EXHIBIT F – TRAFFIC STUDY (DRAFT)

Engine Company 115 Fire Station
Traffic Impact Study

119th St and Morgan St

Chicago, Illinois, 60643

Draft Report

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SECTION I – EXECUTIVE SUMMARY

A new fire station is proposed at the northwest corner of the 119th St and Morgan St in the Chicago, Illinois. The proposed development will have approximately 26,000 gross square foot area including the new fire station and district offices.

Existing traffic volume data was collected along 119th St on intersections that would be directly and indirectly affected by the fire department. Turning movement data was collected from 6:00am to 9:00am and from 4:00pm to 7:00pm on October 25th, 2018 to observe the typical traffic peak hours. The data was collected at five intersections along 119th St and the peak hour for each intersection was determined from the collected data.

Traffic projections for the site were generated using the standards provided in the Institute of Transportation Engineers (ITE) "*Trip Generation Manual"* and based on the site data provided. The land use code for Fire and Rescue Station (575) was chosen for developing the new trips. Since there were only three similar studies with vehicle trip data, trips were extrapolated from the study that produced the greatest number of trips for the least amount of gross square feet. These site generated trips were added to the existing traffic to get new proposed volumes and modeled. The results of the opening day model showed no significant changes from the existing traffic operations.

A future horizon was also evaluated for the site based on 2024 traffic. To generate this projected traffic, the existing traffic was projected six years in the future using a growth rate of 0.5% per year. These volumes were modeled as both a Future "No-build" condition, and then the site generated trips were added to the 2024 horizon and modeled as a Future Build condition. Again, the results shown in the traffic models show similar levels of service with little to no change from the existing conditions.

New entrances to the proposed site are proposed to the employee parking and for emergency vehicles to enter the site from Morgan St. Additionally, an exit for emergency vehicles is proposed on 119th St. The fire station exit may need to consider installation of a new signal mast arm to stop eastbound traffic coming towards the site, and the ability for the fire station to control the traffic signals on 119th and Morgan St. to change the indications to all red and allow emergency vehicles to leave the fire station can safely and quickly. This may require a new signal controller, signal wiring and other changes to the existing signal at 119th St. and Morgan St.

SECTION II – INTRODUCTION/BACKGROUND OF SITE

TERRA Engineering has been asked to evaluate the traffic impacts of the proposed fire station for Engine Company 115 to be constructed in Chicago, Illinois. The development is proposed to be built near the corner of 119th St and Morgan St. At the origin of this study there were two sites being considered on the northwest and southeast corners of the intersections which both are currently abandoned lots. It appears that the northwest corner site has been chosen for further study, however the traffic impacts on existing traffic in the area would likely be roughly the same for either location.

The proposed building will have approximately 26,000 gross square foot area per the program area analysis which was provided to TERRA for the project. The facilities would include the new fire station with truck and ambulance bays within the site. The building would contain typical amenities including officer quarters, locker rooms, kitchen and dining areas, common spaces and similar facilities. In addition, this location is expected to contain additional district offices with a training room.

The current proposed layout places the main building along 119th Street with a driveway exit for the emergency vehicles onto 119th and entrances to both the fire truck bays and the staff parking to be situated along Morgan Street north on 119th Street.

SECTION III – STUDY AREA

As mentioned above, the proposed site lies in the northwest corner of 119th St and Morgan St in what is currently an abandoned lot in Chicago, Illinois. Currently, the intersection of 119th St and Morgan St is signalized. The proposed site location and adjacent street network and study intersections are provided in Figure 1.

Traffic data was collected at several locations around the proposed site including at the following intersections:

- 119th St and Loomis St (signalized)
- 119th St and Morgan St (signalized)
- 119th St and Sangamon St (unsignalized)
- 119th St and Peoria St (unsignalized)
- 119th St and Halsted St (signalized)

119th St is a four-lane minor arterial road (two lanes in each direction) that runs east-west. It services residential neighborhoods to the north and south. 119th Street connects to Interstate 57 west of the study area, and Halsted St. (IL Route 1) on the east side of the study area. The posted speed limit is 30 miles per hour (mph). Sidewalks exist on both sides of 119th St, and on-street parking is allowed when there is less than 2 inches of snow. The Ray and Joan Kroc Corps Community center lies on the north side of 119th between Loomis St and Morgan St, and there are two entrances to enter the community center. There CTA 119 Bus Route runs along this portion of 119th with several bus stops near the project site, including on Loomis St, Morgan St, Peoria St, Ada St, and Halsted St.

Loomis St is a one-way and one-lane roadway that runs in the northbound direction to the north of 119th Street, serving a residential area. On-street parking is allowed on both sides

Figure 1 - Study Area Map

of this segment of roadway. On the south side the street is interrupted by a large parking area which serves Johnnie Coleman Academy and another business with large parking areas. This entrance creates a 4-way intersection at this location which is signalized. The assumed speed limit is 30 mph with the north leg being one-way away from the intersection.

Morgan St is a two-lane road running in the north-south direction and provides two-way traffic flow. On-street parking is allowed on both sides of the street. North of 119th St, Morgan St serves a residential area and connects to several adjacent parks in the neighborhood. South of 119th St, Morgan St continues for 650 feet before ending at 120th Street where there is a large solar power farm and several currently abandoned lots. The assumed speed limit is 30 mph.

Sangamon St is a one-way street running in the southbound direction providing egress from a residential area to 119th Street. On-street parking is allowed on both sides of the street. Sangamon St ends at 119th St, forming an unsignalized T-intersection.

Peoria St is a roadway that extends 1,300 feet north of 119th serving a residential area before being cut-off by a roadway barrier at 117th Street and provides ingress into the neighborhood. Peoria Street also extends to the south of 119th St serving several

businesses before coming to a dead-end south of the train tracks. North of 119th St, Peoria St is a one-way road running northbound away from 119th St. Side street parking is allowed. South of 119th St, Peoria St is a two-way, two-lane road running in the north-south direction. It appears that south of 120th Street, Peoria Street would allow for pedestrian access to the West Pullman station on the Metra Electric line.

Halsted St is also known as Illinois Route 1. It is a four-lane major arterial road running in the north-sound direction, with two lanes in each direction separated by a median. The northbound and southbound directions have an additional lane for left turns at the intersection with 119th St. Halsted St intersects with Interstate 57 to the north of 119th, and Route 83 to the south. It serves many residential areas and there are many businesses along it. On-street parking is allowed on some segments of Halsted St without reducing the travel lanes. The posted speed limit is 30 miles per hour (mph).

SECTION IV – EXISTING ROADWAY TRAFFIC CONDITIONS

Existing traffic data was collected on October 25th, 2018 at the five study area intersections. Counts were collected from 6:00 AM to 9:00 AM to consider the AM peak hour, and again from 4:00 PM to 7:00 PM to consider the PM peak hour.

The AM and PM peak hour for Morgan St, Peoria St, and Halsted St occurred at the same time, from 7:15 AM to 8:15 AM and from 4:45 PM to 5:45 PM. Because Sangamon St is close in proximity between Morgan St and Peoria St, and Morgan St and Peoria St had matching peak hours, it was assumed that the peak hours for Sangamon St would also be from 7:15 AM to 8:15 AM, and from 4:45 PM to 5:45 PM. The vehicle turning movements for Sangamon St were counted during the assumed peak hours to generate existing traffic data on Sangamon St.

The PM peak hour at 199th and Loomis St coincided with the PM peak hour for the other intersections, however the AM peak hour on Loomis St occurred between 7:30 AM and 8:30 AM which was slightly later. Though the AM peak on Loomis does not coincide with the AM peaks on the other intersections, the turning movement data during the 7:30-8:30 AM peak was used to provide a worst-case calculation. Using the highest observed data at each intersection provides a slightly more conservative calculation for traffic volumes. The resulting AM and PM peak hour volumes are provided in Figure 2.

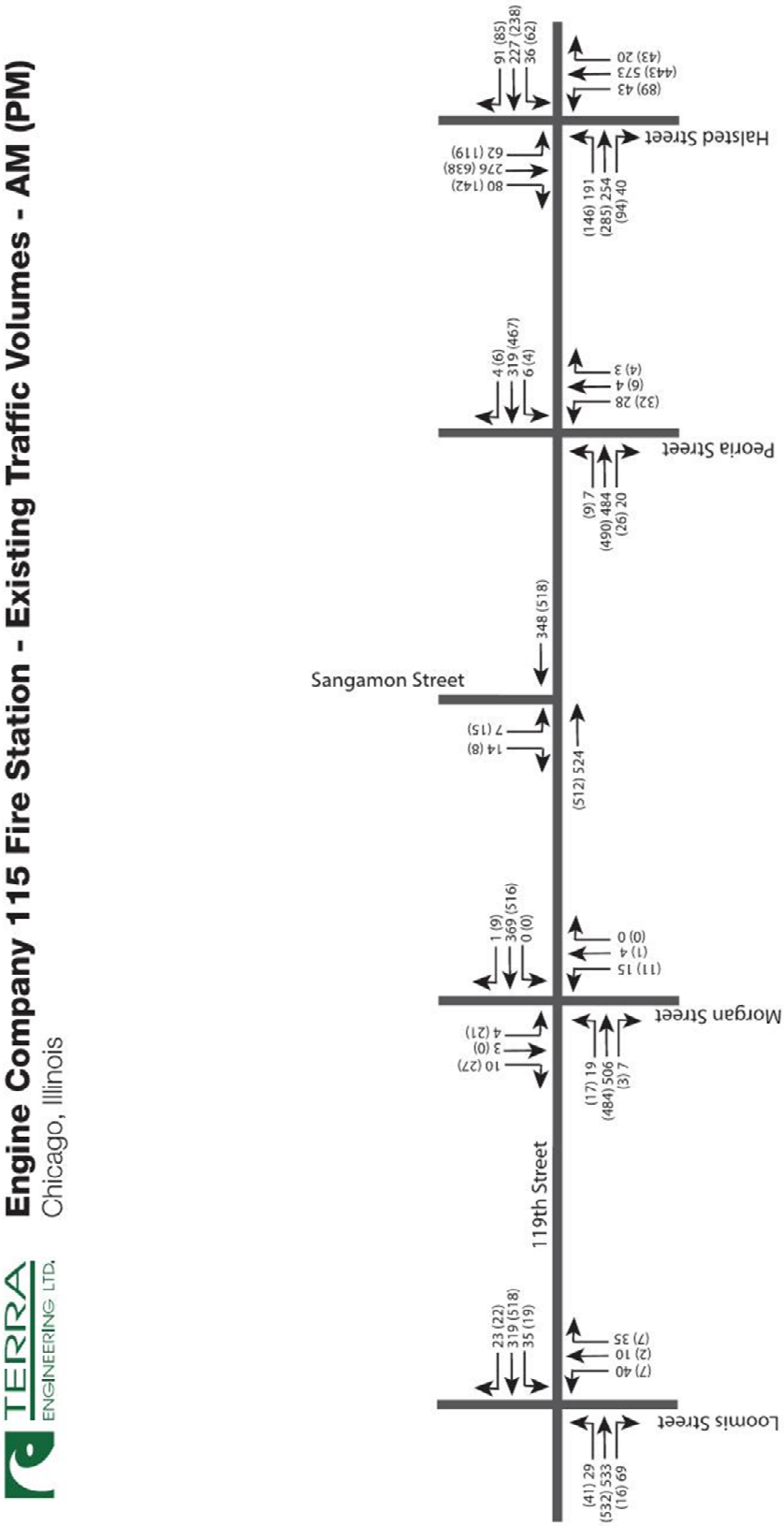


Figure 2 – 2018 Existing AM (PM) Peak Hour Traffic Volumes

Level of Service and Delay

Delay is one of the main components of measuring the service of an interrupted flow roadway. The principal measure of this delay is control delay which is defined by the Highway Capacity Manual as "a quantitative stratification of a performance measure or measures representing quality of service". The LOS is measured on an A-F scale, where "LOS A represents the best operating conditions from the traveler's perspective and LOS F the worst. For cost, environmental impact, and other reasons, roadways are typically designed not to provide LOS A conditions during peak periods but instead to provide some lower LOS that balances individual travelers' desires against society's desires and financial resources".

The LOS designation was created as a tool to help laypersons and decision makers determine the difference in operating conditions for a particular location. There are six representative levels of service defined for each type of facility which can be analyzed, and they are designated using letters A through F. These letters are an attempt to translate "complex numerical performance results into a simple A-F system representative of travelers' perceptions of the quality of service". LOS calculations are provided for different modes of travel such as motorized vehicle, pedestrian, bicycle and transit modes. Safety of the intersection is not included in the analysis of LOS. Level of Service is defined separately for signalized and unsignalized intersections as shown in the Table 1.

Table 1 – Level of Service Thresholds for Control Delay (seconds/vehicle)

Level of Service	Control Delay per Vehicle (sec/veh)	
	Signalized	Unsignalized
A	0-10 sec	0-10 sec
B	> 10-20 sec	> 10-15 sec
C	> 20-35 sec	> 15-25 sec
D	> 35-55 sec	> 25-35 sec
E	> 55-80 sec	> 35-50 sec
F	> 80 sec	> 50 sec

LOS is a measure of the acceptability of the amount of delay, therefore it is considered slightly subjective as what is acceptable in a major metropolitan area may not be acceptable in a smaller city or rural area. These delays are computed as the average control delay per vehicle arriving at the intersection. For signalized intersections, delays are evaluated for the overall intersection, while on streets which are unsignalized; delay is analyzed for each movement separately and only includes side street traffic and left turns from the major street.

Another factor evaluated when determining traffic operations at an intersection is the volume to capacity (v/c) ratio of the critical lane group. This ratio compares the rate of flow to the available capacity of the intersection and is considered a measure of the degree of saturation. Sustainable values of a v/c ratio range from 0.0 to 1.0. Values in excess of 1.0 indicate a possible excess of demand and are considered to be LOS F.

In a dense urban area, it is generally acceptable to provide LOS D in all areas but consider LOS E in certain situations where traffic demand is very high on major arterial routes.

Occasionally side streets will be allowed to operate at LOS F when volume and demand on the side street is considered very low and servicing these vehicles would cause a greater negative impact on the progression of through traffic on the main route.

The existing traffic data collected was modeled in Synchro 10 traffic modeling software for analysis of the street network surrounding the proposed fire station site. The analysis was performed for the existing traffic during the peak period in the morning and again in the afternoon. As noted previously, the peak for each individual intersection was utilized. Each of the intersections was then evaluated on an individual basis to determine the control delay at the intersection. There are three signalized intersections in the study area. The other two intersections are both two-way stop controlled, with the major route (119th St) being allowed to free flow and the side street required to stop.

Signal timings were provided for this analysis from the City of Chicago Department of Transportation (CDOT). The existing traffic analysis performance data is provided in Table 2 for the AM and PM periods and the Synchro output from the existing analysis is provided in Appendix B.

Table 2 – Existing Traffic Analysis

	Weekday AM			Weekday PM Peak		
	LOS	Delay	v/c	LOS	Delay	v/c
S Loomis St & W 119th St						
Signalized Intersection	A	8.6	0.35	A	8.5	0.34
S Morgan St & W 119th St						
Signalized Intersection	A	7.8	0.31	A	7.9	0.29
W 119th St & S Sangamon St						
Unsignalized Intersection – Southbound	B	11.2	0.04	C	15.2	0.07
S Peoria St & W 119th St						
Unsignalized Intersection – Northbound Left	C	16.1	0.11	C	17.9	0.14
Eastbound Left	A	8.0	0.01	A	8.5	0.01
Westbound Left	A	8.6	0.01	A	8.6	0.01
S Halsted St & W 119th St						
Signalized Intersection	C	20.7	0.48	C	21.8	0.64

All the intersections and turning movements appear to perform at a LOS C or better in the existing condition, which is considered acceptable. The largest delay is experienced at the signalized intersection of Halsted St and 119th St, which experiences a delay of 20.7 seconds during the AM peak hour and 21.8 seconds during the PM peak hour. Base don the existing traffic flows, LOS and delays it appears that traffic in the area functions well on an average daily basis.

SECTION V – COMPUTATION OF BACKGROUND TRAFFIC

Often when projecting traffic for a new development with a future opening date, it is necessary to project an increase in the existing traffic due to background growth. This growth is generally created by other sources including new developments and overall growth of the area. While much of the residential portion of the area is built out, there does

appear to be some room for further developments in the area in locations which are currently vacant or abandoned which could bring additional traffic. A 0.5% growth rate for traffic in the area was assumed for the purposes of this study. As this development would be planned for a 2019 opening at the earliest, it will be necessary to increase the opening day background traffic for a period of one year to a 2019 date for the opening day analysis. TERRA also analyzed the traffic 5 years after opening day, which means a 5-year design horizon becomes a six-year horizon for future analysis in 2024.

The existing traffic data collected was adjusted by the corresponding factors to both 2019 and 2024 traffic volumes. The calculations to adjust these traffic volumes are provided in Appendix C.

The next step was to create a model for the 2024 traffic showing a no-build condition for establishing the future background traffic without the development. The "Future No-Build" traffic was developed and is shown in Figure 3.

These new volumes are considered a no-build condition and are representative of what the expected traffic levels would be in 6 years if the fire station were not built. These values were modeled in Synchro as the "Future No-Build" condition to provide a frame of reference for the future analysis to help show what is attributable to the new site and what is due to other factors not created by the new project site traffic. The results of the updated analysis for the 2024 no-build condition are provided in Table 3 with the full synchro results provided in Appendix D.

Table 3 – 2024 Future No-Build Traffic Analysis

	Weekday AM			Weekday PM Peak		
	LOS	Delay	v/c	LOS	Delay	v/c
S Loomis St & W 119th St						
Signalized Intersection	A	8.7	0.36	A	8.6	0.35
S Morgan St & W 119th St						
Signalized Intersection	A	7.8	0.32	A	7.9	0.30
W 119th St & S Sangamon St						
Unsignalized Intersection – Southbound Left	B	11.4	0.04	C	15.2	0.07
S Peoria St & W 119th St						
Unsignalized Intersection – Northbound Left	C	16.5	0.12	C	18.2	0.15
Eastbound Left	A	8.0	0.01	A	8.5	0.01
Westbound Left	A	8.6	0.01	A	8.6	0.01
S Halsted St & W 119th St						
Signalized Intersection	C	20.9	0.50	C	21.9	0.65

Like the evaluations of the existing traffic, the 2024 projected no-build traffic operates within what is typically considered acceptable from a LOS standpoint. The traffic caused by a 0.5% traffic growth produces negligible changes in the LOS or days at each intersection when compared to existing data.

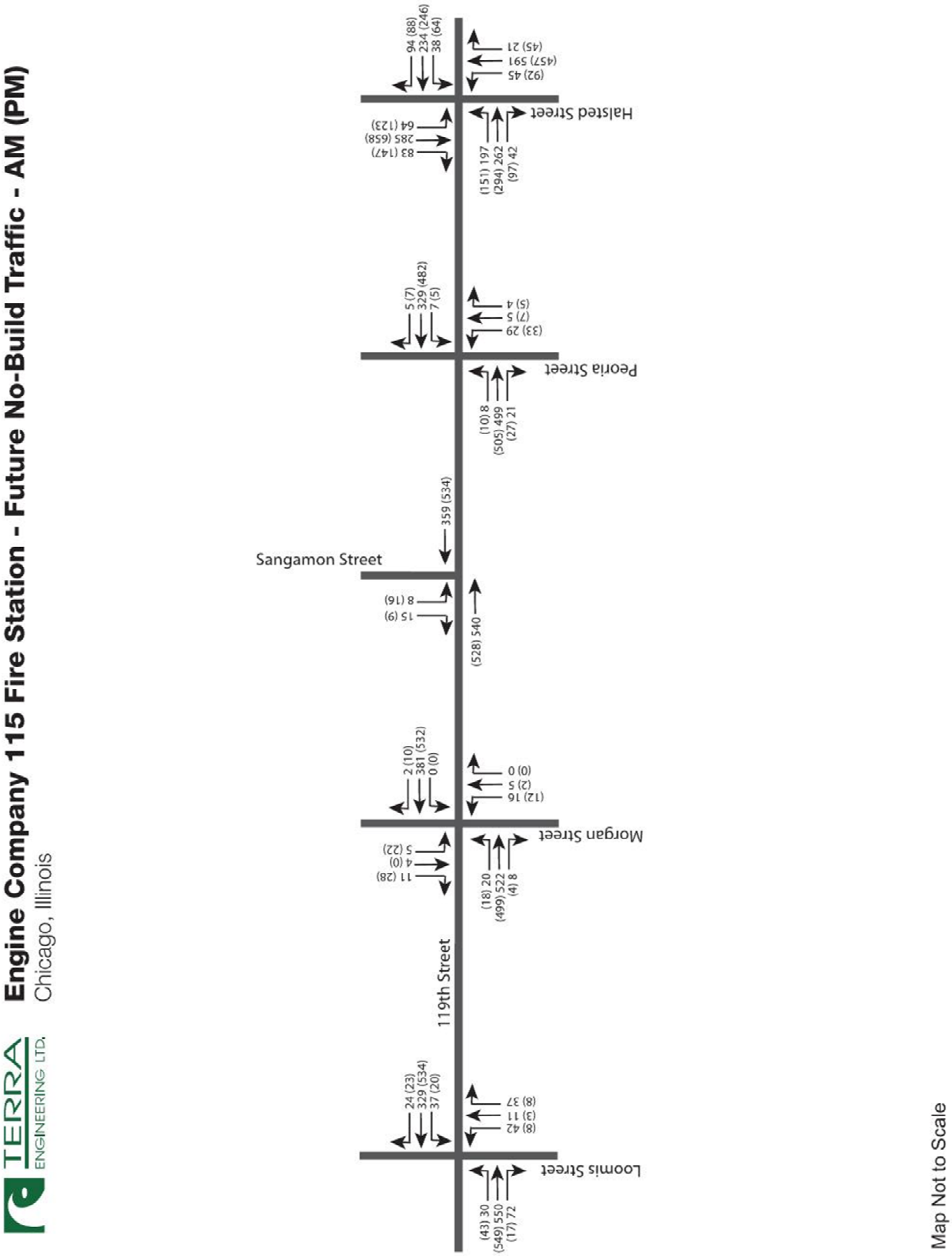


Figure 3 - 2024 Future No-Build AM (PM) Volumes

SECTION VI – SITE LAYOUT

The proposed new fire station for Engine Company 115 is to be located on the northwest corner of 119th St and Morgan St on what is currently a vacant lot. The site plan calls for two driveways along Morgan St, and one along 119th St.

Along Morgan St, a northern driveway for employees and visitors is proposed which will contain 61 parking spaces. This northern entrance will be located approximately mid-way between 119th St. and 118th St. and will provide all of the on-site parking access for personal vehicles both for fire station staff, district staff and visitors to the site. It appears this entrance and another internal entrance within the parking area may include fencing and a lockable gate.

A southern entrance along Morgan St is also proposed for fire trucks to enter the fire station hangar and garage area. It appears this entrance for the trucks and emergency vehicles to enter the garage bays appears to be located about 50 feet from the intersection with 119th Street. Based on the existing traffic volumes collected, it is not expected that southbound Morgan Street traffic which is relatively low, would block the trucks from turning into the parking area. This driveway is meant to be an entrance only into the site and would be considered “one-way” into the site.

The egress driveway meant for fire trucks leaving the site from the fire station hangar is proposed to access 119th Street directly approximately 200 feet west of the intersection. For fire trucks to safely and quickly leave the station in the event of an emergency, a new fire station signal will be needed by the driveway on 119th St to stop eastbound vehicles. This signal, along with the Morgan Street and 119th Street signal will need to be wired to allow for emergency preemption by calls to the station. Essentially, the ability for the fire station the change all the signal lights on 119th St and Morgan St to all-red to stop westbound vehicles on 119th Street and all vehicles on Morgan Street at the currently existing signal and the eastbound 119th traffic at the new fire station signal. This will require modification of the existing signals on 119th St and Morgan St which will likely include additional wiring, a new signal controller and other amenities to allow the fire station to control it on an as-needed basis, and the installation of new mast arms on 119th St near by the new proposed driveway.

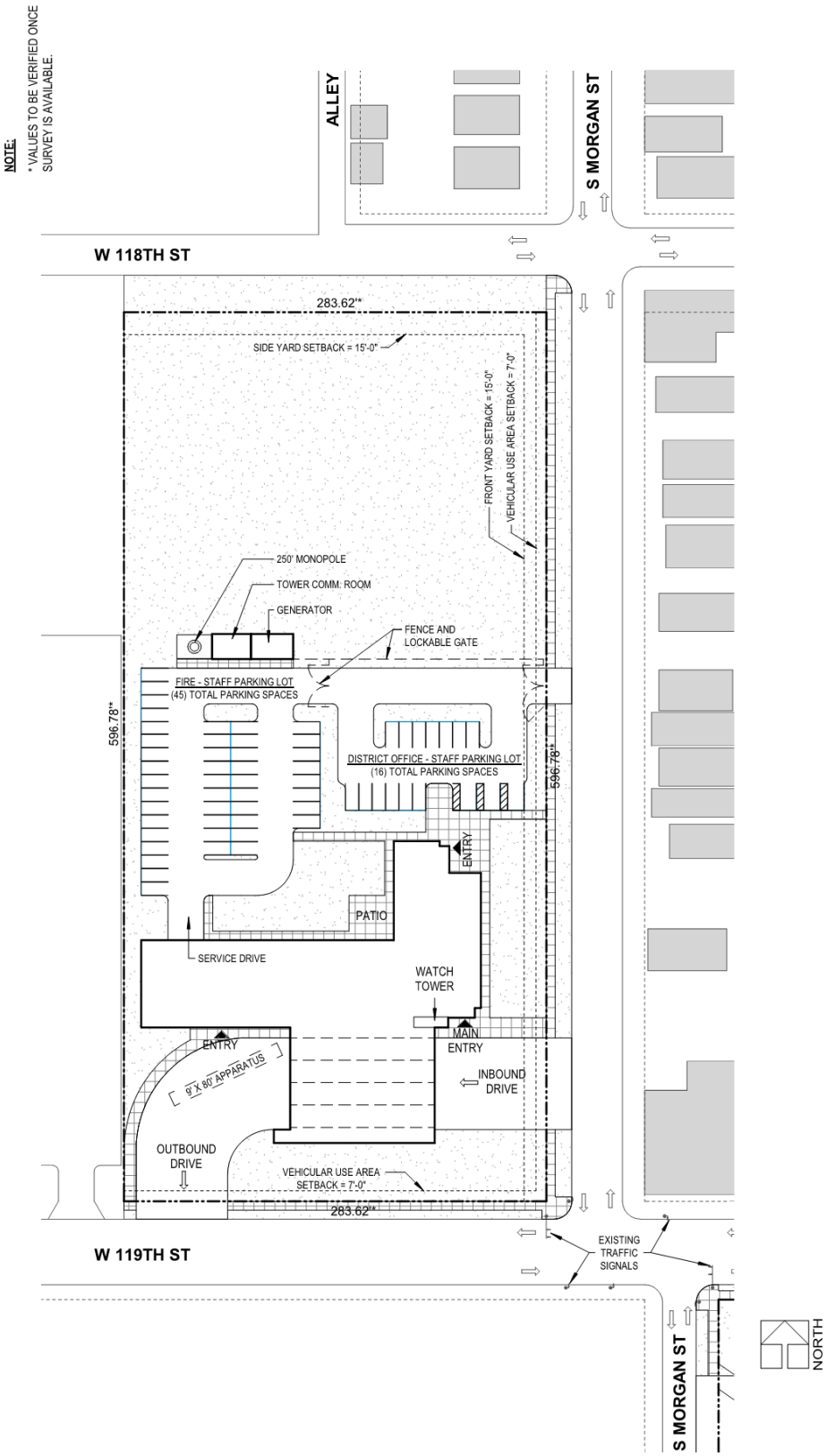


Figure 4 - Proposed Fire Station Site Plan

SECTION VII – TRIP GENERATION

When evaluating proposed traffic at a new development, it is necessary to estimate the number of new vehicle trips which will be created by the new uses at the site. This estimation of trips is generated using data obtained from traffic counts at other similar locations or by using the Institute of Transportation Engineers (ITE) Trip Generation Manual. The ITE Manual collects data at existing sites for all types of uses such as hotels, shopping centers, apartment complexes, subdivisions, offices, etc. and compiles it into book form as a reference for designers. The data in the 10th edition is based on more than 5,000 trip generation studies which have been collected over several decades by transportation professionals. For this analysis, the land use codes used for the calculations are Fire and Rescue Station (575).

