TRAFFIC IMPACT STUDY

FOR

EAST AURORA SCHOOL DISTRICT #131

EAST AURORA HIGH SCHOOL EXPANSION

Aurora, Illinois

Prepared For:

East Aurora School District #131
McKnight School Service Center
417 Fifth Street
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Job No. SD1602

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INTRODUCTION

The East Aurora School District (EASD) is proposing an expansion of the existing East Aurora High School which will include building expansion, rebuilding the existing football field, stormwater detention, reconfigured parking, and a new entrance on Fifth Avenue. The site is located on the south side of Fifth Avenue between the intersections of Smith Boulevard to the east and State Street to the west. A site location map for the proposed development is included as **Exhibit A**. The school will include the current 350,720 sf existing building plus the addition of another 64,840 sf to the main building and 9,150 sf of concessions and maintenance buildings for a total of approximately 415,560 sf to the main building. The proposed expansion will remove the two existing driveways off of Fifth Avenue (one entrance driveway and one exit driveway) into one combined driveway for entering and exiting traffic at Fifth Avenue and Tomcat Lane. Also included is the addition of parking along South State Street. Refer to **Exhibit B** for the proposed site plan.

This Traffic Impact Study will evaluate the anticipated traffic impacts of the expansion on the surrounding roadway system. The existing traffic data will be combined with the site generated data to determine the impacts that the new proposed expanded facility will create. This report also includes a description of existing conditions, future conditions, data analysis and conclusions and recommendations.

EXECUTIVE SUMMARY

The Traffic Impact Study for the proposed expansion of East Aurora School District East Aurora High School on Fifth Avenue in the City of Aurora was completed in accordance with current engineering practices. The school expansion will serve up to 600 additional students upon build out. The proposed expansion will generate up to 275 additional trips with 190 entering and 85 exiting during the A.M. peak of the site and up to 225 additional trips with 72 entering and 153 exiting during the P.M. peak of the site. The detailed directional and driveway distribution is shown below in the report.

Currently the driveway at Fifth Avenue and Tomcat Lane operates between a C and D level of service for the northbound approach with the highest amount of delay occurring for the exiting left turn movement. Our analysis shows that the proposed increased traffic will significantly increase the delay to the northbound approach. Post expansion, the driveway will operate between a C and F level of service for the northbound approach. With minor pavement marking improvements, the level of service can be increased, ranging from a C to an E.

EXISTING CONDITIONS

Site Location

The parcel of property being expanded is located in the City of Aurora, Illinois and is located on the south side of Fifth Avenue between State Street and Smith Boulevard. **Exhibit A** shows the proposed site location.

Land Use

The proposed expansion will be contained within the existing parcel for the East Aurora High School. The existing land use surrounding the high school is residential. The existing land use can be seen in **Exhibit B**.

Existing Roadways

Fifth Avenue

Fifth Avenue is an east-west local road under the maintenance and jurisdiction of the City of Aurora. The current lane configuration at the intersection of Tomcat Lane has one left turn lane in the westbound direction with a painted median on the other side of the intersection, and one through lane in each direction. There is not a posted speed limit on Fifth Avenue in this area, so the speed limit is assumed to be 25 mph.

Tomcat Lane

Tomcat Lane is the driveway entrance into/exit out of the East Aurora High School parking lot. The current configuration consists of two driveways with one driveway containing one entrance lane and the second driveway containing one left turn lane and one right turn lane exiting out of the school.

Existing Traffic Volumes

The traffic volumes for the intersection of Fifth Avenue and Tomcat Lane and at the existing driveway at South State Street and Sixth Avenue are based on traffic data collected in the field by our office on May 11, 2016 and May 5, 2016, respectively. See **Appendix A** for a summary of the results. The time periods of 7:00-9:00 AM and 1:30-3:30 PM were analyzed because the high school begins at 7:55 AM and ends at 3:04 PM. The existing 2016 traffic volumes for the peak hour of our proposed site are shown in **Exhibit C**.

Existing Traffic Patterns

Vehicular Traffic

As there is currently a drop-off lane on Fifth Avenue just east of the intersection with Tomcat Lane, multiple vehicles would drop off there. In addition, some vehicles also

dropped off students by stopping in the eastbound travel lane. Both of these instances affected the traffic traveling eastbound on Fifth Avenue.

Several vehicles that dropped off students in the drop-off lane and the travel lane would pull into a residential driveway on the north side of Fifth Avenue to turn around. Some vehicles were also observed dropping off students by stopping in the westbound travel lane. Both of these instances affected the traffic traveling westbound on Fifth Avenue.

Pedestrian Traffic

There are currently two sidewalk ramps on the north side of Fifth Avenue at the dead end of Howell Place. The west ramp is at a marked crosswalk on Fifth Avenue, but there is also a receiving ramp on the south side of Fifth Avenue for the east ramp. For this reason, pedestrians cross at both locations.

There are two more marked crosswalks along Fifth Avenue, one near the north entrance to the school and the other at the intersection with Smith Boulevard. However, students were observed crossing all along Fifth Avenue.

In **Photo 1** below, pedestrians can be seen crossing in multiple locations along Fifth Avenue. On the left side of the photo, two vehicles can be seen pulling into residential driveways to turn around. On the right side of the photo, two vehicles can be seen stopped in the eastbound through travel lane to drop-off. The vehicles aren't pulled up far enough to be within the drop-off lane limits, and vehicles traveling eastbound will need to drive partially in the westbound turn lane if they want to go around them.

Photo 1. Observed Traffic Patterns

FUTURE CONDITIONS

Roadway Network

Access to the high school after the expansion will remain primarily the same as current conditions. The only difference is that the intersection of Fifth Avenue and Tomcat Lane will be condensed into one driveway, consisting of one entrance lane into the school parking lot and two lanes exiting the property (one left turn lane and one right turn lane). The driveway at the intersection of Sixth Avenue and South State Street will remain the same.

Refer to **Exhibit B** for the proposed site plan.

Future Traffic Volumes

It is anticipated that full build-out of the property will be completed by the fall of 2018. In order to obtain 2018 background traffic figures for this study, the growth in traffic along the adjacent roadways had to be established. The existing peak hour traffic volumes on Fifth Avenue were increased by a factor of 0.8 percent per year compounded. The growth rate of 0.8 percent per year was determined using current ADT traffic volumes and a projected ADT for 2040 performed by Chicago Metropolitan Agency for Planning. **Exhibit D** illustrates the projected year 2018 peak hour volumes for the two driveways.

TRIP GENERATION AND DISTRIBUTION

The volume of traffic generated by a new development is typically based on the type of land use and the size of development, with consideration given to the amount of internal and pass-by traffic associated with the development. Due to expansion being at a high school, there is no need to consider pass-by traffic or internal trips as the trips are almost all destination oriented.

Trip Generation

Given the proposed use of the site Land Use (530) High School from the Institute of Transportation Engineers (ITE) report title Trip Generation, 7th edition, 2003, was the most appropriate. The ITE Trip Generation graphs are shown in **Appendix B**. **Table 1** and **Table 2** below show the entering and exiting trips for the A.M. and P.M. peak of the generator based on the increased number of students.

Land Use (I.T.E. Land Use Code)	Student Increase	A.M. Peak Hour		
		Trips Generated	Trips Entering	Trips Exiting
High School (530)	600	275	190	85

Table 1: Trip Generation- A.M. Peak Hour

Land Use (I.T.E. Land Use Code)	Student Increase	P.M. Peak Hour		
		Trips Generated	Trips Entering	Trips Exiting
High School (530)	600	225	72	153

Table 2: Trip Generation- P.M. Peak Hour

We also established generated volumes based on projected enrollment data provided by the East Aurora School District. The district determined that there will be approximately 600 additional students attending the high school after the expansion. The following assumptions were made to estimate the trips generated:

- The percentages of students that will walk to school, that will be dropped off, and that will be driving themselves is unknown. Therefore, the existing A.M. and P.M. peak hour traffic was increased by approximately 15.8% since that is the estimated increase in student population after the expansion.
- The 15.8% increase in vehicular traffic was included for both driveways, the driveway at Fifth Avenue and Tomcat Lane and the driveway at the intersection of Sixth Avenue and South State Street.
- Since drop-offs occur along Fifth Avenue east of the intersection with Tomcat Lane, the 15.8% increase was included for the eastbound and westbound through traffic

for the driveway at Fifth Avenue and Tomcat. The eastbound through traffic increase was included in the "entering" trips and the westbound traffic through traffic increase was included in the "exiting" trips.

The trip generation can be seen in the **Table 3** below. As can be seen our trips generated are significantly lower than those in the ITE Trip Generation Manual.

	Trips Generated	Entering	Exiting
A.M.	202	133	69
P.M.	159	75	84

Table 3: Trips Generated

Since the trips generated calculated from the ITE Trip Generation Manual yielded higher numbers, those figures were used in this analysis.

Directional Distribution

The directional distribution of the site generated traffic was determined based on the distribution of the existing movements at the intersection of Fifth Avenue and Tomcat Lane. Different directional distribution percentages were used for the A.M. and P.M. peak periods. The following tables (**Tables 4 through 7**) list the directional distribution utilized for this analysis. As stated previously in this report, the eastbound and westbound through movements were included in the directional distribution due to the drop-offs that occur on Fifth Avenue.

Movement	Existing A.M. Peak Traffic	Directional Distribution
Eastbound Through	287	52.8%
Eastbound Right Turn	128	23.5%
Westbound Left Turn	129	23.7%

Table 4: Directional Distribution – A.M. Peak Entering Traffic

Movement	Existing A.M. Peak Traffic	Directional Distribution
Westbound Through	185	58.4%
Northbound Left Turn	92	29.0%
Northbound Right Turn	40	12.6%

Table 5: Directional Distribution – A.M. Peak Exiting Traffic

Movement	Existing P.M. Peak Traffic	Directional Distribution
Eastbound Through	246	63.9%
Eastbound Right Turn	58	15.1%
Westbound Left Turn	81	21.0%

Table 6: Directional Distribution – P.M. Peak Entering Traffic

Movement	Existing P.M. Peak Traffic	Directional Distribution
Westbound Through	226	64.6%
Northbound Left Turn	67	19.1%
Northbound Right Turn	57	16.3%

Table 7: Directional Distribution – P.M. Peak Exiting Traffic

For the purpose of this analysis, it was assumed that 50-75% of the site generated traffic would travel through Driveway 1 (Fifth Avenue and Tomcat Lane). The cars entering and exiting would follow the directional distribution as stated above. **Exhibit E** and **Exhibit F** show the traffic generated by the site in the A.M. and P.M. peak assuming the trip generation is split equally between the two driveways. **Exhibit H** and **Exhibit I** show the traffic generated by the site assuming 75% of the traffic travels through Driveway 1 and 25% travels through Driveway 2. Since the trip generation values only account for the increase in vehicular traffic, the pedestrian traffic was increased by 15.8% for all movements at Driveway 1.

In order to determine the total traffic for 2018, the background traffic and the site generated traffic are combined using the directional distribution, entrance distribution, and the exit distribution of the site generated traffic. This results in the total projected 2018 peak hour traffic volumes as illustrated in **Exhibit G** for a 50%/50% traffic split and **Exhibit J** for a 75%/25% traffic split.

EVALUATION

The existing Levels of Service for westbound and northbound approaches were evaluated for the intersection of Fifth Avenue and Tomcat Lane. The results are shown below in **Table 8** for the A.M. and P.M. peak hours.

The program used to evaluate the LOS for the intersection, Highway Capacity Software, makes the following assumptions:

- There will be no delay associated with the through movements on the major road road for a two-way stop controlled intersection. Due to this, the program does not give a LOS for the through movements or for the intersection as a whole. The westbound delay and LOS shown below is due to the left turn movement only.
- Pedestrian traffic will yield to the major road vehicular movements and wait until a gap exists to cross the road. Pedestrian traffic crossing the minor street approaches will take precedence and further delay those vehicular movements.
- The pedestrian flow input into the program is not the total amount of pedestrians crossing but the number of crossings instead. Therefore, a 25% reduction in pedestrian volume was used to account for some students crossing the intersection concurrently.

Approach	A.M. Peak		P.M. Peak	
	Delay	LOS	Delay	LOS
Westbound	3.8	A	2.4	A
Northbound	50.0	E	23.1	C

Table 8: Existing LOS and Approach Delay

The future LOS for the westbound and northbound approaches were then evaluated for the intersection for the year 2018, when the school expansion is expected to be complete. An evaluation was performed for 50% and 75% of the trip generation traffic being applied to Driveway 1. The results are shown below in **Table 9**.

Approach	A.M. Peak		P.M. Peak	
	Delay	LOS	Delay	LOS
Westbound - 50% Traffic	4.2	A	2.3	A
Northbound - 50% Traffic	134.9	F	32.5	D
Westbound - 75% Traffic	4.3	A	2.2	A
Northbound - 75% Traffic	198.4	F	38.6	E

Table 9: Future LOS and Approach Delay

The LOS for northbound approach increased significantly, especially in the A.M. peak period. One way to help mitigate that approach delay is to do some updates to the pavement markings on Fifth Avenue. Since the future driveway layout for the intersection at Tomcat Lane is further east than the current entrance driveway, the painted median to the east will need to be extended. If the painted median is instead updated to a two-way left turn lane, an assumption can be made that the TWLTL can store two vehicles. This will allow vehicles turning left onto Fifth Avenue from Tomcat Lane to begin their turning movement when there is a gap in eastbound traffic, wait in the TWLTL temporarily, and complete their turning movement when there is a gap in westbound traffic. The northbound left turning movement had a worse delay than the northbound right turning movement, so that restriping will make a huge impact on the approach LOS. The results of that analysis are shown below in **Table 10**.

Approach	A.M. Peak		P.M. Peak	
	Delay	LOS	Delay	LOS
Westbound - 50% Traffic	4.2	A	2.3	A
Northbound - 50% Traffic	37.8	E	18.6	C
Westbound - 75% Traffic	4.3	A	2.2	A
Northbound - 75% Traffic	52.2	F	19.7	C

Table 10: Future LOS and Approach Delay with Median Storage

Please refer to **Appendix C** to view the HCS Level of Service Summary Data.

Note: Average delay in seconds/vehicle.

CONCLUSIONS AND RECOMMENDATIONS

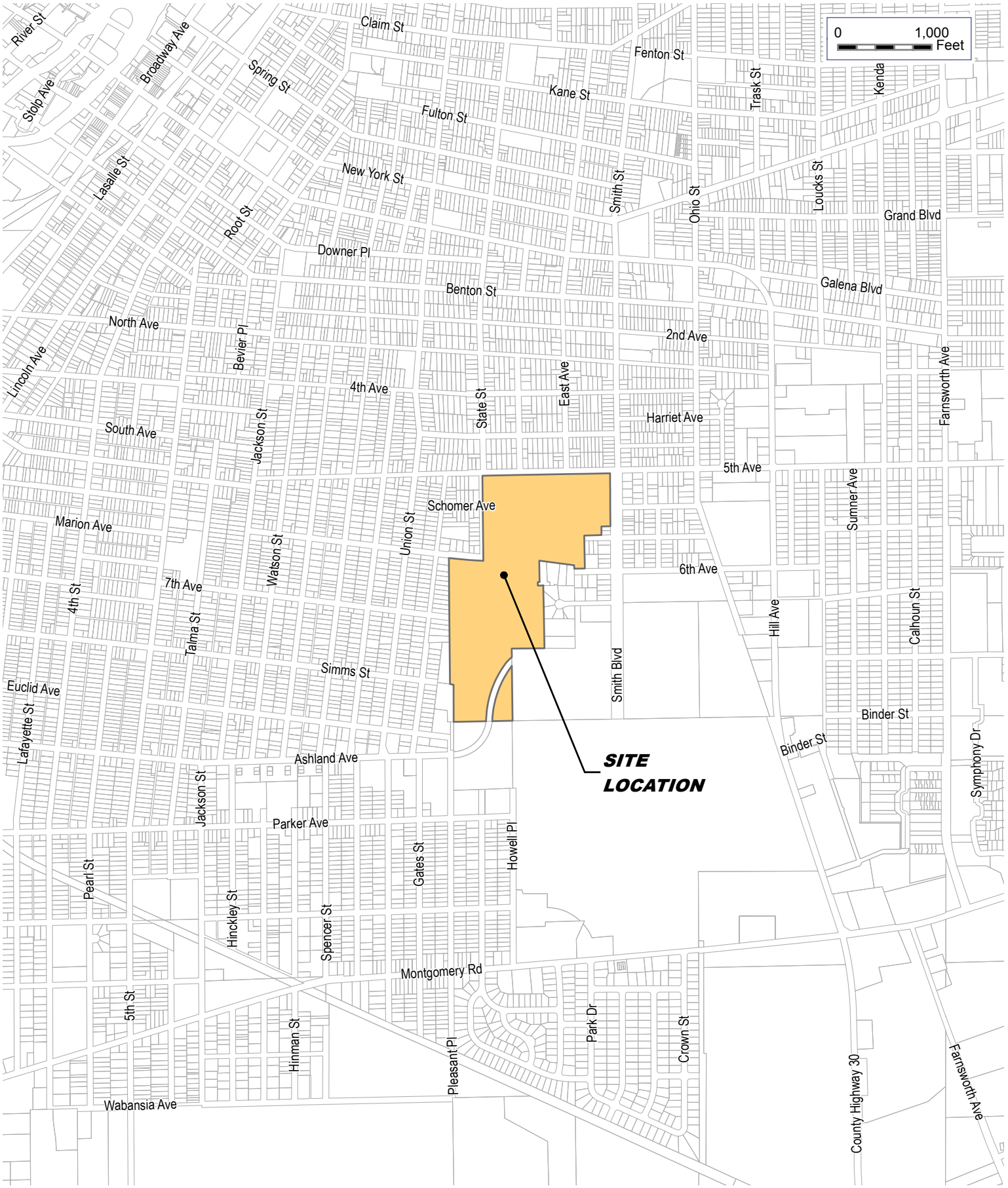
The purpose of this Traffic Impact Study is to determine the effects of the proposed EASD East Aurora High School expansion, along with the growth in background traffic on the existing intersection at Fifth Avenue and Tomcat Lane. The analyses included in the Traffic Impact Study are based on the design year of 2018, which is the estimated year the school expansion is to be complete.

The results of this traffic study for the East Aurora School District in Aurora, Illinois revealed that the traffic on Fifth Avenue experiences minimal impact due to the proposed school expansion. As shown in the evaluation section, the westbound LOS grade remains the same with at most a half of a second variation in the approach delay. Also shown in the evaluation section is the LOS for the northbound approach, and it can be seen that the egress to the site functions at an inadequate level.

Based upon the results of this Traffic Impact Study, it is our opinion that the proposed EASD East Aurora High School expansion does not require any additional work to the existing roadway system. Our analysis shows that the projected traffic volumes from the proposed school expansion will not necessitate the addition of any through or turn lanes on Fifth Avenue.

Since left turning traffic out of the site has the highest amount of delay, countermeasures should be implemented to alleviate the problem. We recommend, at a minimum, that the pedestrian crosswalk be marked on the east side of the driveway on Fifth Avenue. This will help alleviate pedestrian impacts on the northbound left turning movement. In addition, we recommend restriping the median to the west of the driveway to become a TWLTL to allow for left turning movement vehicle storage as explained in the Evaluation section of this report. Another option to consider, instead of the restriping, is to hire someone to direct traffic at the driveway before and after school to help alleviate any significant delays.

