles per hour (vph) given in both of the 80 percent columns of Condition A in Table 4C-1 (see Section 4C.02), or the vph in both of the 80 percent columns of Condition B in Table 4C-1 exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection, or the volume of pedestrian traffic is not less than 80 percent of the requirements specified in the Pedestrian Volume warrant. These major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.

Option:

03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 56 percent columns in Table 4C-1 may be used in place of the 80 percent columns.

Section 4C.09 Warrant 8, Roadway Network

Support:

01 Installing a traffic control signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway network.

Standard:

02 **The need for a traffic control signal shall be considered if an engineering study finds that the common intersection of two or more major routes meets one or both of the following criteria:**

- **A. The intersection has a total existing, or immediately projected, entering volume of at least 1,000 vehicles per hour during the peak hour of a typical weekday and has 5-year projected traffic volumes, based on an engineering study, that meet one or more of Warrants 1, 2, and 3 during an average weekday; or**
- **B. The intersection has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of any 5 hours of a non-normal business day (Saturday or Sunday).**

03 **A major route as used in this signal warrant shall have at least one of the following characteristics:**

- **A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow.**
- **B. It includes rural or suburban highways outside, entering, or traversing a city.**
- **C. It appears as a major route on an official plan, such as a major street plan in an urban area traffic and transportation study.**

Section 4C.10 Warrant 9, Intersection Near a Grade Crossing

Support:

01 The Intersection Near a Grade Crossing signal warrant is intended for use at a location where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic control signal.

Guidance:

02 *This signal warrant should be applied only after adequate consideration has been given to other alternatives or after a trial of an alternative has failed to alleviate the safety concerns associated with the grade crossing. Among the alternatives that should be considered or tried are:*

- *A. Providing additional pavement that would enable vehicles to clear the track or that would provide space for an evasive maneuver, or*
- *B. Reassigning the stop controls at the intersection to make the approach across the track a non-stopping approach.*

Standard:

03 **The need for a traffic control signal shall be considered if an engineering study finds that both of the following criteria are met:**

- **A. A grade crossing exists on an approach controlled by a STOP or YIELD sign and the center of the track nearest to the intersection is within 140 feet of the stop line or yield line on the approach; and**
- **B. During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the minor-street approach that crosses the track (one direction only, approaching the intersection) falls above the applicable curve in Figure 4C-9 or 4C-10 for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance as defined in Section 1A.13.**

Guidance:

04 *The following considerations apply when plotting the traffic volume data on Figure 4C-9 or 4C-10:*

- *A. Figure 4C-9 should be used if there is only one lane approaching the intersection at the track crossing location and Figure 4C-10 should be used if there are two or more lanes approaching the intersection at the track crossing location.*

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