The description for Fire and Rescue Station is as follows: "A fire and rescue station is building [sic] that houses emergency services firefighting apparatus, and the individuals that provide emergency firefighting services. Other services sometimes offered through fire and rescue stations include emergency medical, hazardous materials, rescue, safety training, and fire prevention services."

For most land uses, the collected data is broken into many different types of subsets which can be used to perform the calculations, including comparing the number of trips to the gross floor area, or comparing the number of trips to the number of employees. Calculations can also be completed for an entire weekday, the traditional peak hours of traffic, the peak hour of activity for the use type, Saturday traffic, or Sunday traffic. However, for the Fire and Rescue Station land use, only three studies have been conducted, which measured the gross square footage of the building or the number of employees versus vehicle trips. These studies were conducted on a weekday during the hours between 4:00 PM and 6:00 PM, and the gross area of each studied fire station was less than 12,000 square feet. The proposed EC 115 fire station has a gross area of 25,743 square feet which is much larger than the study locations.

To generate trips, TERRA analyzed the trip generation study in the ITE manual that produced the greatest number of trips for the least amount of gross area. For a conservative estimate, it was estimated the fire station in the ITE Manual had a gross area of 7,500 square feet and generated 9 total trips (entering and exiting). If a linear relationship between gross area and trips was assumed, it follows that a fire station with a gross area 25,743 square feet would generate 31 total trips in and out of the site. In the three studies submitted to the ITE, it was found during the PM peak hour of adjacent street traffic, 29% of vehicles were entering the Fire and Rescue Station, and 71% were exiting. There is no data on the distribution of vehicles the AM peak hour of traffic, so to be conservative, TERRA assumed for both the AM and PM that a potential shift change would create the peak vehicle traffic at the site and would include the same number of entering and exiting vehicles (50%/50% split) instead of using the ITE split.

A 30% increase in the calculated 31 trips will be assumed to be both entering and leaving the site to account for the district offices. It will be estimated then, during the AM peak hour and PM peak hour of traffic, 22 vehicles will enter the fire station, and 22 vehicles will exit the fire station, which is a very conservative estimate of traffic for both evaluations.

SECTION VIII – TRIP ASSIGNMENTS

The calculated trips for the new development need to then be assigned to the network to evaluate the future traffic created by the senior living facility. To begin this process, TERRA evaluated the existing traffic patterns to gain an overall perception of how drivers in the current roadway system utilize the network. This process began by taking the existing traffic volumes recorded at each intersection and dividing the volume for each movement by the total entering traffic on each leg. This gave the percentages of left, through and right turning traffic for each leg.

The next step TERRA performed was to sum the traffic volume entering and exiting each intersection along 119th St and calculating the proportion of vehicles entering each leg of each intersection. This helped to determine the east/west directionality of the overall trips through the study area based on the recorded peak hours of traffic. This helps to provide a possible approximation for what the generated traffic might be expected to do coming to and from the site. It was assumed that traffic leaving the site via 119th Street would not turn right onto Loomis St or turn left onto Peoria St, because it would be easier to go north on Morgan St from the new proposed driveway if they wished to enter the neighborhood.

It was assumed that of the vehicles entering the site, 90% would come from 119th St, and 10% would come through the neighborhood north of the site, entering from southbound Morgan St. Similarly, of the vehicles leaving the site, it was assumed 90% would turn right towards 119th St, and 10% would turn left to head north on Morgan Street into the neighborhood.

On 119th St and Morgan St, it was observed that of all the vehicles using 119th St during the AM peak hour, 59% were traveling eastbound and 41% were traveling westbound. During the PM peak hour, the splits showed 49% were traveling eastbound and 51% were traveling westbound. These percentages were then used to estimate which direction vehicles exiting the fire station were likely to turn when reaching 119th St. It is assumed there would be no through movements on Morgan St as there is not much to attract trips in that direction and because only three vehicles were observed making through movements on southbound Morgan St during the AM peak hour, and zero vehicles were observed in the PM peak hour. In addition, only four vehicles were observed making northbound through movements on Morgan St during the AM peak hour, and only one vehicle was observed making a northbound through movement during the PM peak hour so no northbound through traffic was assumed for the study.

Table 4 – Trip Assignment Percentages

	AM Peak		PM Peak	
Morgan Street	**Entering**	**Exiting**	**Entering**	**Exiting**
Approaching new Driveway To/From North	10%	10%	10%	10%
Approaching new Driveway To/From South	90%	90%	90%	90%
119th Street				
Approaching Morgan Street To/From East	41%	59%	51%	49%
Approaching Morgan Street To/From West	59%	41%	49%	51%

The next step of the process was to assign the generated trips into the roadway network. It was assumed during both the AM peak hour and the PM peak hour, that 22 vehicles will enter the site and 22 vehicles will exit the site. The assignment of trips was completed using the percentages shown in Table 4 for the vehicles entering and exiting the site with a majority leaving the site south on Morgan Street to 119th Street.

In addition to the new driveway which provides access to the parking area for employees, there are additional driveways in and out of the proposed site which provide the access for the emergency vehicles. These driveways will also generate some traffic when emergency calls are placed, and the first responders need to leave and return to the site. The driveway to enter the site will be provided off of Morgan Street, while the driveway for vehicles to exit the site will access 119th Street directly.

These trips will vary according to need and are impossible to predict with any reasonable accuracy. For the purposes of the study it was assumed that during a busy hour, these trips would be 5 vehicles per hour or less. To account for the possibility of these trips and evaluate their impact 5 trips in and out of the driveways were assumed for both the Am and PM peak hours.

The resulting trip assignments for the EC 115 Fire Station are provided in Figure 5 for the newly generated trips.

SECTION IX – OPENING DAY ANALYSIS

The next step in the process was to complete an analysis for potential opening day traffic to compare to the existing data to determine the impact. As the fire station will not be completed in 2018, it was necessary to assume at least one year of background growth for the existing traffic. These background traffic projections for opening day were completed using the same 0.5% per year growth used for the no-build condition. The trips generated by the fire station were then added to the 2019 projections at 0.5% to determine the "Opening Day" traffic volumes. The combined volumes are provided in Figure 6.

The new volumes were inserted into a traffic model to determine the proposed conditions with the additional development traffic around the site. It was assumed for the initial analysis that the existing streets and signal timings were to remain in the same geometric configuration with no change to traffic control methods. Changes to the model included inserting two new driveways on the west side of Morgan St where the proposed parking lot and entrance to the emergency vehicle bays will be located and a new driveway along 119th for the emergency vehicle exit. The Morgan Street driveway was inserted as an unsignalized side street stop for the employee parking area. The emergency vehicle entrance is one way entering and has no traffic control and a actuated traffic signal was assumed for the exit driveway to allow for quick exit of the emergency vehicles.

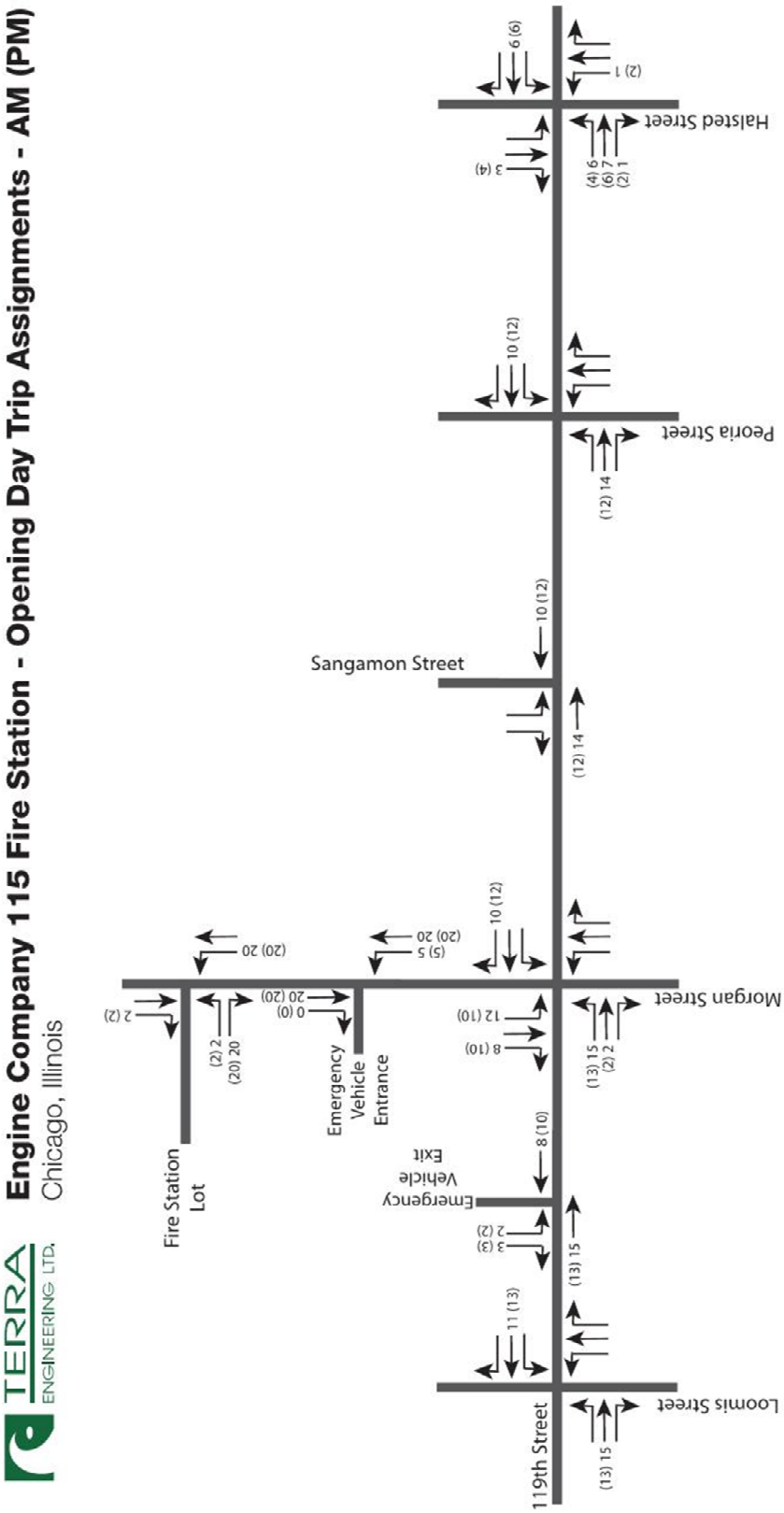


Figure 5 – Opening Day Site Generated Trip Assignments

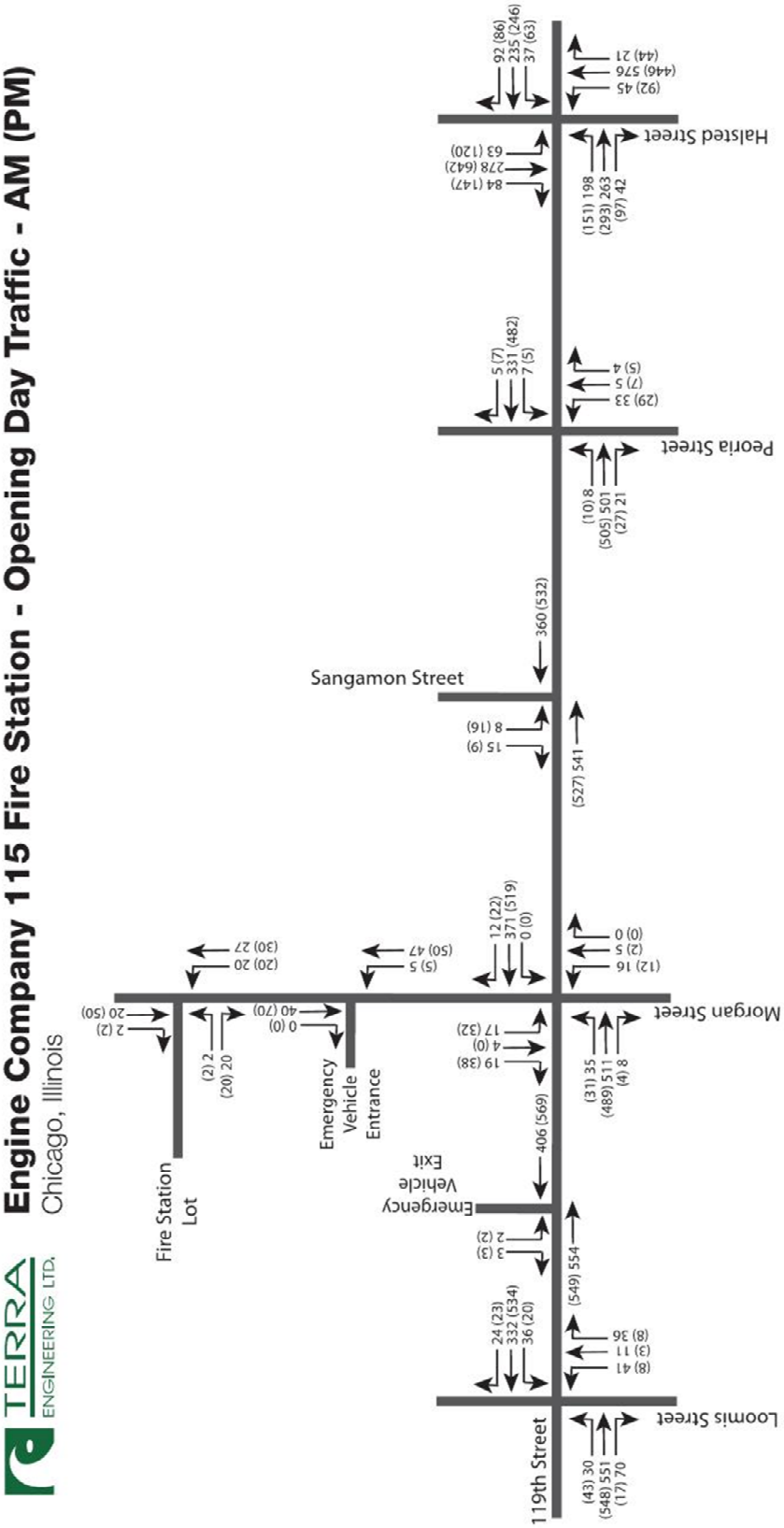


Figure 6 – Opening Day Traffic AM(PM)

Table 5 – Opening Day Traffic Analysis						
	Weekday AM			Weekday PM Peak		
	LOS	Delay	v/c	LOS	Delay	v/c
S Loomis St & W 119th St						
Signalized Intersection	A	8.7	0.36	A	8.6	0.35
S Morgan St & W 119th St						
Signalized Intersection	A	8.4	0.33	A	8.4	0.31
W 119th St & S Sangamon St						
Unsignalized Intersection – Southbound	B	11.4	0.04	C	15.5	0.07
S Peoria St & W 119th St						
Unsignalized Intersection – Northbound	C	16.6	0.12	C	18.6	0.16
Eastbound Left	A	8.0	0.01	A	8.5	0.01
Westbound Left	A	8.6	0.01	A	8.6	0.01
S Halsted St & W 119th St						
Signalized Intersection	C	20.8	0.50	C	22.0	0.65
W 119th St & Fire Station Exit						
Signalized Intersection	A	7.2	0.45	A	7.5	0.45
S Morgan St & EC 115 Parking						
Unsignalized – Northbound Left	A	7.3	0.01	A	7.4	0.01
Eastbound	A	8.6	0.02	A	8.7	0.02

Comparing the traffic analysis for Opening Day and the Existing Traffic analysis performed earlier, the difference in delays at any intersection or turning movement is less than one (1) second for all movements. The LOS for all intersections and turning movements remain the same. Based on the simulation, it is predicted drivers will not notice any changes in traffic flow after the fire station has been constructed due to the traffic generated by the fire station.

To evaluate the location of the emergency driveway entrance, the simulation done by Synchro predicted the vehicle queue length on southbound Morgan St on a typical day at the 119th Street signal. The 95th percentile queue would be at most 26 feet during the AM peak hour and 37 feet during the PM peak hour, measured from the stop bar to the end of the last vehicle in the queue. The length from the north edge of the sidewalk on the north side of 119th St, to the proposed driveway is 48 feet. Therefore, it is unlikely that the queue on southbound Morgan St will interfere with vehicles turning into the driveway to the hangar unless some unusual circumstances are encountered.

SECTION X – FUTURE BUILD CONDITION

The City of Chicago has also requested that the study investigate the future traffic scenario five years after the opening day (2019) which would be in 2024. To develop this condition, it will be necessary to use the projected traffic increases for the Future No-Build condition as the base for the traffic volumes and add in the values from the development for analysis. The resulting map which adds the trip assignments caused by the fire station with the increase in traffic caused by a 0.05% growth in population over 6 years is shown in Figure 7.

These volumes were then placed into the modeling software for analysis and the results of the model are provided in Table 6 and the Synchro output from the analysis is provided in Appendix F.

Table 6 – Future Build Traffic Analysis

	Weekday AM			Weekday PM Peak		
	LOS	Delay	v/c	LOS	Delay	v/c
S Loomis St & W 119th St						
Signalized Intersection	A	8.7	0.37	A	8.7	0.36
S Morgan St & W 119th St						
Signalized Intersection	A	8.5	0.34	A	8.5	0.32
W 119th St & S Sangamon St						
Unsignalized Intersection – Southbound	B	11.6	0.04	C	15.8	0.08
S Peoria St & W 119th St						
Unsignalized Intersection – Northbound	C	16.9	0.12	C	19.1	0.16
Eastbound Left	A	8.1	0.01	A	8.6	0.01
Westbound Left	A	8.7	0.01	A	8.7	0.01
S Halsted St & W 119th St						
Signalized Intersection	C	21.0	0.52	C	22.2	0.67
W 119th St & Fire Station Exit						
Signalized Intersection	A	7.2	0.45	A	7.4	0.46
S Morgan St & EC 115 Parking						
Unsignalized – Northbound Left	A	7.3	0.01	A	7.4	0.01
Eastbound	A	8.6	0.02	A	8.7	0.02

This final analysis returns results which are very similar to all the other scenarios considered. The LOS for all movements match those observed in the other conditions which implies that to the average driver there will be no difference in perception about how the new development will affect their daily commute during peak hours. Comparing the Future Build model to the Existing model, the increase in delay in any intersection or turning movement is less than one second, except for the northbound left movement at Peoria St and 119th St during the PM peak hour, which has an increased delay of 1.2 seconds.

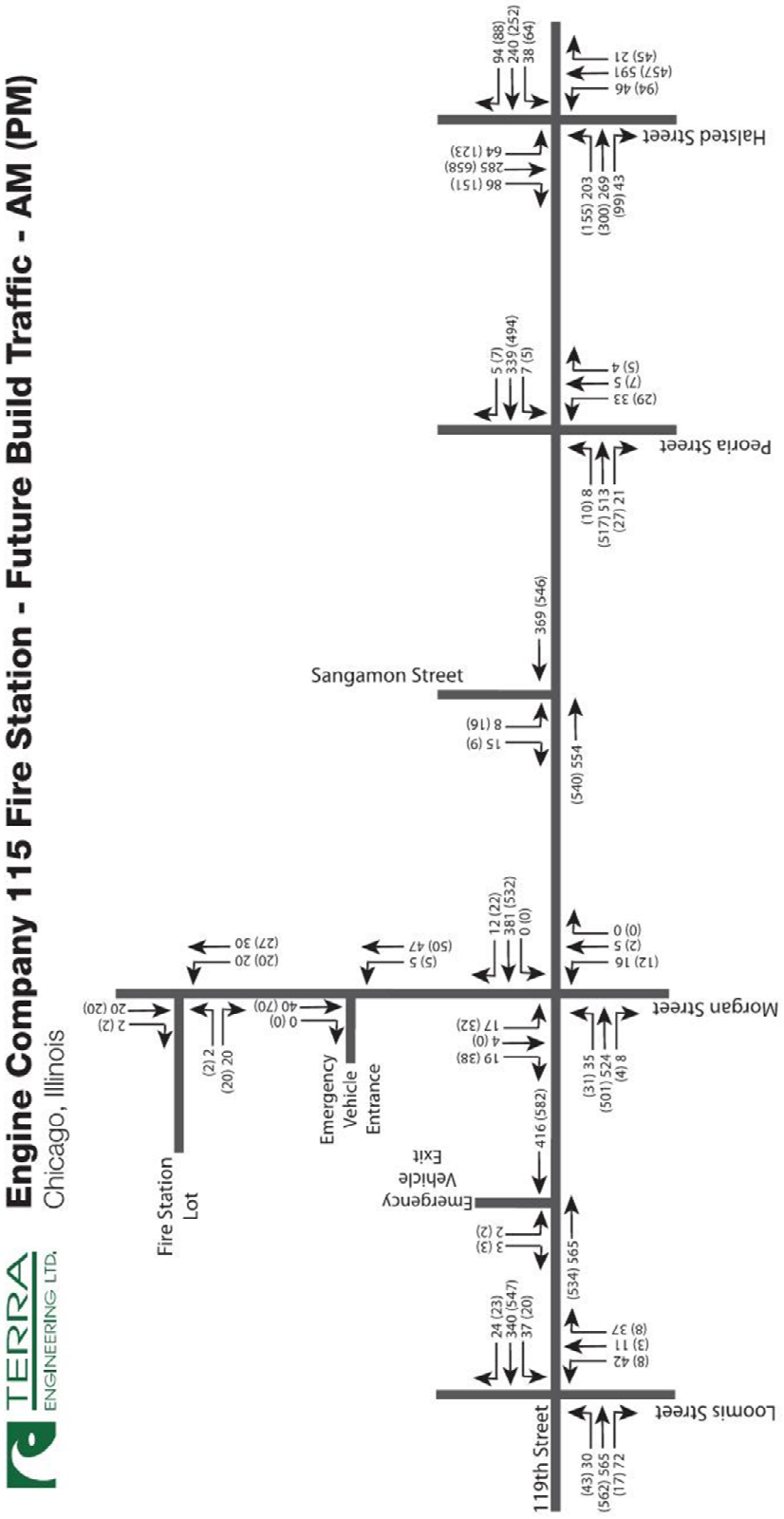


Figure 7 – 2024 Future Build Traffic AM(PM)

The delay at 119th St and the fire station exit decreases by 0.1 seconds during the PM peak hour. This may be counter-intuitive, as many would assume the increase in vehicles should also increase delay. The signal at 119th and the fire station exit is actuated, meaning it is always green unless a fire truck needs to exit for an emergency. Because there are the same number of assumed emergency calls in both scenarios the amount of traffic at the fire station places the same number of calls to the signal. This means more vehicles free flow through the fire station signal along 119th Street on a green signal indication in the Future Build model than the Opening Day model. These additional vehicles experience little to no delay from the signal, so the delay is lower when the delay of all vehicles is averaged.

Like in the Opening Day analysis, the simulation done by Synchro predicted the vehicle queue length on southbound Morgan St on a typical day would be approximately 26 feet during the AM peak hour and 37 feet during the PM peak hour. The length from the north edge of the sidewalk on the north side of 119th St, to the proposed driveway is 48 feet. The queue length remains unchanged and is unlikely to interfere with fire trucks entering the driveway to the hangar.

SECTION XI – SUMMARY AND CONCLUSIONS

This study was undertaken to determine the impact of the proposed fire station development proposed for the northwest corner of 119th St and Morgan St in Chicago, IL. The will have a 25,743 gross square foot area and contain 61 parking spaces. This development will generate new vehicle trips in the area.

Traffic and pedestrian data were collected around the proposed site on October 25th, 2018 to get a better understanding of the existing traffic flow on a typical weekday. This included five intersections near the site which might be directly or indirectly impacted by the development. The existing data collected was modeled using Synchro 10 traffic modeling analysis software. It was noted that in the existing conditions the model showed overall very good operation with LOS of C or better in the morning peak and afternoon peak for all locations.

The vehicle trips for the new site were estimated based on the proposed site plan provided and also a study provided in the ITE Trip Generation Manual. Only three studies were provided in the Trip Generation Manual for Fire and Rescue Station, so trips were extrapolated from the study that produced the greatest number of trips for the least amount of gross square feet. The trips were then assigned to the traffic network based on several factors including the existing traffic patterns.

TERRA has reviewed the traffic model output from the Synchro analysis for the existing, 2024 no-build, 2019 opening day and 2024 future build conditions and has found the operating conditions at the study area intersections to be very similar in all conditions to the existing condition. No geometric changes would be necessary to accommodate the traffic from the new development, but a new signal arm mast to stop eastbound traffic coming towards the site should be installed so fire trucks may safely and quickly leave the station to respond to an emergency. In addition, the fire station may require the ability to set all

signals on 119th St and Morgan St to red during these emergency calls. It would be expected that this will require changes to the traffic signal controller and wiring to allow this preemption to occur and will need to be designed in conjunction with the new Fire Station signal to be installed west of the intersection near the proposed EC 115 driveway onto 119th Street for eastbound traffic.

In the opening day and future build analysis, the queues during the peak hours on southbound Morgan St are not long enough to obstruct the entrance to the fire station driveway on Morgan St. Overall it is expected that the increase if traffic created by the site will have a minimal impact on the traffic flow in this area around the proposed site.