Exhibits



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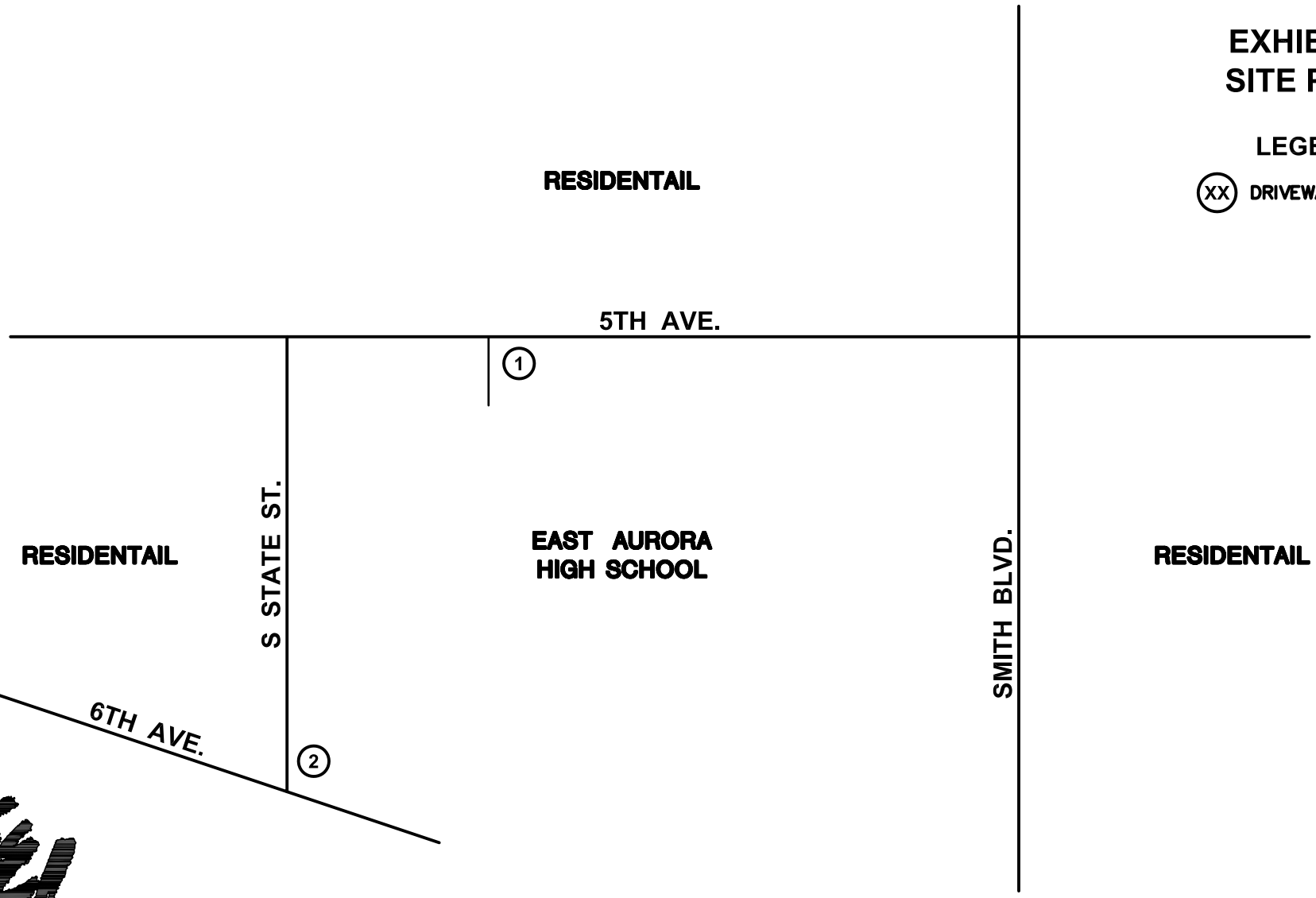
DATE:	MAY 2016
PROJECT NO.:	SD1602
BY:	MJT
PATH:	H:\GIS\SCHOOL DIS.
FILE:	SD1602-EST AURORA Location.MXD

EXHIBIT A
LOCATION MAP
EASD EAST AURURA HIGH SCHOOL
AURORA, ILLINOIS

N



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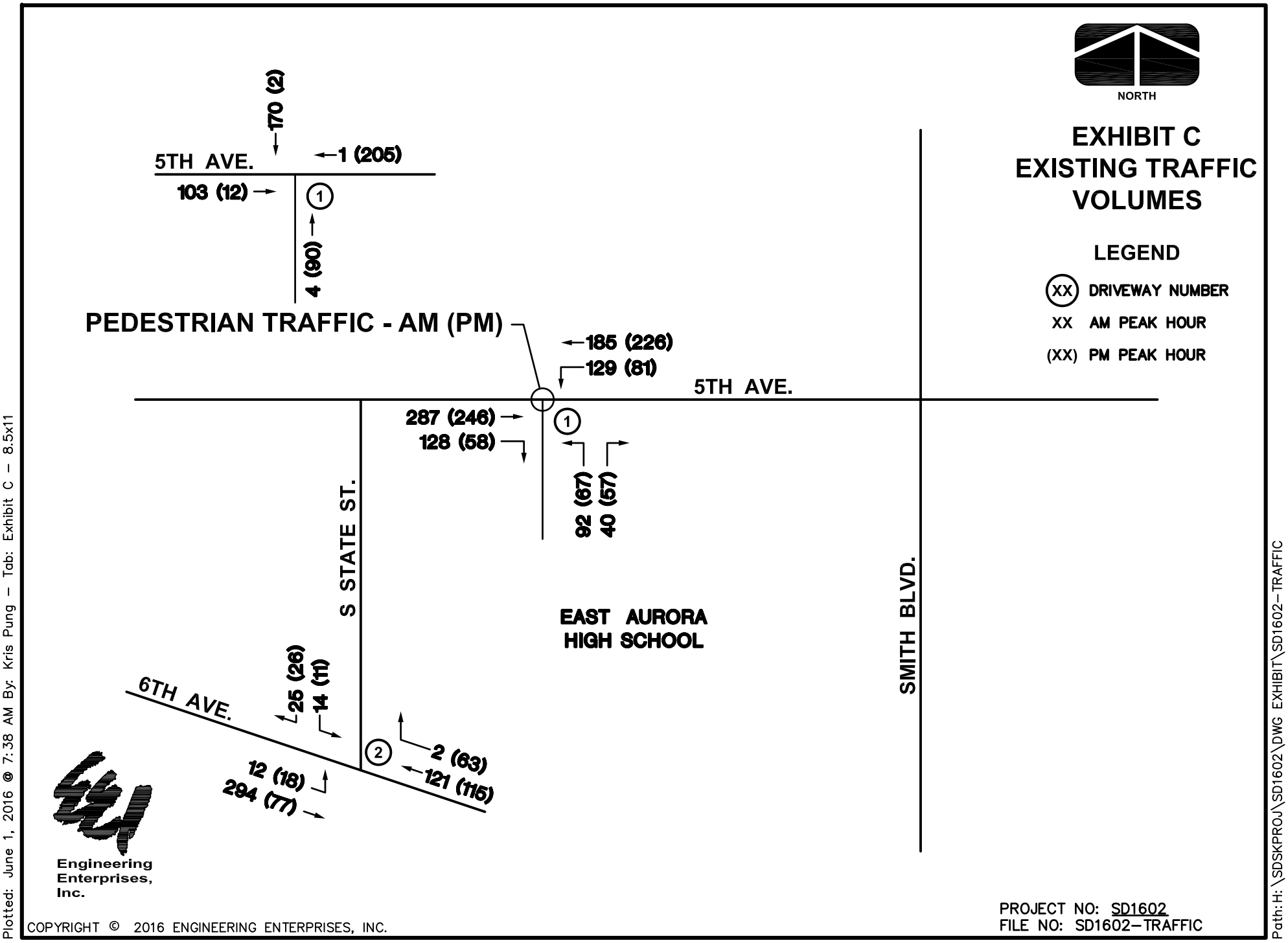

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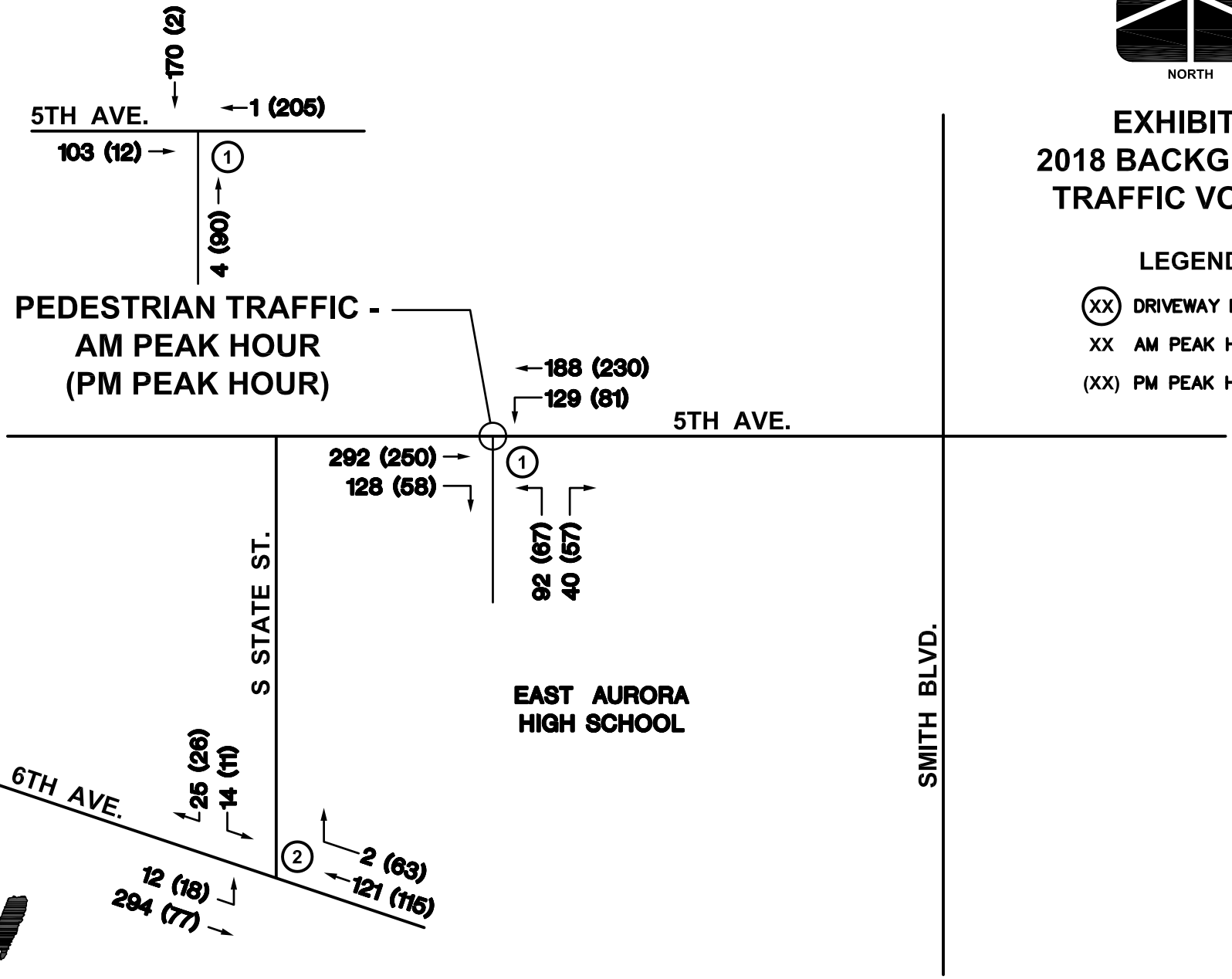
NORTH
EXHIBIT D
2018 BACKGROUND
TRAFFIC VOLUME
LEGEND
(XX) DRIVEWAY NUMBER
XX AM PEAK HOUR
(XX) PM PEAK HOUR
170 (2)
5TH AVE.
1 (205)
103 (12)
1
4 (90)
PEDESTRIAN TRAFFIC -
AM PEAK HOUR
(PM PEAK HOUR)
188 (230)
129 (81)
5TH AVE.
292 (250)
128 (58)
1
92 (67)
40 (57)
S STATE ST.
SMITH BLVD.
EAST AURORA
HIGH SCHOOL
6TH AVE.
25 (26)
14 (11)
2
2 (63)
121 (115)
12 (18)
294 (77)
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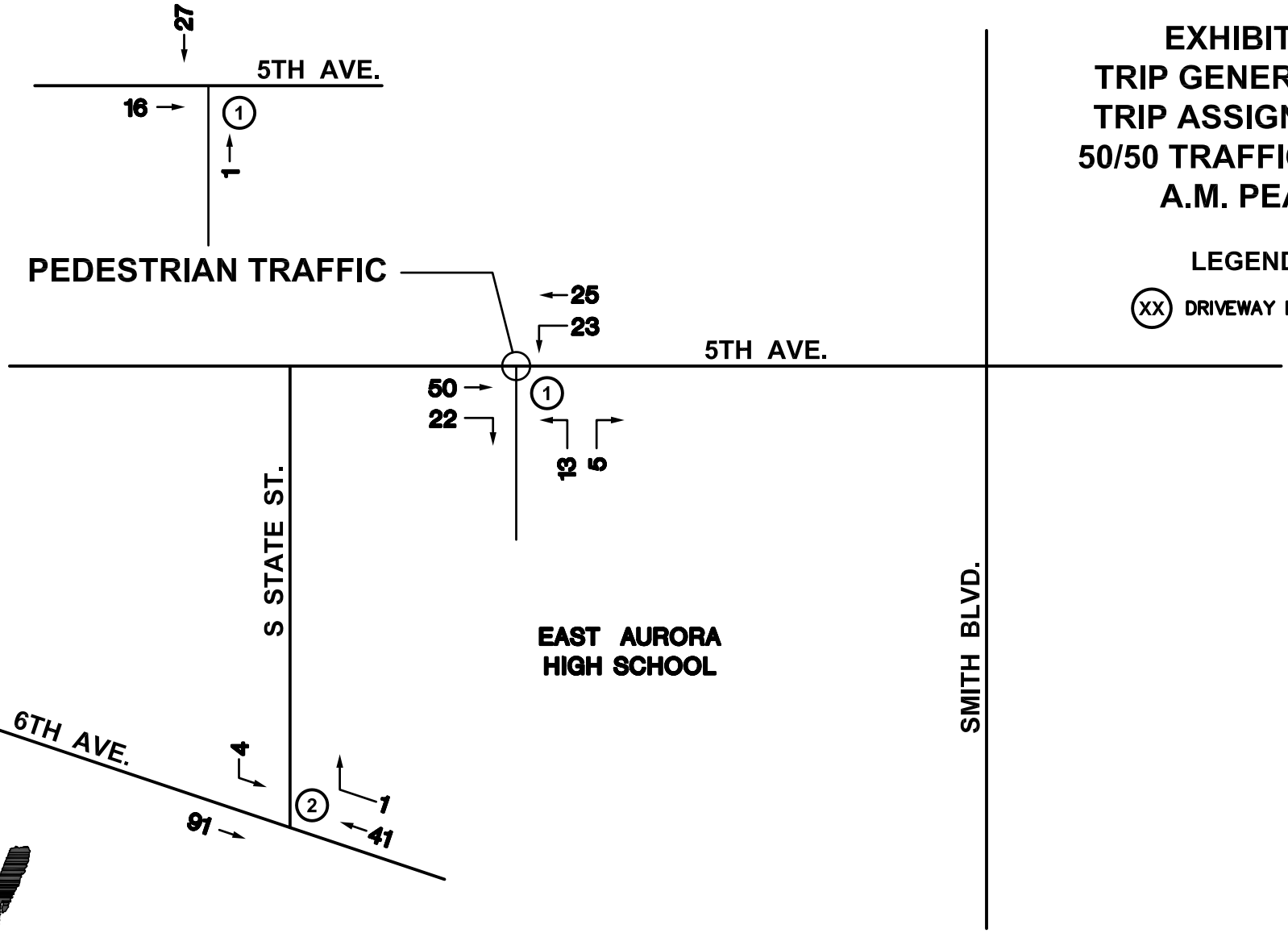

EXHIBIT E
TRIP GENERATION
TRIP ASSIGNMENT
50/50 TRAFFIC SPLIT
A.M. PEAK

LEGEND

(XX) DRIVEWAY NUMBER

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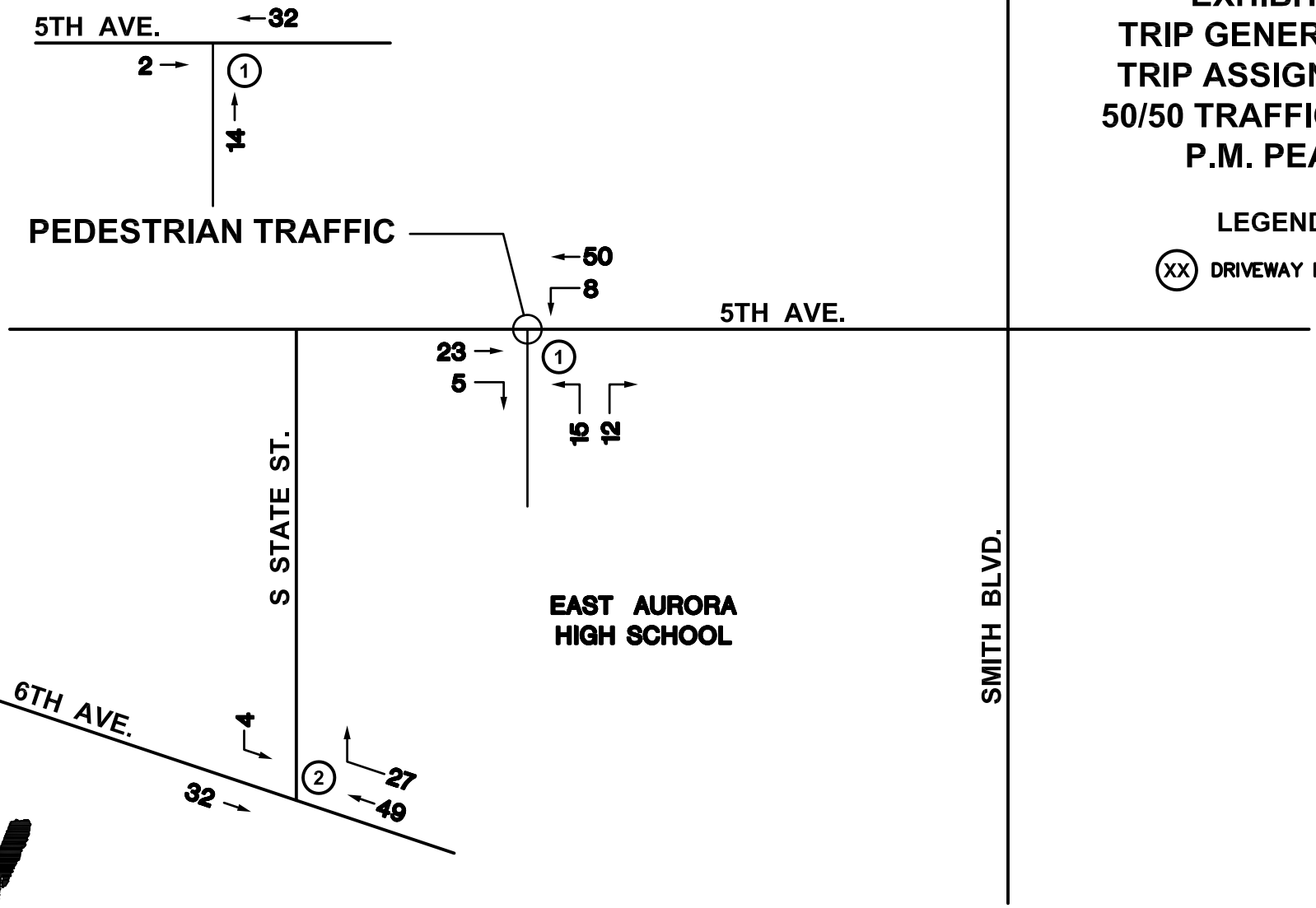