Appendix A

Existing Traffic Volumes

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: S Loomis St and W 119th St
Site Code:
Start Date: 10/25/2018

Turning Movement Data

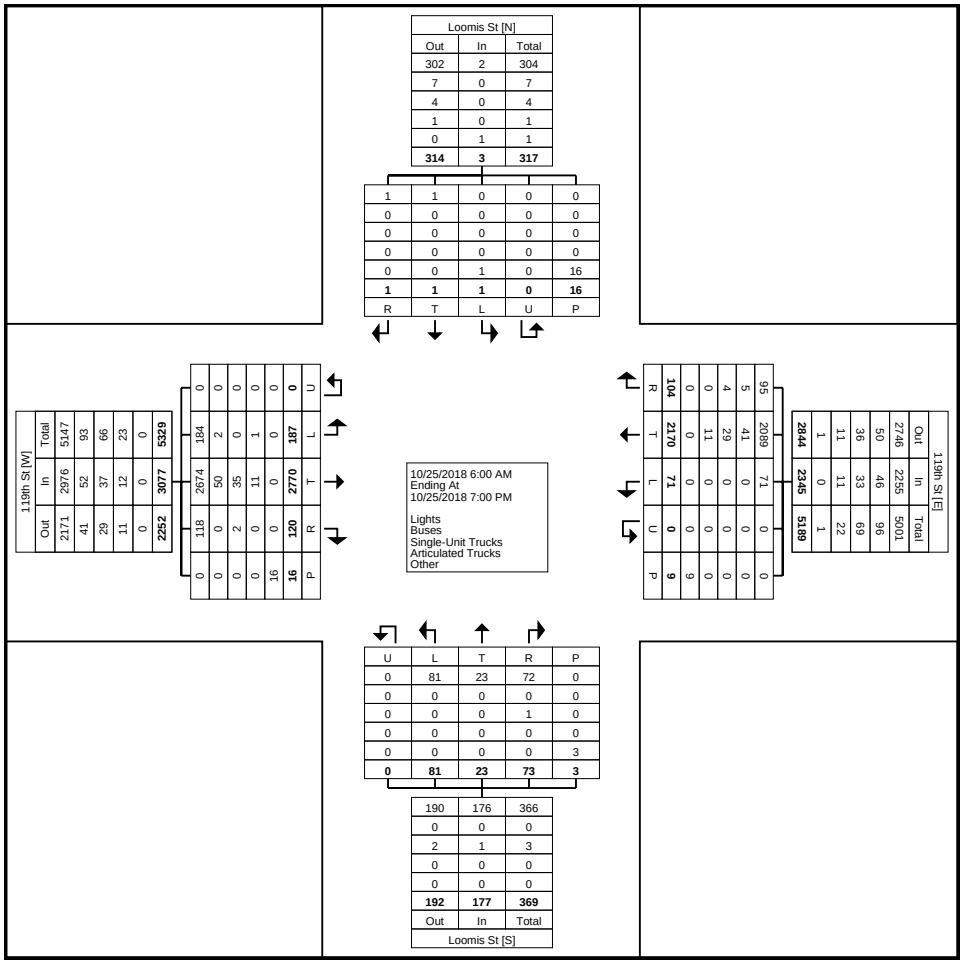
Start Time	Loomis St Southbound						119th St Westbound						Loomis St Northbound						119th St Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	0	0	0	0	0	0	0	37	0	0	0	37	0	0	0	0	0	0	3	64	0	0	0	67	104
6:15 AM	0	0	0	0	0	0	1	58	3	0	0	62	0	0	0	0	0	0	5	87	1	0	0	93	155
6:30 AM	0	0	0	0	0	0	0	49	3	0	0	52	2	0	0	0	0	2	2	76	2	0	0	80	134
6:45 AM	0	0	0	0	0	0	1	51	2	0	1	54	0	1	0	0	0	1	7	95	0	0	0	102	157
Hourly Total	0	0	0	0	0	0	2	195	8	0	1	205	2	1	0	0	0	3	17	322	3	0	0	342	550
7:00 AM	0	0	0	0	1	0	0	60	0	0	0	60	0	0	0	0	0	0	6	112	6	0	2	124	184
7:15 AM	0	0	0	0	1	0	2	77	2	0	2	81	1	0	0	0	1	1	4	131	8	0	1	143	225
7:30 AM	0	0	0	0	0	0	12	99	4	0	1	115	4	2	7	0	0	13	6	137	21	0	0	164	292
7:45 AM	0	0	0	0	3	0	20	77	5	0	0	102	30	7	20	0	0	57	6	123	36	0	6	165	324
Hourly Total	0	0	0	0	5	0	34	313	11	0	3	358	35	9	27	0	1	71	22	503	71	0	9	596	1025
8:00 AM	0	0	0	0	0	0	3	70	8	0	0	81	4	1	6	0	1	11	5	134	9	0	0	148	240
8:15 AM	0	0	0	0	0	0	0	73	6	0	0	79	2	0	2	0	0	4	12	139	3	0	0	154	237
8:30 AM	0	0	0	0	0	0	0	73	5	0	0	78	1	0	0	0	1	1	9	89	1	0	1	99	178
8:45 AM	0	0	0	0	0	0	0	88	6	0	0	94	1	0	1	0	0	2	10	117	2	0	0	129	225
Hourly Total	0	0	0	0	0	0	3	304	25	0	0	332	8	1	9	0	2	18	36	479	15	0	1	530	880
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	1	1	0	0	2	1	140	9	0	0	150	2	0	0	0	0	2	10	104	0	0	0	114	268
4:15 PM	1	0	0	0	2	1	4	95	4	0	0	103	0	0	0	0	0	0	7	117	2	0	1	126	230
4:30 PM	0	0	0	0	2	0	5	114	9	0	0	128	1	0	0	0	0	1	10	134	5	0	0	149	278
4:45 PM	0	0	0	0	0	0	5	127	4	0	0	136	0	0	0	0	0	0	13	132	3	0	0	148	284
Hourly Total	1	1	1	0	4	3	15	476	26	0	0	517	3	0	0	0	0	3	40	487	10	0	1	537	1060
5:00 PM	0	0	0	0	1	0	4	141	5	0	0	150	1	0	1	0	0	2	10	142	4	0	3	156	308
5:15 PM	0	0	0	0	1	0	6	126	4	0	4	136	3	0	3	0	0	6	9	109	6	0	0	124	266
5:30 PM	0	0	0	0	2	0	4	124	9	0	1	137	3	2	3	0	0	8	9	149	3	0	0	161	306
5:45 PM	0	0	0	0	0	0	1	102	3	0	0	106	2	4	7	0	0	13	9	110	2	0	0	121	240
Hourly Total	0	0	0	0	4	0	15	493	21	0	5	529	9	6	14	0	0	29	37	510	15	0	3	562	1120
6:00 PM	0	0	0	0	1	0	1	108	3	0	0	112	5	5	11	0	0	21	10	133	0	0	0	143	276
6:15 PM	0	0	0	0	0	0	0	89	2	0	0	91	13	1	10	0	0	24	11	114	0	0	0	125	240
6:30 PM	0	0	0	0	2	0	0	88	4	0	0	92	5	0	2	0	0	7	8	105	2	0	0	115	214
6:45 PM	0	0	0	0	0	0	1	104	4	0	0	109	1	0	0	0	0	1	6	117	4	0	2	127	237
Hourly Total	0	0	0	0	3	0	2	389	13	0	0	404	24	6	23	0	0	53	35	469	6	0	2	510	967
Grand Total	1	1	1	0	16	3	71	2170	104	0	9	2345	81	23	73	0	3	177	187	2770	120	0	16	3077	5602
Approach %	33.3	33.3	33.3	0.0	-	-	3.0	92.5	4.4	0.0	-	-	45.8	13.0	41.2	0.0	-	-	6.1	90.0	3.9	0.0	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.1	1.3	38.7	1.9	0.0	-	41.9	1.4	0.4	1.3	0.0	-	3.2	3.3	49.4	2.1	0.0	-	54.9	-
Lights	0	1	1	0	-	2	71	2089	95	0	-	2255	81	23	72	0	-	176	184	2674	118	0	-	2976	5409
% Lights	0.0	100.0	100.0	-	-	66.7	100.0	96.3	91.3	-	-	96.2	100.0	100.0	98.6	-	-	99.4	98.4	96.5	98.3	-	-	96.7	96.6
Buses	0	0	0	0	-	0	0	41	5	0	-	46	0	0	0	0	-	0	2	50	0	0	-	52	98

% Buses	0.0	0.0	0.0	-	-	0.0	0.0	1.9	4.8	-	-	2.0	0.0	0.0	0.0	-	-	0.0	1.1	1.8	0.0	-	-	1.7	1.7
Single-Unit Trucks	0	0	0	0	-	0	0	29	4	0	-	33	0	0	1	0	-	1	0	35	2	0	-	37	71
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	1.3	3.8	-	-	1.4	0.0	0.0	1.4	-	-	0.6	0.0	1.3	1.7	-	-	1.2	1.3
Articulated Trucks	0	0	0	0	-	0	0	11	0	0	-	11	0	0	0	0	-	0	1	11	0	0	-	12	23
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.5	0.4	0.0	-	-	0.4	0.4
Bicycles on Road	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	100.0	0.0	0.0	-	-	33.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	16	-	-	-	-	-	9	-	-	-	-	-	3	-	-	-	-	-	16	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: S Loomis St and W 119th St
Site Code:
Start Date: 10/25/2018



Turning Movement Data Plot

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: S Loomis St and W 119th St
Site Code:
Start Date: 10/25/2018

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Loomis St Southbound						119th St Westbound						Loomis St Northbound						119th St Eastbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:30 AM	0	0	0	0	0	0	12	99	4	0	1	115	4	2	7	0	0	13	6	137	21	0	0	164	292
7:45 AM	0	0	0	0	3	0	20	77	5	0	0	102	30	7	20	0	0	57	6	123	36	0	6	165	324
8:00 AM	0	0	0	0	0	0	3	70	8	0	0	81	4	1	6	0	1	11	5	134	9	0	0	148	240
8:15 AM	0	0	0	0	0	0	0	73	6	0	0	79	2	0	2	0	0	4	12	139	3	0	0	154	237
Total	0	0	0	0	3	0	35	319	23	0	1	377	40	10	35	0	1	85	29	533	69	0	6	631	1093
Approach %	0.0	0.0	0.0	0.0	-	-	9.3	84.6	6.1	0.0	-	-	47.1	11.8	41.2	0.0	-	-	4.6	84.5	10.9	0.0	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.0	3.2	29.2	2.1	0.0	-	34.5	3.7	0.9	3.2	0.0	-	7.8	2.7	48.8	6.3	0.0	-	57.7	-
PHF	0.000	0.000	0.000	0.000	-	0.000	0.438	0.806	0.719	0.000	-	0.820	0.333	0.357	0.438	0.000	-	0.373	0.604	0.959	0.479	0.000	-	0.956	0.843
Lights	0	0	0	0	-	0	35	303	21	0	-	359	40	10	34	0	-	84	27	501	68	0	-	596	1039
% Lights	-	-	-	-	-	-	100.0	95.0	91.3	-	-	95.2	100.0	100.0	97.1	-	-	98.8	93.1	94.0	98.6	-	-	94.5	95.1
Buses	0	0	0	0	-	0	0	7	2	0	-	9	0	0	0	0	-	0	1	15	0	0	-	16	25
% Buses	-	-	-	-	-	-	0.0	2.2	8.7	-	-	2.4	0.0	0.0	0.0	-	-	0.0	3.4	2.8	0.0	-	-	2.5	2.3
Single-Unit Trucks	0	0	0	0	-	0	0	4	0	0	-	4	0	0	1	0	-	1	0	11	1	0	-	12	17
% Single-Unit Trucks	-	-	-	-	-	-	0.0	1.3	0.0	-	-	1.1	0.0	0.0	2.9	-	-	1.2	0.0	2.1	1.4	-	-	1.9	1.6
Articulated Trucks	0	0	0	0	-	0	0	5	0	0	-	5	0	0	0	0	-	0	1	6	0	0	-	7	12
% Articulated Trucks	-	-	-	-	-	-	0.0	1.6	0.0	-	-	1.3	0.0	0.0	0.0	-	-	0.0	3.4	1.1	0.0	-	-	1.1	1.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	-	-	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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Count Name: S Loomis St and W 119th St
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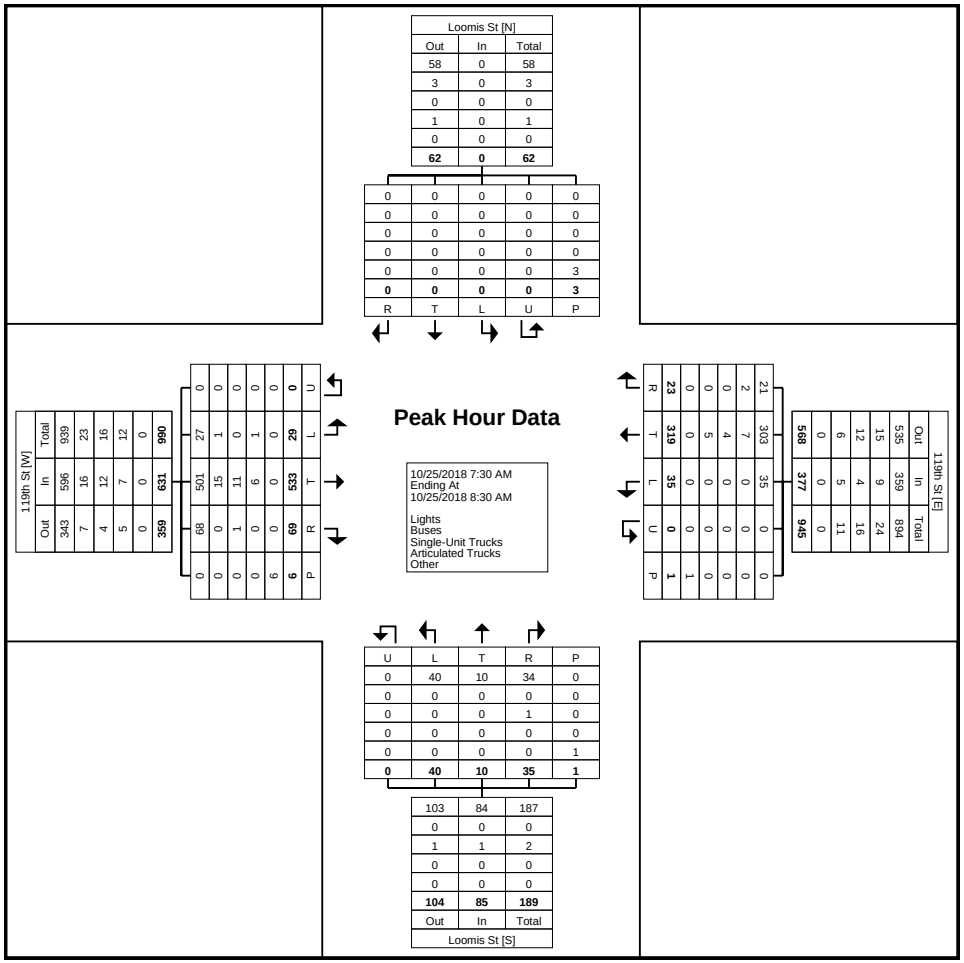


Turning Movement Peak Hour Data Plot (7:30 AM)

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: S Loomis St and W 119th St
Site Code:
Start Date: 10/25/2018

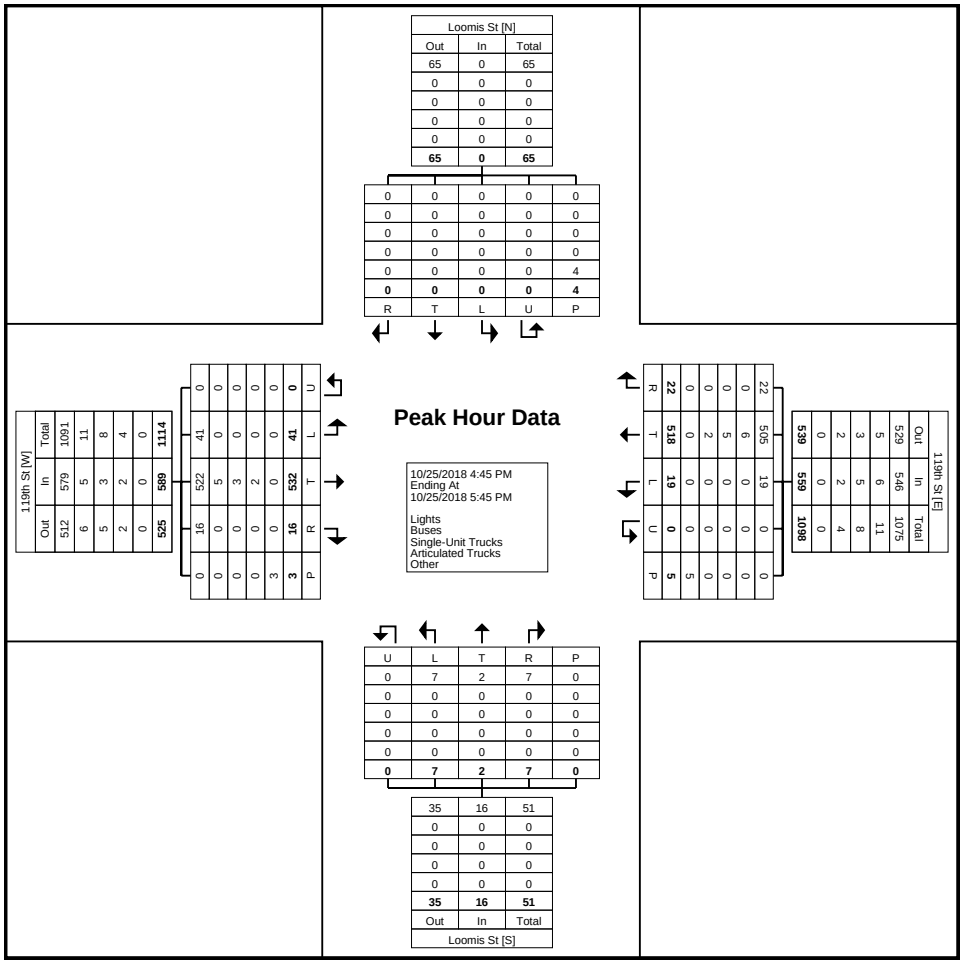
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Loomis St Southbound						119th St Westbound						Loomis St Northbound						119th St Eastbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:45 PM	0	0	0	0	0	0	5	127	4	0	0	136	0	0	0	0	0	0	13	132	3	0	0	148	284
5:00 PM	0	0	0	0	1	0	4	141	5	0	0	150	1	0	1	0	0	2	10	142	4	0	3	156	308
5:15 PM	0	0	0	0	1	0	6	126	4	0	4	136	3	0	3	0	0	6	9	109	6	0	0	124	266
5:30 PM	0	0	0	0	2	0	4	124	9	0	1	137	3	2	3	0	0	8	9	149	3	0	0	161	306
Total	0	0	0	0	4	0	19	518	22	0	5	559	7	2	7	0	0	16	41	532	16	0	3	589	1164
Approach %	0.0	0.0	0.0	0.0	-	-	3.4	92.7	3.9	0.0	-	-	43.8	12.5	43.8	0.0	-	-	7.0	90.3	2.7	0.0	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.0	1.6	44.5	1.9	0.0	-	48.0	0.6	0.2	0.6	0.0	-	1.4	3.5	45.7	1.4	0.0	-	50.6	-
PHF	0.000	0.000	0.000	0.000	-	0.000	0.792	0.918	0.611	0.000	-	0.932	0.583	0.250	0.583	0.000	-	0.500	0.788	0.893	0.667	0.000	-	0.915	0.945
Lights	0	0	0	0	-	0	19	505	22	0	-	546	7	2	7	0	-	16	41	522	16	0	-	579	1141
% Lights	-	-	-	-	-	-	100.0	97.5	100.0	-	-	97.7	100.0	100.0	100.0	-	-	100.0	100.0	98.1	100.0	-	-	98.3	98.0
Buses	0	0	0	0	-	0	0	6	0	0	-	6	0	0	0	0	-	0	0	5	0	0	-	5	11
% Buses	-	-	-	-	-	-	0.0	1.2	0.0	-	-	1.1	0.0	0.0	0.0	-	-	0.0	0.0	0.9	0.0	-	-	0.8	0.9
Single-Unit Trucks	0	0	0	0	-	0	0	5	0	0	-	5	0	0	0	0	-	0	0	3	0	0	-	3	8
% Single-Unit Trucks	-	-	-	-	-	-	0.0	1.0	0.0	-	-	0.9	0.0	0.0	0.0	-	-	0.0	0.0	0.6	0.0	-	-	0.5	0.7
Articulated Trucks	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	0	2	0	0	-	2	4
% Articulated Trucks	-	-	-	-	-	-	0.0	0.4	0.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.0	0.4	0.0	-	-	0.3	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	-	-	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: S Loomis St and W 119th St
Site Code:
Start Date: 10/25/2018



Turning Movement Peak Hour Data Plot (4:45 PM)

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: 119th St & Morgan St
Site Code:
Start Date: 10/25/2018

Turning Movement Data

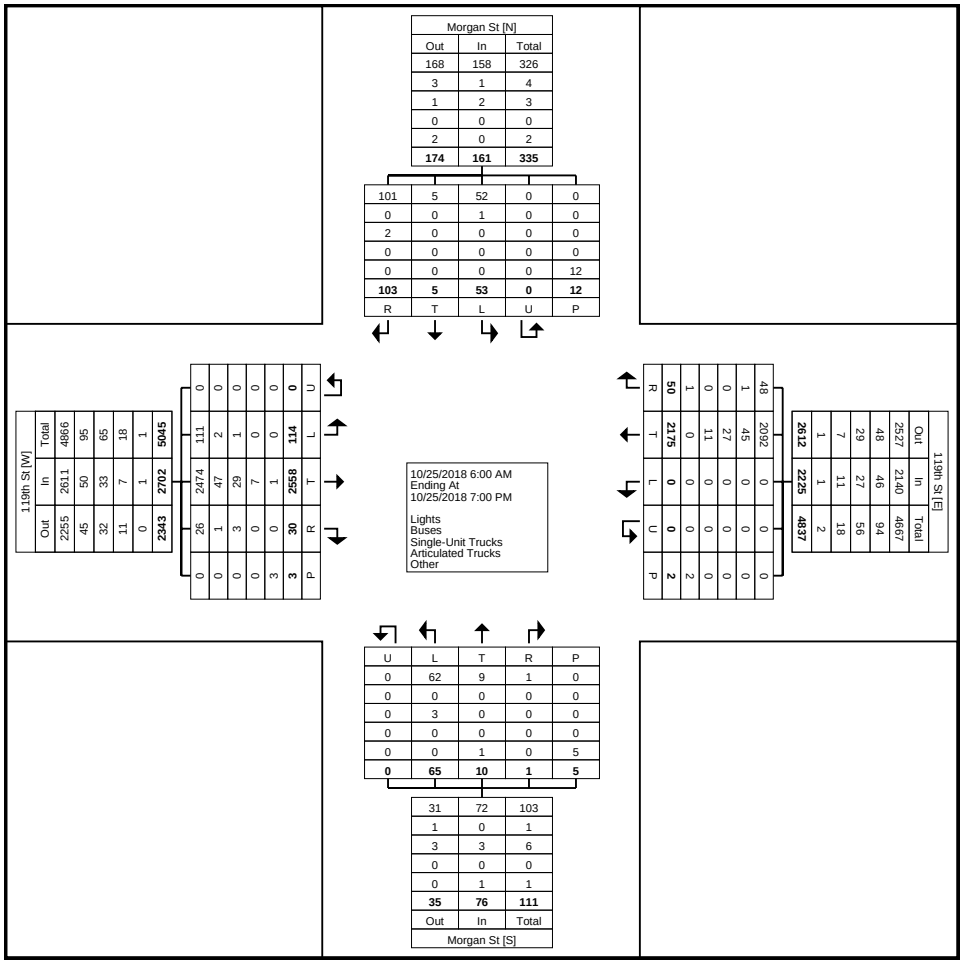
Start Time	Morgan St Southbound						119th St Westbound						Morgan St Northbound						119th St Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	1	0	2	0	0	3	0	37	1	0	0	38	1	0	1	0	0	2	2	55	1	0	0	58	101
6:15 AM	2	1	2	0	0	5	0	63	1	0	0	64	2	0	0	0	0	2	1	80	0	0	0	81	152
6:30 AM	0	0	1	0	0	1	0	48	1	0	0	49	0	1	0	0	0	1	2	75	0	0	0	77	128
6:45 AM	3	0	2	0	0	5	0	65	1	0	0	66	1	0	0	0	0	1	3	88	2	0	0	93	165
Hourly Total	6	1	7	0	0	14	0	213	4	0	0	217	4	1	1	0	0	6	8	298	3	0	0	309	546
7:00 AM	0	0	2	0	0	2	0	58	0	0	0	58	4	0	0	0	0	4	2	107	1	0	0	110	174
7:15 AM	1	1	0	0	0	2	0	86	0	0	0	86	4	1	0	0	0	5	2	128	3	0	0	133	226
7:30 AM	1	0	4	0	0	5	0	118	0	0	0	118	3	0	0	0	0	3	2	136	1	0	0	139	265
7:45 AM	1	1	3	0	1	5	0	88	0	0	0	88	6	1	0	0	0	7	4	124	3	0	0	131	231
Hourly Total	3	2	9	0	1	14	0	350	0	0	0	350	17	2	0	0	0	19	10	495	8	0	0	513	896
8:00 AM	1	1	3	0	0	5	0	77	1	0	0	78	2	2	0	0	1	4	11	118	0	0	0	129	216
8:15 AM	3	0	5	0	2	8	0	63	7	0	1	70	1	0	0	0	0	1	9	125	2	0	0	136	215
8:30 AM	2	0	3	0	0	5	0	77	3	0	0	80	2	0	0	0	1	2	9	78	1	0	0	88	175
8:45 AM	3	0	4	0	2	7	0	88	2	0	0	90	5	0	0	0	1	5	5	105	2	0	0	112	214
Hourly Total	9	1	15	0	4	25	0	305	13	0	1	318	10	2	0	0	3	12	34	426	5	0	0	465	820
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	1	1	5	0	0	7	0	132	7	0	0	139	5	0	0	0	0	5	6	89	0	0	0	95	246
4:15 PM	1	0	13	0	2	14	0	101	2	0	0	103	5	0	0	0	0	5	7	113	1	0	0	121	243
4:30 PM	2	0	2	0	0	4	0	107	3	0	1	110	3	2	0	0	0	5	7	118	2	0	0	127	246
4:45 PM	7	0	9	0	2	16	0	114	1	0	0	115	5	1	0	0	1	6	4	118	2	0	1	124	261
Hourly Total	11	1	29	0	4	41	0	454	13	0	1	467	18	3	0	0	1	21	24	438	5	0	1	467	996
5:00 PM	8	0	10	0	0	18	0	142	2	0	0	144	3	0	0	0	0	3	4	128	0	0	0	132	297
5:15 PM	3	0	5	0	0	8	0	128	4	0	0	132	0	0	0	0	1	0	5	99	1	0	1	105	245
5:30 PM	3	0	3	0	0	6	0	132	2	0	0	134	3	0	0	0	0	3	4	139	0	0	0	143	286
5:45 PM	4	0	6	0	0	10	0	92	3	0	0	95	0	0	0	0	0	0	6	105	2	0	0	113	218
Hourly Total	18	0	24	0	0	42	0	494	11	0	0	505	6	0	0	0	1	6	19	471	3	0	1	493	1046
6:00 PM	2	0	5	0	0	7	0	97	3	0	0	100	3	2	0	0	0	5	6	127	2	0	0	135	247
6:15 PM	1	0	5	0	1	6	0	90	1	0	0	91	3	0	0	0	0	3	2	109	1	0	0	112	212
6:30 PM	1	0	5	0	2	6	0	79	3	0	0	82	0	0	0	0	0	0	3	97	2	0	1	102	190
6:45 PM	2	0	4	0	0	6	0	93	2	0	0	95	4	0	0	0	0	4	8	97	1	0	0	106	211
Hourly Total	6	0	19	0	3	25	0	359	9	0	0	368	10	2	0	0	0	12	19	430	6	0	1	455	860
Grand Total	53	5	103	0	12	161	0	2175	50	0	2	2225	65	10	1	0	5	76	114	2558	30	0	3	2702	5164
Approach %	32.9	3.1	64.0	0.0	-	-	0.0	97.8	2.2	0.0	-	-	85.5	13.2	1.3	0.0	-	-	4.2	94.7	1.1	0.0	-	-	-
Total %	1.0	0.1	2.0	0.0	-	3.1	0.0	42.1	1.0	0.0	-	43.1	1.3	0.2	0.0	0.0	-	1.5	2.2	49.5	0.6	0.0	-	52.3	-
Lights	52	5	101	0	-	158	0	2092	48	0	-	2140	62	9	1	0	-	72	111	2474	26	0	-	2611	4981
% Lights	98.1	100.0	98.1	-	-	98.1	-	96.2	96.0	-	-	96.2	95.4	90.0	100.0	-	-	94.7	97.4	96.7	86.7	-	-	96.6	96.5
Buses	1	0	0	0	-	1	0	45	1	0	-	46	0	0	0	0	-	0	2	47	1	0	-	50	97

% Buses	1.9	0.0	0.0	-	-	0.6	-	2.1	2.0	-	-	2.1	0.0	0.0	0.0	-	-	0.0	1.8	1.8	3.3	-	-	1.9	1.9
Single-Unit Trucks	0	0	2	0	-	2	0	27	0	0	-	27	3	0	0	0	-	3	1	29	3	0	-	33	65
% Single-Unit Trucks	0.0	0.0	1.9	-	-	1.2	-	1.2	0.0	-	-	1.2	4.6	0.0	0.0	-	-	3.9	0.9	1.1	10.0	-	-	1.2	1.3
Articulated Trucks	0	0	0	0	-	0	0	11	0	0	-	11	0	0	0	0	-	0	0	7	0	0	-	7	18
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	-	0.5	0.0	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	-	-	0.3	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	1	0	-	1	0	1	0	0	-	1	0	1	0	0	-	1	3
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	-	0.0	2.0	-	-	0.0	0.0	10.0	0.0	-	-	1.3	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	12	-	-	-	-	-	2	-	-	-	-	-	5	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: 119th St & Morgan St
Site Code:
Start Date: 10/25/2018



Turning Movement Data Plot

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: 119th St & Morgan St
Site Code:
Start Date: 10/25/2018