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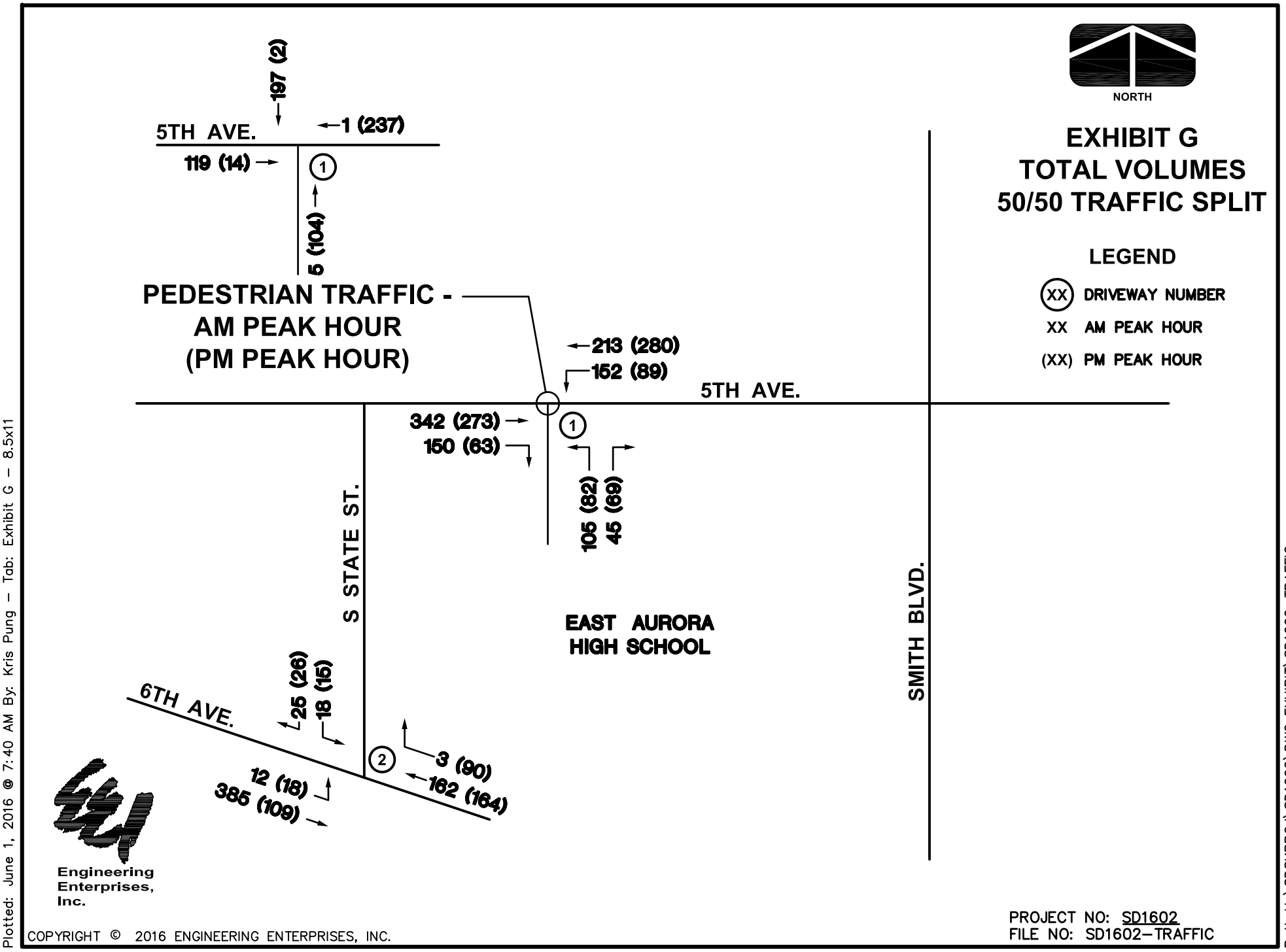
NORTH
EXHIBIT G
TOTAL VOLUMES
50/50 TRAFFIC SPLIT
LEGEND
XX DRIVEWAY NUMBER
XX AM PEAK HOUR
(XX) PM PEAK HOUR
197 (2)
5TH AVE.
1 (237)
119 (14)
1
5 (104)
PEDESTRIAN TRAFFIC -
AM PEAK HOUR
(PM PEAK HOUR)
213 (280)
152 (89)
5TH AVE.
342 (273)
150 (63)
1
105 (82)
45 (69)
S STATE ST.
SMITH BLVD.
EAST AURORA
HIGH SCHOOL
6TH AVE.
25 (26)
18 (15)
2
3 (90)
162 (164)
12 (18)
385 (109)
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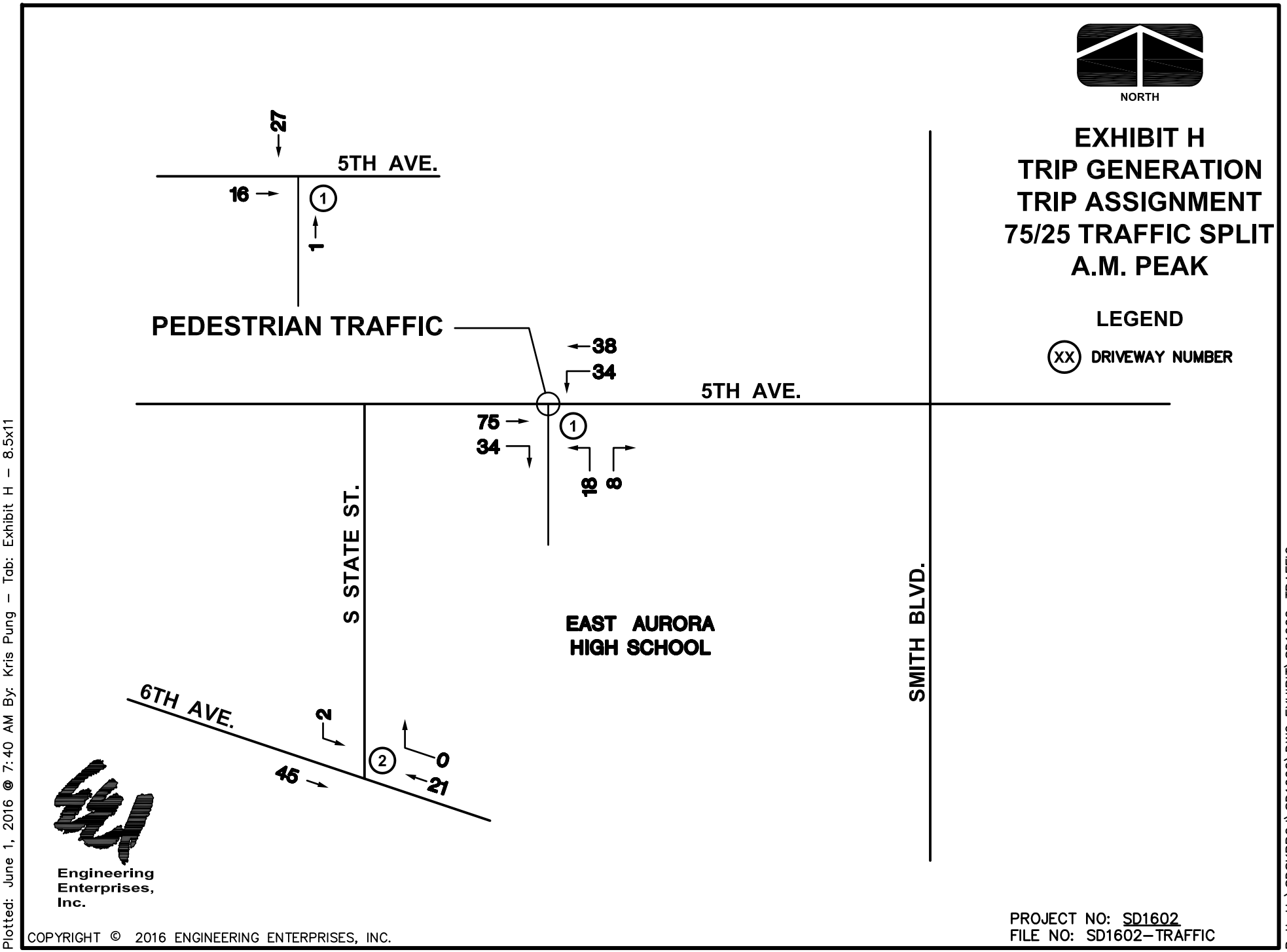

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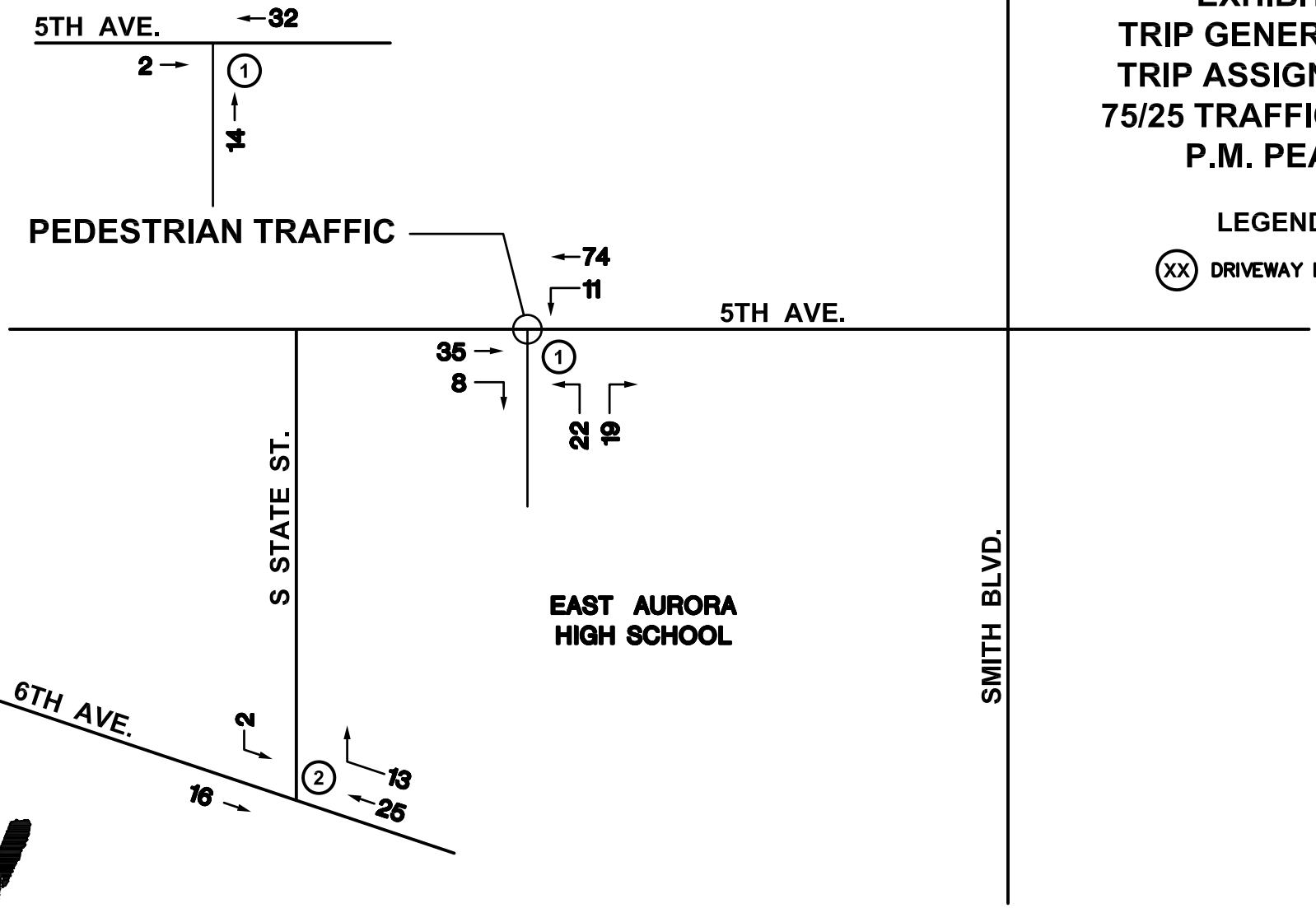

EXHIBIT I
TRIP GENERATION
TRIP ASSIGNMENT
75/25 TRAFFIC SPLIT
P.M. PEAK

LEGEND

(XX) DRIVEWAY NUMBER

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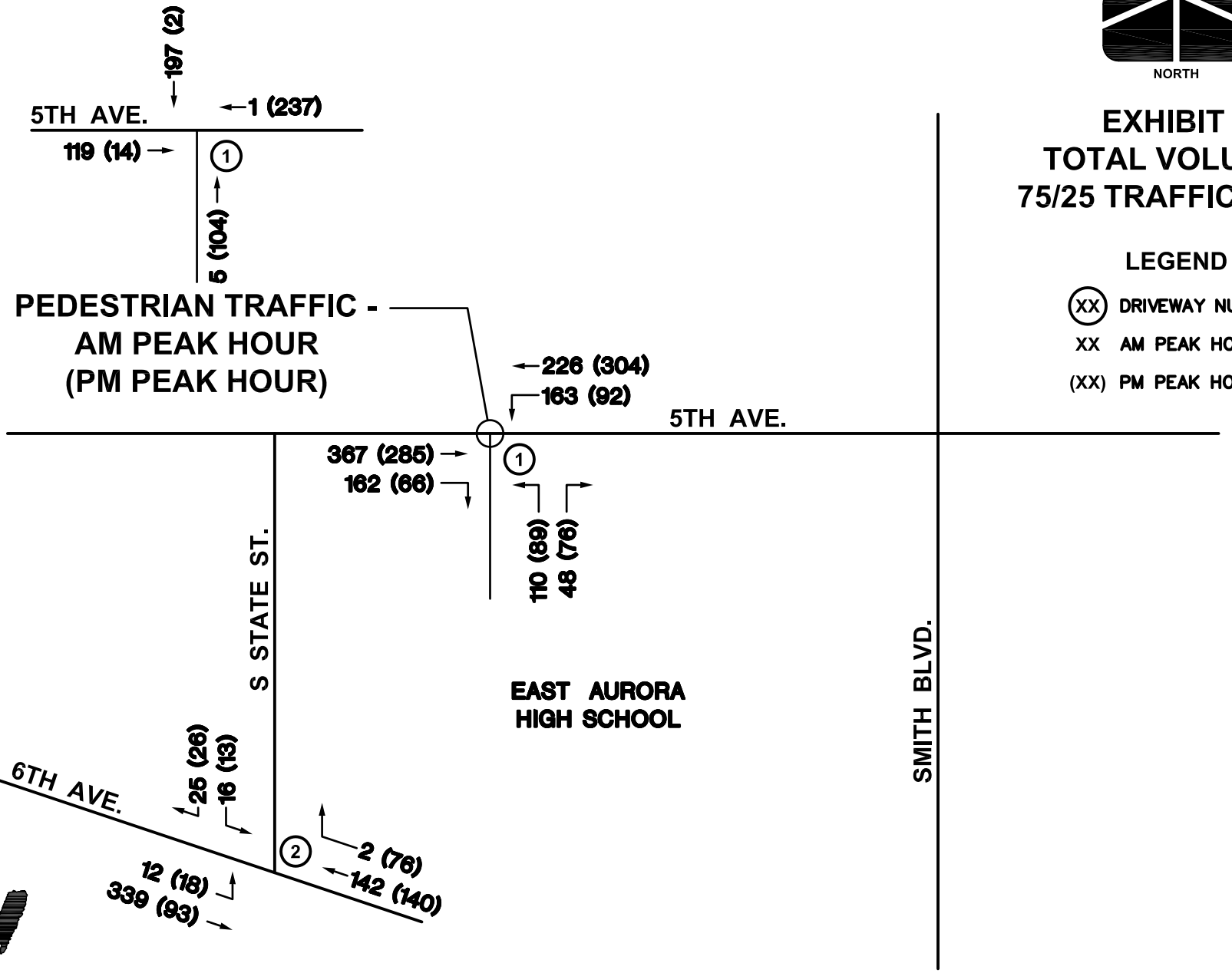

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Appendix A

Traffic Count Summary

Turning Movement Peak Hour Details

	Southbound Tomcat Lane			Westbound 5th Avenue			Northbound Tomcat Lane			Eastbound 5th Avenue			
Interval	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Total
6:45 AM	0	0	0	0	5	2	0	0	0	1	4	0	12
7:00 AM	0	0	0	0	20	37	9	0	7	7	60	0	140
7:15 AM	0	0	0	0	43	43	10	0	15	37	78	0	226
7:30 AM	0	0	0	0	50	30	8	0	43	46	81	0	258
7:45 AM	0	0	0	0	72	19	13	0	27	38	68	0	237
8:00 AM	0	0	0	0	51	6	6	0	8	5	61	0	137
8:15 AM	0	0	0	0	58	4	6	0	1	2	77	0	148
8:30 AM	0	0	0	0	43	8	4	0	3	3	77	0	138
8:45 AM	0	0	0	0	26	14	10	0	8	2	48	0	108
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	0	0	0	0	368	163	66	0	112	141	554	0	1404
Entering		0			531			178			695		
Exiting		304			480			0			620		

	North	East	South	West	Total
Pedestrians	173	3	5	120	301

Vehicle Totals

Car	0	0	0	0	362 98.4%	162 99.4%	64 97.0%	0	109 97.3%	137 97.2%	533 96.2%	0	1367 97.4%
SU	0	0	0	0	6 1.6%	1 0.6%	2 3.0%	0	3 2.7%	4 2.8%	21 3.8%	0	37 2.6%

Peak Hour: 7:00 AM - 8:00 AM

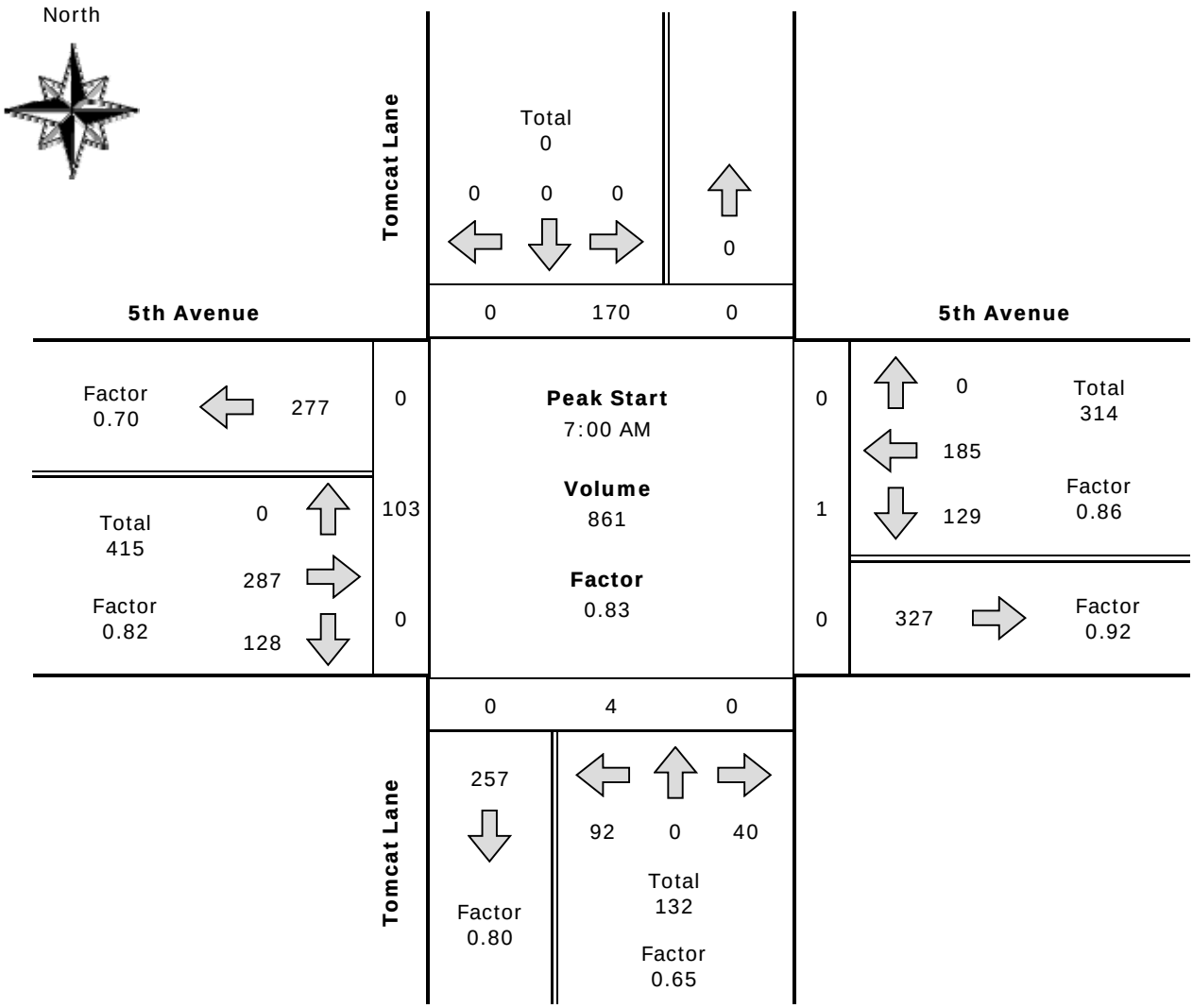
	Southbound Tomcat Lane			Westbound 5th Avenue			Northbound Tomcat Lane			Eastbound 5th Avenue			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Total
Totals	0	0	0	0	185	129	40	0	92	128	287	0	861
Factor	-	-	-	-	0.64	0.75	0.77	-	0.53	0.70	0.89	-	0.83
Entering		0			314			132			415		
Factor					0.86			0.65			0.82		
Exiting		257			277			0			327		
Factor		0.80			0.70						0.92		

	North	East	South	West	Total
Pedestrians	170	1	4	103	278

Peak Vehicles

Car	0	0	0	0	183 98.9%	128 99.2%	39 97.5%	0	91 98.9%	125 97.7%	277 96.5%	0	843 97.9%
SU	0	0	0	0	2 1.1%	1 0.8%	1 2.5%	0	1 1.1%	3 2.3%	10 3.5%	0	18 2.1%

Turning Movement Peak Hour Details



Turning Movement Peak Hour Details

	Southbound Tomcat Lane			Westbound 5th Avenue			Northbound Tomcat Lane			Eastbound 5th Avenue			
Interval	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Total
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	54	6	9	0	6	5	54	0	134
1:45 PM	0	0	0	0	63	8	4	0	11	6	52	0	144
2:00 PM	0	0	0	0	65	13	17	0	4	2	56	0	157
2:15 PM	0	0	0	0	58	6	10	0	11	4	69	0	158
2:30 PM	0	0	0	0	69	9	5	0	3	8	83	0	177
2:45 PM	0	0	0	0	69	19	7	0	3	14	64	0	176
3:00 PM	0	0	0	0	42	23	12	0	30	14	51	0	172
3:15 PM	0	0	0	0	46	30	33	0	31	22	48	0	210
3:30 PM	0	0	0	0	8	2	0	0	2	1	5	0	18
Totals	0	0	0	0	474	116	97	0	101	76	482	0	1346
Entering		0			590			198			558		
Exiting		192			575			0			579		