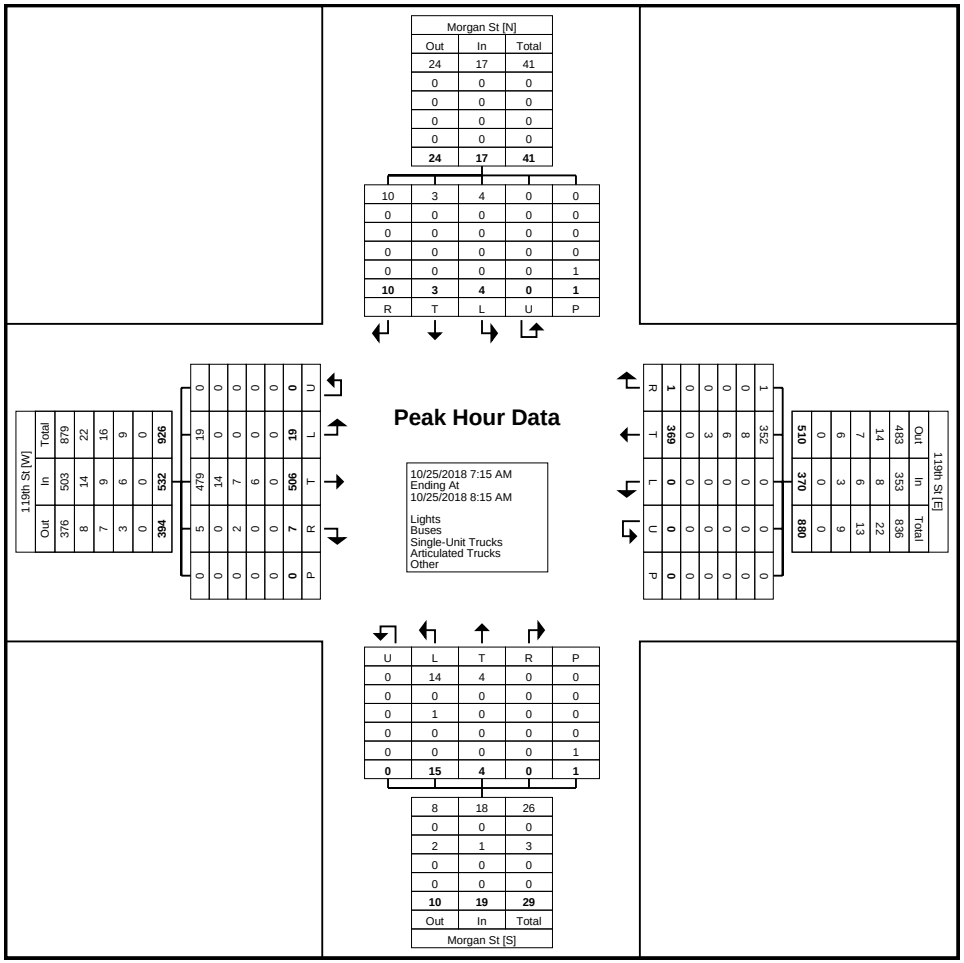
Turning Movement Peak Hour Data (7:15 AM)

Start Time	Morgan St Southbound						119th St Westbound						Morgan St Northbound						119th St Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:15 AM	1	1	0	0	0	2	0	86	0	0	0	86	4	1	0	0	0	5	2	128	3	0	0	133	226
7:30 AM	1	0	4	0	0	5	0	118	0	0	0	118	3	0	0	0	0	3	2	136	1	0	0	139	265
7:45 AM	1	1	3	0	1	5	0	88	0	0	0	88	6	1	0	0	0	7	4	124	3	0	0	131	231
8:00 AM	1	1	3	0	0	5	0	77	1	0	0	78	2	2	0	0	1	4	11	118	0	0	0	129	216
Total	4	3	10	0	1	17	0	369	1	0	0	370	15	4	0	0	1	19	19	506	7	0	0	532	938
Approach %	23.5	17.6	58.8	0.0	-	-	0.0	99.7	0.3	0.0	-	-	78.9	21.1	0.0	0.0	-	-	3.6	95.1	1.3	0.0	-	-	-
Total %	0.4	0.3	1.1	0.0	-	1.8	0.0	39.3	0.1	0.0	-	39.4	1.6	0.4	0.0	0.0	-	2.0	2.0	53.9	0.7	0.0	-	56.7	-
PHF	1.000	0.750	0.625	0.000	-	0.850	0.000	0.782	0.250	0.000	-	0.784	0.625	0.500	0.000	0.000	-	0.679	0.432	0.930	0.583	0.000	-	0.957	0.885
Lights	4	3	10	0	-	17	0	352	1	0	-	353	14	4	0	0	-	18	19	479	5	0	-	503	891
% Lights	100.0	100.0	100.0	-	-	100.0	-	95.4	100.0	-	-	95.4	93.3	100.0	-	-	-	94.7	100.0	94.7	71.4	-	-	94.5	95.0
Buses	0	0	0	0	-	0	0	8	0	0	-	8	0	0	0	0	-	0	0	14	0	0	-	14	22
% Buses	0.0	0.0	0.0	-	-	0.0	-	2.2	0.0	-	-	2.2	0.0	0.0	-	-	-	0.0	0.0	2.8	0.0	-	-	2.6	2.3
Single-Unit Trucks	0	0	0	0	-	0	0	6	0	0	-	6	1	0	0	0	-	1	0	7	2	0	-	9	16
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	-	1.6	0.0	-	-	1.6	6.7	0.0	-	-	-	5.3	0.0	1.4	28.6	-	-	1.7	1.7
Articulated Trucks	0	0	0	0	-	0	0	3	0	0	-	3	0	0	0	0	-	0	0	6	0	0	-	6	9
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	-	0.8	0.0	-	-	0.8	0.0	0.0	-	-	-	0.0	0.0	1.2	0.0	-	-	1.1	1.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: 119th St & Morgan St
Site Code:
Start Date: 10/25/2018



Turning Movement Peak Hour Data Plot (7:15 AM)

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: 119th St & Morgan St
Site Code:
Start Date: 10/25/2018

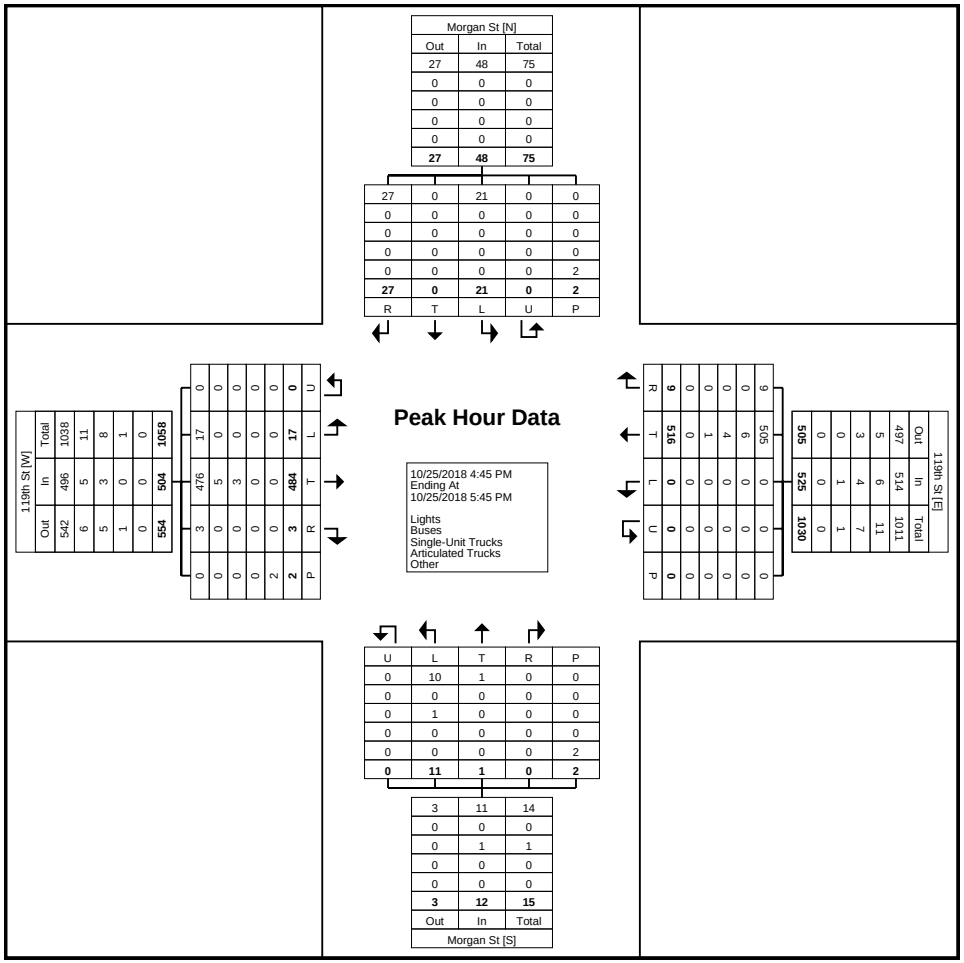
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Morgan St Southbound						119th St Westbound						Morgan St Northbound						119th St Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	7	0	9	0	2	16	0	114	1	0	0	115	5	1	0	0	1	6	4	118	2	0	1	124	261
5:00 PM	8	0	10	0	0	18	0	142	2	0	0	144	3	0	0	0	0	3	4	128	0	0	0	132	297
5:15 PM	3	0	5	0	0	8	0	128	4	0	0	132	0	0	0	0	1	0	5	99	1	0	1	105	245
5:30 PM	3	0	3	0	0	6	0	132	2	0	0	134	3	0	0	0	0	3	4	139	0	0	0	143	286
Total	21	0	27	0	2	48	0	516	9	0	0	525	11	1	0	0	2	12	17	484	3	0	2	504	1089
Approach %	43.8	0.0	56.3	0.0	-	-	0.0	98.3	1.7	0.0	-	-	91.7	8.3	0.0	0.0	-	-	3.4	96.0	0.6	0.0	-	-	-
Total %	1.9	0.0	2.5	0.0	-	4.4	0.0	47.4	0.8	0.0	-	48.2	1.0	0.1	0.0	0.0	-	1.1	1.6	44.4	0.3	0.0	-	46.3	-
PHF	0.656	0.000	0.675	0.000	-	0.667	0.000	0.908	0.563	0.000	-	0.911	0.550	0.250	0.000	0.000	-	0.500	0.850	0.871	0.375	0.000	-	0.881	0.917
Lights	21	0	27	0	-	48	0	505	9	0	-	514	10	1	0	0	-	11	17	476	3	0	-	496	1069
% Lights	100.0	-	100.0	-	-	100.0	-	97.9	100.0	-	-	97.9	90.9	100.0	-	-	-	91.7	100.0	98.3	100.0	-	-	98.4	98.2
Buses	0	0	0	0	-	0	0	6	0	0	-	6	0	0	0	0	-	0	0	5	0	0	-	5	11
% Buses	0.0	-	0.0	-	-	0.0	-	1.2	0.0	-	-	1.1	0.0	0.0	-	-	-	0.0	0.0	1.0	0.0	-	-	1.0	1.0
Single-Unit Trucks	0	0	0	0	-	0	0	4	0	0	-	4	1	0	0	0	-	1	0	3	0	0	-	3	8
% Single-Unit Trucks	0.0	-	0.0	-	-	0.0	-	0.8	0.0	-	-	0.8	9.1	0.0	-	-	-	8.3	0.0	0.6	0.0	-	-	0.6	0.7
Articulated Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Articulated Trucks	0.0	-	0.0	-	-	0.0	-	0.2	0.0	-	-	0.2	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: 119th St & Morgan St
Site Code:
Start Date: 10/25/2018



Turning Movement Peak Hour Data Plot (4:45 PM)

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: W 119th St and Sangamon St
Site Code:
Start Date: 10/25/2018

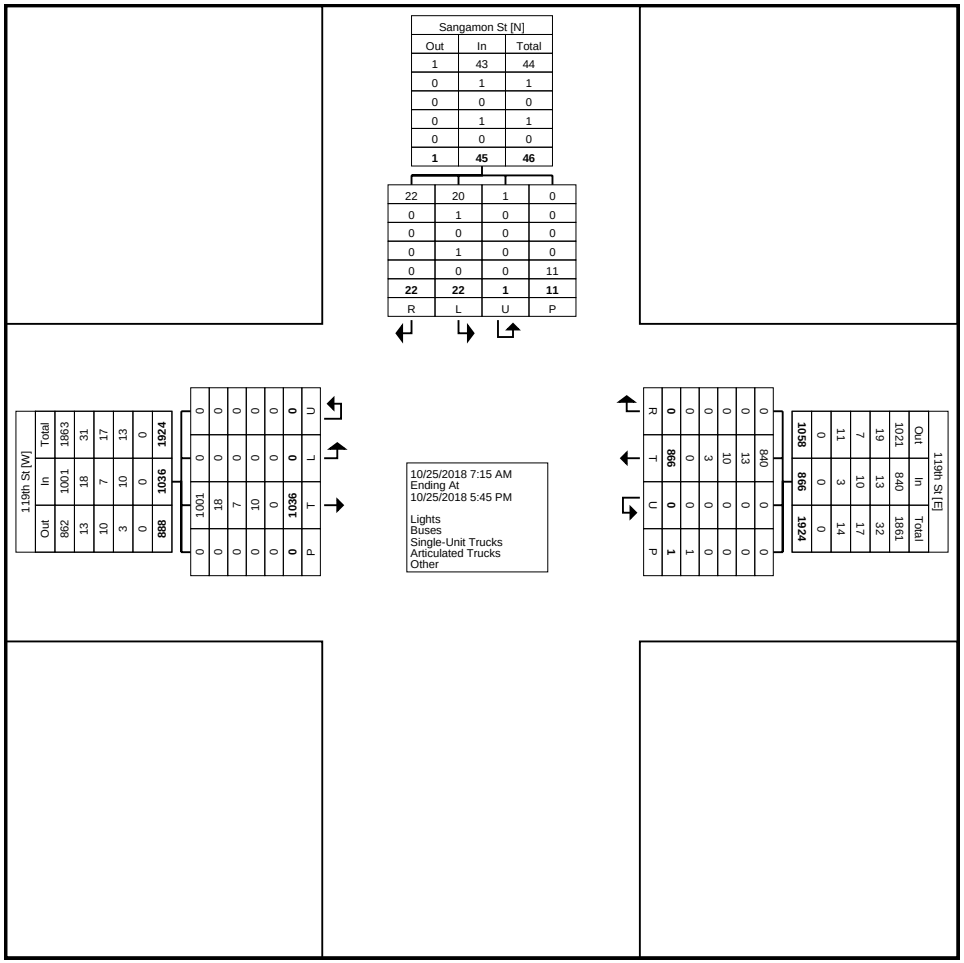
Turning Movement Data

Start Time	Sangamon St Southbound					119th St Westbound					119th St Eastbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
7:15 AM	3	3	1	1	7	81	0	0	1	81	0	136	0	0	136	224
7:30 AM	1	5	0	1	6	107	0	0	0	107	0	134	0	0	134	247
7:45 AM	3	3	0	1	6	84	0	0	0	84	0	134	0	0	134	224
Hourly Total	7	11	1	3	19	272	0	0	1	272	0	404	0	0	404	695
8:00 AM	0	3	0	0	3	76	0	0	0	76	0	120	0	0	120	199
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	3	0	0	3	76	0	0	0	76	0	120	0	0	120	199
4:45 PM	3	2	0	1	5	116	0	0	0	116	0	124	0	0	124	245
Hourly Total	3	2	0	1	5	116	0	0	0	116	0	124	0	0	124	245
5:00 PM	5	3	0	0	8	144	0	0	0	144	0	143	0	0	143	295
5:15 PM	0	2	0	3	2	126	0	0	0	126	0	100	0	0	100	228
5:30 PM	7	1	0	4	8	132	0	0	0	132	0	145	0	0	145	285
Grand Total	22	22	1	11	45	866	0	0	1	866	0	1036	0	0	1036	1947
Approach %	48.9	48.9	2.2	-	-	100.0	0.0	0.0	-	-	0.0	100.0	0.0	-	-	-
Total %	1.1	1.1	0.1	-	2.3	44.5	0.0	0.0	-	44.5	0.0	53.2	0.0	-	53.2	-
Lights	20	22	1	-	43	840	0	0	-	840	0	1001	0	-	1001	1884
% Lights	90.9	100.0	100.0	-	95.6	97.0	-	-	-	97.0	-	96.6	-	-	96.6	96.8
Buses	1	0	0	-	1	13	0	0	-	13	0	18	0	-	18	32
% Buses	4.5	0.0	0.0	-	2.2	1.5	-	-	-	1.5	-	1.7	-	-	1.7	1.6
Single-Unit Trucks	0	0	0	-	0	10	0	0	-	10	0	7	0	-	7	17
% Single-Unit Trucks	0.0	0.0	0.0	-	0.0	1.2	-	-	-	1.2	-	0.7	-	-	0.7	0.9
Articulated Trucks	1	0	0	-	1	3	0	0	-	3	0	10	0	-	10	14
% Articulated Trucks	4.5	0.0	0.0	-	2.2	0.3	-	-	-	0.3	-	1.0	-	-	1.0	0.7
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	-	-	-	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	11	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	-

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: W 119th St and Sangamon St
Site Code:
Start Date: 10/25/2018



Turning Movement Data Plot

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: W 119th St and Sangamon St
Site Code:
Start Date: 10/25/2018

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Sangamon St Southbound					119th St Westbound					119th St Eastbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
7:15 AM	3	3	1	1	7	81	0	0	1	81	0	136	0	0	136	224
7:30 AM	1	5	0	1	6	107	0	0	0	107	0	134	0	0	134	247
7:45 AM	3	3	0	1	6	84	0	0	0	84	0	134	0	0	134	224
8:00 AM	0	3	0	0	3	76	0	0	0	76	0	120	0	0	120	199
Total	7	14	1	3	22	348	0	0	1	348	0	524	0	0	524	894
Approach %	31.8	63.6	4.5	-	-	100.0	0.0	0.0	-	-	0.0	100.0	0.0	-	-	-
Total %	0.8	1.6	0.1	-	2.5	38.9	0.0	0.0	-	38.9	0.0	58.6	0.0	-	58.6	-
PHF	0.583	0.700	0.250	-	0.786	0.813	0.000	0.000	-	0.813	0.000	0.963	0.000	-	0.963	0.905
Lights	6	14	1	-	21	333	0	0	-	333	0	497	0	-	497	851
% Lights	85.7	100.0	100.0	-	95.5	95.7	-	-	-	95.7	-	94.8	-	-	94.8	95.2
Buses	1	0	0	-	1	7	0	0	-	7	0	13	0	-	13	21
% Buses	14.3	0.0	0.0	-	4.5	2.0	-	-	-	2.0	-	2.5	-	-	2.5	2.3
Single-Unit Trucks	0	0	0	-	0	6	0	0	-	6	0	7	0	-	7	13
% Single-Unit Trucks	0.0	0.0	0.0	-	0.0	1.7	-	-	-	1.7	-	1.3	-	-	1.3	1.5
Articulated Trucks	0	0	0	-	0	2	0	0	-	2	0	7	0	-	7	9
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.6	-	-	-	0.6	-	1.3	-	-	1.3	1.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	-	-	-	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	3	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	-	-

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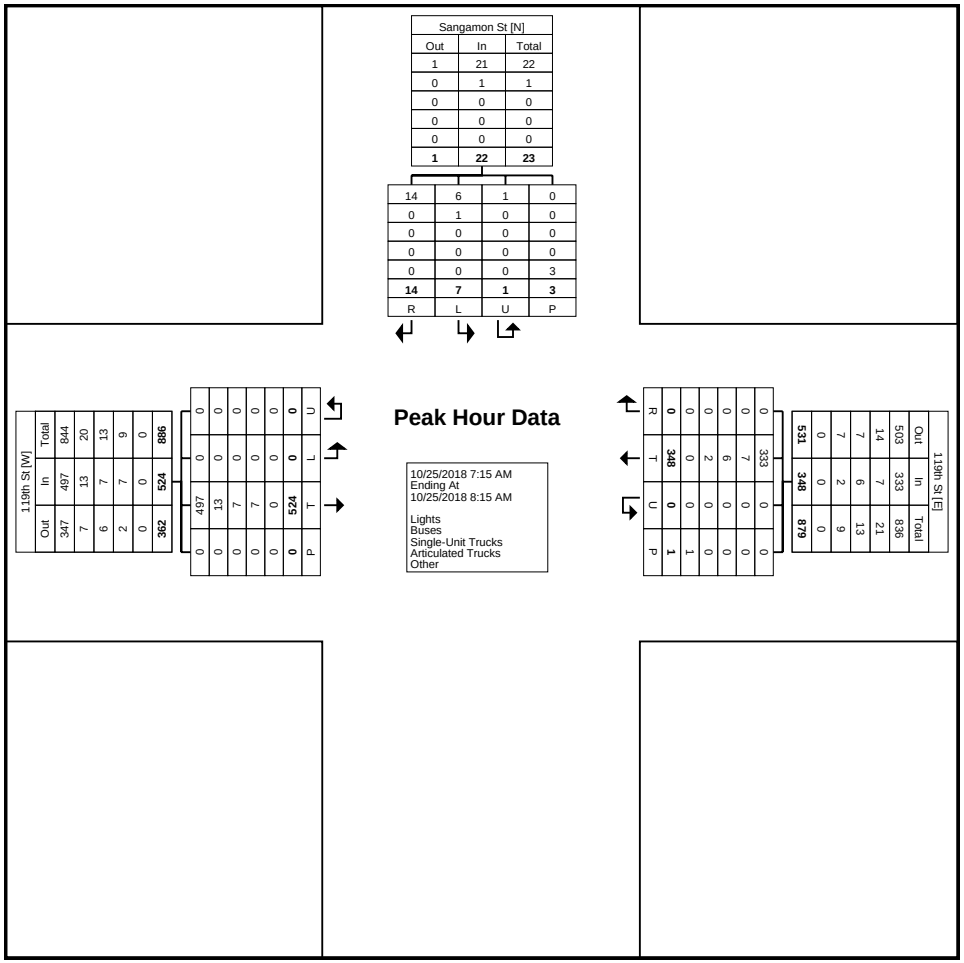
Count Name: W 119th St and Sangamon St
Site Code:
Start Date: 10/25/2018



Turning Movement Peak Hour Data Plot (7:15 AM)

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: W 119th St and Sangamon St
Site Code:
Start Date: 10/25/2018

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Sangamon St Southbound					119th St Westbound					119th St Eastbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
4:45 PM	3	2	0	1	5	116	0	0	0	116	0	124	0	0	124	245
5:00 PM	5	3	0	0	8	144	0	0	0	144	0	143	0	0	143	295
5:15 PM	0	2	0	3	2	126	0	0	0	126	0	100	0	0	100	228
5:30 PM	7	1	0	4	8	132	0	0	0	132	0	145	0	0	145	285
Total	15	8	0	8	23	518	0	0	0	518	0	512	0	0	512	1053
Approach %	65.2	34.8	0.0	-	-	100.0	0.0	0.0	-	-	0.0	100.0	0.0	-	-	-
Total %	1.4	0.8	0.0	-	2.2	49.2	0.0	0.0	-	49.2	0.0	48.6	0.0	-	48.6	-
PHF	0.536	0.667	0.000	-	0.719	0.899	0.000	0.000	-	0.899	0.000	0.883	0.000	-	0.883	0.892
Lights	14	8	0	-	22	507	0	0	-	507	0	504	0	-	504	1033
% Lights	93.3	100.0	-	-	95.7	97.9	-	-	-	97.9	-	98.4	-	-	98.4	98.1
Buses	0	0	0	-	0	6	0	0	-	6	0	5	0	-	5	11
% Buses	0.0	0.0	-	-	0.0	1.2	-	-	-	1.2	-	1.0	-	-	1.0	1.0
Single-Unit Trucks	0	0	0	-	0	4	0	0	-	4	0	0	0	-	0	4
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.8	-	-	-	0.8	-	0.0	-	-	0.0	0.4
Articulated Trucks	1	0	0	-	1	1	0	0	-	1	0	3	0	-	3	5
% Articulated Trucks	6.7	0.0	-	-	4.3	0.2	-	-	-	0.2	-	0.6	-	-	0.6	0.5
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	-	-	-	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	8	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-

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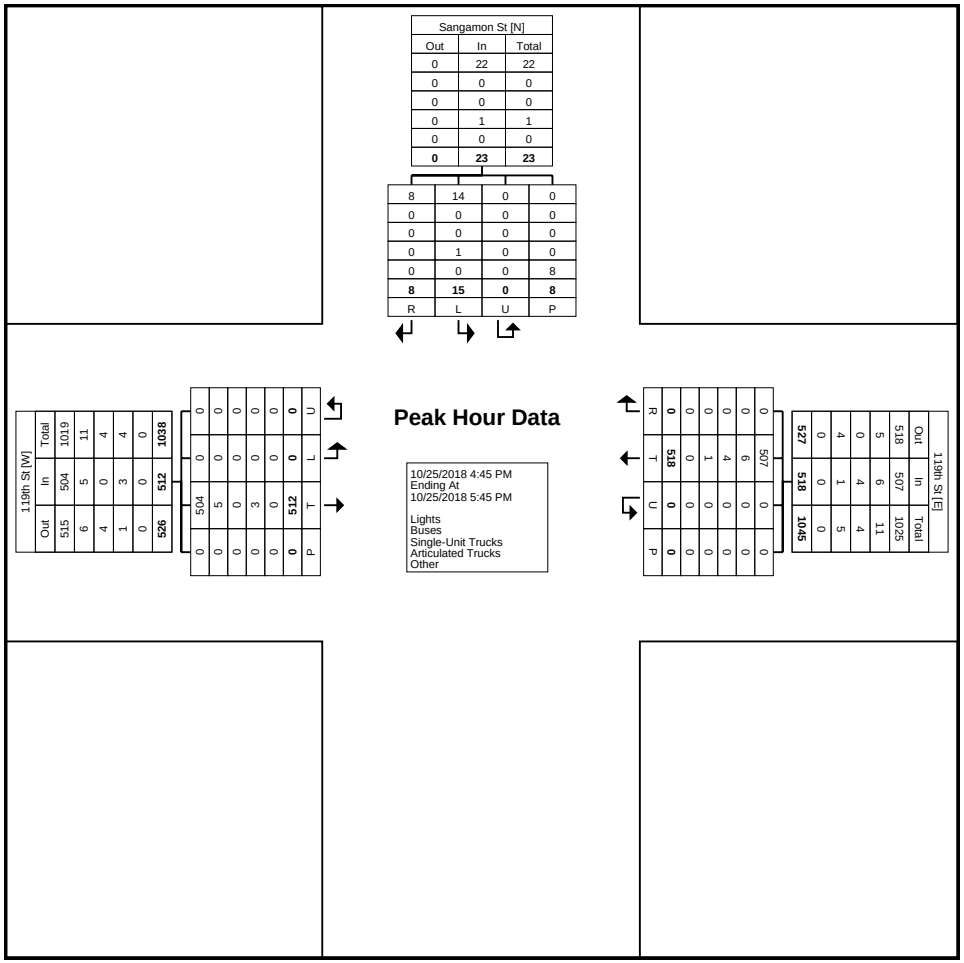
Count Name: W 119th St and Sangamon St
Site Code:
Start Date: 10/25/2018



Turning Movement Peak Hour Data Plot (4:45 PM)

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: 119th St & Peoria St
Site Code:
Start Date: 10/25/2018