	North	East	South	West	Total
Pedestrians	2	214	95	12	323

Vehicle Totals

Car	0	0	0	0	463 97.7%	112 96.6%	90 92.8%	0	99 98.0%	71 93.4%	451 93.6%	0	1286 95.5%
SU	0	0	0	0	11 2.3%	4 3.4%	7 7.2%	0	2 2.0%	5 6.6%	31 6.4%	0	60 4.5%

Peak Hour: 2:30 PM - 3:30 PM

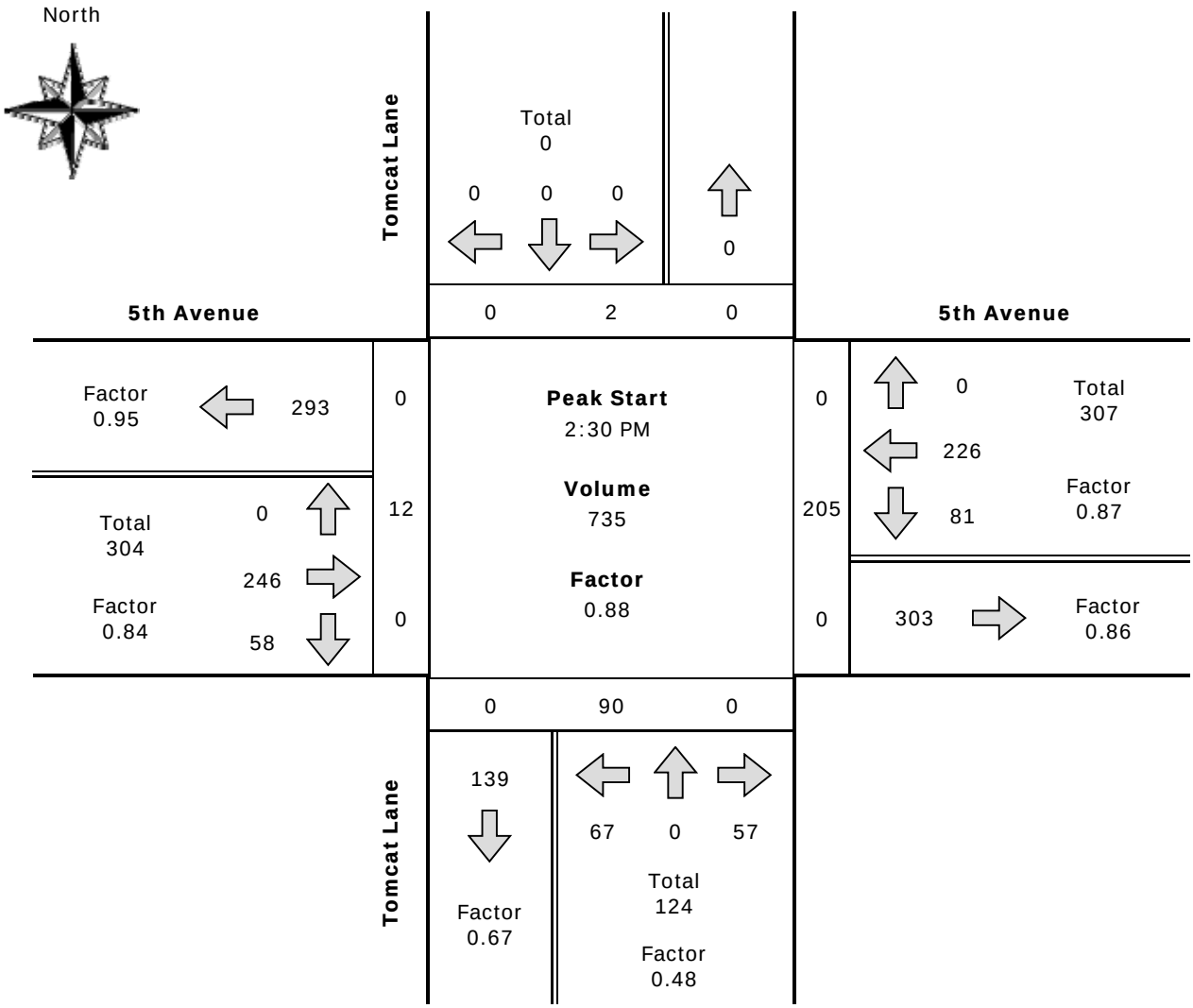
	Southbound Tomcat Lane			Westbound 5th Avenue			Northbound Tomcat Lane			Eastbound 5th Avenue			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Total
Totals	0	0	0	0	226	81	57	0	67	58	246	0	735
Factor	-	-	-	-	0.82	0.68	0.43	-	0.54	0.66	0.74	-	0.88
Entering		0			307			124			304		
Factor					0.87			0.48			0.84		
Exiting		139			293			0			303		
Factor		0.67			0.95						0.86		

	North	East	South	West	Total
Pedestrians	2	205	90	12	309

Peak Vehicles

Car	0	0	0	0	220 97.3%	77 95.1%	53 93.0%	0	66 98.5%	57 98.3%	231 93.9%	0	704 95.8%
SU	0	0	0	0	6 2.7%	4 4.9%	4 7.0%	0	1 1.5%	1 1.7%	15 6.1%	0	31 4.2%

Turning Movement Peak Hour Details



Site: Driveway 2 - AM Traffic
5/5/2016
Thursday

Turning Movement Peak Hour Details

	Southbound State Street			Westbound Parking Lot			Northbound			Eastbound 6th Ave			
Interval	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Total
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	1	0	0	0	0	0	0	0	0	0	14	0	15
7:15 AM	1	0	3	1	8	0	0	0	0	0	41	1	55
7:30 AM	4	0	4	0	51	0	0	0	0	0	144	1	204
7:45 AM	11	0	6	1	60	0	0	0	0	0	105	5	188
8:00 AM	9	0	1	0	2	0	0	0	0	0	4	5	21
8:15 AM	23	0	1	1	4	0	0	0	0	0	5	15	49
8:30 AM	1	0	0	0	2	0	0	0	0	0	7	6	16
8:45 AM	0	0	6	0	0	0	0	0	0	0	14	1	21
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	50	0	21	3	127	0	0	0	0	0	334	34	569
Entering		71			130			0			368		
Exiting		0			177			37			355		

	North	East	South	West	Total
Pedestrians	0	0	0	0	0

Vehicle Totals

Car	49 98.0%	0	21 100%	3 100%	127 100%	0	0	0	0	0	334 100%	34 100%	568 99.8%
SU	1 2.0%	0	0	0	0	0	0	0	0	0	0	0	1 0.2%

Peak Hour: 7:15 AM - 8:15 AM

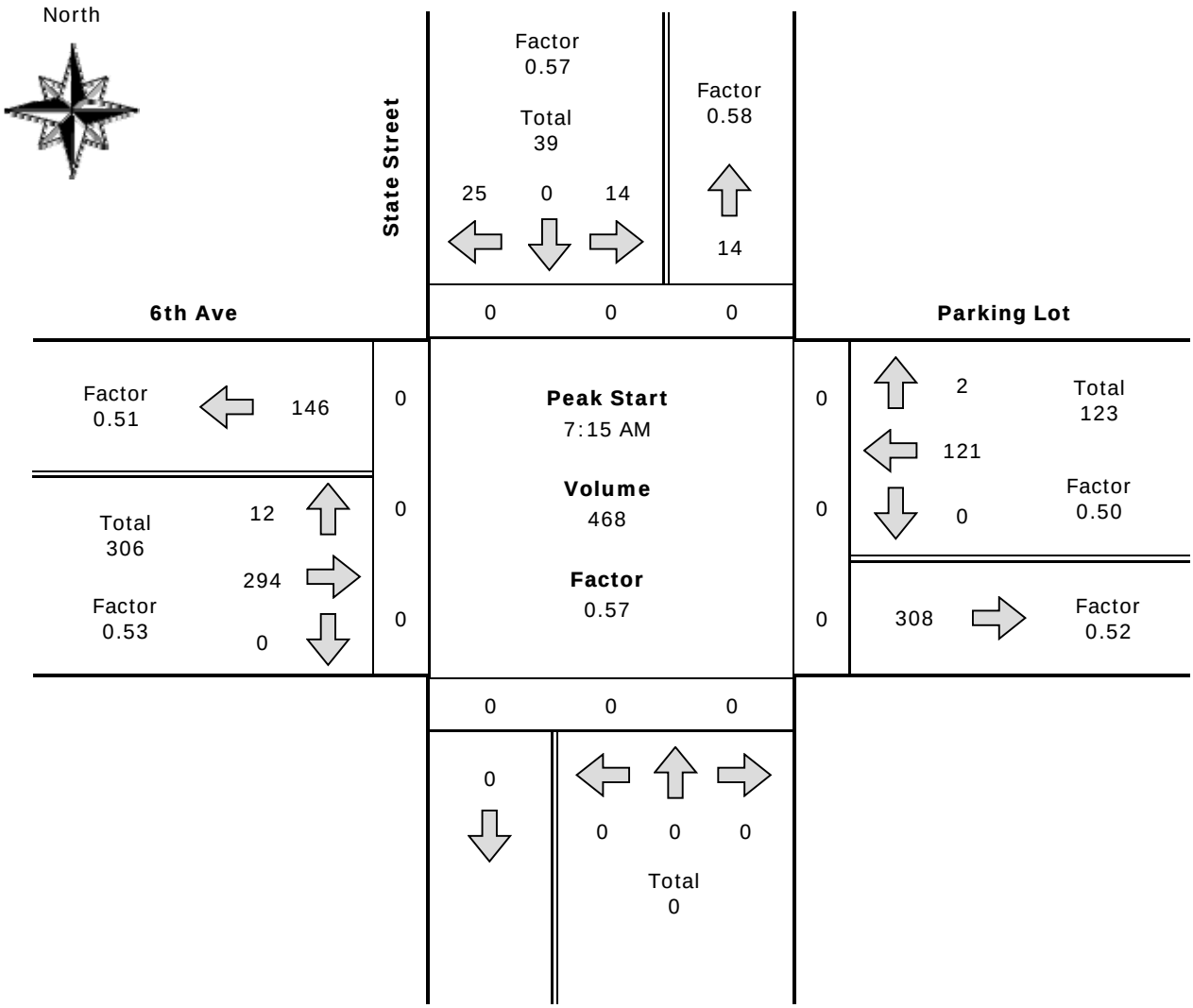
	Southbound State Street			Westbound Parking Lot			Northbound			Eastbound 6th Ave			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Total
Totals	25	0	14	2	121	0	0	0	0	0	294	12	468
Factor	0.57	-	0.58	0.50	0.50	-	-	-	-	-	0.51	0.60	0.57
Entering		39			123			0			306		
Factor		0.57			0.50						0.53		
Exiting		0			146			14			308		
Factor					0.51			0.58			0.52		

	North	East	South	West	Total
Pedestrians	0	0	0	0	0

Peak Vehicles

Car	24 96.0%	0	14 100%	2 100%	121 100%	0	0	0	0	0	294 100%	12 100%	467 99.8%
SU	1 4.0%	0	0	0	0	0	0	0	0	0	0	0	1 0.2%

Turning Movement Peak Hour Details



Site: Driveway 2 - PM Traffic
5/5/2016
Thursday

Turning Movement Peak Hour Details

	Southbound State Street			Westbound Parking Lot			Northbound			Eastbound 6th Avenue			
Interval	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Total
1:30 PM	1	0	0	0	3	0	0	0	0	0	1	2	7
1:45 PM	2	0	0	0	1	0	0	0	0	0	3	1	7
2:00 PM	3	0	1	2	6	0	0	0	0	0	1	0	13
2:15 PM	3	0	0	0	5	0	0	0	0	0	2	1	11
2:30 PM	3	0	1	2	1	0	0	0	0	0	4	1	12
2:45 PM	6	0	8	1	7	0	0	0	0	0	16	3	41
3:00 PM	9	0	1	43	38	0	0	0	0	0	30	10	131
3:15 PM	8	0	1	17	69	0	0	0	0	0	27	4	126
3:30 PM	1	0	0	0	0	0	0	0	0	0	1	0	2
Totals	36	0	12	65	130	0	0	0	0	0	85	22	350
Entering		48			195			0			107		
Exiting		0			166			87			97		

	North	East	South	West	Total
Pedestrians	0	0	0	0	0

Vehicle Totals

Car	36 100%	0	12 100%	65 100%	130 100%	0	0	0	0	0	83 97.6%	21 95.5%	347 99.1%
SU	0	0	0	0	0	0	0	0	0	0	2 2.4%	1 4.5%	3 0.9%

Peak Hour: 2:30 PM - 3:30 PM

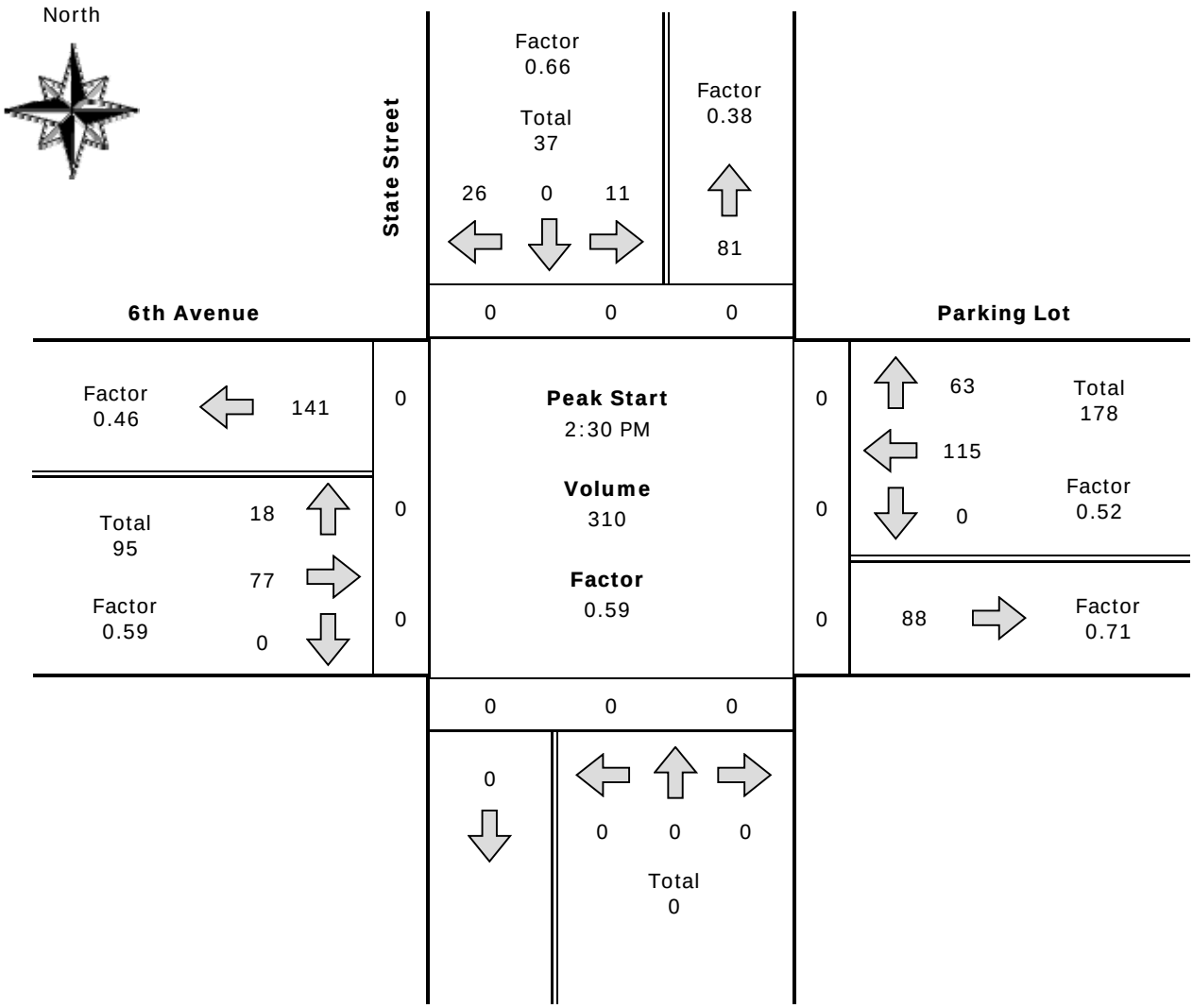
	Southbound State Street			Westbound Parking Lot			Northbound			Eastbound 6th Avenue			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Total
Totals	26	0	11	63	115	0	0	0	0	0	77	18	310
Factor	0.72	-	0.34	0.37	0.42	-	-	-	-	-	0.64	0.45	0.59
Entering		37			178			0			95		
Factor		0.66			0.52						0.59		
Exiting		0			141			81			88		
Factor					0.46			0.38			0.71		

	North	East	South	West	Total
Pedestrians	0	0	0	0	0

Peak Vehicles

Car	26 100%	0	11 100%	63 100%	115 100%	0	0	0	0	0	75 97.4%	18 100%	308 99.4%
SU	0	0	0	0	0	0	0	0	0	0	2 2.6%	0	2 0.6%

Turning Movement Peak Hour Details



Appendix B

ITE Trip Generation

Land Use: 530
High School

Description

High schools serve students who have completed middle or junior high school. Both public and private high schools are included in this land use. Elementary school (Land Use 520), middle school/junior high school (Land Use 522), private school—K–8 (Land Use 534) and private school—K–12 (Land Use 536) are related uses.

Additional Data

The trip generation for weekend time periods varied considerably; therefore, caution should be used when applying weekend statistics. Information describing the weekend activities conducted at the high schools was not available.

Average weekday transit trip ends—

The percentage of the students at the sites who were transported to school via bus varied considerably. Due to the varied transit and school bus usage at these sites, it is desirable that future studies include additional detail on the percentage of students that were bussed to school and the percentage that were dropped off and picked up.

The populations served and the social and economic characteristics of the areas surveyed varied considerably. The high schools also exhibited significant variations in terms of facilities provided.

Since the ratio of floor space to student population varied widely among the schools surveyed, the number of students may be a more reliable independent variable on which to establish trip generation rates.

Peak hours of the generator—

The weekday a.m. peak hour of the generator typically coincided with the peak hour of the adjacent street traffic; therefore, only one a.m. peak hour, which represents both the peak hour of the generator and the peak hour of the adjacent street traffic, is displayed. The weekday p.m. peak hour varied between 2:00 p.m. and 4:00 p.m.

The sites were surveyed from the late 1960s to the 2000s throughout the United States.

Many of the studies included in this land use did not indicate if the schools were public or private. To assist in the future analysis of this land use, it is important that this information be collected and included in trip generation data submissions.

Source Numbers

7, 10, 31, 33, 34, 40, 86, 91, 186, 293, 383, 409, 422, 444, 533, 536, 550, 564, 579

High School
(530)

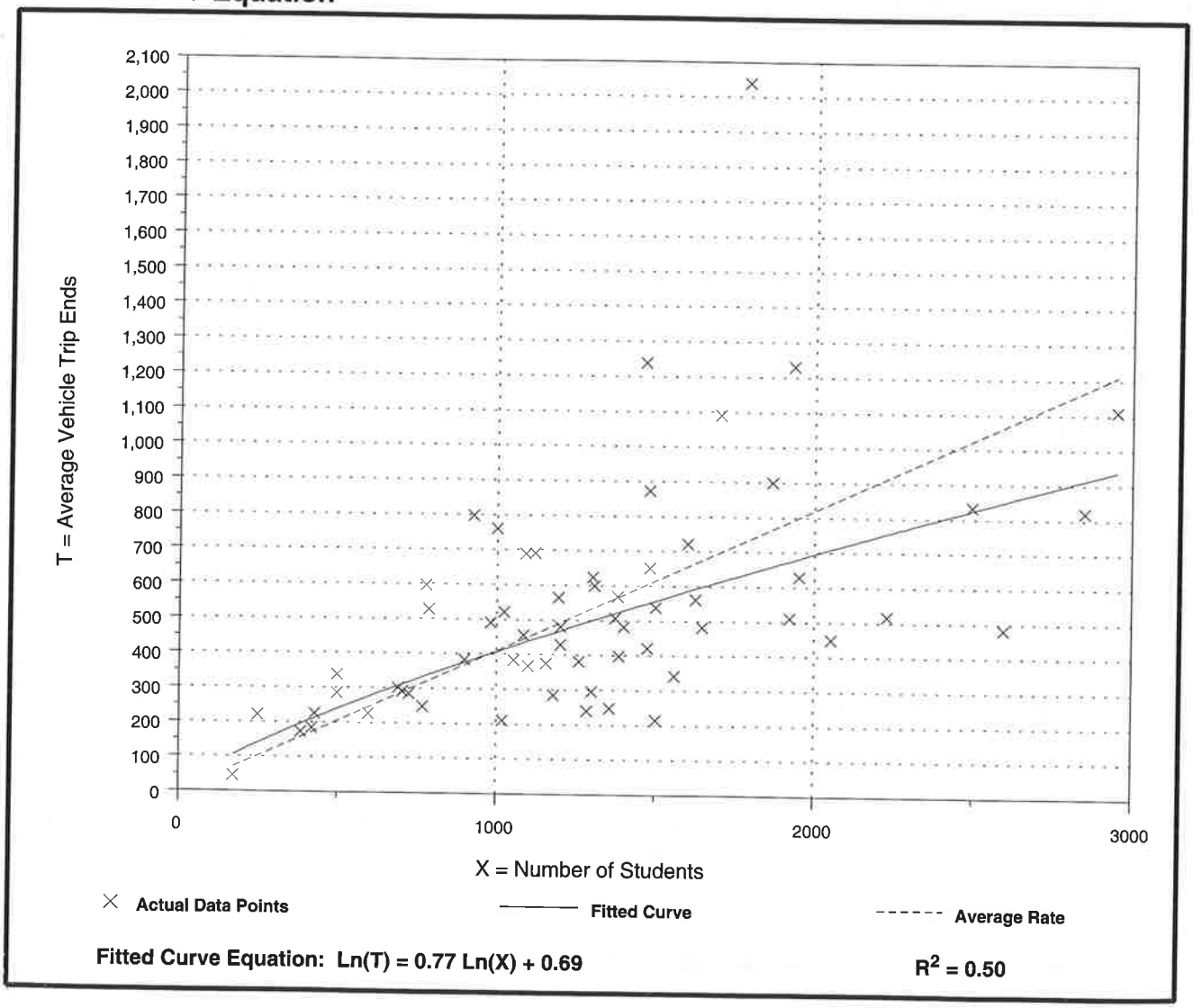
Average Vehicle Trip Ends vs: Students
On a: Weekday,
A.M. Peak Hour

Number of Studies: 62
Average Number of Students: 1,290
Directional Distribution: 69% entering, 31% exiting

Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
0.41	0.14 - 1.15	0.67

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.77 Ln(X) + 0.69

R^2 = 0.50

High School
(530)

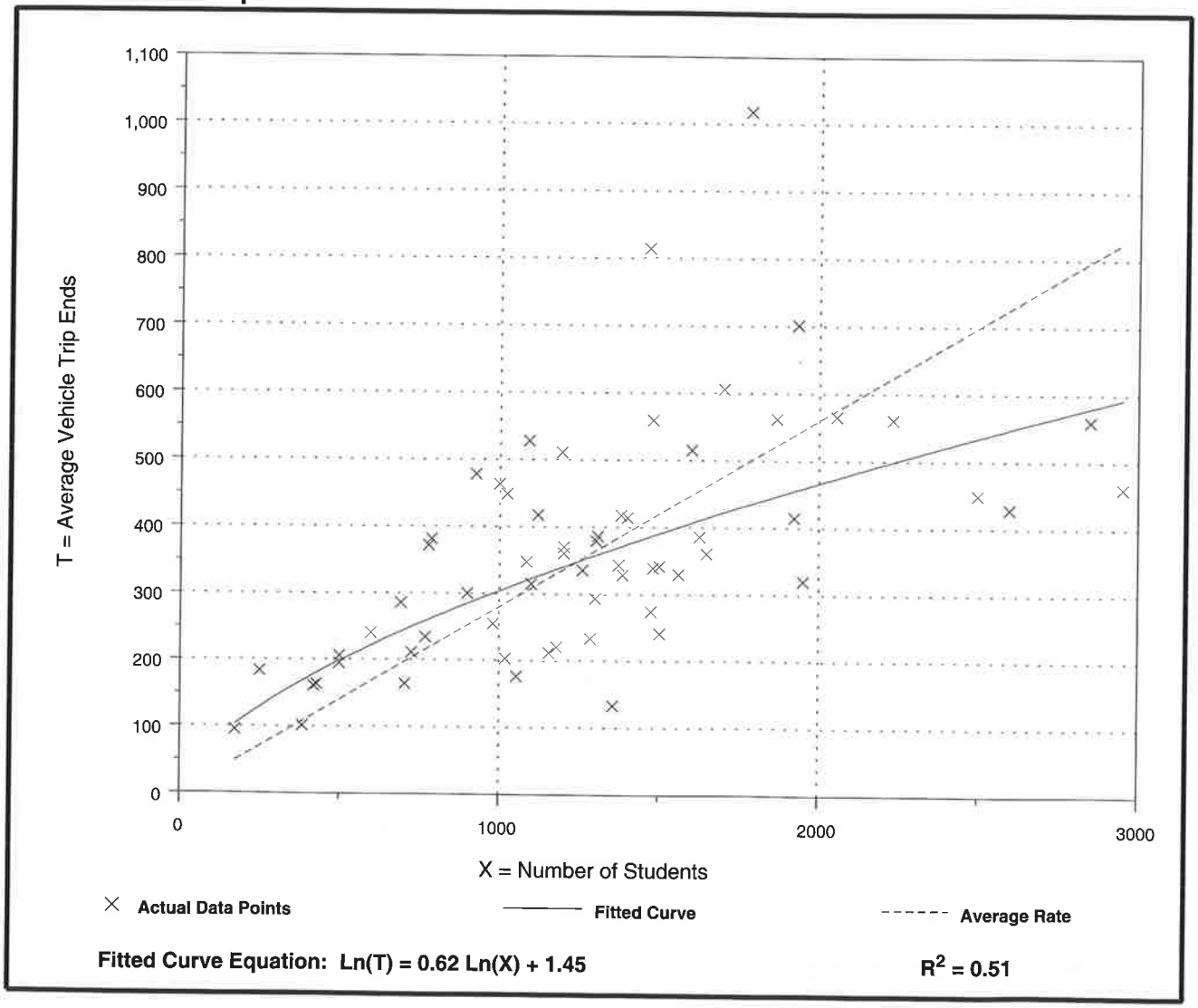
Average Vehicle Trip Ends vs: Students
On a: Weekday,
P.M. Peak Hour of Generator

Number of Studies: 62
Average Number of Students: 1,290
Directional Distribution: 32% entering, 68% exiting

Trip Generation per Student

Average Rate	Range of Rates	Standard Deviation
0.28	0.10 - 0.74	0.54

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.62 Ln(X) + 1.45

R^2 = 0.51

Appendix C

Level of Service Analysis

HCS 2010 TWSC Text Report

This TWSC text report was created on 06/01/2016 16:58:15

HCS 2010 Two Way Stop Intersections Release 6.70

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	Current Traffic - AM Peak Hour
Analyst:	Collette Frohlich
Agency/Co.:	EEI
Date Performed:	5/24/2016
Time Analyzed:	AM Peak Hour
Jurisdiction:	EASD #131
Analysis Year:	2016
Project Description:	EAHS Expansion
Units:	U.S. Customary
Intersection Name:	EAHS - Driveway 1
Major Street Direction:	East-West
East/West Street Name:	5th Avenue
North/South Street Name:	Tomcat Lane
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	EastBound				WestBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume			287	128		129	185	
Peak Hour Factor, PHF				0.83				
Hourly Flow Rate, HFR			346	154		155	223	
Percent Heavy Vehicles						1		
Number of Lanes	0	0	1	0	0	1	1	0
Lane Configuration				TR		L	T	
Median Type				Undivided				
Median Storage								
RT channelized?				No				No
Left-Turn Lane Storage						5		
Upstream Signal?				Not Present				

Minor street:

Approach	NorthBound				SouthBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume	92		40				
Peak Hour Factor, PHF			0.83				
Hourly Flow Rate, HFR	111		48				
Percent Heavy Vehicles	1		3				
Number of Lanes	1	0	1		0	0	0
Lane Configuration	L		R				
RT channelized?			No				No
Flared Approach/Storage	No	/			No	/	
Percent Grade		0					

Pedestrian Volumes and Adjustments

Approach	EB	WB	NB	SB
Movement	13	14	15	16
Flow (ped/hr)	131	131	79	0
Lane Width (ft)	12.0	12.0	12.0	
Walking Speed (ft/sec)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.098	0.001	0.004	

Delay, Queue Length, and Level of Service

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				155	111		48			
Lane Capacity				985	162		475			
v/c				0.16	0.69		0.10			
95% Queue Leng.				0.6	4.0		0.3			
Control Delay				9.3	65.8		13.4			
LOS				A	F		B			
Approach Delay				3.8		50.0				
Approach LOS				A		E				
Intersct. Delay		9.1								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	EastBound				WestBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

Approach	NorthBound			SouthBound		
Priority	7	8	9	10	11	12
Movement	L	T	R	L	T	R

Step 2: MOVEMENT DEMAND VOLUMES AND FLOW RATES

Major Street:

Approach	EastBound				WestBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume, V(x)			287	128		129	185	
Flow Rate, v(x)			346	154		155	223	

Minor Street:

Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume, V(x)	92		40			
Flow Rate, v(x)	111		48			

Step 3: CONFLICTING FLOW RATES

Major Street:

Approach	EastBound				WestBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Flow Rate, v(x)			346	154		155	223	
Conflicting Flow,v(c,x)						579		

Minor Street:

Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Flow Rate, v(x)	111		48			
Conflicting Flow, v(c,x)	1166		633			

Step 4: CRITICAL HEADWAYS and FOLLOW-UP HEADWAYS

CRITICAL HEADWAYS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(c,base)										
Single Stage				4.1	7.1		6.2			
Stage I										
Stage II										
t(c,HV)				1.0	1.0		1.0			
P(HV)				0.01	0.01		0.03			
t(c,G)				0.0	0.2		0.1			
G				0	0		0			
t(3,LT)				0.0	0.7		0.0			
t(c)										
Single Stage				4.13	6.43		6.23			
Stage I										
Stage II										

FOLLOW-UP HEADWAYS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(f,base)				2.2	3.5		3.3			
t(f,HV)				0.9	0.9		0.9			
P(HV)				0.01	0.01		0.03			
t(f)				2.23	3.53		3.33			

Step 5: POTENTIAL CAPACITIES

NO UPSTREAM SIGNAL EFFECTS PRESENT

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
v(c,x)				579	1166		633			

t(c,x)	4.13	6.43	6.23
t(f,x)	2.23	3.53	3.33
c(p,x)	989	213	478

Steps 6 - 9: MOVEMENT CAPACITIES

Pedestrian Impedance Approach	EB	WB	NB	SB
Movement	13	14	15	16
Pedestrian Flow Rate, v(x)	131	131	79	0
Lane Width, w	12.0	12.0	12.0	
Walking Speed, S(p)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.098	0.001	0.004	
Major-Street Left-Turn Movement		1	4	
Conflicting Flow, v(c,x)			579	
Potential Capacity, c(p,x)			989	
Pedestrian Impedance Factor, p(p,x)			0.996	
Movement Capacity, c(m,x)			985	
Probability of Queue-free State, p(0,j)			0.843	
Major L-Shared Prob. Q-free St., p*(0,j)			0.843	
Minor-Street Right-Turn Movement		9	12	
Conflicting Flow, v(c,x)		633		
Potential Capacity, c(p,x)		478		
Pedestrian Impedance Factor, p(p,x)		0.995		
Movement Capacity, c(m,x)		475		
Probability of Queue-free State, p(0,j)		0.899		
Major-Street U-turn Movement		1U	4U	
Conflicting Flow, v(c,x)				
Potential Capacity, c(p,x)				
Capacity Adjustment Factor, f(x)				
Movement Capacity, c(m,x)				
Shared L/U Capacity, c(SH)				
Probability of Queue-free State, p(0,j)				
Minor-Street Through Movement		8	11	
Conflicting Flow, v(c,x)				
Potential Capacity, c(p,x)				
Pedestrian Impedance Factor, p(p,x)				
Capacity Adjustment Factor, f(x)				
Movement Capacity, c(m,x)				
Probability of Queue-free State, p(0,j)				
Minor-Street Left-Turn Movement		7	10	
Conflicting Flow, v(c,x)		1166		
Potential Capacity, c(p,x)		213		
Pedestrian Impedance Factor, p(p,x)		0.898		
Major L, Minor T Adj. Imp. Factor, p"				
Major L, Minor T Impedance Factor, p'				
Capacity Adjustment Factor, f(p,l)		0.843		
Movement Capacity, c(m,x)		162		

Step 11: CONTROL DELAY

CONTROL DELAY TO RANK 2 THROUGH 4 MOVEMENTS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
Flow Rate				155	111		48			
Movement Cap.				985	162		475			
Lane Config.				L	L		R			
Shared Cap.				985	162		475			
Control Delay				9.3	65.8		13.4			

Steps 12 - 13: APPROACH/INTERSECTION CONTROL DELAY and 95% QUEUE LENGTHS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				155	111		48			
Lane Capacity				985	162		475			
v/c				0.16	0.69		0.10			
95% Queue Leng.				0.6	4.0		0.3			
Control Delay				9.3	65.8		13.4			

LOS		A	F		B
Approach Delay		3.8		50.0	
Approach LOS		A		E	
Intersct. Delay	9.1				

HCS 2010 TWSC Text Report

This TWSC text report was created on 06/01/2016 17:00:48

HCS 2010 Two Way Stop Intersections Release 6.70

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	Current Traffic - PM Peak Hour
Analyst:	Collette Frohlich
Agency/Co.:	EEI
Date Performed:	5/24/2016
Time Analyzed:	PM Peak Hour
Jurisdiction:	EASD #131
Analysis Year:	2016
Project Description:	EAHS Expansion
Units:	U.S. Customary
Intersection Name:	EAHS - Driveway 1
Major Street Direction:	East-West
East/West Street Name:	5th Avenue
North/South Street Name:	Tomcat Lane
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	EastBound				WestBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume			246	58		81	226	
Peak Hour Factor, PHF				0.88				
Hourly Flow Rate, HFR			280	66		92	257	
Percent Heavy Vehicles						5		
Number of Lanes	0	0	1	0	0	1	1	0
Lane Configuration				TR		L	T	
Median Type				Undivided				
Median Storage								
RT channelized?				No				No
Left-Turn Lane Storage						5		
Upstream Signal?				Not Present				

Minor street:

Approach	NorthBound				SouthBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume	67		57				
Peak Hour Factor, PHF			0.88				
Hourly Flow Rate, HFR	76		65				
Percent Heavy Vehicles	2		7				
Number of Lanes	1	0	1		0	0	0
Lane Configuration	L		R				
RT channelized?			No				No
Flared Approach/Storage	No	/			No	/	
Percent Grade		0					

Pedestrian Volumes and Adjustments

Approach	EB	WB	NB	SB
Movement	13	14	15	16
Flow (ped/hr)	70	70	163	0
Lane Width (ft)	12.0	12.0	12.0	
Walking Speed (ft/sec)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.011	0.195	0.086	

Delay, Queue Length, and Level of Service

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				92	76		65			
Lane Capacity				954	224		389			
v/c				0.10	0.34		0.17			
95% Queue Leng.				0.3	1.4		0.6			
Control Delay				9.2	29.1		16.1			
LOS				A	D		C			
Approach Delay				2.4		23.1				
Approach LOS				A		C				
Intersct. Delay		4.9								

Step 1: MOVEMENT PRIORITIES

Major Street:									
Approach		EastBound					WestBound		
Priority	1U	1	2	3	4U	4	5	6	
Movement	U	L	T	R	U	L	T	R	
Minor Street:									
Approach		NorthBound				SouthBound			
Priority		7	8	9		10	11	12	
Movement		L	T	R		L	T	R	

Step 2: MOVEMENT DEMAND VOLUMES AND FLOW RATES

Major Street:									
Approach		EastBound					WestBound		
Movement	1U	1	2	3	4U	4	5	6	
	U	L	T	R	U	L	T	R	
Volume, V(x)			246	58		81	226		
Flow Rate, v(x)			280	66		92	257		
Minor Street:									
Approach		NorthBound				SouthBound			
Movement		7	8	9		10	11	12	
		L	T	R		L	T	R	
Volume, V(x)		67		57					
Flow Rate, v(x)		76		65					

Step 3: CONFLICTING FLOW RATES

Major Street:									
Approach		EastBound					WestBound		
Movement	1U	1	2	3	4U	4	5	6	
	U	L	T	R	U	L	T	R	
Flow Rate, v(x)			280	66		92	257		
Conflicting Flow,v(c,x)						509			
Minor Street:									
Approach		NorthBound				SouthBound			
Movement		7	8	9		10	11	12	
		L	T	R		L	T	R	
Flow Rate, v(x)		76		65					
Conflicting Flow, v(c,x)		987		546					

Step 4: CRITICAL HEADWAYS and FOLLOW-UP HEADWAYS

CRITICAL HEADWAYS										
Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(c,base)										
Single Stage				4.1	7.1		6.2			
Stage I										
Stage II										
t(c,HV)				1.0	1.0		1.0			
P(HV)				0.05	0.02		0.07			
t(c,G)				0.0	0.2		0.1			
G				0	0		0			
t(3,LT)				0.0	0.7		0.0			
t(c)										
Single Stage				4.15	6.42		6.27			
Stage I										
Stage II										

FOLLOW-UP HEADWAYS										
Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(f,base)				2.2	3.5		3.3			
t(f,HV)				0.9	0.9		0.9			
P(HV)				0.05	0.02		0.07			
t(f)				2.24	3.52		3.36			

Step 5: POTENTIAL CAPACITIES

NO UPSTREAM SIGNAL EFFECTS PRESENT										
Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
v(c,x)				509	987		546			

t(c,x)	4.15	6.42	6.27
t(f,x)	2.24	3.52	3.36
c(p,x)	1043	274	528

Steps 6 - 9: MOVEMENT CAPACITIES

Pedestrian Impedance Approach	EB	WB	NB	SB
Movement	13	14	15	16
Pedestrian Flow Rate, v(x)	70	70	163	0
Lane Width, w	12.0	12.0	12.0	
Walking Speed, S(p)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.011	0.195	0.086	
Major-Street Left-Turn Movement		1	4	
Conflicting Flow, v(c,x)			509	
Potential Capacity, c(p,x)			1043	
Pedestrian Impedance Factor, p(p,x)			0.914	
Movement Capacity, c(m,x)			954	
Probability of Queue-free State, p(0,j)			0.904	
Major L-Shared Prob. Q-free St., p*(0,j)			0.904	
Minor-Street Right-Turn Movement		9	12	
Conflicting Flow, v(c,x)		546		
Potential Capacity, c(p,x)		528		
Pedestrian Impedance Factor, p(p,x)		0.736		
Movement Capacity, c(m,x)		389		
Probability of Queue-free State, p(0,j)		0.833		
Major-Street U-turn Movement		1U	4U	
Conflicting Flow, v(c,x)				
Potential Capacity, c(p,x)				
Capacity Adjustment Factor, f(x)				
Movement Capacity, c(m,x)				
Shared L/U Capacity, c(SH)				
Probability of Queue-free State, p(0,j)				
Minor-Street Through Movement		8	11	
Conflicting Flow, v(c,x)				
Potential Capacity, c(p,x)				
Pedestrian Impedance Factor, p(p,x)				
Capacity Adjustment Factor, f(x)				
Movement Capacity, c(m,x)				
Probability of Queue-free State, p(0,j)				
Minor-Street Left-Turn Movement		7	10	
Conflicting Flow, v(c,x)		987		
Potential Capacity, c(p,x)		274		
Pedestrian Impedance Factor, p(p,x)		0.904		
Major L, Minor T Adj. Imp. Factor, p"				
Major L, Minor T Impedance Factor, p'				
Capacity Adjustment Factor, f(p,l)		0.904		
Movement Capacity, c(m,x)		224		

Step 11: CONTROL DELAY

CONTROL DELAY TO RANK 2 THROUGH 4 MOVEMENTS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
Flow Rate				92	76		65			
Movement Cap.				954	224		389			
Lane Config.				L	L		R			
Shared Cap.				954	224		389			
Control Delay				9.2	29.1		16.1			

Steps 12 - 13: APPROACH/INTERSECTION CONTROL DELAY and 95% QUEUE LENGTHS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				92	76		65			
Lane Capacity				954	224		389			
v/c				0.10	0.34		0.17			
95% Queue Leng.				0.3	1.4		0.6			
Control Delay				9.2	29.1		16.1			