Turning Movement Data

Start Time	Peoria St Southbound						119th St Westbound						Peoria St Northbound						119th St Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	0	0	0	0	1	0	0	34	0	0	0	34	3	0	0	1	0	4	1	53	5	0	0	59	97
6:15 AM	0	0	0	0	0	0	2	59	0	0	0	61	3	0	2	0	0	5	0	75	5	0	0	80	146
6:30 AM	0	0	0	0	0	0	0	44	0	0	0	44	4	0	0	0	0	4	1	78	1	0	0	80	128
6:45 AM	0	0	0	0	2	0	2	59	0	0	0	61	7	1	0	0	0	8	2	77	1	0	0	80	149
Hourly Total	0	0	0	0	3	0	4	196	0	0	0	200	17	1	2	1	0	21	4	283	12	0	0	299	520
7:00 AM	0	0	0	0	0	0	1	47	1	0	0	49	5	0	0	0	0	5	2	100	9	0	0	111	165
7:15 AM	0	0	0	0	1	0	2	76	2	0	0	80	4	1	0	0	0	5	4	130	1	0	1	135	220
7:30 AM	0	0	0	0	1	0	1	101	0	0	0	102	8	1	1	0	0	10	0	126	4	0	0	130	242
7:45 AM	0	0	0	0	3	0	1	74	0	1	1	76	10	0	1	0	0	11	2	127	7	0	0	136	223
Hourly Total	0	0	0	0	5	0	5	298	3	1	1	307	27	2	2	0	0	31	8	483	21	0	1	512	850
8:00 AM	0	0	0	0	0	0	2	68	2	0	0	72	6	2	1	0	1	9	1	101	8	0	1	110	191
8:15 AM	0	0	0	0	0	0	1	57	1	0	0	59	10	2	2	0	2	14	5	114	2	0	2	121	194
8:30 AM	0	0	0	0	1	0	2	77	2	0	0	81	2	2	3	0	1	7	1	68	9	0	1	78	166
8:45 AM	0	0	0	0	5	0	1	73	1	0	1	75	9	2	0	0	0	11	2	97	6	0	1	105	191
Hourly Total	0	0	0	0	6	0	6	275	6	0	1	287	27	8	6	0	4	41	9	380	25	0	5	414	742
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	0	0	2	0	4	120	1	0	0	125	11	1	4	0	0	16	2	88	2	0	0	92	233
4:15 PM	0	0	0	0	0	0	0	100	1	0	7	101	5	1	1	0	0	7	4	103	10	0	0	117	225
4:30 PM	0	0	0	0	4	0	1	107	1	0	4	109	7	1	2	0	0	10	2	120	3	0	0	125	244
4:45 PM	0	0	0	0	0	0	2	109	2	0	1	113	7	0	1	0	2	8	1	119	6	0	0	126	247
Hourly Total	0	0	0	0	6	0	7	436	5	0	12	448	30	3	8	0	2	41	9	430	21	0	0	460	949
5:00 PM	0	0	0	0	1	0	1	131	2	0	2	134	8	0	1	0	2	9	6	133	7	0	1	146	289
5:15 PM	0	0	0	0	3	0	0	113	0	0	3	113	10	3	1	0	1	14	0	98	3	0	0	101	228
5:30 PM	0	0	0	0	2	0	1	114	2	0	1	117	7	3	1	0	1	11	2	140	10	0	1	152	280
5:45 PM	0	0	0	0	2	0	1	86	3	0	1	90	4	1	3	0	0	8	2	107	3	0	0	112	210
Hourly Total	0	0	0	0	8	0	3	444	7	0	7	454	29	7	6	0	4	42	10	478	23	0	2	511	1007
6:00 PM	0	0	0	0	0	0	2	88	2	0	3	92	9	1	0	0	0	10	3	122	6	0	0	131	233
6:15 PM	0	0	0	0	5	0	1	80	2	0	0	83	8	0	0	0	1	8	2	99	5	0	0	106	197
6:30 PM	0	0	0	0	0	0	1	76	2	0	1	79	5	1	2	0	1	8	1	96	9	0	0	106	193
6:45 PM	0	0	0	0	1	0	0	77	3	0	1	80	11	0	3	0	0	14	3	85	11	0	0	99	193
Hourly Total	0	0	0	0	6	0	4	321	9	0	5	334	33	2	5	0	2	40	9	402	31	0	0	442	816
Grand Total	0	0	0	0	34	0	29	1970	30	1	26	2030	163	23	29	1	12	216	49	2456	133	0	8	2638	4884
Approach %	0.0	0.0	0.0	0.0	-	-	1.4	97.0	1.5	0.0	-	-	75.5	10.6	13.4	0.5	-	-	1.9	93.1	5.0	0.0	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.0	0.6	40.3	0.6	0.0	-	41.6	3.3	0.5	0.6	0.0	-	4.4	1.0	50.3	2.7	0.0	-	54.0	-
Lights	0	0	0	0	-	0	5	1892	29	1	-	1927	159	21	27	1	-	208	48	2371	133	0	-	2552	4687
% Lights	-	-	-	-	-	-	17.2	96.0	96.7	100.0	-	94.9	97.5	91.3	93.1	100.0	-	96.3	98.0	96.5	100.0	-	-	96.7	96.0
Buses	0	0	0	0	-	0	24	41	1	0	-	66	1	1	0	0	-	2	0	49	0	0	-	49	117

% Buses	-	-	-	-	-	-	82.8	2.1	3.3	0.0	-	3.3	0.6	4.3	0.0	0.0	-	0.9	0.0	2.0	0.0	-	-	1.9	2.4
Single-Unit Trucks	0	0	0	0	-	0	0	29	0	0	-	29	2	0	2	0	-	4	1	29	0	0	-	30	63
% Single-Unit Trucks	-	-	-	-	-	-	0.0	1.5	0.0	0.0	-	1.4	1.2	0.0	6.9	0.0	-	1.9	2.0	1.2	0.0	-	-	1.1	1.3
Articulated Trucks	0	0	0	0	-	0	0	8	0	0	-	8	1	0	0	0	-	1	0	7	0	0	-	7	16
% Articulated Trucks	-	-	-	-	-	-	0.0	0.4	0.0	0.0	-	0.4	0.6	0.0	0.0	0.0	-	0.5	0.0	0.3	0.0	-	-	0.3	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	-	-	-	-	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	4.3	0.0	0.0	-	0.5	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	34	-	-	-	-	-	26	-	-	-	-	-	12	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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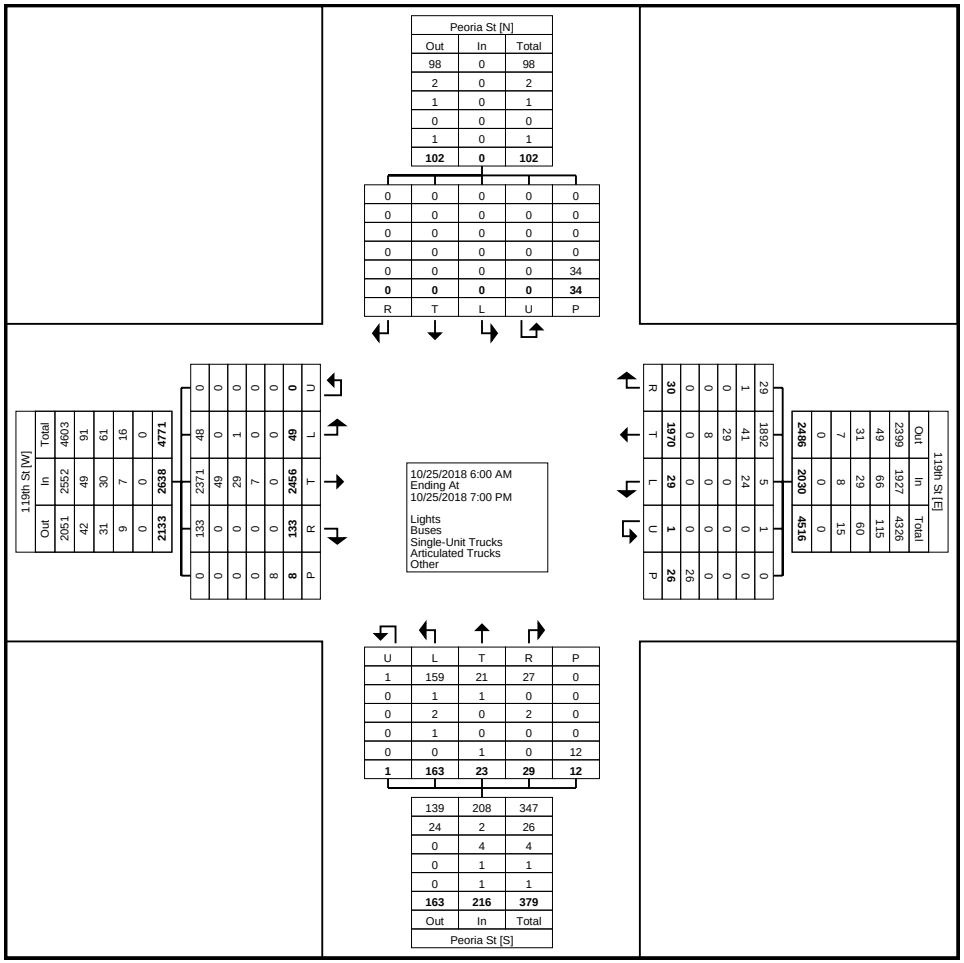
Count Name: 119th St & Peoria St
Site Code:
Start Date: 10/25/2018



Turning Movement Data Plot

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: 119th St & Peoria St
Site Code:
Start Date: 10/25/2018

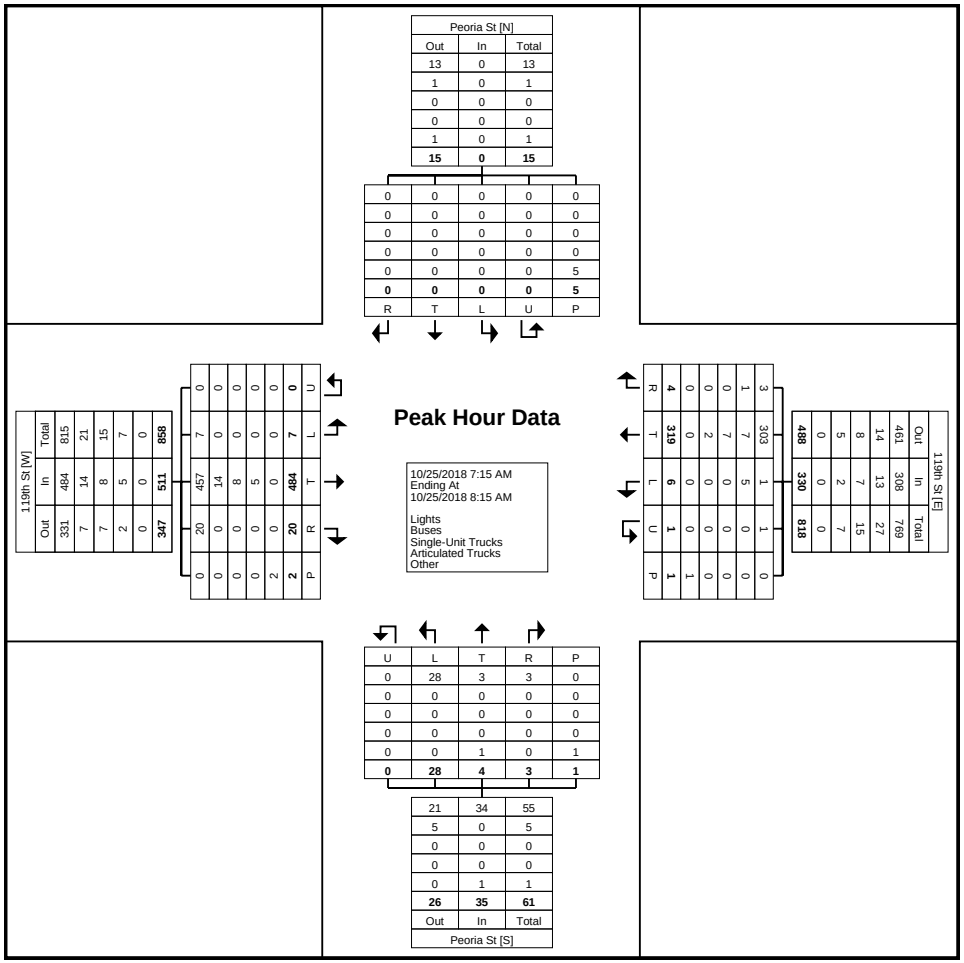
Turning Movement Peak Hour Data (7:15 AM)

Start Time	Peoria St Southbound						119th St Westbound						Peoria St Northbound						119th St Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:15 AM	0	0	0	0	1	0	2	76	2	0	0	80	4	1	0	0	0	5	4	130	1	0	1	135	220
7:30 AM	0	0	0	0	1	0	1	101	0	0	0	102	8	1	1	0	0	10	0	126	4	0	0	130	242
7:45 AM	0	0	0	0	3	0	1	74	0	1	1	76	10	0	1	0	0	11	2	127	7	0	0	136	223
8:00 AM	0	0	0	0	0	0	2	68	2	0	0	72	6	2	1	0	1	9	1	101	8	0	1	110	191
Total	0	0	0	0	5	0	6	319	4	1	1	330	28	4	3	0	1	35	7	484	20	0	2	511	876
Approach %	0.0	0.0	0.0	0.0	-	-	1.8	96.7	1.2	0.3	-	-	80.0	11.4	8.6	0.0	-	-	1.4	94.7	3.9	0.0	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.0	0.7	36.4	0.5	0.1	-	37.7	3.2	0.5	0.3	0.0	-	4.0	0.8	55.3	2.3	0.0	-	58.3	-
PHF	0.000	0.000	0.000	0.000	-	0.000	0.750	0.790	0.500	0.250	-	0.809	0.700	0.500	0.750	0.000	-	0.795	0.438	0.931	0.625	0.000	-	0.939	0.905
Lights	0	0	0	0	-	0	1	303	3	1	-	308	28	3	3	0	-	34	7	457	20	0	-	484	826
% Lights	-	-	-	-	-	-	16.7	95.0	75.0	100.0	-	93.3	100.0	75.0	100.0	-	-	97.1	100.0	94.4	100.0	-	-	94.7	94.3
Buses	0	0	0	0	-	0	5	7	1	0	-	13	0	0	0	0	-	0	0	14	0	0	-	14	27
% Buses	-	-	-	-	-	-	83.3	2.2	25.0	0.0	-	3.9	0.0	0.0	0.0	-	-	0.0	0.0	2.9	0.0	-	-	2.7	3.1
Single-Unit Trucks	0	0	0	0	-	0	0	7	0	0	-	7	0	0	0	0	-	0	0	8	0	0	-	8	15
% Single-Unit Trucks	-	-	-	-	-	-	0.0	2.2	0.0	0.0	-	2.1	0.0	0.0	0.0	-	-	0.0	0.0	1.7	0.0	-	-	1.6	1.7
Articulated Trucks	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	0	5	0	0	-	5	7
% Articulated Trucks	-	-	-	-	-	-	0.0	0.6	0.0	0.0	-	0.6	0.0	0.0	0.0	-	-	0.0	0.0	1.0	0.0	-	-	1.0	0.8
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	-	-	-	-	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	25.0	0.0	-	-	2.9	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: 119th St & Peoria St
Site Code:
Start Date: 10/25/2018



Turning Movement Peak Hour Data Plot (7:15 AM)

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: 119th St & Peoria St
Site Code:
Start Date: 10/25/2018

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Peoria St Southbound						119th St Westbound						Peoria St Northbound						119th St Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	0	0	0	0	0	0	2	109	2	0	1	113	7	0	1	0	2	8	1	119	6	0	0	126	247
5:00 PM	0	0	0	0	1	0	1	131	2	0	2	134	8	0	1	0	2	9	6	133	7	0	1	146	289
5:15 PM	0	0	0	0	3	0	0	113	0	0	3	113	10	3	1	0	1	14	0	98	3	0	0	101	228
5:30 PM	0	0	0	0	2	0	1	114	2	0	1	117	7	3	1	0	1	11	2	140	10	0	1	152	280
Total	0	0	0	0	6	0	4	467	6	0	7	477	32	6	4	0	6	42	9	490	26	0	2	525	1044
Approach %	0.0	0.0	0.0	0.0	-	-	0.8	97.9	1.3	0.0	-	-	76.2	14.3	9.5	0.0	-	-	1.7	93.3	5.0	0.0	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.0	0.4	44.7	0.6	0.0	-	45.7	3.1	0.6	0.4	0.0	-	4.0	0.9	46.9	2.5	0.0	-	50.3	-
PHF	0.000	0.000	0.000	0.000	-	0.000	0.500	0.891	0.750	0.000	-	0.890	0.800	0.500	1.000	0.000	-	0.750	0.375	0.875	0.650	0.000	-	0.863	0.903
Lights	0	0	0	0	-	0	1	457	6	0	-	464	31	6	4	0	-	41	8	482	26	0	-	516	1021
% Lights	-	-	-	-	-	-	25.0	97.9	100.0	-	-	97.3	96.9	100.0	100.0	-	-	97.6	88.9	98.4	100.0	-	-	98.3	97.8
Buses	0	0	0	0	-	0	3	6	0	0	-	9	0	0	0	0	-	0	0	5	0	0	-	5	14
% Buses	-	-	-	-	-	-	75.0	1.3	0.0	-	-	1.9	0.0	0.0	0.0	-	-	0.0	0.0	1.0	0.0	-	-	1.0	1.3
Single-Unit Trucks	0	0	0	0	-	0	0	4	0	0	-	4	0	0	0	0	-	0	1	3	0	0	-	4	8
% Single-Unit Trucks	-	-	-	-	-	-	0.0	0.9	0.0	-	-	0.8	0.0	0.0	0.0	-	-	0.0	11.1	0.6	0.0	-	-	0.8	0.8
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Articulated Trucks	-	-	-	-	-	-	0.0	0.0	0.0	-	-	0.0	3.1	0.0	0.0	-	-	2.4	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	-	-	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	7	-	-	-	-	-	6	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Terra Engineering
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Count Name: 119th St & Peoria St
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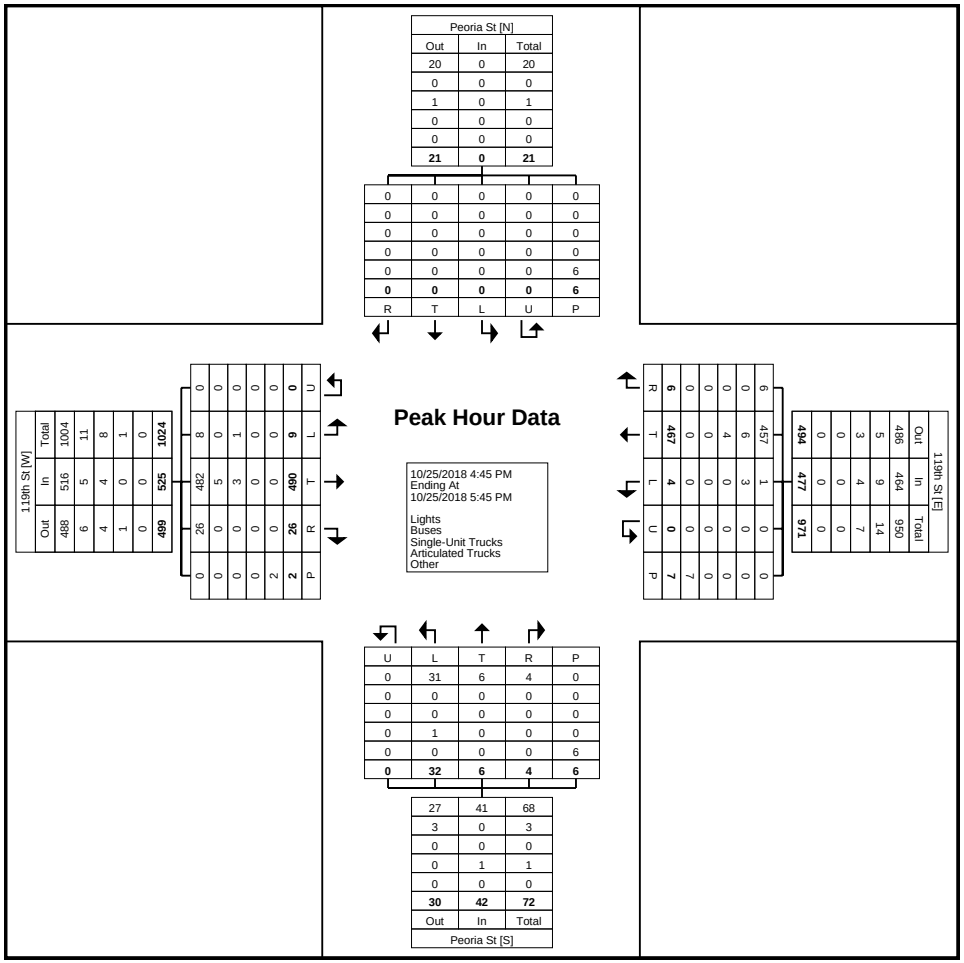

Turning Movement Peak Hour Data Plot (4:45 PM)

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: Halstead St & W 119th St
Site Code:
Start Date: 10/25/2018
Page No: 1

Turning Movement Data

Start Time	Halstead St Southbound						119th St Westbound						Halstead St Northbound						119th St Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	2	25	4	0	2	31	2	23	5	0	2	30	4	77	3	0	3	84	18	26	5	0	1	49	194
6:15 AM	6	33	17	0	3	56	4	38	12	0	0	54	6	95	6	0	0	107	29	44	8	0	2	81	298
6:30 AM	6	26	9	0	3	41	7	33	13	0	1	53	4	120	6	0	2	130	31	37	10	0	3	78	302
6:45 AM	11	44	17	0	1	72	8	35	7	0	4	50	10	141	5	0	3	156	20	41	18	0	2	79	357
Hourly Total	25	128	47	0	9	200	21	129	37	0	7	187	24	433	20	0	8	477	98	148	41	0	8	287	1151
7:00 AM	12	30	14	0	8	56	7	35	20	0	4	62	2	153	9	0	2	164	39	47	12	0	8	98	380
7:15 AM	9	45	17	0	6	71	9	57	18	0	6	84	8	165	3	0	0	176	67	54	6	0	3	127	458
7:30 AM	15	61	33	0	4	109	10	63	27	0	0	100	12	131	5	1	0	149	46	64	11	0	6	121	479
7:45 AM	17	75	14	0	2	106	6	59	20	0	1	85	9	135	6	0	0	150	45	69	17	0	3	131	472
Hourly Total	53	211	78	0	20	342	32	214	85	0	11	331	31	584	23	1	2	639	197	234	46	0	20	477	1789
8:00 AM	21	95	16	0	3	132	11	48	26	0	6	85	14	142	6	0	2	162	33	67	6	0	4	106	485
8:15 AM	19	81	27	0	1	127	7	33	27	0	1	67	12	110	4	0	1	126	43	51	14	0	7	108	428
8:30 AM	18	83	21	0	8	122	11	48	28	0	0	87	23	114	6	0	3	143	30	35	10	0	10	75	427
8:45 AM	19	79	23	0	5	121	11	44	27	0	4	82	16	139	11	0	1	166	26	52	18	0	3	96	465
Hourly Total	77	338	87	0	17	502	40	173	108	0	11	321	65	505	27	0	7	597	132	205	48	0	24	385	1805
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	19	166	53	0	6	238	21	55	20	0	5	96	30	108	3	0	4	141	25	55	19	0	11	99	574
4:15 PM	37	140	36	0	5	213	13	57	20	0	1	90	19	134	4	0	1	157	37	72	15	0	8	124	584
4:30 PM	31	154	38	0	7	223	12	51	13	0	5	76	16	110	5	0	6	131	38	53	20	0	18	111	541
4:45 PM	39	179	48	1	7	267	21	52	18	0	3	91	19	123	14	0	8	156	30	67	23	0	13	120	634
Hourly Total	126	639	175	1	25	941	67	215	71	0	14	353	84	475	26	0	19	585	130	247	77	0	50	454	2333
5:00 PM	28	146	34	0	4	208	14	62	25	0	4	101	19	103	8	0	3	130	42	71	29	0	7	142	581
5:15 PM	27	174	32	0	1	233	14	59	21	0	3	94	22	115	7	0	7	144	30	60	22	0	6	112	583
5:30 PM	25	139	28	0	7	192	13	65	21	0	2	99	29	102	14	0	6	145	44	87	20	0	8	151	587
5:45 PM	37	145	33	0	11	215	19	38	21	0	1	78	16	107	5	0	1	128	26	60	30	0	9	116	537
Hourly Total	117	604	127	0	23	848	60	224	88	0	10	372	86	427	34	0	17	547	142	278	101	0	30	521	2288
6:00 PM	28	116	29	0	6	173	19	48	24	0	0	91	15	89	9	0	5	113	40	64	24	0	6	128	505
6:15 PM	27	132	23	0	4	182	16	38	21	0	4	75	23	100	4	0	0	127	27	50	28	0	8	105	489
6:30 PM	34	121	32	0	1	187	19	33	9	0	7	61	14	84	9	0	1	107	31	48	19	0	5	98	453
6:45 PM	16	113	16	0	4	145	12	42	17	0	1	71	22	79	6	0	2	107	25	55	21	0	5	101	424
Hourly Total	105	482	100	0	15	687	66	161	71	0	12	298	74	352	28	0	8	454	123	217	92	0	24	432	1871
Grand Total	503	2402	614	1	109	3520	286	1116	460	0	65	1862	364	2776	158	1	61	3299	822	1329	405	0	156	2556	11237
Approach %	14.3	68.2	17.4	0.0	-	-	15.4	59.9	24.7	0.0	-	-	11.0	84.1	4.8	0.0	-	-	32.2	52.0	15.8	0.0	-	-	-
Total %	4.5	21.4	5.5	0.0	-	31.3	2.5	9.9	4.1	0.0	-	16.6	3.2	24.7	1.4	0.0	-	29.4	7.3	11.8	3.6	0.0	-	22.7	-
Lights	486	2293	572	1	-	3352	279	1066	448	0	-	1793	352	2618	152	1	-	3123	802	1267	399	0	-	2468	10736
% Lights	96.6	95.5	93.2	100.0	-	95.2	97.6	95.5	97.4	-	-	96.3	96.7	94.3	96.2	100.0	-	94.7	97.6	95.3	98.5	-	-	96.6	95.5
Buses	7	83	27	0	-	117	2	37	7	0	-	46	2	114	4	0	-	120	8	37	2	0	-	47	330

% Buses	1.4	3.5	4.4	0.0	-	3.3	0.7	3.3	1.5	-	-	2.5	0.5	4.1	2.5	0.0	-	3.6	1.0	2.8	0.5	-	-	1.8	2.9
Single-Unit Trucks	7	19	11	0	-	37	5	11	5	0	-	21	6	34	1	0	-	41	9	20	4	0	-	33	132
% Single-Unit Trucks	1.4	0.8	1.8	0.0	-	1.1	1.7	1.0	1.1	-	-	1.1	1.6	1.2	0.6	0.0	-	1.2	1.1	1.5	1.0	-	-	1.3	1.2
Articulated Trucks	2	7	4	0	-	13	0	2	0	0	-	2	4	10	1	0	-	15	3	5	0	0	-	8	38
% Articulated Trucks	0.4	0.3	0.7	0.0	-	0.4	0.0	0.2	0.0	-	-	0.1	1.1	0.4	0.6	0.0	-	0.5	0.4	0.4	0.0	-	-	0.3	0.3
Bicycles on Road	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.2	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	-	5	-	-	-	-	-	3	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	2.8	-	-	-	-	-	7.7	-	-	-	-	-	4.9	-	-	-	-	-	2.6	-	-
Pedestrians	-	-	-	-	106	-	-	-	-	-	60	-	-	-	-	-	58	-	-	-	-	-	152	-	-
% Pedestrians	-	-	-	-	97.2	-	-	-	-	-	92.3	-	-	-	-	-	95.1	-	-	-	-	-	97.4	-	-

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
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Count Name: Halstead St & W 119th St
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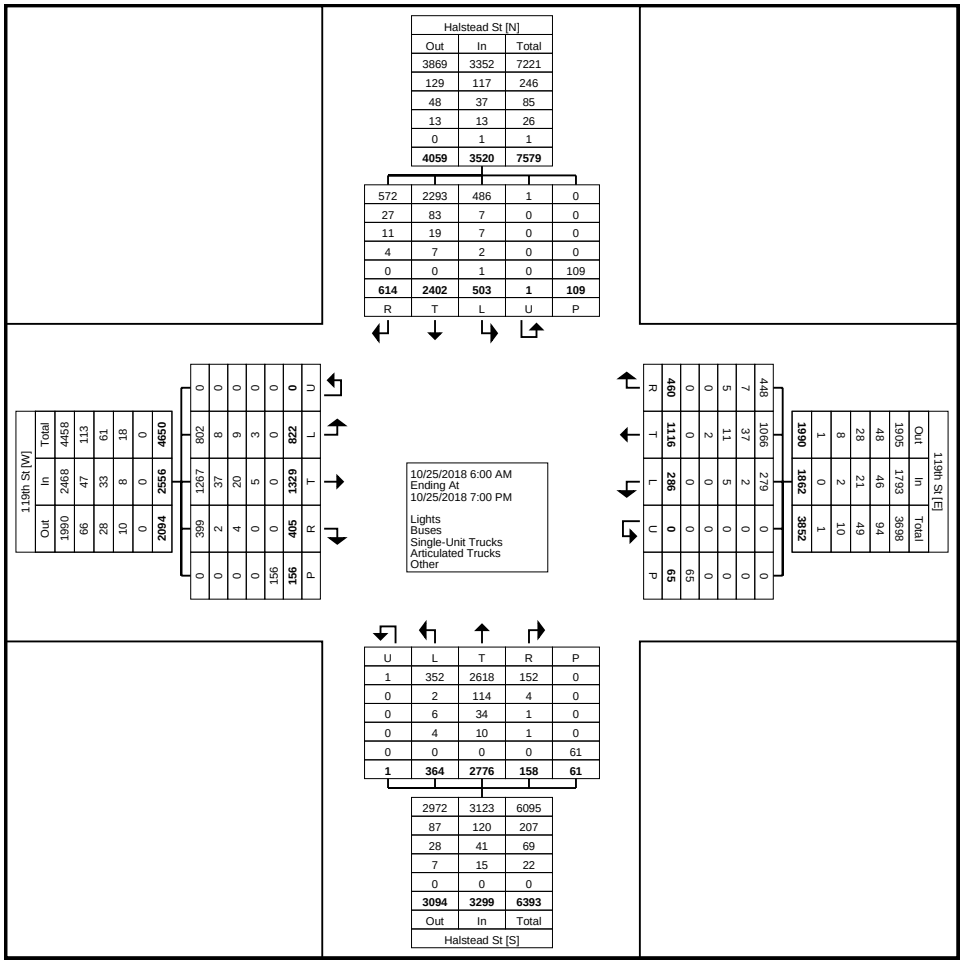
Start Date: 10/25/2018