LOS		A	D		C
Approach Delay		2.4		23.1	
Approach LOS		A		C	
Intersct. Delay	4.9				

HCS 2010 TWSC Text Report

This TWSC text report was created on 06/01/2016 16:58:55

HCS 2010 Two Way Stop Intersections Release 6.70

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	Future Traffic - AM Peak Hour
Analyst:	Collette Frohlich
Agency/Co.:	EEI
Date Performed:	5/24/2016
Time Analyzed:	AM Peak Hour
Jurisdiction:	EASD #131
Analysis Year:	2018
Project Description:	EAHS Expansion
Units:	U.S. Customary
Intersection Name:	EAHS - Driveway 1
Major Street Direction:	East-West
East/West Street Name:	5th Avenue
North/South Street Name:	Tomcat Lane
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	EastBound				WestBound		
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume			342	150		152	213	
Peak Hour Factor, PHF				0.83				
Hourly Flow Rate, HFR			412	181		183	257	
Percent Heavy Vehicles						1		
Number of Lanes	0	0	1	0	0	1	1	0
Lane Configuration				TR		L	T	
Median Type				Undivided				
Median Storage								
RT channelized?				No				No
Left-Turn Lane Storage						3		
Upstream Signal?				Not Present				

Minor street:

Approach	NorthBound				SouthBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume	105		45				
Peak Hour Factor, PHF			0.83				
Hourly Flow Rate, HFR	127		54				
Percent Heavy Vehicles	1		3				
Number of Lanes	1	0	1		0	0	0
Lane Configuration	L		R				
RT channelized?			No				No
Flared Approach/Storage	No	/			No	/	
Percent Grade		0					

Pedestrian Volumes and Adjustments

Approach	EB	WB	NB	SB
Movement	13	14	15	16
Flow (ped/hr)	152	152	91	0
Lane Width (ft)	12.0	12.0	12.0	
Walking Speed (ft/sec)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.098	0.001	0.004	

Delay, Queue Length, and Level of Service

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				183	127		54			
Lane Capacity				900	115		410			
v/c				0.20	1.10		0.13			
95% Queue Leng.				0.8	7.7		0.5			
Control Delay				10.0	185.9		15.1			
LOS				B	F		C			
Approach Delay				4.2		134.9				
Approach LOS				A		F				
Intersct. Delay		21.6								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	EastBound					WestBound		
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

Approach	NorthBound			SouthBound		
Priority	7	8	9	10	11	12
Movement	L	T	R	L	T	R

Step 2: MOVEMENT DEMAND VOLUMES AND FLOW RATES

Major Street:

Approach	EastBound				WestBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume, V(x)			342	150		152	213	
Flow Rate, v(x)			412	181		183	257	

Minor Street:

Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume, V(x)	105		45			
Flow Rate, v(x)	127		54			

Step 3: CONFLICTING FLOW RATES

Major Street:

Approach	EastBound				WestBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Flow Rate, v(x)			412	181		183	257	
Conflicting Flow,v(c,x)						684		

Minor Street:

Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Flow Rate, v(x)	127		54			
Conflicting Flow, v(c,x)	1368		746			

Step 4: CRITICAL HEADWAYS and FOLLOW-UP HEADWAYS

CRITICAL HEADWAYS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(c,base)										
Single Stage				4.1	7.1		6.2			
Stage I										
Stage II										
t(c,HV)				1.0	1.0		1.0			
P(HV)				0.01	0.01		0.03			
t(c,G)				0.0	0.2		0.1			
G				0	0		0			
t(3,LT)				0.0	0.7		0.0			
t(c)										
Single Stage				4.13	6.43		6.23			
Stage I										
Stage II										

FOLLOW-UP HEADWAYS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(f,base)				2.2	3.5		3.3			
t(f,HV)				0.9	0.9		0.9			
P(HV)				0.01	0.01		0.03			
t(f)				2.23	3.53		3.33			

Step 5: POTENTIAL CAPACITIES

NO UPSTREAM SIGNAL EFFECTS PRESENT

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
v(c,x)				684	1368		746			

t(c,x)	4.13	6.43	6.23
t(f,x)	2.23	3.53	3.33
c(p,x)	904	161	412

Steps 6 - 9: MOVEMENT CAPACITIES

Pedestrian Impedance Approach	EB	WB	NB	SB
Movement	13	14	15	16
Pedestrian Flow Rate, v(x)	152	152	91	0
Lane Width, w	12.0	12.0	12.0	
Walking Speed, S(p)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.098	0.001	0.004	
Major-Street Left-Turn Movement		1	4	
Conflicting Flow, v(c,x)			684	
Potential Capacity, c(p,x)			904	
Pedestrian Impedance Factor, p(p,x)			0.996	
Movement Capacity, c(m,x)			900	
Probability of Queue-free State, p(0,j)			0.797	
Major L-Shared Prob. Q-free St., p*(0,j)			0.797	
Minor-Street Right-Turn Movement		9	12	
Conflicting Flow, v(c,x)		746		
Potential Capacity, c(p,x)		412		
Pedestrian Impedance Factor, p(p,x)		0.995		
Movement Capacity, c(m,x)		410		
Probability of Queue-free State, p(0,j)		0.868		
Major-Street U-turn Movement		1U	4U	
Conflicting Flow, v(c,x)				
Potential Capacity, c(p,x)				
Capacity Adjustment Factor, f(x)				
Movement Capacity, c(m,x)				
Shared L/U Capacity, c(SH)				
Probability of Queue-free State, p(0,j)				
Minor-Street Through Movement		8	11	
Conflicting Flow, v(c,x)				
Potential Capacity, c(p,x)				
Pedestrian Impedance Factor, p(p,x)				
Capacity Adjustment Factor, f(x)				
Movement Capacity, c(m,x)				
Probability of Queue-free State, p(0,j)				
Minor-Street Left-Turn Movement		7	10	
Conflicting Flow, v(c,x)		1368		
Potential Capacity, c(p,x)		161		
Pedestrian Impedance Factor, p(p,x)		0.898		
Major L, Minor T Adj. Imp. Factor, p"				
Major L, Minor T Impedance Factor, p'				
Capacity Adjustment Factor, f(p,l)		0.797		
Movement Capacity, c(m,x)		115		

Step 11: CONTROL DELAY

CONTROL DELAY TO RANK 2 THROUGH 4 MOVEMENTS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
Flow Rate				183	127		54			
Movement Cap.				900	115		410			
Lane Config.				L	L		R			
Shared Cap.				900	115		410			
Control Delay				10.0	185.9		15.1			

Steps 12 - 13: APPROACH/INTERSECTION CONTROL DELAY and 95% QUEUE LENGTHS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				183	127		54			
Lane Capacity				900	115		410			
v/c				0.20	1.10		0.13			
95% Queue Leng.				0.8	7.7		0.5			
Control Delay				10.0	185.9		15.1			

LOS		B	F		C
Approach Delay		4.2		134.9	
Approach LOS		A		F	
Intersct. Delay	21.6				

HCS 2010 TWSC Text Report

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HCS 2010 Two Way Stop Intersections Release 6.70

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	Future Traffic - PM Peak Hour
Analyst:	Collette Frohlich
Agency/Co.:	EEI
Date Performed:	5/24/2016
Time Analyzed:	PM Peak Hour
Jurisdiction:	EASD #131
Analysis Year:	2018
Project Description:	EAHS Expansion
Units:	U.S. Customary
Intersection Name:	EAHS - Driveway 1
Major Street Direction:	East-West
East/West Street Name:	5th Avenue
North/South Street Name:	Tomcat Lane
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	EastBound				WestBound		
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume		273	63	89	280		
Peak Hour Factor, PHF			0.88				
Hourly Flow Rate, HFR		310	72	101	318		
Percent Heavy Vehicles				5			
Number of Lanes	0	0	1	0	0	1	1	0
Lane Configuration			TR			L	T	
Median Type				Undivided				
Median Storage								
RT channelized?			No					No
Left-Turn Lane Storage						3		
Upstream Signal?				Not Present				

Minor street:

Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	82		69			
Peak Hour Factor, PHF			0.88			
Hourly Flow Rate, HFR	93		78			
Percent Heavy Vehicles	2		7			
Number of Lanes	1	0	1	0	0	0
Lane Configuration	L		R			
RT channelized?			No			No
Flared Approach/Storage	No	/		No	/	
Percent Grade		0				

Pedestrian Volumes and Adjustments

Approach	EB	WB	NB	SB
Movement	13	14	15	16
Flow (ped/hr)	80	80	189	0
Lane Width (ft)	12.0	12.0	12.0	
Walking Speed (ft/sec)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.011	0.195	0.086	

Delay, Queue Length, and Level of Service

Approach	EB		WB		NorthBound			SouthBound		
Movement	1	4	7	8	9	10	11	12		
Lane Config.			L	L		R				
Flow Rate			101	93		78				
Lane Capacity			904	180		355				
v/c			0.11	0.52		0.22				
95% Queue Leng.			0.4	2.6		0.8				
Control Delay			9.5	44.8		18.0				
LOS			A	E		C				
Approach Delay			2.3		32.5					
Approach LOS			A		D					
Intersct. Delay	6.7									

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach		EastBound					WestBound		
Priority	1U	1	2	3	|	4U	4	5	6
Movement	U	L	T	R	|	U	L	T	R

Minor Street:

Approach		NorthBound					SouthBound		
Priority		7	8	9	|		10	11	12
Movement		L	T	R	|		L	T	R

Step 2: MOVEMENT DEMAND VOLUMES AND FLOW RATES

Major Street:

Approach		EastBound					WestBound		
Movement	1U	1	2	3	|	4U	4	5	6
	U	L	T	R	|	U	L	T	R
Volume, V(x)			273	63			89	280	
Flow Rate, v(x)			310	72			101	318	

Minor Street:

Approach		NorthBound					SouthBound		
Movement		7	8	9	|		10	11	12
		L	T	R	|		L	T	R
Volume, V(x)		82		69					
Flow Rate, v(x)		93		78					

Step 3: CONFLICTING FLOW RATES

Major Street:

Approach		EastBound					WestBound		
Movement	1U	1	2	3	|	4U	4	5	6
	U	L	T	R	|	U	L	T	R
Flow Rate, v(x)			310	72			101	318	
Conflicting Flow,v(c,x)							571		

Minor Street:

Approach		NorthBound					SouthBound		
Movement		7	8	9	|		10	11	12
		L	T	R	|		L	T	R
Flow Rate, v(x)		93		78					
Conflicting Flow, v(c,x)		1135		615					

Step 4: CRITICAL HEADWAYS and FOLLOW-UP HEADWAYS

CRITICAL HEADWAYS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(c,base)										
Single Stage				4.1	7.1		6.2			
Stage I										
Stage II										
t(c,HV)				1.0	1.0		1.0			
P(HV)				0.05	0.02		0.07			
t(c,G)				0.0	0.2		0.1			
G				0	0		0			
t(3,LT)				0.0	0.7		0.0			
t(c)										
Single Stage				4.15	6.42		6.27			
Stage I										
Stage II										

FOLLOW-UP HEADWAYS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(f,base)				2.2	3.5		3.3			
t(f,HV)				0.9	0.9		0.9			
P(HV)				0.05	0.02		0.07			
t(f)				2.24	3.52		3.36			

Step 5: POTENTIAL CAPACITIES

NO UPSTREAM SIGNAL EFFECTS PRESENT

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
v(c,x)				571	1135		615			

t(c,x)	4.15	6.42	6.27
t(f,x)	2.24	3.52	3.36
c(p,x)	989	224	483

Steps 6 - 9: MOVEMENT CAPACITIES

Pedestrian Impedance Approach	EB	WB	NB	SB
Movement	13	14	15	16
Pedestrian Flow Rate, v(x)	80	80	189	0
Lane Width, w	12.0	12.0	12.0	
Walking Speed, S(p)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.011	0.195	0.086	
Major-Street Left-Turn Movement		1	4	
Conflicting Flow, v(c,x)			571	
Potential Capacity, c(p,x)			989	
Pedestrian Impedance Factor, p(p,x)			0.914	
Movement Capacity, c(m,x)			904	
Probability of Queue-free State, p(0,j)			0.888	
Major L-Shared Prob. Q-free St., p*(0,j)			0.888	
Minor-Street Right-Turn Movement		9	12	
Conflicting Flow, v(c,x)		615		
Potential Capacity, c(p,x)		483		
Pedestrian Impedance Factor, p(p,x)		0.736		
Movement Capacity, c(m,x)		355		
Probability of Queue-free State, p(0,j)		0.780		
Major-Street U-turn Movement		1U	4U	
Conflicting Flow, v(c,x)				
Potential Capacity, c(p,x)				
Capacity Adjustment Factor, f(x)				
Movement Capacity, c(m,x)				
Shared L/U Capacity, c(SH)				
Probability of Queue-free State, p(0,j)				
Minor-Street Through Movement		8	11	
Conflicting Flow, v(c,x)				
Potential Capacity, c(p,x)				
Pedestrian Impedance Factor, p(p,x)				
Capacity Adjustment Factor, f(x)				
Movement Capacity, c(m,x)				
Probability of Queue-free State, p(0,j)				
Minor-Street Left-Turn Movement		7	10	
Conflicting Flow, v(c,x)		1135		
Potential Capacity, c(p,x)		224		
Pedestrian Impedance Factor, p(p,x)		0.904		
Major L, Minor T Adj. Imp. Factor, p"				
Major L, Minor T Impedance Factor, p'				
Capacity Adjustment Factor, f(p,l)		0.888		
Movement Capacity, c(m,x)		180		

Step 11: CONTROL DELAY

CONTROL DELAY TO RANK 2 THROUGH 4 MOVEMENTS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
Flow Rate				101	93		78			
Movement Cap.				904	180		355			
Lane Config.				L	L		R			
Shared Cap.				904	180		355			
Control Delay				9.5	44.8		18.0			

Steps 12 - 13: APPROACH/INTERSECTION CONTROL DELAY and 95% QUEUE LENGTHS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				101	93		78			
Lane Capacity				904	180		355			
v/c				0.11	0.52		0.22			
95% Queue Leng.				0.4	2.6		0.8			
Control Delay				9.5	44.8		18.0			

LOS		A	E		C
Approach Delay		2.3		32.5	
Approach LOS		A		D	
Intersct. Delay	6.7				

HCS 2010 TWSC Text Report

This TWSC text report was created on 06/01/2016 16:59:53

HCS 2010 Two Way Stop Intersections Release 6.70

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	Future Traffic - AM Peak Hour - 75%
Analyst:	Collette Frohlich
Agency/Co.:	EEI
Date Performed:	5/24/2016
Time Analyzed:	AM Peak Hour
Jurisdiction:	EASD #131
Analysis Year:	2018
Project Description:	EAHS Expansion
Units:	U.S. Customary
Intersection Name:	EAHS - Driveway 1
Major Street Direction:	East-West
East/West Street Name:	5th Avenue
North/South Street Name:	Tomcat Lane
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	EastBound				WestBound		
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume			367	162		163	226	
Peak Hour Factor, PHF				0.83				
Hourly Flow Rate, HFR			442	195		196	272	
Percent Heavy Vehicles						1		
Number of Lanes	0	0	1	0	0	1	1	0
Lane Configuration				TR		L	T	
Median Type				Undivided				
Median Storage								
RT channelized?				No				No
Left-Turn Lane Storage						3		
Upstream Signal?				Not Present				

Minor street:

Approach	NorthBound				SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	110		48			
Peak Hour Factor, PHF			0.83			
Hourly Flow Rate, HFR	133		58			
Percent Heavy Vehicles	1		3			
Number of Lanes	1	0	1	0	0	0
Lane Configuration	L		R			
RT channelized?			No			No
Flared Approach/Storage	No	/		No	/	
Percent Grade		0				

Pedestrian Volumes and Adjustments

Approach	EB	WB	NB	SB
Movement	13	14	15	16
Flow (ped/hr)	152	152	91	0
Lane Width (ft)	12.0	12.0	12.0	
Walking Speed (ft/sec)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.098	0.001	0.004	

Delay, Queue Length, and Level of Service

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				196	133		58			
Lane Capacity				867	100		391			
v/c				0.23	1.33		0.15			
95% Queue Leng.				0.9	9.4		0.5			
Control Delay				10.4	278.0		15.8			
LOS				B	F		C			
Approach Delay				4.3		198.4				
Approach LOS				A		F				
Intersct. Delay		30.8								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach		EastBound					WestBound		
Priority	1U	1	2	3	|	4U	4	5	6
Movement	U	L	T	R	|	U	L	T	R

Minor Street:

Approach	NorthBound				SouthBound		
Priority	7	8	9	|	10	11	12
Movement	L	T	R	|	L	T	R

Step 2: MOVEMENT DEMAND VOLUMES AND FLOW RATES

Major Street:

Approach		EastBound					WestBound		
Movement	1U	1	2	3	|	4U	4	5	6
	U	L	T	R	|	U	L	T	R
Volume, V(x)			367	162			163	226	
Flow Rate, v(x)			442	195			196	272	

Minor Street:

Approach	NorthBound				SouthBound		
Movement	7	8	9	|	10	11	12
	L	T	R	|	L	T	R
Volume, V(x)	110		48				
Flow Rate, v(x)	133		58				

Step 3: CONFLICTING FLOW RATES

Major Street:

Approach		EastBound					WestBound		
Movement	1U	1	2	3	|	4U	4	5	6
	U	L	T	R	|	U	L	T	R
Flow Rate, v(x)			442	195			196	272	
Conflicting Flow,v(c,x)							728		

Minor Street:

Approach	NorthBound				SouthBound		
Movement	7	8	9	|	10	11	12
	L	T	R	|	L	T	R
Flow Rate, v(x)	133		58				
Conflicting Flow, v(c,x)	1446		782				

Step 4: CRITICAL HEADWAYS and FOLLOW-UP HEADWAYS

CRITICAL HEADWAYS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(c,base)										
Single Stage				4.1	7.1		6.2			
Stage I										
Stage II										
t(c,HV)				1.0	1.0		1.0			
P(HV)				0.01	0.01		0.03			
t(c,G)				0.0	0.2		0.1			
G				0	0		0			
t(3,LT)				0.0	0.7		0.0			
t(c)										
Single Stage				4.13	6.43		6.23			
Stage I										
Stage II										

FOLLOW-UP HEADWAYS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(f,base)				2.2	3.5		3.3			
t(f,HV)				0.9	0.9		0.9			
P(HV)				0.01	0.01		0.03			
t(f)				2.23	3.53		3.33			

Step 5: POTENTIAL CAPACITIES

NO UPSTREAM SIGNAL EFFECTS PRESENT

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
v(c,x)				728	1446		782			

t(c,x)	4.13	6.43	6.23
t(f,x)	2.23	3.53	3.33
c(p,x)	870	144	393

Steps 6 - 9: MOVEMENT CAPACITIES

Pedestrian Impedance Approach	EB	WB	NB	SB
Movement	13	14	15	16
Pedestrian Flow Rate, v(x)	152	152	91	0
Lane Width, w	12.0	12.0	12.0	
Walking Speed, S(p)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.098	0.001	0.004	
Major-Street Left-Turn Movement		1	4	
Conflicting Flow, v(c,x)			728	
Potential Capacity, c(p,x)			870	
Pedestrian Impedance Factor, p(p,x)			0.996	
Movement Capacity, c(m,x)			867	
Probability of Queue-free State, p(0,j)			0.774	
Major L-Shared Prob. Q-free St., p*(0,j)			0.774	
Minor-Street Right-Turn Movement		9	12	
Conflicting Flow, v(c,x)		782		
Potential Capacity, c(p,x)		393		
Pedestrian Impedance Factor, p(p,x)		0.995		
Movement Capacity, c(m,x)		391		
Probability of Queue-free State, p(0,j)		0.852		
Major-Street U-turn Movement		1U	4U	
Conflicting Flow, v(c,x)				
Potential Capacity, c(p,x)				
Capacity Adjustment Factor, f(x)				
Movement Capacity, c(m,x)				
Shared L/U Capacity, c(SH)				
Probability of Queue-free State, p(0,j)				
Minor-Street Through Movement		8	11	
Conflicting Flow, v(c,x)				
Potential Capacity, c(p,x)				
Pedestrian Impedance Factor, p(p,x)				
Capacity Adjustment Factor, f(x)				
Movement Capacity, c(m,x)				
Probability of Queue-free State, p(0,j)				
Minor-Street Left-Turn Movement		7	10	
Conflicting Flow, v(c,x)		1446		
Potential Capacity, c(p,x)		144		
Pedestrian Impedance Factor, p(p,x)		0.898		
Major L, Minor T Adj. Imp. Factor, p"				
Major L, Minor T Impedance Factor, p'				
Capacity Adjustment Factor, f(p,l)		0.774		
Movement Capacity, c(m,x)		100		

Step 11: CONTROL DELAY

CONTROL DELAY TO RANK 2 THROUGH 4 MOVEMENTS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
Flow Rate				196	133		58			
Movement Cap.				867	100		391			
Lane Config.				L	L		R			
Shared Cap.				867	100		391			
Control Delay				10.4	278.0		15.8			

Steps 12 - 13: APPROACH/INTERSECTION CONTROL DELAY and 95% QUEUE LENGTHS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				196	133		58			
Lane Capacity				867	100		391			
v/c				0.23	1.33		0.15			
95% Queue Leng.				0.9	9.4		0.5			
Control Delay				10.4	278.0		15.8			

LOS		B	F		C
Approach Delay		4.3		198.4	
Approach LOS		A		F	
Intersct. Delay	30.8				

HCS 2010 TWSC Text Report

This TWSC text report was created on 06/01/2016 17:01:42

HCS 2010 Two Way Stop Intersections Release 6.70

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	Future Traffic - PM Peak Hour - 75%
Analyst:	Collette Frohlich
Agency/Co.:	EEI
Date Performed:	5/24/2016
Time Analyzed:	PM Peak Hour
Jurisdiction:	EASD #131
Analysis Year:	2018
Project Description:	EAHS Expansion
Units:	U.S. Customary
Intersection Name:	EAHS - Driveway 1
Major Street Direction:	East-West
East/West Street Name:	5th Avenue
North/South Street Name:	Tomcat Lane
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	EastBound				WestBound		
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume			285	66		92	304	
Peak Hour Factor, PHF				0.88				
Hourly Flow Rate, HFR			324	75		105	345	
Percent Heavy Vehicles						5		
Number of Lanes	0	0	1	0	0	1	1	0
Lane Configuration				TR		L	T	
Median Type				Undivided				
Median Storage								
RT channelized?				No				No
Left-Turn Lane Storage						3		
Upstream Signal?				Not Present				

Minor street:

Approach	NorthBound				SouthBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume	89		76				
Peak Hour Factor, PHF			0.88				
Hourly Flow Rate, HFR	101		86				
Percent Heavy Vehicles	2		7				
Number of Lanes	1	0	1		0	0	0
Lane Configuration	L		R				
RT channelized?			No				No
Flared Approach/Storage	No	/			No	/	
Percent Grade		0					

Pedestrian Volumes and Adjustments

Approach	EB	WB	NB	SB
Movement	13	14	15	16
Flow (ped/hr)	80	80	189	0
Lane Width (ft)	12.0	12.0	12.0	
Walking Speed (ft/sec)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.011	0.195	0.086	

Delay, Queue Length, and Level of Service

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				105	101		86			
Lane Capacity				891	166		348			
v/c				0.12	0.61		0.25			
95% Queue Leng.				0.4	3.3		1.0			
Control Delay				9.6	55.5		18.7			
LOS				A	F		C			
Approach Delay				2.2		38.6				
Approach LOS				A		E				
Intersct. Delay		7.9								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach	EastBound				WestBound			
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

Approach	NorthBound			SouthBound		
Priority	7	8	9	10	11	12
Movement	L	T	R	L	T	R

Step 2: MOVEMENT DEMAND VOLUMES AND FLOW RATES

Major Street:

Approach	EastBound				WestBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume, V(x)			285	66		92	304	
Flow Rate, v(x)			324	75		105	345	

Minor Street:

Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume, V(x)	89		76			
Flow Rate, v(x)	101		86			

Step 3: CONFLICTING FLOW RATES

Major Street:

Approach	EastBound				WestBound			
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Flow Rate, v(x)			324	75		105	345	
Conflicting Flow,v(c,x)						588		

Minor Street:

Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Flow Rate, v(x)	101		86			
Conflicting Flow, v(c,x)	1186		630			

Step 4: CRITICAL HEADWAYS and FOLLOW-UP HEADWAYS

CRITICAL HEADWAYS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(c,base)										
Single Stage				4.1	7.1		6.2			
Stage I										
Stage II										
t(c,HV)				1.0	1.0		1.0			
P(HV)				0.05	0.02		0.07			
t(c,G)				0.0	0.2		0.1			
G				0	0		0			
t(3,LT)				0.0	0.7		0.0			
t(c)										
Single Stage				4.15	6.42		6.27			
Stage I										
Stage II										

FOLLOW-UP HEADWAYS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(f,base)				2.2	3.5		3.3			
t(f,HV)				0.9	0.9		0.9			
P(HV)				0.05	0.02		0.07			
t(f)				2.24	3.52		3.36			

Step 5: POTENTIAL CAPACITIES

NO UPSTREAM SIGNAL EFFECTS PRESENT

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
v(c,x)				588	1186		630			

t(c,x)	4.15	6.42	6.27
t(f,x)	2.24	3.52	3.36
c(p,x)	974	208	473

Steps 6 - 9: MOVEMENT CAPACITIES

Pedestrian Impedance Approach	EB	WB	NB	SB
Movement	13	14	15	16
Pedestrian Flow Rate, v(x)	80	80	189	0
Lane Width, w	12.0	12.0	12.0	
Walking Speed, S(p)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.011	0.195	0.086	
Major-Street Left-Turn Movement		1	4	
Conflicting Flow, v(c,x)			588	
Potential Capacity, c(p,x)			974	
Pedestrian Impedance Factor, p(p,x)			0.914	
Movement Capacity, c(m,x)			891	
Probability of Queue-free State, p(0,j)			0.882	
Major L-Shared Prob. Q-free St., p*(0,j)			0.882	
Minor-Street Right-Turn Movement		9	12	
Conflicting Flow, v(c,x)		630		
Potential Capacity, c(p,x)		473		
Pedestrian Impedance Factor, p(p,x)		0.736		
Movement Capacity, c(m,x)		348		
Probability of Queue-free State, p(0,j)		0.753		
Major-Street U-turn Movement		1U	4U	
Conflicting Flow, v(c,x)				
Potential Capacity, c(p,x)				
Capacity Adjustment Factor, f(x)				
Movement Capacity, c(m,x)				
Shared L/U Capacity, c(SH)				
Probability of Queue-free State, p(0,j)				
Minor-Street Through Movement		8	11	
Conflicting Flow, v(c,x)				
Potential Capacity, c(p,x)				
Pedestrian Impedance Factor, p(p,x)				
Capacity Adjustment Factor, f(x)				
Movement Capacity, c(m,x)				
Probability of Queue-free State, p(0,j)				
Minor-Street Left-Turn Movement		7	10	
Conflicting Flow, v(c,x)		1186		
Potential Capacity, c(p,x)		208		
Pedestrian Impedance Factor, p(p,x)		0.904		
Major L, Minor T Adj. Imp. Factor, p"				
Major L, Minor T Impedance Factor, p'				
Capacity Adjustment Factor, f(p,l)		0.882		
Movement Capacity, c(m,x)		166		

Step 11: CONTROL DELAY

CONTROL DELAY TO RANK 2 THROUGH 4 MOVEMENTS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
Flow Rate				105	101		86			
Movement Cap.				891	166		348			
Lane Config.				L	L		R			
Shared Cap.				891	166		348			
Control Delay				9.6	55.5		18.7			

Steps 12 - 13: APPROACH/INTERSECTION CONTROL DELAY and 95% QUEUE LENGTHS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				105	101		86			
Lane Capacity				891	166		348			
v/c				0.12	0.61		0.25			
95% Queue Leng.				0.4	3.3		1.0			
Control Delay				9.6	55.5		18.7			

LOS		A	F		C
Approach Delay		2.2		38.6	
Approach LOS		A		E	
Intersct. Delay	7.9				

HCS 2010 TWSC Text Report

This TWSC text report was created on 06/01/2016 16:59:17

HCS 2010 Two Way Stop Intersections Release 6.70

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	Future Traffic - AM Peak Hour
Analyst:	Collette Frohlich
Agency/Co.:	EEI
Date Performed:	5/24/2016
Time Analyzed:	AM Peak Hour
Jurisdiction:	EASD #131
Analysis Year:	2018
Project Description:	EAHS Expansion
Units:	U.S. Customary
Intersection Name:	EAHS - Driveway 1
Major Street Direction:	East-West
East/West Street Name:	5th Avenue
North/South Street Name:	Tomcat Lane
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	EastBound				WestBound		
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume			342	150		152	213	
Peak Hour Factor, PHF				0.83				
Hourly Flow Rate, HFR			412	181		183	257	
Percent Heavy Vehicles						1		
Number of Lanes	0	0	1	0	0	1	1	0
Lane Configuration				TR		L	T	
Median Type					Left Only			
Median Storage					2			
RT channelized?				No				No
Left-Turn Lane Storage						3		
Upstream Signal?					Not Present			

Minor street:

Approach	NorthBound				SouthBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume	105		45				
Peak Hour Factor, PHF				0.83			
Hourly Flow Rate, HFR	127		54				
Percent Heavy Vehicles	1		3				
Number of Lanes	1	0	1		0	0	0
Lane Configuration	L		R				
RT channelized?			No				No
Flared Approach/Storage	No	/			No	/	
Percent Grade		0					

Pedestrian Volumes and Adjustments

Approach	EB	WB	NB	SB
Movement	13	14	15	16
Flow (ped/hr)	152	152	91	0
Lane Width (ft)	12.0	12.0	12.0	
Walking Speed (ft/sec)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.098	0.001	0.004	

Delay, Queue Length, and Level of Service

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				183	127		54			
Lane Capacity				900	205		410			
v/c				0.20	0.62		0.13			
95% Queue Leng.				0.8	3.6		0.5			
Control Delay				10.0	47.4		15.1			
LOS				B	E		C			
Approach Delay				4.2		37.8				
Approach LOS				A		E				
Intersct. Delay		7.1								

Step 1: MOVEMENT PRIORITIES

Major Street:								
Approach		EastBound				WestBound		
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:						
Approach	NorthBound			SouthBound		
Priority	7	8	9	10	11	12
Movement	L	T	R	L	T	R

Step 2: MOVEMENT DEMAND VOLUMES AND FLOW RATES

Major Street:								
Approach		EastBound				WestBound		
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume, V(x)			342	150		152	213	
Flow Rate, v(x)			412	181		183	257	

Minor Street:						
Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume, V(x)	105		45			
Flow Rate, v(x)	127		54			

Step 3: CONFLICTING FLOW RATES

Major Street:								
Approach		EastBound				WestBound		
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Flow Rate, v(x)			412	181		183	257	
Conflicting Flow,v(c,x)						684		

Minor Street:						
Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Flow Rate, v(x)	127		54			
Conflicting Flow, v(c,x)	1369		746			

Minor-Street Left-Turn Movements		7	10

Conflicting Flow	
Single Stage, v(c,x)	1369
Stage I, v(c,I,x)	594
Stage II, v(c,II,x)	775

Step 4: CRITICAL HEADWAYS and FOLLOW-UP HEADWAYS

CRITICAL HEADWAYS										
Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(c,base)										
Single Stage				4.1	7.1		6.2			
Stage I					6.1					
Stage II					6.1					
t(c,HV)				1.0	1.0		1.0			
P(HV)				0.01	0.01		0.03			
t(c,G)				0.0	0.2		0.1			
G				0	0		0			
t(3,LT)				0.0	0.7		0.0			
t(c)										
Single Stage				4.13	6.43		6.23			
Stage I					5.43					
Stage II					5.43					

FOLLOW-UP HEADWAYS										
Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(f,base)				2.2	3.5		3.3			
t(f,HV)				0.9	0.9		0.9			
P(HV)				0.01	0.01		0.03			
t(f)				2.23	3.53		3.33			

Step 5: POTENTIAL CAPACITIES

NO UPSTREAM SIGNAL EFFECTS PRESENT

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
v(c,x)				684	1369		746			
t(c,x)				4.13	6.43		6.23			
t(f,x)				2.23	3.53		3.33			
c(p,x)				904	161		412			

Minor-Street Left Movements	NorthBound 7		SouthBound 10	
	StageI	StageII	StageI	StageII
Conflicting Flow Rate, v(c,x)	594	775		
Critical Headway, t(c,x)	5.43	5.43		
Follow-up Headway, t(f,x)	3.53	3.53		
Potential Capacity, c(p,x)	549	452		

Steps 6 - 9: MOVEMENT CAPACITIES

Pedestrian Impedance				
Approach	EB	WB	NB	SB
Movement	13	14	15	16
Pedestrian Flow Rate, v(x)	152	152	91	0
Lane Width, w	12.0	12.0	12.0	
Walking Speed, S(p)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.098	0.001	0.004	

Major-Street Left-Turn Movement	1	4
Conflicting Flow, v(c,x)		684
Potential Capacity, c(p,x)		904
Pedestrian Impedance Factor, p(p,x)		0.996
Movement Capacity, c(m,x)		900
Probability of Queue-free State, p(0,j)		0.797
Major L-Shared Prob. Q-free St., p*(0,j)		0.797

Minor-Street Right-Turn Movement	9	12
Conflicting Flow, v(c,x)	746	
Potential Capacity, c(p,x)	412	
Pedestrian Impedance Factor, p(p,x)	0.995	
Movement Capacity, c(m,x)	410	
Probability of Queue-free State, p(0,j)	0.868	

Major-Street U-turn Movement	1U	4U
Conflicting Flow, v(c,x)		
Potential Capacity, c(p,x)		
Capacity Adjustment Factor, f(x)		
Movement Capacity, c(m,x)		
Shared L/U Capacity, c(SH)		
Probability of Queue-free State, p(0,j)		

Minor-Street Through Movement	8	11
Conflicting Flow, v(c,x)		
Potential Capacity, c(p,x)		
Pedestrian Impedance Factor, p(p,x)		
Capacity Adjustment Factor, f(x)		
Movement Capacity, c(m,x)		
Probability of Queue-free State, p(0,j)		

Minor-Street Left-Turn Movement	7	10
Conflicting Flow, v(c,x)	1369	
Potential Capacity, c(p,x)	161	
Pedestrian Impedance Factor, p(p,x)	0.898	
Major L, Minor T Adj. Imp. Factor, p"		
Major L, Minor T Impedance Factor, p'		
Capacity Adjustment Factor, f(p,l)	0.797	
Movement Capacity, c(m,x)	115	

Capacity for Two-Stage Movement Minor-Street Left-Turn Movement	7	10
Part 1 - Stage I		
Conflicting Flow, v(c,x)	594	
Potential Capacity, c(p,x)	549	
Pedestrian Impedance Factor, p(p,x)	0.996	
Capacity Adjustment Factor, f(p,l)	0.794	

Movement Capacity, c(m,x)	436
Part 2 - Stage II	
Conflicting Flow, v(c,x)	775
Potential Capacity, c(p,x)	452
Pedestrian Impedance Factor, p(p,x)	0.902
Capacity Adjustment Factor, f(p,l)	0.902
Movement Capacity, c(m,x)	408
Part 3 - Single Stage	
Conflicting Flow, v(c,x)	1369
Potential Capacity, c(p,x)	161
Pedestrian Impedance Factor, p(p,x)	0.898
Major L, Minor T Adj. Imp. Factor, p"	
Major L, Minor T Impedance Factor, p'	
Capacity Adjustment Factor, f(p,l)	0.797
Movement Capacity, c(m,x)	115
Results for Two-Stage Process:	
Adjustment Factor, a	0.949
Intermediate Variable, y	2.918
Total Capacity, c(T)	205

Step 11: CONTROL DELAY

CONTROL DELAY TO RANK 2 THROUGH 4 MOVEMENTS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
Flow Rate				183	127		54			
Movement Cap.				900	205		410			
Lane Config.				L	L		R			
Shared Cap.				900	205		410			
Control Delay				10.0	47.4		15.1			

Steps 12 - 13: APPROACH/INTERSECTION CONTROL DELAY and 95% QUEUE LENGTHS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				183	127		54			
Lane Capacity				900	205		410			
v/c				0.20	0.62		0.13			
95% Queue Leng.				0.8	3.6		0.5			
Control Delay				10.0	47.4		15.1			
LOS				B	E		C			
Approach Delay				4.2		37.8				
Approach LOS				A		E				
Intersct. Delay		7.1								

HCS 2010 TWSC Text Report

This TWSC text report was created on 06/01/2016 17:01:21

HCS 2010 Two Way Stop Intersections Release 6.70

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	Future Traffic - PM Peak Hour
Analyst:	Collette Frohlich
Agency/Co.:	EEI
Date Performed:	5/24/2016
Time Analyzed:	PM Peak Hour
Jurisdiction:	EASD #131
Analysis Year:	2018
Project Description:	EAHS Expansion
Units:	U.S. Customary
Intersection Name:	EAHS - Driveway 1
Major Street Direction:	East-West
East/West Street Name:	5th Avenue
North/South Street Name:	Tomcat Lane
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	EastBound				WestBound		
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume		273	63	89	280		
Peak Hour Factor, PHF			0.88				
Hourly Flow Rate, HFR		310	72	101	318		
Percent Heavy Vehicles				5			
Number of Lanes	0	0	1	0	1	1	0
Lane Configuration			TR		L	T	
Median Type				Left Only			
Median Storage				2			
RT channelized?			No				No
Left-Turn Lane Storage					3		
Upstream Signal?				Not Present			

Minor street:

Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	82		69			
Peak Hour Factor, PHF			0.88			
Hourly Flow Rate, HFR	93		78			
Percent Heavy Vehicles	2		7			
Number of Lanes	1	0	1	0	0	0
Lane Configuration	L		R			
RT channelized?			No			No
Flared Approach/Storage	No	/		No	/	
Percent Grade		0				

Pedestrian Volumes and Adjustments

Approach	EB	WB	NB	SB
Movement	13	14	15	16
Flow (ped/hr)	80	80	189	0
Lane Width (ft)	12.0	12.0	12.0	
Walking Speed (ft/sec)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.011	0.195	0.086	

Delay, Queue Length, and Level of Service

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				101	93		78			
Lane Capacity				904	346		355			
v/c				0.11	0.27		0.22			
95% Queue Leng.				0.4	1.1		0.8			
Control Delay				9.5	19.2		18.0			
LOS				A	C		C			
Approach Delay				2.3		18.6				
Approach LOS				A		C				
Intersct. Delay		4.3								

Step 1: MOVEMENT PRIORITIES

Major Street:

Approach		EastBound					WestBound	
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:

Approach	NorthBound			SouthBound		
Priority	7	8	9	10	11	12
Movement	L	T	R	L	T	R

Step 2: MOVEMENT DEMAND VOLUMES AND FLOW RATES

Major Street:

Approach		EastBound					WestBound	
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume, V(x)			273	63		89	280	
Flow Rate, v(x)			310	72		101	318	

Minor Street:

Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume, V(x)	82		69			
Flow Rate, v(x)	93		78			

Step 3: CONFLICTING FLOW RATES

Major Street:

Approach		EastBound					WestBound	
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Flow Rate, v(x)			310	72		101	318	
Conflicting Flow,v(c,x)						571		

Minor Street:

Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Flow Rate, v(x)	93		78			
Conflicting Flow, v(c,x)	1135		615			
Minor-Street Left-Turn Movements			7	10		
Conflicting Flow						
Single Stage, v(c,x)			1135			
Stage I, v(c,I,x)			535			
Stage II, v(c,II,x)			600			

Step 4: CRITICAL HEADWAYS and FOLLOW-UP HEADWAYS

CRITICAL HEADWAYS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(c,base)										
Single Stage				4.1	7.1		6.2			
Stage I					6.1					
Stage II					6.1					
t(c,HV)				1.0	1.0		1.0			
P(HV)				0.05	0.02		0.07			
t(c,G)				0.0	0.2		0.1			
G				0	0		0			
t(3,LT)				0.0	0.7		0.0			
t(c)										
Single Stage				4.15	6.42		6.27			
Stage I					5.42					
Stage II					5.42					

FOLLOW-UP HEADWAYS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(f,base)				2.2	3.5		3.3			
t(f,HV)				0.9	0.9		0.9			
P(HV)				0.05	0.02		0.07			
t(f)				2.24	3.52		3.36			

Step 5: POTENTIAL CAPACITIES

NO UPSTREAM SIGNAL EFFECTS PRESENT

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
v(c,x)				571	1135		615			
t(c,x)				4.15	6.42		6.27			
t(f,x)				2.24	3.52		3.36			
c(p,x)				989	224		483			

Minor-Street Left Movements	NorthBound 7		SouthBound 10	
	StageI	StageII	StageI	StageII
Conflicting Flow Rate, v(c,x)	535	600		
Critical Headway, t(c,x)	5.42	5.42		
Follow-up Headway, t(f,x)	3.52	3.52		
Potential Capacity, c(p,x)	587	548		

Steps 6 - 9: MOVEMENT CAPACITIES

Pedestrian Impedance				
Approach	EB	WB	NB	SB
Movement	13	14	15	16
Pedestrian Flow Rate, v(x)	80	80	189	0
Lane Width, w	12.0	12.0	12.0	
Walking Speed, S(p)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.011	0.195	0.086	

Major-Street Left-Turn Movement	1	4
Conflicting Flow, v(c,x)		571
Potential Capacity, c(p,x)		989
Pedestrian Impedance Factor, p(p,x)		0.914
Movement Capacity, c(m,x)		904
Probability of Queue-free State, p(0,j)		0.888
Major L-Shared Prob. Q-free St., p*(0,j)		0.888

Minor-Street Right-Turn Movement	9	12
Conflicting Flow, v(c,x)	615	
Potential Capacity, c(p,x)	483	
Pedestrian Impedance Factor, p(p,x)	0.736	
Movement Capacity, c(m,x)	355	
Probability of Queue-free State, p(0,j)	0.780	