Turning Movement Data Plot

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: Halstead St & W 119th St
Site Code:
Start Date: 10/25/2018

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Halstead St Southbound						119th St Westbound						Halstead St Northbound						119th St Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:15 AM	9	45	17	0	6	71	9	57	18	0	6	84	8	165	3	0	0	176	67	54	6	0	3	127	458
7:30 AM	15	61	33	0	4	109	10	63	27	0	0	100	12	131	5	1	0	149	46	64	11	0	6	121	479
7:45 AM	17	75	14	0	2	106	6	59	20	0	1	85	9	135	6	0	0	150	45	69	17	0	3	131	472
8:00 AM	21	95	16	0	3	132	11	48	26	0	6	85	14	142	6	0	2	162	33	67	6	0	4	106	485
Total	62	276	80	0	15	418	36	227	91	0	13	354	43	573	20	1	2	637	191	254	40	0	16	485	1894
Approach %	14.8	66.0	19.1	0.0	-	-	10.2	64.1	25.7	0.0	-	-	6.8	90.0	3.1	0.2	-	-	39.4	52.4	8.2	0.0	-	-	-
Total %	3.3	14.6	4.2	0.0	-	22.1	1.9	12.0	4.8	0.0	-	18.7	2.3	30.3	1.1	0.1	-	33.6	10.1	13.4	2.1	0.0	-	25.6	-
PHF	0.738	0.726	0.606	0.000	-	0.792	0.818	0.901	0.843	0.000	-	0.885	0.768	0.868	0.833	0.250	-	0.905	0.713	0.920	0.588	0.000	-	0.926	0.976
Lights	54	256	71	0	-	381	34	216	89	0	-	339	40	534	18	1	-	593	186	234	38	0	-	458	1771
% Lights	87.1	92.8	88.8	-	-	91.1	94.4	95.2	97.8	-	-	95.8	93.0	93.2	90.0	100.0	-	93.1	97.4	92.1	95.0	-	-	94.4	93.5
Buses	2	12	5	0	-	19	0	9	2	0	-	11	0	20	2	0	-	22	3	9	1	0	-	13	65
% Buses	3.2	4.3	6.3	-	-	4.5	0.0	4.0	2.2	-	-	3.1	0.0	3.5	10.0	0.0	-	3.5	1.6	3.5	2.5	-	-	2.7	3.4
Single-Unit Trucks	5	7	3	0	-	15	2	1	0	0	-	3	1	14	0	0	-	15	0	7	1	0	-	8	41
% Single-Unit Trucks	8.1	2.5	3.8	-	-	3.6	5.6	0.4	0.0	-	-	0.8	2.3	2.4	0.0	0.0	-	2.4	0.0	2.8	2.5	-	-	1.6	2.2
Articulated Trucks	1	1	1	0	-	3	0	1	0	0	-	1	2	5	0	0	-	7	2	4	0	0	-	6	17
% Articulated Trucks	1.6	0.4	1.3	-	-	0.7	0.0	0.4	0.0	-	-	0.3	4.7	0.9	0.0	0.0	-	1.1	1.0	1.6	0.0	-	-	1.2	0.9
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	6.7	-	-	-	-	-	7.7	-	-	-	-	-	0.0	-	-	-	-	-	12.5	-	-
Pedestrians	-	-	-	-	14	-	-	-	-	-	12	-	-	-	-	-	2	-	-	-	-	-	14	-	-
% Pedestrians	-	-	-	-	93.3	-	-	-	-	-	92.3	-	-	-	-	-	100.0	-	-	-	-	-	87.5	-	-

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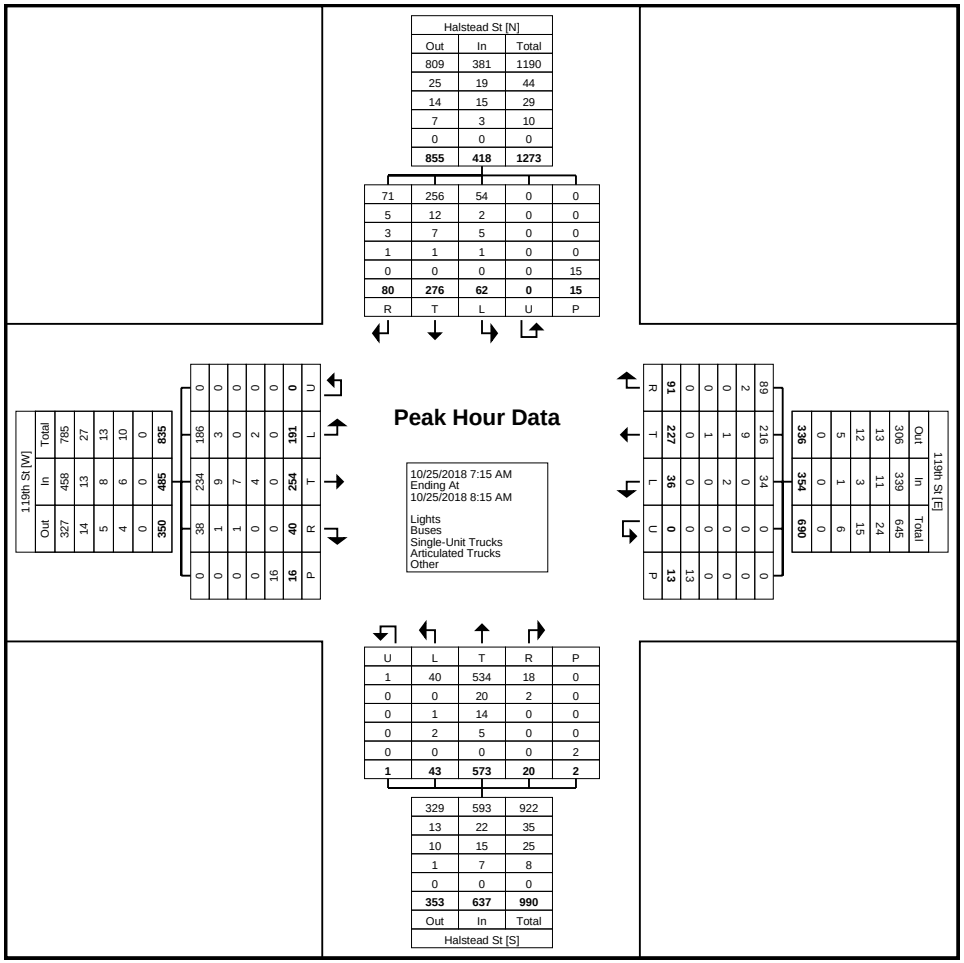
Site Code:
Start Date: 10/25/2018



Turning Movement Peak Hour Data Plot (7:15 AM)

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: Halstead St & W 119th St
Site Code:
Start Date: 10/25/2018

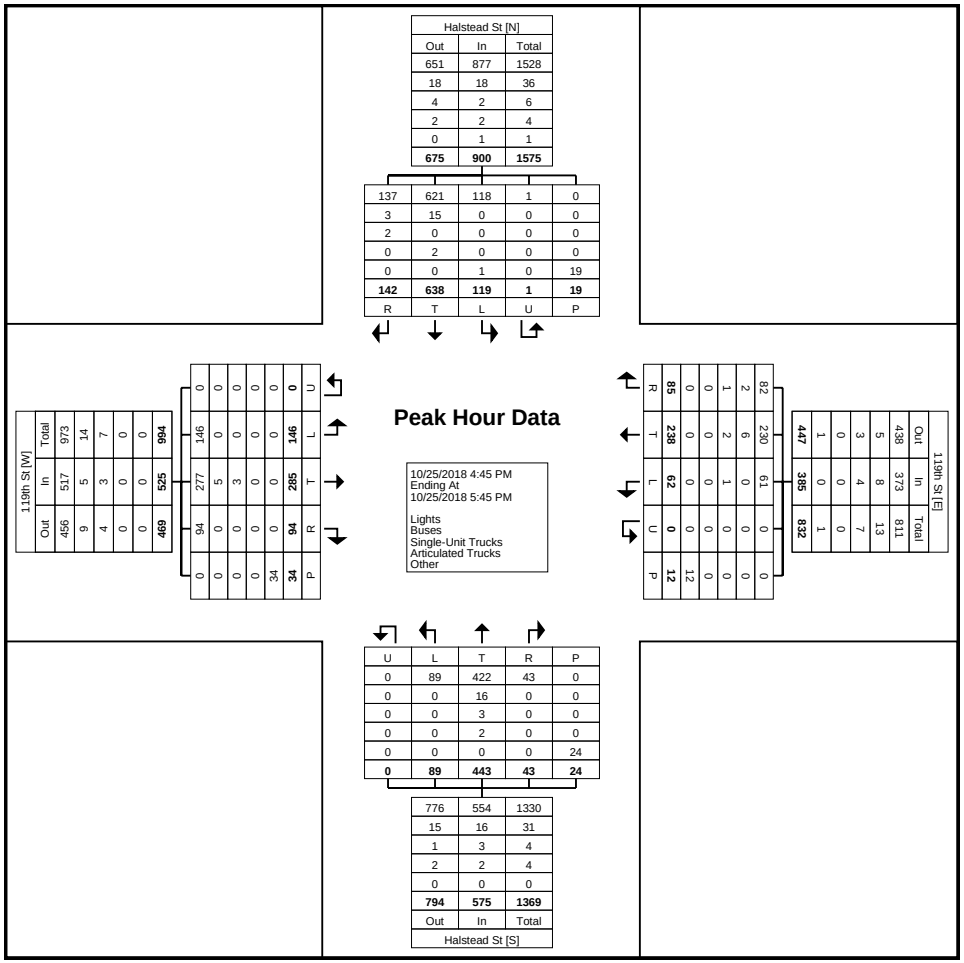
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Halstead St Southbound						119th St Westbound						Halstead St Northbound						119th St Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	39	179	48	1	7	267	21	52	18	0	3	91	19	123	14	0	8	156	30	67	23	0	13	120	634
5:00 PM	28	146	34	0	4	208	14	62	25	0	4	101	19	103	8	0	3	130	42	71	29	0	7	142	581
5:15 PM	27	174	32	0	1	233	14	59	21	0	3	94	22	115	7	0	7	144	30	60	22	0	6	112	583
5:30 PM	25	139	28	0	7	192	13	65	21	0	2	99	29	102	14	0	6	145	44	87	20	0	8	151	587
Total	119	638	142	1	19	900	62	238	85	0	12	385	89	443	43	0	24	575	146	285	94	0	34	525	2385
Approach %	13.2	70.9	15.8	0.1	-	-	16.1	61.8	22.1	0.0	-	-	15.5	77.0	7.5	0.0	-	-	27.8	54.3	17.9	0.0	-	-	-
Total %	5.0	26.8	6.0	0.0	-	37.7	2.6	10.0	3.6	0.0	-	16.1	3.7	18.6	1.8	0.0	-	24.1	6.1	11.9	3.9	0.0	-	22.0	-
PHF	0.763	0.891	0.740	0.250	-	0.843	0.738	0.915	0.850	0.000	-	0.953	0.767	0.900	0.768	0.000	-	0.921	0.830	0.819	0.810	0.000	-	0.869	0.940
Lights	118	621	137	1	-	877	61	230	82	0	-	373	89	422	43	0	-	554	146	277	94	0	-	517	2321
% Lights	99.2	97.3	96.5	100.0	-	97.4	98.4	96.6	96.5	-	-	96.9	100.0	95.3	100.0	-	-	96.3	100.0	97.2	100.0	-	-	98.5	97.3
Buses	0	15	3	0	-	18	0	6	2	0	-	8	0	16	0	0	-	16	0	5	0	0	-	5	47
% Buses	0.0	2.4	2.1	0.0	-	2.0	0.0	2.5	2.4	-	-	2.1	0.0	3.6	0.0	-	-	2.8	0.0	1.8	0.0	-	-	1.0	2.0
Single-Unit Trucks	0	0	2	0	-	2	1	2	1	0	-	4	0	3	0	0	-	3	0	3	0	0	-	3	12
% Single-Unit Trucks	0.0	0.0	1.4	0.0	-	0.2	1.6	0.8	1.2	-	-	1.0	0.0	0.7	0.0	-	-	0.5	0.0	1.1	0.0	-	-	0.6	0.5
Articulated Trucks	0	2	0	0	-	2	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	4
% Articulated Trucks	0.0	0.3	0.0	0.0	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.8	0.0	0.0	0.0	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	5.3	-	-	-	-	-	8.3	-	-	-	-	-	8.3	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	18	-	-	-	-	-	11	-	-	-	-	-	22	-	-	-	-	-	34	-	-
% Pedestrians	-	-	-	-	94.7	-	-	-	-	-	91.7	-	-	-	-	-	91.7	-	-	-	-	-	100.0	-	-

Terra Engineering
1804 Borman Circle Drive

Saint Louis, Missouri, United States 63146
314-395-9899 song@terraengineering.com

Count Name: Halstead St & W 119th St
Site Code:
Start Date: 10/25/2018

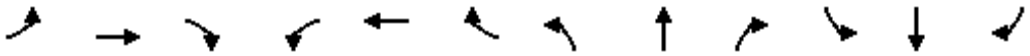


Turning Movement Peak Hour Data Plot (4:45 PM)

Appendix B

Existing Synchro Output

TERRA ENGINEERING LTD.

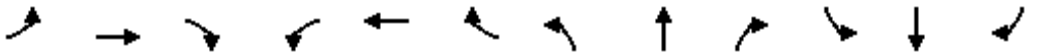


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	533	69	35	319	23	40	10	35	0	0	0
Future Volume (vph)	29	533	69	35	319	23	40	10	35	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.991			0.944				
Flt Protected		0.998			0.995			0.977				
Satd. Flow (prot)	0	3476	0	0	3490	0	0	1718	0	0	0	0
Flt Permitted		0.923			0.860			0.977				
Satd. Flow (perm)	0	3214	0	0	3016	0	0	1718	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			14			38				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		261			2694			191			877	
Travel Time (s)		5.9			61.2			4.3			19.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	579	75	38	347	25	43	11	38	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	686	0	0	410	0	0	92	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Minimum Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (%)	65.9%	65.9%		65.9%	65.9%		34.1%	34.1%				
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0				
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0				
Lost Time Adjust (s)		0.0			0.0			0.0				
Total Lost Time (s)		4.0			4.0			4.0				
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		52.0			52.0			25.0				
Actuated g/C Ratio		0.61			0.61			0.29				
v/c Ratio		0.35			0.22			0.17				
Control Delay		8.3			7.5			15.2				
Queue Delay		0.0			0.0			0.0				
Total Delay		8.3			7.5			15.2				
LOS		A			A			B				
Approach Delay		8.3			7.5			15.2				
Approach LOS		A			A			B				
Stops (vph)		275			150			40				
Fuel Used(gal)		4			9			1				
CO Emissions (g/hr)		271			652			43				
NOx Emissions (g/hr)		53			127			8				
VOC Emissions (g/hr)		63			151			10				
Dilemma Vehicles (#)		0			0			0				
Queue Length 50th (ft)		81			45			21				
Queue Length 95th (ft)		113			66			56				
Internal Link Dist (ft)		181			2614			111			797	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1977			1850			532				
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.35			0.22			0.17				

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Pretimed			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 8.6		Intersection LOS: A	
Intersection Capacity Utilization 57.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: S Loomis St & W 119th St

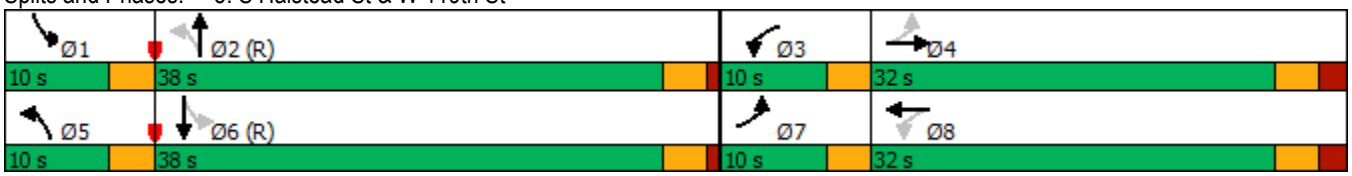


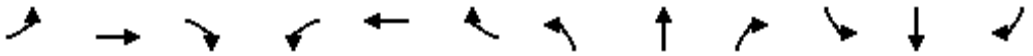
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	191	254	40	36	227	91	43	573	20	62	276	80
Future Volume (vph)	191	254	40	36	227	91	43	573	20	62	276	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	115		0	120		0	120		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.980			0.957			0.995			0.966	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3468	0	1770	3387	0	1770	3522	0	1770	3419	0
Flt Permitted	0.502			0.528			0.475			0.299		
Satd. Flow (perm)	935	3468	0	984	3387	0	885	3522	0	557	3419	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			68			4			48	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		665			675			757			907	
Travel Time (s)		15.1			15.3			17.2			20.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	208	276	43	39	247	99	47	623	22	67	300	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	208	319	0	39	346	0	47	645	0	67	387	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (%)	11.1%	35.6%		11.1%	35.6%		11.1%	42.2%		11.1%	42.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Act Effct Green (s)	36.0	27.0		36.0	27.0		42.0	34.0		42.0	34.0	
Actuated g/C Ratio	0.40	0.30		0.40	0.30		0.47	0.38		0.47	0.38	
v/c Ratio	0.47	0.30		0.09	0.33		0.10	0.48		0.19	0.29	
Control Delay	21.1	23.6		15.4	20.4		12.2	22.7		13.1	17.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.1	23.6		15.4	20.4		12.2	22.7		13.1	17.7	
LOS	C	C		B	C		B	C		B	B	
Approach Delay		22.6			19.9			22.0			17.1	
Approach LOS		C			B			C			B	
Stops (vph)	127	204		21	191		22	431		31	209	
Fuel Used(gal)	3	4		0	4		0	9		1	5	
CO Emissions (g/hr)	176	283		29	283		34	603		54	347	
NOx Emissions (g/hr)	34	55		6	55		7	117		11	67	
VOC Emissions (g/hr)	41	66		7	66		8	140		13	80	
Dilemma Vehicles (#)	0	0		0	0		0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	74	68		13	63		13	143		19	68	
Queue Length 95th (ft)	123	103		31	100		31	193		40	103	
Internal Link Dist (ft)		585			595			677			827	
Turn Bay Length (ft)	135			115			120			120		
Base Capacity (vph)	438	1054		454	1063		481	1333		354	1321	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.47	0.30		0.09	0.33		0.10	0.48		0.19	0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 79.5 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 20.7		Intersection LOS: C	
Intersection Capacity Utilization 56.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: S Halstead St & W 119th St





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	506	7	0	369	1	15	4	0	4	3	10
Future Volume (vph)	19	506	7	0	369	1	15	4	0	4	3	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998									0.917	
Flt Protected		0.998						0.962			0.989	
Satd. Flow (prot)	0	3525	0	0	3539	0	0	1792	0	0	1689	0
Flt Permitted		0.936						0.872			0.971	
Satd. Flow (perm)	0	3306	0	0	3539	0	0	1624	0	0	1659	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			1						11	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2694			317			449			789	
Travel Time (s)		61.2			7.2			10.2			17.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	550	8	0	401	1	16	4	0	4	3	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	579	0	0	402	0	0	20	0	0	18	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (%)	63.1%	63.1%		63.1%	63.1%		36.9%	36.9%		36.9%	36.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		37.0			37.0			20.0			20.0	
Actuated g/C Ratio		0.57			0.57			0.31			0.31	
v/c Ratio		0.31			0.20			0.04			0.03	
Control Delay		7.8			7.1			16.2			11.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		7.8			7.1			16.2			11.2	
LOS		A			A			B			B	
Approach Delay		7.8			7.1			16.2			11.2	
Approach LOS		A			A			B			B	
Stops (vph)		252			163			14			9	
Fuel Used(gal)		13			2			0			0	
CO Emissions (g/hr)		939			164			14			13	
NOx Emissions (g/hr)		183			32			3			3	
VOC Emissions (g/hr)		218			38			3			3	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		56			36			5			2	
Queue Length 95th (ft)		83			55			19			15	
Internal Link Dist (ft)		2614			237			369			709	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1883			2014			499			518	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.31			0.20			0.04			0.03	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 32 (49%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.31			
Intersection Signal Delay: 7.8		Intersection LOS: A	
Intersection Capacity Utilization 41.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: S Morgan St & W 119th St

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	484	20	6	319	4	28	4	3	0	0	0
Future Vol, veh/h	7	484	20	6	319	4	28	4	3	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	526	22	7	347	4	30	4	3	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	351	0	0	548	0	0	741	918	274
Stage 1	-	-	-	-	-	-	553	553	-
Stage 2	-	-	-	-	-	-	188	365	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	1204	-	-	1018	-	-	352	270	724
Stage 1	-	-	-	-	-	-	540	513	-
Stage 2	-	-	-	-	-	-	825	622	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1204	-	-	1018	-	-	345	0	724
Mov Cap-2 Maneuver	-	-	-	-	-	-	345	0	-
Stage 1	-	-	-	-	-	-	530	0	-
Stage 2	-	-	-	-	-	-	825	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.2	16.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	363	1204	-	-	1018	-	-
HCM Lane V/C Ratio	0.105	0.006	-	-	0.006	-	-
HCM Control Delay (s)	16.1	8	0	-	8.6	0	-
HCM Lane LOS	C	A	A	-	A	A	-
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-

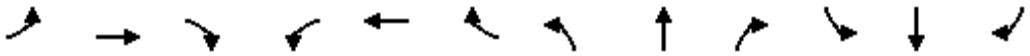
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↱	
Traffic Vol, veh/h	0	524	348	0	7	14
Future Vol, veh/h	0	524	348	0	7	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	570	378	0	8	15

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	663	189
Stage 1	-	-	-	-	378	-
Stage 2	-	-	-	-	285	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	0	-	-	0	394	821
Stage 1	0	-	-	0	663	-
Stage 2	0	-	-	0	738	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	394	821
Mov Cap-2 Maneuver	-	-	-	-	394	-
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	738	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	603
HCM Lane V/C Ratio	-	-	0.038
HCM Control Delay (s)	-	-	11.2
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

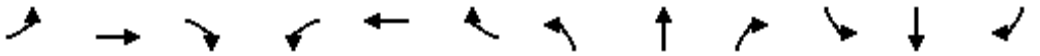


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	532	16	19	518	22	7	2	7	0	0	0
Future Volume (vph)	41	532	16	19	518	22	7	2	7	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.994			0.940				
Flt Protected		0.996			0.998			0.978				
Satd. Flow (prot)	0	3511	0	0	3511	0	0	1712	0	0	0	0
Flt Permitted		0.879			0.925			0.978				
Satd. Flow (perm)	0	3099	0	0	3254	0	0	1712	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			9			8				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		261			2694			191			877	
Travel Time (s)		5.9			61.2			4.3			19.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	578	17	21	563	24	8	2	8	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	640	0	0	608	0	0	18	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Minimum Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (%)	65.9%	65.9%		65.9%	65.9%		34.1%	34.1%				
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0				
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0				
Lost Time Adjust (s)		0.0			0.0			0.0				
Total Lost Time (s)		4.0			4.0			4.0				
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		52.0			52.0			25.0				
Actuated g/C Ratio		0.61			0.61			0.29				
v/c Ratio		0.34			0.30			0.04				
Control Delay		8.6			8.2			16.1				
Queue Delay		0.0			0.0			0.0				
Total Delay		8.6			8.2			16.1				
LOS		A			A			B				
Approach Delay		8.6			8.2			16.1				
Approach LOS		A			A			B				
Stops (vph)		265			243			9				
Fuel Used(gal)		4			14			0				
CO Emissions (g/hr)		258			980			9				
NOx Emissions (g/hr)		50			191			2				
VOC Emissions (g/hr)		60			227			2				
Dilemma Vehicles (#)		0			0			0				
Queue Length 50th (ft)		78			72			4				
Queue Length 95th (ft)		108			100			19				
Internal Link Dist (ft)		181			2614			111			797	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1898			1994			509				
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.34			0.30			0.04				

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Pretimed			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay: 8.5		Intersection LOS: A	
Intersection Capacity Utilization 65.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: S Loomis St & W 119th St

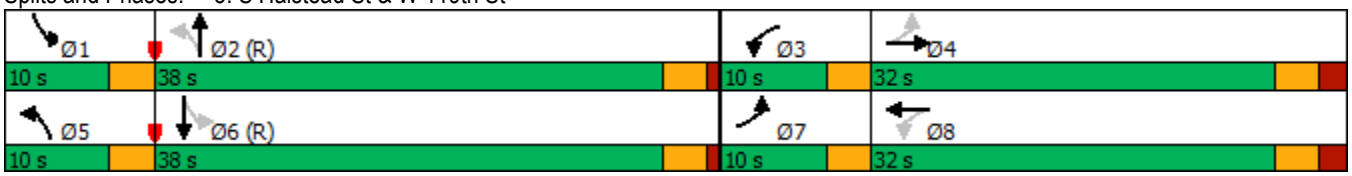


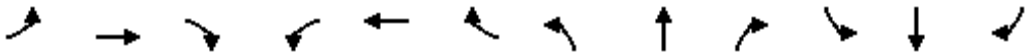
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	285	94	62	238	85	89	443	43	119	638	142
Future Volume (vph)	146	285	94	62	238	85	89	443	43	119	638	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	115		0	120		0	120		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.963			0.961			0.987			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3408	0	1770	3401	0	1770	3493	0	1770	3444	0
Flt Permitted	0.497			0.442			0.192			0.372		
Satd. Flow (perm)	926	3408	0	823	3401	0	358	3493	0	693	3444	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			57			13			34	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		665			675			757			907	
Travel Time (s)		15.1			15.3			17.2			20.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	159	310	102	67	259	92	97	482	47	129	693	154
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	412	0	67	351	0	97	529	0	129	847	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (%)	11.1%	35.6%		11.1%	35.6%		11.1%	42.2%		11.1%	42.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Act Effct Green (s)	36.0	27.0		36.0	27.0		42.0	34.0		42.0	34.0	
Actuated g/C Ratio	0.40	0.30		0.40	0.30		0.47	0.38		0.47	0.38	
v/c Ratio	0.36	0.39		0.17	0.33		0.35	0.40		0.32	0.64	
Control Delay	18.8	23.0		16.2	21.3		15.7	21.1		14.5	24.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.8	23.0		16.2	21.3		15.7	21.1		14.5	24.7	
LOS	B	C		B	C		B	C		B	C	
Approach Delay		21.8			20.5			20.2			23.3	
Approach LOS		C			C			C			C	
Stops (vph)	91	253		36	202		46	334		63	595	
Fuel Used(gal)	2	5		1	4		1	7		2	13	
CO Emissions (g/hr)	127	359		51	295		74	476		108	889	
NOx Emissions (g/hr)	25	70		10	57		14	93		21	173	
VOC Emissions (g/hr)	29	83		12	68		17	110		25	206	
Dilemma Vehicles (#)	0	0		0	0		0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	55	84		22	66		28	110		38	196	
Queue Length 95th (ft)	96	125		46	104		54	154		69	260	
Internal Link Dist (ft)		585			595			677			827	
Turn Bay Length (ft)	135			115			120			120		
Base Capacity (vph)	436	1058		402	1060		276	1327		407	1322	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.36	0.39		0.17	0.33		0.35	0.40		0.32	0.64	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 79.5 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 21.8		Intersection LOS: C	
Intersection Capacity Utilization 59.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: S Halstead St & W 119th St





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	484	3	0	516	9	11	1	0	21	0	27
Future Volume (vph)	17	484	3	0	516	9	11	1	0	21	0	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.997						0.925	
Flt Protected		0.998						0.956			0.978	
Satd. Flow (prot)	0	3529	0	0	3529	0	0	1781	0	0	1685	0
Flt Permitted		0.933						0.858			0.912	
Satd. Flow (perm)	0	3299	0	0	3529	0	0	1598	0	0	1571	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			4						29	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2694			317			449			789	
Travel Time (s)		61.2			7.2			10.2			17.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	526	3	0	561	10	12	1	0	23	0	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	547	0	0	571	0	0	13	0	0	52	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (%)	63.1%	63.1%		63.1%	63.1%		36.9%	36.9%		36.9%	36.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		37.0			37.0			20.0			20.0	
Actuated g/C Ratio		0.57			0.57			0.31			0.31	
v/c Ratio		0.29			0.28			0.03			0.10	
Control Delay		7.7			7.6			16.0			10.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		7.7			7.6			16.0			10.2	
LOS		A			A			B			B	
Approach Delay		7.7			7.6			16.0			10.2	
Approach LOS		A			A			B			B	
Stops (vph)		236			244			11			21	
Fuel Used(gal)		13			3			0			1	
CO Emissions (g/hr)		885			242			10			36	
NOx Emissions (g/hr)		172			47			2			7	
VOC Emissions (g/hr)		205			56			2			8	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		52			54			4			6	
Queue Length 95th (ft)		77			79			14			28	
Internal Link Dist (ft)		2614			237			369			709	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1878			2010			491			503	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.29			0.28			0.03			0.10	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 32 (49%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 7.9		Intersection LOS: A	
Intersection Capacity Utilization 39.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: S Morgan St & W 119th St

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	490	26	4	467	6	32	6	4	0	0	0
Future Vol, veh/h	9	490	26	4	467	6	32	6	4	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	533	28	4	508	7	35	7	4	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	515	0	0	561	0	0	829	1090	281
Stage 1	-	-	-	-	-	-	567	567	-
Stage 2	-	-	-	-	-	-	262	523	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	1047	-	-	1006	-	-	309	214	716
Stage 1	-	-	-	-	-	-	531	505	-
Stage 2	-	-	-	-	-	-	758	529	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1047	-	-	1006	-	-	303	0	716
Mov Cap-2 Maneuver	-	-	-	-	-	-	303	0	-
Stage 1	-	-	-	-	-	-	520	0	-
Stage 2	-	-	-	-	-	-	758	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0.1	17.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	324	1047	-	-	1006	-	-
HCM Lane V/C Ratio	0.141	0.009	-	-	0.004	-	-
HCM Control Delay (s)	17.9	8.5	0.1	-	8.6	0	-
HCM Lane LOS	C	A	A	-	A	A	-
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↱	
Traffic Vol, veh/h	0	512	518	0	15	8
Future Vol, veh/h	0	512	518	0	15	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	557	563	0	16	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	842	282
Stage 1	-	-	-	-	563	-
Stage 2	-	-	-	-	279	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	0	-	-	0	303	715
Stage 1	0	-	-	0	534	-
Stage 2	0	-	-	0	743	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	303	715
Mov Cap-2 Maneuver	-	-	-	-	303	-
Stage 1	-	-	-	-	534	-
Stage 2	-	-	-	-	743	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.2
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	379
HCM Lane V/C Ratio	-	-	0.066
HCM Control Delay (s)	-	-	15.2
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.2

Appendix C

Traffic Growth Calculations

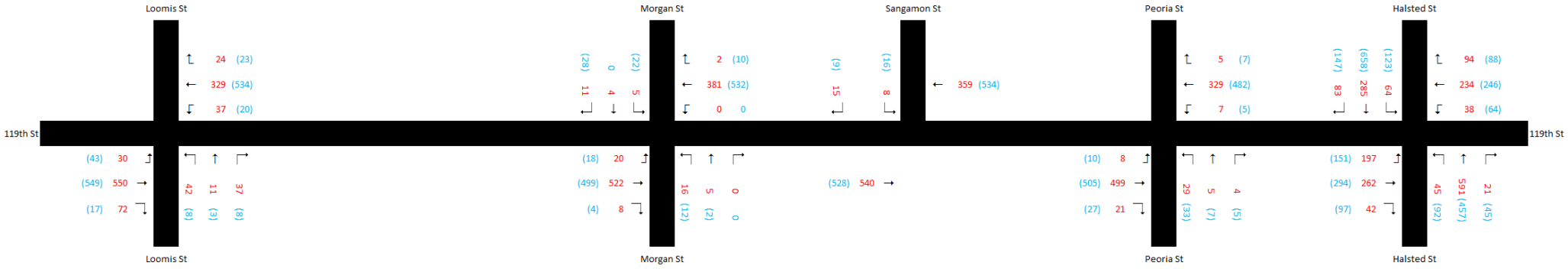
TERRA ENGINEERING LTD.

2024 No-Build, 0.5% Growth

Growth Multiplier = $(1+r)^n$,

where r = assumed growth rate, n = number of years.

Each existing volume is multiplied by Growth Multiplier.



Appendix D

2023 Future No-Build Synchro Output

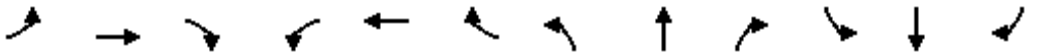
TERRA ENGINEERING LTD.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	550	72	37	329	24	42	11	37	0	0	0
Future Volume (vph)	30	550	72	37	329	24	42	11	37	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.991			0.945				
Flt Protected		0.998			0.995			0.977				
Satd. Flow (prot)	0	3472	0	0	3490	0	0	1720	0	0	0	0
Flt Permitted		0.921			0.853			0.977				
Satd. Flow (perm)	0	3204	0	0	2992	0	0	1720	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			14			40				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		261			2694			191			877	
Travel Time (s)		5.9			61.2			4.3			19.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	598	78	40	358	26	46	12	40	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	709	0	0	424	0	0	98	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Minimum Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (%)	65.9%	65.9%		65.9%	65.9%		34.1%	34.1%				
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0				
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0				
Lost Time Adjust (s)		0.0			0.0			0.0				
Total Lost Time (s)		4.0			4.0			4.0				
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		52.0			52.0			25.0				
Actuated g/C Ratio		0.61			0.61			0.29				
v/c Ratio		0.36			0.23			0.18				
Control Delay		8.5			7.6			15.2				
Queue Delay		0.0			0.0			0.0				
Total Delay		8.5			7.6			15.2				
LOS		A			A			B				
Approach Delay		8.5			7.6			15.2				
Approach LOS		A			A			B				
Stops (vph)		287			157			41				
Fuel Used(gal)		4			10			1				
CO Emissions (g/hr)		282			675			45				
NOx Emissions (g/hr)		55			131			9				
VOC Emissions (g/hr)		65			157			10				
Dilemma Vehicles (#)		0			0			0				
Queue Length 50th (ft)		85			46			23				
Queue Length 95th (ft)		117			68			59				
Internal Link Dist (ft)		181			2614			111			797	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1971			1835			534				
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.36			0.23			0.18				

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Pretimed			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 8.7		Intersection LOS: A	
Intersection Capacity Utilization 59.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: S Loomis St & W 119th St

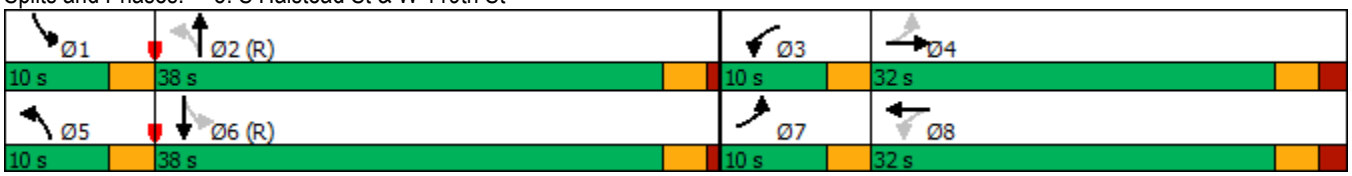


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	262	42	38	234	94	45	591	21	64	285	83
Future Volume (vph)	197	262	42	38	234	94	45	591	21	64	285	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	115		0	120		0	120		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.979			0.957			0.995			0.966	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3465	0	1770	3387	0	1770	3522	0	1770	3419	0
Flt Permitted	0.493			0.516			0.464			0.287		
Satd. Flow (perm)	918	3465	0	961	3387	0	864	3522	0	535	3419	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			69			5			48	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		665			675			757			907	
Travel Time (s)		15.1			15.3			17.2			20.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	285	46	41	254	102	49	642	23	70	310	90
Shared Lane Traffic (%)												
Lane Group Flow (vph)	214	331	0	41	356	0	49	665	0	70	400	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (%)	11.1%	35.6%		11.1%	35.6%		11.1%	42.2%		11.1%	42.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Act Effct Green (s)	36.0	27.0		36.0	27.0		42.0	34.0		42.0	34.0	
Actuated g/C Ratio	0.40	0.30		0.40	0.30		0.47	0.38		0.47	0.38	
v/c Ratio	0.49	0.31		0.09	0.33		0.10	0.50		0.20	0.30	
Control Delay	21.6	23.7		15.5	20.6		12.2	22.9		13.3	17.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.6	23.7		15.5	20.6		12.2	22.9		13.3	17.9	
LOS	C	C		B	C		B	C		B	B	
Approach Delay		22.9			20.0			22.2			17.2	
Approach LOS		C			C			C			B	
Stops (vph)	133	214		23	198		24	447		32	218	
Fuel Used(gal)	3	4		0	4		1	9		1	5	
CO Emissions (g/hr)	183	296		31	293		36	625		56	360	
NOx Emissions (g/hr)	36	58		6	57		7	122		11	70	
VOC Emissions (g/hr)	43	69		7	68		8	145		13	83	
Dilemma Vehicles (#)	0	0		0	0		0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	76	71		13	65		14	148		20	71	
Queue Length 95th (ft)	126	107		32	102		32	200		42	107	
Internal Link Dist (ft)		585			595			677			827	
Turn Bay Length (ft)	135			115			120			120		
Base Capacity (vph)	433	1054		447	1064		473	1333		345	1321	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.49	0.31		0.09	0.33		0.10	0.50		0.20	0.30	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 79.5 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 20.9		Intersection LOS: C	
Intersection Capacity Utilization 57.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: S Halstead St & W 119th St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	522	8	0	381	2	16	5	0	5	4	11
Future Volume (vph)	20	522	8	0	381	2	16	5	0	5	4	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.999						0.923	
Flt Protected		0.998						0.963			0.988	
Satd. Flow (prot)	0	3525	0	0	3536	0	0	1794	0	0	1699	0
Flt Permitted		0.935						0.872			0.967	
Satd. Flow (perm)	0	3303	0	0	3536	0	0	1624	0	0	1663	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			1						12	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2694			317			449			789	
Travel Time (s)		61.2			7.2			10.2			17.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	567	9	0	414	2	17	5	0	5	4	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	598	0	0	416	0	0	22	0	0	21	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (%)	63.1%	63.1%		63.1%	63.1%		36.9%	36.9%		36.9%	36.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		37.0			37.0			20.0			20.0	
Actuated g/C Ratio		0.57			0.57			0.31			0.31	
v/c Ratio		0.32			0.21			0.04			0.04	
Control Delay		7.9			7.1			16.2			11.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		7.9			7.1			16.2			11.2	
LOS		A			A			B			B	
Approach Delay		7.9			7.1			16.2			11.2	
Approach LOS		A			A			B			B	
Stops (vph)		261			169			16			11	
Fuel Used(gal)		14			2			0			0	
CO Emissions (g/hr)		970			170			16			15	
NOx Emissions (g/hr)		189			33			3			3	
VOC Emissions (g/hr)		225			39			4			4	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		58			37			6			2	
Queue Length 95th (ft)		85			57			20			16	
Internal Link Dist (ft)		2614			237			369			709	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1881			2013			499			520	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.32			0.21			0.04			0.04	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 32 (49%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.32			
Intersection Signal Delay: 7.8		Intersection LOS: A	
Intersection Capacity Utilization 42.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: S Morgan St & W 119th St

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	499	21	7	329	5	29	5	4	0	0	0
Future Vol, veh/h	8	499	21	7	329	5	29	5	4	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	542	23	8	358	5	32	5	4	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	363	0	0	565	0	0	767	951	283
Stage 1	-	-	-	-	-	-	572	572	-
Stage 2	-	-	-	-	-	-	195	379	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	1192	-	-	1003	-	-	339	258	714
Stage 1	-	-	-	-	-	-	528	502	-
Stage 2	-	-	-	-	-	-	819	613	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1192	-	-	1003	-	-	332	0	714
Mov Cap-2 Maneuver	-	-	-	-	-	-	332	0	-
Stage 1	-	-	-	-	-	-	517	0	-
Stage 2	-	-	-	-	-	-	819	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.2	16.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	355	1192	-	-	1003	-	-
HCM Lane V/C Ratio	0.116	0.007	-	-	0.008	-	-
HCM Control Delay (s)	16.5	8	0	-	8.6	0	-
HCM Lane LOS	C	A	A	-	A	A	-
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-

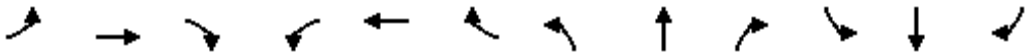
Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↱	
Traffic Vol, veh/h	0	540	359	0	8	15
Future Vol, veh/h	0	540	359	0	8	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	587	390	0	9	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	684	195
Stage 1	-	-	-	-	390	-
Stage 2	-	-	-	-	294	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	0	-	-	0	382	814
Stage 1	0	-	-	0	653	-
Stage 2	0	-	-	0	730	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	382	814
Mov Cap-2 Maneuver	-	-	-	-	382	-
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	730	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	584
HCM Lane V/C Ratio	-	-	0.043
HCM Control Delay (s)	-	-	11.4
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

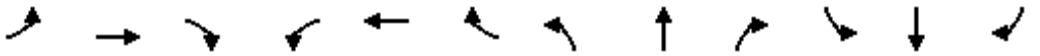


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	549	17	20	534	23	8	3	8	0	0	0
Future Volume (vph)	43	549	17	20	534	23	8	3	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.994			0.942				
Flt Protected		0.996			0.998			0.979				
Satd. Flow (prot)	0	3511	0	0	3511	0	0	1718	0	0	0	0
Flt Permitted		0.874			0.923			0.979				
Satd. Flow (perm)	0	3081	0	0	3247	0	0	1718	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			9			9				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		261			2694			191			877	
Travel Time (s)		5.9			61.2			4.3			19.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	597	18	22	580	25	9	3	9	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	662	0	0	627	0	0	21	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Minimum Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (%)	65.9%	65.9%		65.9%	65.9%		34.1%	34.1%				
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0				
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0				
Lost Time Adjust (s)		0.0			0.0			0.0				
Total Lost Time (s)		4.0			4.0			4.0				
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		52.0			52.0			25.0				
Actuated g/C Ratio		0.61			0.61			0.29				
v/c Ratio		0.35			0.32			0.04				
Control Delay		8.7			8.3			16.1				
Queue Delay		0.0			0.0			0.0				
Total Delay		8.7			8.3			16.1				
LOS		A			A			B				
Approach Delay		8.7			8.3			16.1				
Approach LOS		A			A			B				
Stops (vph)		276			253			12				
Fuel Used(gal)		4			14			0				
CO Emissions (g/hr)		269			1013			11				
NOx Emissions (g/hr)		52			197			2				
VOC Emissions (g/hr)		62			235			3				
Dilemma Vehicles (#)		0			0			0				
Queue Length 50th (ft)		82			75			5				
Queue Length 95th (ft)		113			104			21				
Internal Link Dist (ft)		181			2614			111			797	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1887			1989			511				
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.35			0.32			0.04				

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Pretimed			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 8.6		Intersection LOS: A	
Intersection Capacity Utilization 67.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: S Loomis St & W 119th St

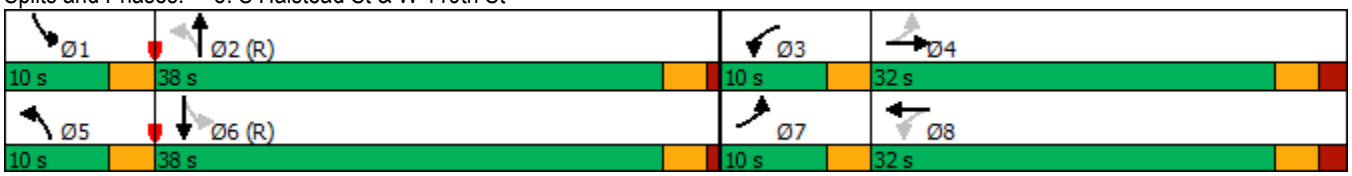


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	287	95	63	240	86	90	446	44	120	642	143
Future Volume (vph)	147	287	95	63	240	86	90	446	44	120	642	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	115		0	120		0	120		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.963			0.961			0.986			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3408	0	1770	3401	0	1770	3490	0	1770	3444	0
Flt Permitted	0.494			0.439			0.189			0.369		
Satd. Flow (perm)	920	3408	0	818	3401	0	352	3490	0	687	3444	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			57			13			34	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		665			675			757			907	
Travel Time (s)		15.1			15.3			17.2			20.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	312	103	68	261	93	98	485	48	130	698	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	160	415	0	68	354	0	98	533	0	130	853	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (%)	11.1%	35.6%		11.1%	35.6%		11.1%	42.2%		11.1%	42.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Act Effct Green (s)	36.0	27.0		36.0	27.0		42.0	34.0		42.0	34.0	
Actuated g/C Ratio	0.40	0.30		0.40	0.30		0.47	0.38		0.47	0.38	
v/c Ratio	0.37	0.39		0.17	0.33		0.36	0.40		0.32	0.65	
Control Delay	18.9	23.1		16.3	21.4		15.8	21.1		14.5	24.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.9	23.1		16.3	21.4		15.8	21.1		14.5	24.8	
LOS	B	C		B	C		B	C		B	C	
Approach Delay		21.9			20.6			20.3			23.4	
Approach LOS		C			C			C			C	
Stops (vph)	92	257		37	204		46	336		63	600	
Fuel Used(gal)	2	5		1	4		1	7		2	13	
CO Emissions (g/hr)	128	363		52	298		75	479		108	897	
NOx Emissions (g/hr)	25	71		10	58		15	93		21	175	
VOC Emissions (g/hr)	30	84		12	69		17	111		25	208	
Dilemma Vehicles (#)	0	0		0	0		0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	55	85		22	67		28	111		38	198	
Queue Length 95th (ft)	97	126		47	105		55	155		69	262	
Internal Link Dist (ft)		585			595			677			827	
Turn Bay Length (ft)	135			115			120			120		
Base Capacity (vph)	434	1058		401	1060		274	1326		404	1322	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.37	0.39		0.17	0.33		0.36	0.40		0.32	0.65	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 79.5 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 21.9		Intersection LOS: C	
Intersection Capacity Utilization 59.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: S Halstead St & W 119th St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	487	4	0	519	10	12	2	0	22	0	28
Future Volume (vph)	18	487	4	0	519	10	12	2	0	22	0	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.997						0.925	
Flt Protected		0.998						0.958			0.978	
Satd. Flow (prot)	0	3529	0	0	3529	0	0	1785	0	0	1685	0
Flt Permitted		0.930						0.860			0.910	
Satd. Flow (perm)	0	3288	0	0	3529	0	0	1602	0	0	1568	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			5						30	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2694			317			449			789	
Travel Time (s)		61.2			7.2			10.2			17.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	529	4	0	564	11	13	2	0	24	0	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	553	0	0	575	0	0	15	0	0	54	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (%)	63.1%	63.1%		63.1%	63.1%		36.9%	36.9%		36.9%	36.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		37.0			37.0			20.0			20.0	
Actuated g/C Ratio		0.57			0.57			0.31			0.31	
v/c Ratio		0.30			0.29			0.03			0.11	
Control Delay		7.7			7.6			16.1			10.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		7.7			7.6			16.1			10.2	
LOS		A			A			B			B	
Approach Delay		7.7			7.6			16.1			10.2	
Approach LOS		A			A			B			B	
Stops (vph)		239			246			12			21	
Fuel Used(gal)		13			3			0			1	
CO Emissions (g/hr)		896			244			11			37	
NOx Emissions (g/hr)		174			47			2			7	
VOC Emissions (g/hr)		208			56			3			9	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		53			54			4			7	
Queue Length 95th (ft)		78			80			16			29	
Internal Link Dist (ft)		2614			237			369			709	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1872			2010			492			503	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.30			0.29			0.03			0.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 32 (49%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.30			
Intersection Signal Delay: 7.9		Intersection LOS: A	
Intersection Capacity Utilization 40.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: S Morgan St & W 119th St

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	493	27	5	470	7	33	7	5	0	0	0
Future Vol, veh/h	10	493	27	5	470	7	33	7	5	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	536	29	5	511	8	36	8	5	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	519	0	0	565	0	0	839	1102	283
Stage 1	-	-	-	-	-	-	573	573	-
Stage 2	-	-	-	-	-	-	266	529	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	1043	-	-	1003	-	-	304	210	714
Stage 1	-	-	-	-	-	-	527	502	-
Stage 2	-	-	-	-	-	-	754	525	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1043	-	-	1003	-	-	297	0	714
Mov Cap-2 Maneuver	-	-	-	-	-	-	297	0	-
Stage 1	-	-	-	-	-	-	515	0	-
Stage 2	-	-	-	-	-	-	754	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0.1	18.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	322	1043	-	-	1003	-	-
HCM Lane V/C Ratio	0.152	0.01	-	-	0.005	-	-
HCM Control Delay (s)	18.2	8.5	0.1	-	8.6	0	-
HCM Lane LOS	C	A	A	-	A	A	-
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↱	
Traffic Vol, veh/h	0	515	521	0	16	9
Future Vol, veh/h	0	515	521	0	16	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	560	566	0	17	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	846	283
Stage 1	-	-	-	-	566	-
Stage 2	-	-	-	-	280	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	0	-	-	0	301	714
Stage 1	0	-	-	0	532	-
Stage 2	0	-	-	0	742	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	301	714
Mov Cap-2 Maneuver	-	-	-	-	301	-
Stage 1	-	-	-	-	532	-
Stage 2	-	-	-	-	742	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.2
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	380
HCM Lane V/C Ratio	-	-	0.072
HCM Control Delay (s)	-	-	15.2
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.2

Appendix E

Trip Generation Calculations

TERRA ENGINEERING LTD.

Fire and Rescue Station
(575)

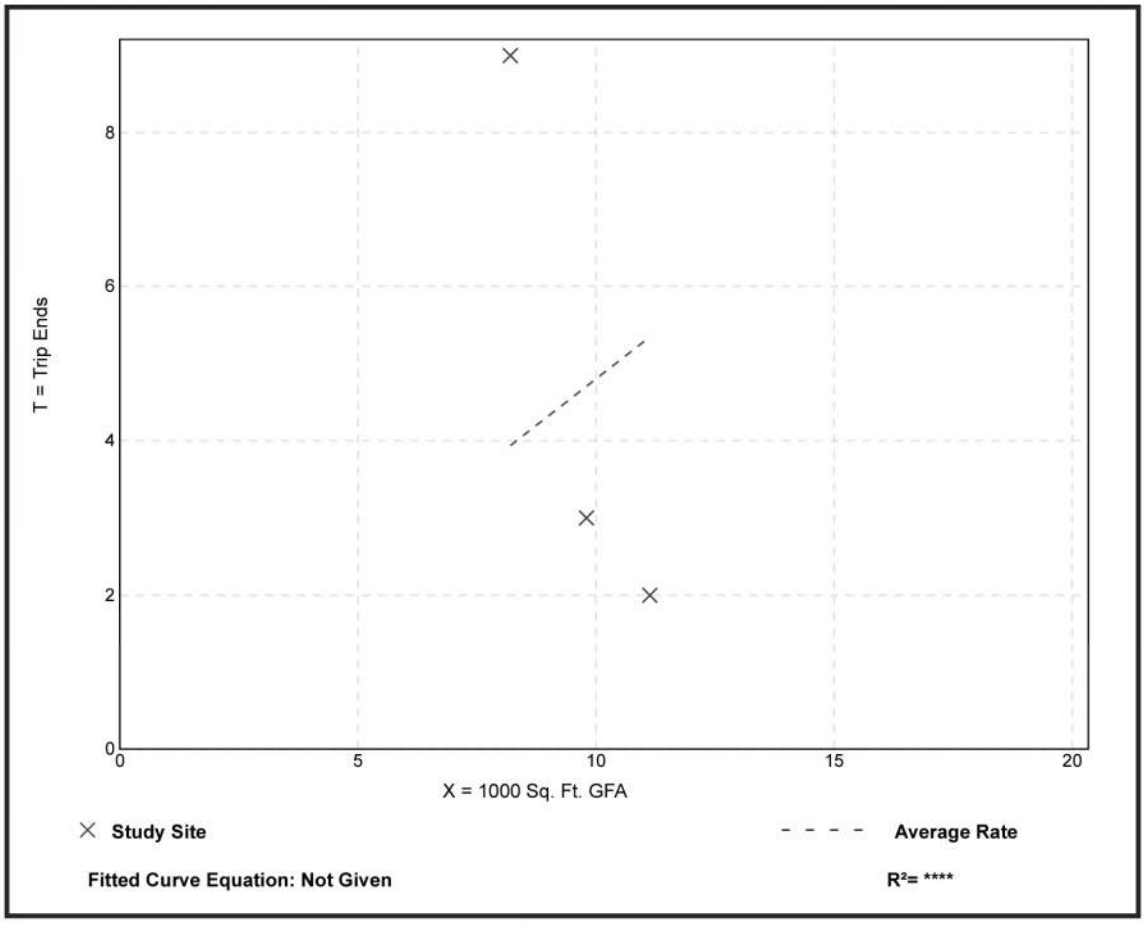
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 3
1000 Sq. Ft. GFA: 10
Directional Distribution: 29% entering, 71% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.48	0.18 - 1.10	0.82

Data Plot and Equation

Caution – Small Sample Size



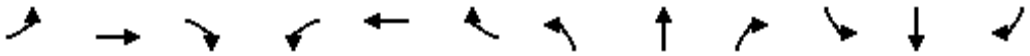
Fitted Curve Equation: Not Given

R^2= ****

Appendix F

Opening Day Synchro Output

TERRA ENGINEERING LTD.