Major-Street U-turn Movement	1U	4U
Conflicting Flow, v(c,x)		
Potential Capacity, c(p,x)		
Capacity Adjustment Factor, f(x)		
Movement Capacity, c(m,x)		
Shared L/U Capacity, c(SH)		
Probability of Queue-free State, p(0,j)		

Minor-Street Through Movement	8	11
Conflicting Flow, v(c,x)		
Potential Capacity, c(p,x)		
Pedestrian Impedance Factor, p(p,x)		
Capacity Adjustment Factor, f(x)		
Movement Capacity, c(m,x)		
Probability of Queue-free State, p(0,j)		

Minor-Street Left-Turn Movement	7	10
Conflicting Flow, v(c,x)	1135	
Potential Capacity, c(p,x)	224	
Pedestrian Impedance Factor, p(p,x)	0.904	
Major L, Minor T Adj. Imp. Factor, p"		
Major L, Minor T Impedance Factor, p'		
Capacity Adjustment Factor, f(p,l)	0.888	
Movement Capacity, c(m,x)	180	

Capacity for Two-Stage Movement Minor-Street Left-Turn Movement	7	10
Part 1 - Stage I		
Conflicting Flow, v(c,x)	535	
Potential Capacity, c(p,x)	587	
Pedestrian Impedance Factor, p(p,x)	0.914	
Capacity Adjustment Factor, f(p,l)	0.812	

Movement Capacity, c(m,x)	477
Part 2 - Stage II	
Conflicting Flow, v(c,x)	600
Potential Capacity, c(p,x)	548
Pedestrian Impedance Factor, p(p,x)	0.989
Capacity Adjustment Factor, f(p,l)	0.989
Movement Capacity, c(m,x)	542
Part 3 - Single Stage	
Conflicting Flow, v(c,x)	1135
Potential Capacity, c(p,x)	224
Pedestrian Impedance Factor, p(p,x)	0.904
Major L, Minor T Adj. Imp. Factor, p"	
Major L, Minor T Impedance Factor, p'	
Capacity Adjustment Factor, f(p,l)	0.888
Movement Capacity, c(m,x)	180
Results for Two-Stage Process:	
Adjustment Factor, a	0.949
Intermediate Variable, y	1.138
Total Capacity, c(T)	346

Step 11: CONTROL DELAY

CONTROL DELAY TO RANK 2 THROUGH 4 MOVEMENTS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
Flow Rate				101	93		78			
Movement Cap.				904	346		355			
Lane Config.				L	L		R			
Shared Cap.				904	346		355			
Control Delay				9.5	19.2		18.0			

Steps 12 - 13: APPROACH/INTERSECTION CONTROL DELAY and 95% QUEUE LENGTHS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				101	93		78			
Lane Capacity				904	346		355			
v/c				0.11	0.27		0.22			
95% Queue Leng.				0.4	1.1		0.8			
Control Delay				9.5	19.2		18.0			
LOS				A	C		C			
Approach Delay				2.3		18.6				
Approach LOS				A		C				
Intersct. Delay		4.3								

HCS 2010 TWSC Text Report

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HCS 2010 Two Way Stop Intersections Release 6.70

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	Future Traffic - AM Peak Hour - 75%
Analyst:	Collette Frohlich
Agency/Co.:	EEI
Date Performed:	5/24/2016
Time Analyzed:	AM Peak Hour
Jurisdiction:	EASD #131
Analysis Year:	2018
Project Description:	EAHS Expansion
Units:	U.S. Customary
Intersection Name:	EAHS - Driveway 1
Major Street Direction:	East-West
East/West Street Name:	5th Avenue
North/South Street Name:	Tomcat Lane
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	EastBound				WestBound		
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume			367	162		163	226	
Peak Hour Factor, PHF				0.83				
Hourly Flow Rate, HFR			442	195		196	272	
Percent Heavy Vehicles						1		
Number of Lanes	0	0	1	0	0	1	1	0
Lane Configuration				TR		L	T	
Median Type					Left Only			
Median Storage					2			
RT channelized?				No				No
Left-Turn Lane Storage						3		
Upstream Signal?					Not Present			

Minor street:

Approach	NorthBound				SouthBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume	110		48				
Peak Hour Factor, PHF				0.83			
Hourly Flow Rate, HFR	133		58				
Percent Heavy Vehicles	1		3				
Number of Lanes	1	0	1		0	0	0
Lane Configuration	L		R				
RT channelized?			No				No
Flared Approach/Storage	No	/			No	/	
Percent Grade		0					

Pedestrian Volumes and Adjustments

Approach	EB	WB	NB	SB
Movement	13	14	15	16
Flow (ped/hr)	152	152	91	0
Lane Width (ft)	12.0	12.0	12.0	
Walking Speed (ft/sec)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.098	0.001	0.004	

Delay, Queue Length, and Level of Service

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				196	133		58			
Lane Capacity				867	178		391			
v/c				0.23	0.75		0.15			
95% Queue Leng.				0.9	4.8		0.5			
Control Delay				10.4	68.1		15.8			
LOS				B	F		C			
Approach Delay				4.3		52.2				
Approach LOS				A		F				
Intersct. Delay		9.3								

Step 1: MOVEMENT PRIORITIES

Major Street:								
Approach		EastBound				WestBound		
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:						
Approach	NorthBound			SouthBound		
Priority	7	8	9	10	11	12
Movement	L	T	R	L	T	R

Step 2: MOVEMENT DEMAND VOLUMES AND FLOW RATES

Major Street:								
Approach		EastBound				WestBound		
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume, V(x)			367	162		163	226	
Flow Rate, v(x)			442	195		196	272	

Minor Street:						
Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume, V(x)	110		48			
Flow Rate, v(x)	133		58			

Step 3: CONFLICTING FLOW RATES

Major Street:								
Approach		EastBound				WestBound		
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Flow Rate, v(x)			442	195		196	272	
Conflicting Flow,v(c,x)						728		

Minor Street:						
Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Flow Rate, v(x)	133		58			
Conflicting Flow, v(c,x)	1446		782			

Minor-Street Left-Turn Movements		7	10

Conflicting Flow	
Single Stage, v(c,x)	1446
Stage I, v(c,I,x)	630
Stage II, v(c,II,x)	816

Step 4: CRITICAL HEADWAYS and FOLLOW-UP HEADWAYS

CRITICAL HEADWAYS										
Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(c,base)										
Single Stage				4.1	7.1		6.2			
Stage I					6.1					
Stage II					6.1					
t(c,HV)				1.0	1.0		1.0			
P(HV)				0.01	0.01		0.03			
t(c,G)				0.0	0.2		0.1			
G				0	0		0			
t(3,LT)				0.0	0.7		0.0			
t(c)										
Single Stage				4.13	6.43		6.23			
Stage I					5.43					
Stage II					5.43					

FOLLOW-UP HEADWAYS										
Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(f,base)				2.2	3.5		3.3			
t(f,HV)				0.9	0.9		0.9			
P(HV)				0.01	0.01		0.03			
t(f)				2.23	3.53		3.33			

Step 5: POTENTIAL CAPACITIES

NO UPSTREAM SIGNAL EFFECTS PRESENT

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
v(c,x)				728	1446		782			
t(c,x)				4.13	6.43		6.23			
t(f,x)				2.23	3.53		3.33			
c(p,x)				870	144		393			

Minor-Street Left Movements	NorthBound 7		SouthBound 10	
	StageI	StageII	StageI	StageII
Conflicting Flow Rate, v(c,x)	630	816		
Critical Headway, t(c,x)	5.43	5.43		
Follow-up Headway, t(f,x)	3.53	3.53		
Potential Capacity, c(p,x)	529	433		

Steps 6 - 9: MOVEMENT CAPACITIES

Pedestrian Impedance				
Approach	EB	WB	NB	SB
Movement	13	14	15	16
Pedestrian Flow Rate, v(x)	152	152	91	0
Lane Width, w	12.0	12.0	12.0	
Walking Speed, S(p)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.098	0.001	0.004	

Major-Street Left-Turn Movement	1	4
Conflicting Flow, v(c,x)		728
Potential Capacity, c(p,x)		870
Pedestrian Impedance Factor, p(p,x)		0.996
Movement Capacity, c(m,x)		867
Probability of Queue-free State, p(0,j)		0.774
Major L-Shared Prob. Q-free St., p*(0,j)		0.774

Minor-Street Right-Turn Movement	9	12
Conflicting Flow, v(c,x)	782	
Potential Capacity, c(p,x)	393	
Pedestrian Impedance Factor, p(p,x)	0.995	
Movement Capacity, c(m,x)	391	
Probability of Queue-free State, p(0,j)	0.852	

Major-Street U-turn Movement	1U	4U
Conflicting Flow, v(c,x)		
Potential Capacity, c(p,x)		
Capacity Adjustment Factor, f(x)		
Movement Capacity, c(m,x)		
Shared L/U Capacity, c(SH)		
Probability of Queue-free State, p(0,j)		

Minor-Street Through Movement	8	11
Conflicting Flow, v(c,x)		
Potential Capacity, c(p,x)		
Pedestrian Impedance Factor, p(p,x)		
Capacity Adjustment Factor, f(x)		
Movement Capacity, c(m,x)		
Probability of Queue-free State, p(0,j)		

Minor-Street Left-Turn Movement	7	10
Conflicting Flow, v(c,x)	1446	
Potential Capacity, c(p,x)	144	
Pedestrian Impedance Factor, p(p,x)	0.898	
Major L, Minor T Adj. Imp. Factor, p"		
Major L, Minor T Impedance Factor, p'		
Capacity Adjustment Factor, f(p,l)	0.774	
Movement Capacity, c(m,x)	100	

Capacity for Two-Stage Movement Minor-Street Left-Turn Movement	7	10
Part 1 - Stage I		
Conflicting Flow, v(c,x)	630	
Potential Capacity, c(p,x)	529	
Pedestrian Impedance Factor, p(p,x)	0.996	
Capacity Adjustment Factor, f(p,l)	0.771	

Movement Capacity, c(m,x)	408
Part 2 - Stage II	
Conflicting Flow, v(c,x)	816
Potential Capacity, c(p,x)	433
Pedestrian Impedance Factor, p(p,x)	0.902
Capacity Adjustment Factor, f(p,l)	0.902
Movement Capacity, c(m,x)	390
Part 3 - Single Stage	
Conflicting Flow, v(c,x)	1446
Potential Capacity, c(p,x)	144
Pedestrian Impedance Factor, p(p,x)	0.898
Major L, Minor T Adj. Imp. Factor, p"	
Major L, Minor T Impedance Factor, p'	
Capacity Adjustment Factor, f(p,l)	0.774
Movement Capacity, c(m,x)	100
Results for Two-Stage Process:	
Adjustment Factor, a	0.949
Intermediate Variable, y	3.267
Total Capacity, c(T)	178

Step 11: CONTROL DELAY

CONTROL DELAY TO RANK 2 THROUGH 4 MOVEMENTS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
Flow Rate				196	133		58			
Movement Cap.				867	178		391			
Lane Config.				L	L		R			
Shared Cap.				867	178		391			
Control Delay				10.4	68.1		15.8			

Steps 12 - 13: APPROACH/INTERSECTION CONTROL DELAY and 95% QUEUE LENGTHS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				196	133		58			
Lane Capacity				867	178		391			
v/c				0.23	0.75		0.15			
95% Queue Leng.				0.9	4.8		0.5			
Control Delay				10.4	68.1		15.8			
LOS				B	F		C			
Approach Delay				4.3		52.2				
Approach LOS				A		F				
Intersct. Delay		9.3								

HCS 2010 TWSC Text Report

This TWSC text report was created on 06/01/2016 17:01:58

HCS 2010 Two Way Stop Intersections Release 6.70

TWO-WAY STOP CONTROL (TWSC) Analysis

File Name:	Future Traffic - PM Peak Hour - 75%
Analyst:	Collette Frohlich
Agency/Co.:	EEI
Date Performed:	5/24/2016
Time Analyzed:	PM Peak Hour
Jurisdiction:	EASD #131
Analysis Year:	2018
Project Description:	EAHS Expansion
Units:	U.S. Customary
Intersection Name:	EAHS - Driveway 1
Major Street Direction:	East-West
East/West Street Name:	5th Avenue
North/South Street Name:	Tomcat Lane
Analysis Time Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street:

Approach	EastBound				WestBound		
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume			285	66		92	304	
Peak Hour Factor, PHF				0.88				
Hourly Flow Rate, HFR			324	75		105	345	
Percent Heavy Vehicles						5		
Number of Lanes	0	0	1	0	0	1	1	0
Lane Configuration				TR		L	T	
Median Type					Left Only			
Median Storage					2			
RT channelized?				No				No
Left-Turn Lane Storage						3		
Upstream Signal?					Not Present			

Minor street:

Approach	NorthBound				SouthBound		
Movement	7	8	9		10	11	12
	L	T	R		L	T	R
Volume	89		76				
Peak Hour Factor, PHF				0.88			
Hourly Flow Rate, HFR	101		86				
Percent Heavy Vehicles	2		7				
Number of Lanes	1	0	1		0	0	0
Lane Configuration	L		R				
RT channelized?			No				No
Flared Approach/Storage	No	/			No	/	
Percent Grade		0					

Pedestrian Volumes and Adjustments

Approach	EB	WB	NB	SB
Movement	13	14	15	16
Flow (ped/hr)	80	80	189	0
Lane Width (ft)	12.0	12.0	12.0	
Walking Speed (ft/sec)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.011	0.195	0.086	

Delay, Queue Length, and Level of Service

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				105	101		86			
Lane Capacity				891	330		348			
v/c				0.12	0.31		0.25			
95% Queue Leng.				0.4	1.3		1.0			
Control Delay				9.6	20.6		18.7			
LOS				A	C		C			
Approach Delay				2.2		19.7				
Approach LOS				A		C				
Intersct. Delay		4.5								

Step 1: MOVEMENT PRIORITIES

Major Street:								
Approach		EastBound				WestBound		
Priority	1U	1	2	3	4U	4	5	6
Movement	U	L	T	R	U	L	T	R

Minor Street:						
Approach	NorthBound			SouthBound		
Priority	7	8	9	10	11	12
Movement	L	T	R	L	T	R

Step 2: MOVEMENT DEMAND VOLUMES AND FLOW RATES

Major Street:								
Approach		EastBound				WestBound		
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Volume, V(x)			285	66		92	304	
Flow Rate, v(x)			324	75		105	345	

Minor Street:						
Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume, V(x)	89		76			
Flow Rate, v(x)	101		86			

Step 3: CONFLICTING FLOW RATES

Major Street:								
Approach		EastBound				WestBound		
Movement	1U	1	2	3	4U	4	5	6
	U	L	T	R	U	L	T	R
Flow Rate, v(x)			324	75		105	345	
Conflicting Flow,v(c,x)						588		

Minor Street:						
Approach	NorthBound			SouthBound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Flow Rate, v(x)	101		86			
Conflicting Flow, v(c,x)	1185		630			

Minor-Street Left-Turn Movements	7 10

Conflicting Flow	
Single Stage, v(c,x)	1185
Stage I, v(c,I,x)	550
Stage II, v(c,II,x)	635

Step 4: CRITICAL HEADWAYS and FOLLOW-UP HEADWAYS

CRITICAL HEADWAYS										
Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(c,base)										
Single Stage				4.1	7.1		6.2			
Stage I					6.1					
Stage II					6.1					
t(c,HV)				1.0	1.0		1.0			
P(HV)				0.05	0.02		0.07			
t(c,G)				0.0	0.2		0.1			
G				0	0		0			
t(3,LT)				0.0	0.7		0.0			
t(c)										
Single Stage				4.15	6.42		6.27			
Stage I					5.42					
Stage II					5.42					

FOLLOW-UP HEADWAYS										
Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
t(f,base)				2.2	3.5		3.3			
t(f,HV)				0.9	0.9		0.9			
P(HV)				0.05	0.02		0.07			
t(f)				2.24	3.52		3.36			

Step 5: POTENTIAL CAPACITIES

NO UPSTREAM SIGNAL EFFECTS PRESENT

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
v(c,x)				588	1185		630			
t(c,x)				4.15	6.42		6.27			
t(f,x)				2.24	3.52		3.36			
c(p,x)				974	209		473			

Minor-Street Left Movements	NorthBound 7		SouthBound 10	
	StageI	StageII	StageI	StageII
Conflicting Flow Rate, v(c,x)	550	635		
Critical Headway, t(c,x)	5.42	5.42		
Follow-up Headway, t(f,x)	3.52	3.52		
Potential Capacity, c(p,x)	578	528		

Steps 6 - 9: MOVEMENT CAPACITIES

Pedestrian Impedance				
Approach	EB	WB	NB	SB
Movement	13	14	15	16
Pedestrian Flow Rate, v(x)	80	80	189	0
Lane Width, w	12.0	12.0	12.0	
Walking Speed, S(p)	3.5	3.5	3.5	
Pedestrian Blockage Factor, f(pb)	0.011	0.195	0.086	

Major-Street Left-Turn Movement	1	4
Conflicting Flow, v(c,x)		588
Potential Capacity, c(p,x)		974
Pedestrian Impedance Factor, p(p,x)		0.914
Movement Capacity, c(m,x)		891
Probability of Queue-free State, p(0,j)		0.882
Major L-Shared Prob. Q-free St., p*(0,j)		0.882

Minor-Street Right-Turn Movement	9	12
Conflicting Flow, v(c,x)	630	
Potential Capacity, c(p,x)	473	
Pedestrian Impedance Factor, p(p,x)	0.736	
Movement Capacity, c(m,x)	348	
Probability of Queue-free State, p(0,j)	0.753	

Major-Street U-turn Movement	1U	4U
Conflicting Flow, v(c,x)		
Potential Capacity, c(p,x)		
Capacity Adjustment Factor, f(x)		
Movement Capacity, c(m,x)		
Shared L/U Capacity, c(SH)		
Probability of Queue-free State, p(0,j)		

Minor-Street Through Movement	8	11
Conflicting Flow, v(c,x)		
Potential Capacity, c(p,x)		
Pedestrian Impedance Factor, p(p,x)		
Capacity Adjustment Factor, f(x)		
Movement Capacity, c(m,x)		
Probability of Queue-free State, p(0,j)		

Minor-Street Left-Turn Movement	7	10
Conflicting Flow, v(c,x)	1185	
Potential Capacity, c(p,x)	209	
Pedestrian Impedance Factor, p(p,x)	0.904	
Major L, Minor T Adj. Imp. Factor, p"		
Major L, Minor T Impedance Factor, p'		
Capacity Adjustment Factor, f(p,l)	0.882	
Movement Capacity, c(m,x)	166	

Capacity for Two-Stage Movement Minor-Street Left-Turn Movement	7	10
Part 1 - Stage I		
Conflicting Flow, v(c,x)	550	
Potential Capacity, c(p,x)	578	
Pedestrian Impedance Factor, p(p,x)	0.914	
Capacity Adjustment Factor, f(p,l)	0.807	

Movement Capacity, c(m,x)	466
Part 2 - Stage II	
Conflicting Flow, v(c,x)	635
Potential Capacity, c(p,x)	528
Pedestrian Impedance Factor, p(p,x)	0.989
Capacity Adjustment Factor, f(p,l)	0.989
Movement Capacity, c(m,x)	522
Part 3 - Single Stage	
Conflicting Flow, v(c,x)	1185
Potential Capacity, c(p,x)	209
Pedestrian Impedance Factor, p(p,x)	0.904
Major L, Minor T Adj. Imp. Factor, p"	
Major L, Minor T Impedance Factor, p'	
Capacity Adjustment Factor, f(p,l)	0.882
Movement Capacity, c(m,x)	166
Results for Two-Stage Process:	
Adjustment Factor, a	0.949
Intermediate Variable, y	1.196
Total Capacity, c(T)	330

Step 11: CONTROL DELAY

CONTROL DELAY TO RANK 2 THROUGH 4 MOVEMENTS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
	U	L	U	L	L	T	R	L	T	R
Flow Rate				105	101		86			
Movement Cap.				891	330		348			
Lane Config.				L	L		R			
Shared Cap.				891	330		348			
Control Delay				9.6	20.6		18.7			

Steps 12 - 13: APPROACH/INTERSECTION CONTROL DELAY and 95% QUEUE LENGTHS

Approach	EB		WB		NorthBound			SouthBound		
Movement	1U	1	4U	4	7	8	9	10	11	12
Lane Config.				L	L		R			
Flow Rate				105	101		86			
Lane Capacity				891	330		348			
v/c				0.12	0.31		0.25			
95% Queue Leng.				0.4	1.3		1.0			
Control Delay				9.6	20.6		18.7			
LOS				A	C		C			
Approach Delay				2.2		19.7				
Approach LOS				A		C				
Intersct. Delay		4.5								