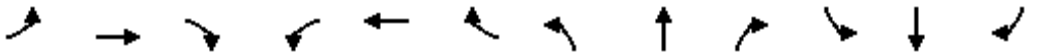


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	548	70	36	332	24	41	11	36	0	0	0
Future Volume (vph)	30	548	70	36	332	24	41	11	36	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.991			0.945				
Flt Protected		0.998			0.995			0.977				
Satd. Flow (prot)	0	3476	0	0	3490	0	0	1720	0	0	0	0
Flt Permitted		0.921			0.857			0.977				
Satd. Flow (perm)	0	3207	0	0	3006	0	0	1720	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			14			39				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		261			2443			191			877	
Travel Time (s)		5.9			55.5			4.3			19.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	596	76	39	361	26	45	12	39	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	705	0	0	426	0	0	96	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Minimum Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (%)	65.9%	65.9%		65.9%	65.9%		34.1%	34.1%				
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0				
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0				
Lost Time Adjust (s)		0.0			0.0			0.0				
Total Lost Time (s)		4.0			4.0			4.0				
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		52.0			52.0			25.0				
Actuated g/C Ratio		0.61			0.61			0.29				
v/c Ratio		0.36			0.23			0.18				
Control Delay		8.5			7.6			15.3				
Queue Delay		0.0			0.0			0.0				
Total Delay		8.5			7.6			15.3				
LOS		A			A			B				
Approach Delay		8.5			7.6			15.3				
Approach LOS		A			A			B				
Stops (vph)		286			158			41				
Fuel Used(gal)		4			9			1				
CO Emissions (g/hr)		281			625			44				
NOx Emissions (g/hr)		55			122			9				
VOC Emissions (g/hr)		65			145			10				
Dilemma Vehicles (#)		0			0			0				
Queue Length 50th (ft)		84			46			22				
Queue Length 95th (ft)		116			69			58				
Internal Link Dist (ft)		181			2363			111			797	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1972			1844			533				
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.36			0.23			0.18				

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Pretimed			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 8.7		Intersection LOS: A	
Intersection Capacity Utilization 59.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: S Loomis St & W 119th St

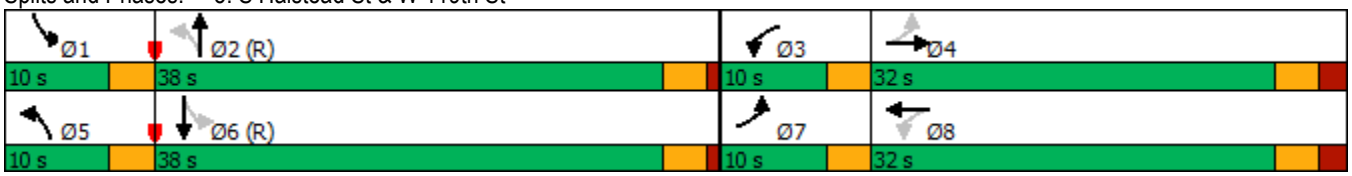


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	198	263	42	37	235	92	45	576	21	63	278	84
Future Volume (vph)	198	263	42	37	235	92	45	576	21	63	278	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	115		0	120		0	120		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.979			0.958			0.995			0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3465	0	1770	3391	0	1770	3522	0	1770	3415	0
Flt Permitted	0.493			0.515			0.470			0.297		
Satd. Flow (perm)	918	3465	0	959	3391	0	875	3522	0	553	3415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			66			5			50	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		665			675			757			907	
Travel Time (s)		15.1			15.3			17.2			20.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	215	286	46	40	255	100	49	626	23	68	302	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	215	332	0	40	355	0	49	649	0	68	393	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (%)	11.1%	35.6%		11.1%	35.6%		11.1%	42.2%		11.1%	42.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Act Effct Green (s)	36.0	27.0		36.0	27.0		42.0	34.0		42.0	34.0	
Actuated g/C Ratio	0.40	0.30		0.40	0.30		0.47	0.38		0.47	0.38	
v/c Ratio	0.50	0.32		0.09	0.33		0.10	0.49		0.19	0.30	
Control Delay	21.7	23.8		15.5	20.8		12.2	22.7		13.2	17.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.7	23.8		15.5	20.8		12.2	22.7		13.2	17.7	
LOS	C	C		B	C		B	C		B	B	
Approach Delay		23.0			20.2			22.0			17.0	
Approach LOS		C			C			C			B	
Stops (vph)	134	213		21	200		24	434		32	212	
Fuel Used(gal)	3	4		0	4		1	9		1	5	
CO Emissions (g/hr)	185	296		30	294		36	607		55	352	
NOx Emissions (g/hr)	36	58		6	57		7	118		11	69	
VOC Emissions (g/hr)	43	69		7	68		8	141		13	82	
Dilemma Vehicles (#)	0	0		0	0		0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	77	71		13	65		14	144		19	69	
Queue Length 95th (ft)	128	107		31	103		32	194		41	104	
Internal Link Dist (ft)		585			595			677			827	
Turn Bay Length (ft)	135			115			120			120		
Base Capacity (vph)	433	1053		446	1063		477	1333		352	1321	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.50	0.32		0.09	0.33		0.10	0.49		0.19	0.30	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 79.5 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 20.8		Intersection LOS: C	
Intersection Capacity Utilization 57.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: S Halstead St & W 119th St

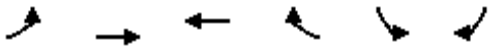


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	511	8	0	371	12	16	5	0	17	4	19
Future Volume (vph)	35	511	8	0	371	12	16	5	0	17	4	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.995						0.934	
Flt Protected		0.997						0.963			0.979	
Satd. Flow (prot)	0	3522	0	0	3522	0	0	1794	0	0	1703	0
Flt Permitted		0.912						0.864			0.920	
Satd. Flow (perm)	0	3221	0	0	3522	0	0	1609	0	0	1601	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			8						21	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		251			317			449			178	
Travel Time (s)		5.7			7.2			10.2			4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	555	9	0	403	13	17	5	0	18	4	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	602	0	0	416	0	0	22	0	0	43	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (%)	63.1%	63.1%		63.1%	63.1%		36.9%	36.9%		36.9%	36.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		37.0			37.0			20.0			20.0	
Actuated g/C Ratio		0.57			0.57			0.31			0.31	
v/c Ratio		0.33			0.21			0.04			0.08	
Control Delay		8.0			7.0			16.2			11.0	
Queue Delay		1.0			0.0			0.0			0.0	
Total Delay		9.0			7.0			16.2			11.0	
LOS		A			A			B			B	
Approach Delay		9.0			7.0			16.2			11.0	
Approach LOS		A			A			B			B	
Stops (vph)		267			168			16			20	
Fuel Used(gal)		3			2			0			0	
CO Emissions (g/hr)		242			169			16			18	
NOx Emissions (g/hr)		47			33			3			3	
VOC Emissions (g/hr)		56			39			4			4	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		58			36			6			6	
Queue Length 95th (ft)		86			57			20			26	
Internal Link Dist (ft)		171			237			369			98	

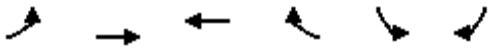
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1835			2008			495			507	
Starvation Cap Reductn		922			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.66			0.21			0.04			0.08	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 32 (49%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 8.4		Intersection LOS: A	
Intersection Capacity Utilization 42.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: S Morgan St & W 119th St



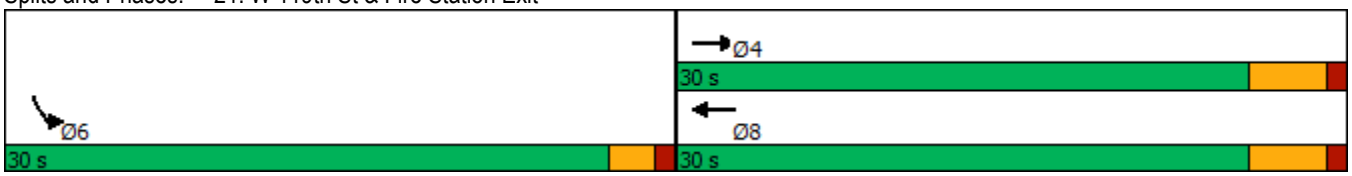
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	554	406	0	2	3
Future Volume (vph)	0	554	406	0	2	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt					0.919	
Flt Protected					0.980	
Satd. Flow (prot)	0	3539	3539	0	1678	0
Flt Permitted					0.980	
Satd. Flow (perm)	0	3539	3539	0	1678	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					3	
Link Speed (mph)		30	30		30	
Link Distance (ft)		2443	251		158	
Travel Time (s)		55.5	5.7		3.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	602	441	0	2	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	602	441	0	5	0
Turn Type		NA	NA		Prot	
Protected Phases		4	8		6	
Permitted Phases						
Detector Phase		4	8		6	
Switch Phase						
Minimum Initial (s)		5.0	5.0		10.0	
Minimum Split (s)		22.5	22.5		13.0	
Total Split (s)		30.0	30.0		30.0	
Total Split (%)		50.0%	50.0%		50.0%	
Yellow Time (s)		3.5	3.5		2.0	
All-Red Time (s)		1.0	1.0		1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5		3.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode		None	None		Min	
Act Effct Green (s)		10.9	10.9		10.1	
Actuated g/C Ratio		0.38	0.38		0.35	
v/c Ratio		0.45	0.33		0.01	
Control Delay		7.5	6.7		6.2	
Queue Delay		0.0	0.0		0.0	
Total Delay		7.5	6.7		6.2	
LOS		A	A		A	
Approach Delay		7.5	6.7		6.2	
Approach LOS		A	A		A	
Stops (vph)		327	226		5	
Fuel Used(gal)		13	3		0	
CO Emissions (g/hr)		923	182		3	
NOx Emissions (g/hr)		180	35		1	
VOC Emissions (g/hr)		214	42		1	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Dilemma Vehicles (#)		0	0		0	
Queue Length 50th (ft)		30	21		0	
Queue Length 95th (ft)		50	36		4	
Internal Link Dist (ft)		2363	171		78	
Turn Bay Length (ft)						
Base Capacity (vph)		3177	3177		1575	
Starvation Cap Reductn		0	73		0	
Spillback Cap Reductn		0	0		0	
Storage Cap Reductn		0	0		0	
Reduced v/c Ratio		0.19	0.14		0.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 28.5			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 7.2		Intersection LOS: A	
Intersection Capacity Utilization 30.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 21: W 119th St & Fire Station Exit



Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Traffic Vol, veh/h	8	502	21	7	331	5	29	5	4	0	0	0
Future Vol, veh/h	8	502	21	7	331	5	29	5	4	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	546	23	8	360	5	32	5	4	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	365	0	0	569	0	0	772	957	285
Stage 1	-	-	-	-	-	-	576	576	-
Stage 2	-	-	-	-	-	-	196	381	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	1190	-	-	999	-	-	336	256	712
Stage 1	-	-	-	-	-	-	525	500	-
Stage 2	-	-	-	-	-	-	818	612	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1190	-	-	999	-	-	329	0	712
Mov Cap-2 Maneuver	-	-	-	-	-	-	329	0	-
Stage 1	-	-	-	-	-	-	514	0	-
Stage 2	-	-	-	-	-	-	818	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.2	16.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	352	1190	-	-	999	-	-
HCM Lane V/C Ratio	0.117	0.007	-	-	0.008	-	-
HCM Control Delay (s)	16.6	8	0	-	8.6	0	-
HCM Lane LOS	C	A	A	-	A	A	-
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↱	
Traffic Vol, veh/h	0	541	360	0	8	15
Future Vol, veh/h	0	541	360	0	8	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	588	391	0	9	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	685	196
Stage 1	-	-	-	-	391	-
Stage 2	-	-	-	-	294	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	0	-	-	0	382	812
Stage 1	0	-	-	0	653	-
Stage 2	0	-	-	0	730	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	382	812
Mov Cap-2 Maneuver	-	-	-	-	382	-
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	730	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	584
HCM Lane V/C Ratio	-	-	0.043
HCM Control Delay (s)	-	-	11.4
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

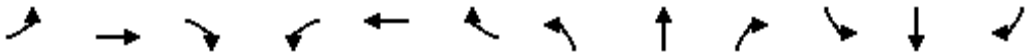
Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	20	20	27	20	2
Future Vol, veh/h	2	20	20	27	20	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	22	22	29	22	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	96	23	24	0	-	0
Stage 1	23	-	-	-	-	-
Stage 2	73	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	903	1054	1591	-	-	-
Stage 1	1000	-	-	-	-	-
Stage 2	950	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	890	1054	1591	-	-	-
Mov Cap-2 Maneuver	890	-	-	-	-	-
Stage 1	986	-	-	-	-	-
Stage 2	950	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	3.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1591	-	1037	-	-
HCM Lane V/C Ratio	0.014	-	0.023	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	548	17	20	534	23	8	3	8	0	0	0
Future Volume (vph)	42	548	17	20	534	23	8	3	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.994			0.942				
Flt Protected		0.997			0.998			0.979				
Satd. Flow (prot)	0	3514	0	0	3511	0	0	1718	0	0	0	0
Flt Permitted		0.876			0.923			0.979				
Satd. Flow (perm)	0	3088	0	0	3247	0	0	1718	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			9			9				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		261			2443			191			877	
Travel Time (s)		5.9			55.5			4.3			19.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	596	18	22	580	25	9	3	9	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	660	0	0	627	0	0	21	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Minimum Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (%)	65.9%	65.9%		65.9%	65.9%		34.1%	34.1%				
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0				
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0				
Lost Time Adjust (s)		0.0			0.0			0.0				
Total Lost Time (s)		4.0			4.0			4.0				
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		52.0			52.0			25.0				
Actuated g/C Ratio		0.61			0.61			0.29				
v/c Ratio		0.35			0.32			0.04				
Control Delay		8.7			8.3			16.1				
Queue Delay		0.0			0.0			0.0				
Total Delay		8.7			8.3			16.1				
LOS		A			A			B				
Approach Delay		8.7			8.3			16.1				
Approach LOS		A			A			B				
Stops (vph)		275			253			12				
Fuel Used(gal)		4			13			0				
CO Emissions (g/hr)		268			934			11				
NOx Emissions (g/hr)		52			182			2				
VOC Emissions (g/hr)		62			217			3				
Dilemma Vehicles (#)		0			0			0				
Queue Length 50th (ft)		82			75			5				
Queue Length 95th (ft)		113			104			21				
Internal Link Dist (ft)		181			2363			111			797	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1891			1989			511				
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.35			0.32			0.04				

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Pretimed			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 8.6		Intersection LOS: A	
Intersection Capacity Utilization 66.9%		ICU Level of Service C	
Analysis Period (min) 15			

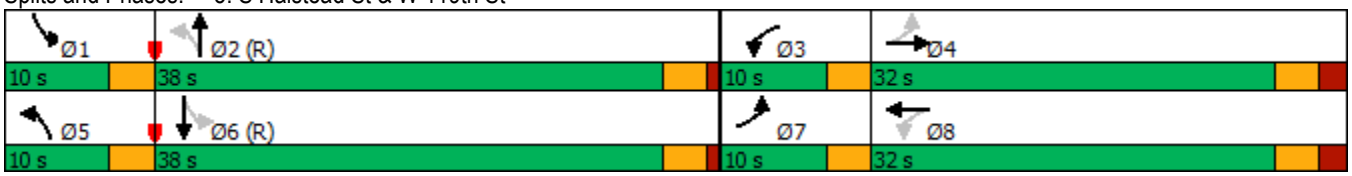
Splits and Phases: 3: S Loomis St & W 119th St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	293	97	63	246	86	92	446	44	120	642	147
Future Volume (vph)	151	293	97	63	246	86	92	446	44	120	642	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	115		0	120		0	120		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.963			0.961			0.986			0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3408	0	1770	3401	0	1770	3490	0	1770	3440	0
Flt Permitted	0.489			0.432			0.187			0.369		
Satd. Flow (perm)	911	3408	0	805	3401	0	348	3490	0	687	3440	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			55			13			35	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		665			675			757			907	
Travel Time (s)		15.1			15.3			17.2			20.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	164	318	105	68	267	93	100	485	48	130	698	160
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	423	0	68	360	0	100	533	0	130	858	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (%)	11.1%	35.6%		11.1%	35.6%		11.1%	42.2%		11.1%	42.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Act Effct Green (s)	36.0	27.0		36.0	27.0		42.0	34.0		42.0	34.0	
Actuated g/C Ratio	0.40	0.30		0.40	0.30		0.47	0.38		0.47	0.38	
v/c Ratio	0.38	0.40		0.17	0.34		0.37	0.40		0.32	0.65	
Control Delay	19.1	23.2		16.3	21.7		16.0	21.1		14.5	24.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	19.1	23.2		16.3	21.7		16.0	21.1		14.5	24.9	
LOS	B	C		B	C		B	C		B	C	
Approach Delay		22.1			20.8			20.3			23.5	
Approach LOS		C			C			C			C	
Stops (vph)	95	262		37	211		48	336		63	604	
Fuel Used(gal)	2	5		1	4		1	7		2	13	
CO Emissions (g/hr)	132	371		52	305		77	479		108	903	
NOx Emissions (g/hr)	26	72		10	59		15	93		21	176	
VOC Emissions (g/hr)	31	86		12	71		18	111		25	209	
Dilemma Vehicles (#)	0	0		0	0		0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	57	87		22	70		29	111		38	199	
Queue Length 95th (ft)	98	129		47	107		56	155		69	264	
Internal Link Dist (ft)		585			595			677			827	
Turn Bay Length (ft)	135			115			120			120		
Base Capacity (vph)	431	1058		397	1058		273	1326		404	1321	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.38	0.40		0.17	0.34		0.37	0.40		0.32	0.65	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 79.5 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 22.0		Intersection LOS: C	
Intersection Capacity Utilization 60.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: S Halstead St & W 119th St

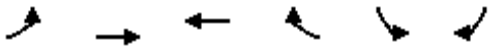


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	489	4	0	519	22	12	2	0	32	0	38
Future Volume (vph)	31	489	4	0	519	22	12	2	0	32	0	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.994						0.927	
Flt Protected		0.997						0.958			0.977	
Satd. Flow (prot)	0	3525	0	0	3518	0	0	1785	0	0	1687	0
Flt Permitted		0.904						0.853			0.896	
Satd. Flow (perm)	0	3196	0	0	3518	0	0	1589	0	0	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			11						41	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		251			317			449			178	
Travel Time (s)		5.7			7.2			10.2			4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	532	4	0	564	24	13	2	0	35	0	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	570	0	0	588	0	0	15	0	0	76	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (%)	63.1%	63.1%		63.1%	63.1%		36.9%	36.9%		36.9%	36.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		37.0			37.0			20.0			20.0	
Actuated g/C Ratio		0.57			0.57			0.31			0.31	
v/c Ratio		0.31			0.29			0.03			0.15	
Control Delay		7.9			7.6			16.1			10.2	
Queue Delay		0.9			0.0			0.0			0.0	
Total Delay		8.8			7.6			16.1			10.2	
LOS		A			A			B			B	
Approach Delay		8.8			7.6			16.1			10.2	
Approach LOS		A			A			B			B	
Stops (vph)		249			249			12			29	
Fuel Used(gal)		3			4			0			0	
CO Emissions (g/hr)		227			248			11			28	
NOx Emissions (g/hr)		44			48			2			5	
VOC Emissions (g/hr)		53			57			3			7	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		55			55			4			10	
Queue Length 95th (ft)		82			81			16			37	
Internal Link Dist (ft)		171			237			369			98	

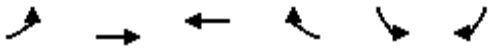
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1820			2007			488			504	
Starvation Cap Reductn		922			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.63			0.29			0.03			0.15	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 32 (49%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.31			
Intersection Signal Delay: 8.4		Intersection LOS: A	
Intersection Capacity Utilization 46.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: S Morgan St & W 119th St



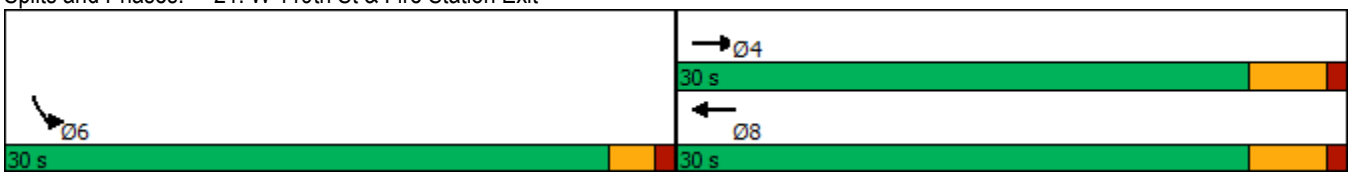
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	549	569	0	2	3
Future Volume (vph)	0	549	569	0	2	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt					0.919	
Flt Protected					0.980	
Satd. Flow (prot)	0	3539	3539	0	1678	0
Flt Permitted					0.980	
Satd. Flow (perm)	0	3539	3539	0	1678	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					3	
Link Speed (mph)		30	30		30	
Link Distance (ft)		2443	251		158	
Travel Time (s)		55.5	5.7		3.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	597	618	0	2	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	597	618	0	5	0
Turn Type		NA	NA		Prot	
Protected Phases		4	8		6	
Permitted Phases						
Detector Phase		4	8		6	
Switch Phase						
Minimum Initial (s)		5.0	5.0		10.0	
Minimum Split (s)		22.5	22.5		13.0	
Total Split (s)		30.0	30.0		30.0	
Total Split (%)		50.0%	50.0%		50.0%	
Yellow Time (s)		3.5	3.5		2.0	
All-Red Time (s)		1.0	1.0		1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5		3.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode		None	None		Min	
Act Effct Green (s)		11.1	11.1		10.1	
Actuated g/C Ratio		0.39	0.39		0.35	
v/c Ratio		0.44	0.45		0.01	
Control Delay		7.5	7.6		6.2	
Queue Delay		0.0	0.0		0.0	
Total Delay		7.5	7.6		6.2	
LOS		A	A		A	
Approach Delay		7.5	7.6		6.2	
Approach LOS		A	A		A	
Stops (vph)		324	338		5	
Fuel Used(gal)		13	4		0	
CO Emissions (g/hr)		914	270		3	
NOx Emissions (g/hr)		178	52		1	
VOC Emissions (g/hr)		212	63		1	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Dilemma Vehicles (#)		0	0		0	
Queue Length 50th (ft)		30	31		0	
Queue Length 95th (ft)		49	51		4	
Internal Link Dist (ft)		2363	171		78	
Turn Bay Length (ft)						
Base Capacity (vph)		3271	3271		1603	
Starvation Cap Reductn		0	72		0	
Spillback Cap Reductn		0	0		0	
Storage Cap Reductn		0	0		0	
Reduced v/c Ratio		0.18	0.19		0.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 28.7			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 7.5		Intersection LOS: A	
Intersection Capacity Utilization 31.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 21: W 119th St & Fire Station Exit



Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	505	27	5	482	7	33	7	5	0	0	0
Future Vol, veh/h	10	505	27	5	482	7	33	7	5	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	549	29	5	524	8	36	8	5	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	532	0	0	578	0	0	858	1128	289
Stage 1	-	-	-	-	-	-	586	586	-
Stage 2	-	-	-	-	-	-	272	542	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	1032	-	-	992	-	-	296	203	708
Stage 1	-	-	-	-	-	-	519	495	-
Stage 2	-	-	-	-	-	-	749	518	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1032	-	-	992	-	-	289	0	708
Mov Cap-2 Maneuver	-	-	-	-	-	-	289	0	-
Stage 1	-	-	-	-	-	-	507	0	-
Stage 2	-	-	-	-	-	-	749	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0.1	18.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	313	1032	-	-	992	-	-
HCM Lane V/C Ratio	0.156	0.011	-	-	0.005	-	-
HCM Control Delay (s)	18.6	8.5	0.1	-	8.6	0	-
HCM Lane LOS	C	A	A	-	A	A	-
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↱	
Traffic Vol, veh/h	0	527	533	0	16	9
Future Vol, veh/h	0	527	533	0	16	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	573	579	0	17	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	866	290
Stage 1	-	-	-	-	579	-
Stage 2	-	-	-	-	287	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	0	-	-	0	293	707
Stage 1	0	-	-	0	524	-
Stage 2	0	-	-	0	736	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	293	707
Mov Cap-2 Maneuver	-	-	-	-	293	-
Stage 1	-	-	-	-	524	-
Stage 2	-	-	-	-	736	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.5
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	371
HCM Lane V/C Ratio	-	-	0.073
HCM Control Delay (s)	-	-	15.5
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.2

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	20	20	30	50	2
Future Vol, veh/h	2	20	20	30	50	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	22	22	33	54	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	132	55	56	0	-	0
Stage 1	55	-	-	-	-	-
Stage 2	77	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	862	1012	1549	-	-	-
Stage 1	968	-	-	-	-	-
Stage 2	946	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	850	1012	1549	-	-	-
Mov Cap-2 Maneuver	850	-	-	-	-	-
Stage 1	954	-	-	-	-	-
Stage 2	946	-	-	-	-	-

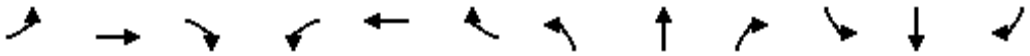
Approach	EB	NB	SB
HCM Control Delay, s	8.7	2.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1549	-	995	-	-
HCM Lane V/C Ratio	0.014	-	0.024	-	-
HCM Control Delay (s)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Appendix G

2023 Future Build Synchro Output

TERRA ENGINEERING LTD.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	565	72	37	340	24	42	11	37	0	0	0
Future Volume (vph)	30	565	72	37	340	24	42	11	37	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.991			0.945				
Flt Protected		0.998			0.995			0.977				
Satd. Flow (prot)	0	3476	0	0	3490	0	0	1720	0	0	0	0
Flt Permitted		0.921			0.853			0.977				
Satd. Flow (perm)	0	3207	0	0	2992	0	0	1720	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			14			40				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		261			2443			191			877	
Travel Time (s)		5.9			55.5			4.3			19.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	614	78	40	370	26	46	12	40	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	725	0	0	436	0	0	98	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Minimum Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (%)	65.9%	65.9%		65.9%	65.9%		34.1%	34.1%				
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0				
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0				
Lost Time Adjust (s)		0.0			0.0			0.0				
Total Lost Time (s)		4.0			4.0			4.0				
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		52.0			52.0			25.0				
Actuated g/C Ratio		0.61			0.61			0.29				
v/c Ratio		0.37			0.24			0.18				
Control Delay		8.5			7.6			15.2				
Queue Delay		0.0			0.0			0.0				
Total Delay		8.5			7.6			15.2				
LOS		A			A			B				
Approach Delay		8.5			7.6			15.2				
Approach LOS		A			A			B				
Stops (vph)		296			163			41				
Fuel Used(gal)		4			9			1				
CO Emissions (g/hr)		290			640			45				
NOx Emissions (g/hr)		56			125			9				
VOC Emissions (g/hr)		67			148			10				
Dilemma Vehicles (#)		0			0			0				
Queue Length 50th (ft)		88			48			23				
Queue Length 95th (ft)		121			71			59				
Internal Link Dist (ft)		181			2363			111			797	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1972			1835			534				
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.37			0.24			0.18				

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Pretimed			
Maximum v/c Ratio: 0.37			
Intersection Signal Delay: 8.7		Intersection LOS: A	
Intersection Capacity Utilization 59.6%		ICU Level of Service B	
Analysis Period (min) 15			

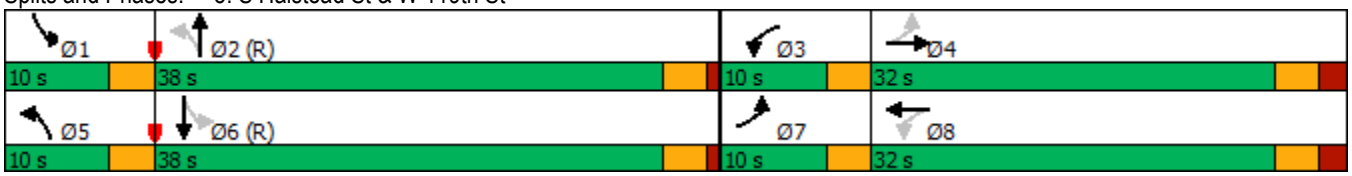
Splits and Phases: 3: S Loomis St & W 119th St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	203	269	43	38	240	94	46	591	21	64	285	86
Future Volume (vph)	203	269	43	38	240	94	46	591	21	64	285	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	115		0	120		0	120		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.979			0.958			0.995			0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3465	0	1770	3391	0	1770	3522	0	1770	3415	0
Flt Permitted	0.486			0.509			0.462			0.287		
Satd. Flow (perm)	905	3465	0	948	3391	0	861	3522	0	535	3415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			65			5			50	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		665			675			757			907	
Travel Time (s)		15.1			15.3			17.2			20.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	221	292	47	41	261	102	50	642	23	70	310	93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	221	339	0	41	363	0	50	665	0	70	403	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (%)	11.1%	35.6%		11.1%	35.6%		11.1%	42.2%		11.1%	42.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Act Effct Green (s)	36.0	27.0		36.0	27.0		42.0	34.0		42.0	34.0	
Actuated g/C Ratio	0.40	0.30		0.40	0.30		0.47	0.38		0.47	0.38	
v/c Ratio	0.52	0.32		0.09	0.34		0.11	0.50		0.20	0.31	
Control Delay	22.2	23.8		15.5	21.0		12.3	22.9		13.3	17.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.2	23.8		15.5	21.0		12.3	22.9		13.3	17.9	
LOS	C	C		B	C		B	C		B	B	
Approach Delay		23.2			20.5			22.1			17.2	
Approach LOS		C			C			C			B	
Stops (vph)	138	218		23	206		24	447		32	219	
Fuel Used(gal)	3	4		0	4		1	9		1	5	
CO Emissions (g/hr)	191	303		31	302		36	625		56	362	
NOx Emissions (g/hr)	37	59		6	59		7	122		11	70	
VOC Emissions (g/hr)	44	70		7	70		8	145		13	84	
Dilemma Vehicles (#)	0	0		0	0		0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	79	73		13	67		14	148		20	72	
Queue Length 95th (ft)	131	110		32	106		32	200		42	107	
Internal Link Dist (ft)		585			595			677			827	
Turn Bay Length (ft)	135			115			120			120		
Base Capacity (vph)	429	1054		443	1062		472	1333		345	1321	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.52	0.32		0.09	0.34		0.11	0.50		0.20	0.31	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 79.5 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 21.0		Intersection LOS: C	
Intersection Capacity Utilization 57.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: S Halstead St & W 119th St

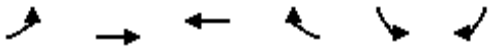


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	524	8	0	381	12	16	5	0	17	4	19
Future Volume (vph)	35	524	8	0	381	12	16	5	0	17	4	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.995						0.934	
Flt Protected		0.997						0.963			0.979	
Satd. Flow (prot)	0	3522	0	0	3522	0	0	1794	0	0	1703	0
Flt Permitted		0.913						0.864			0.920	
Satd. Flow (perm)	0	3225	0	0	3522	0	0	1609	0	0	1601	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			8						21	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		251			317			449			178	
Travel Time (s)		5.7			7.2			10.2			4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	570	9	0	414	13	17	5	0	18	4	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	617	0	0	427	0	0	22	0	0	43	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (%)	63.1%	63.1%		63.1%	63.1%		36.9%	36.9%		36.9%	36.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		37.0			37.0			20.0			20.0	
Actuated g/C Ratio		0.57			0.57			0.31			0.31	
v/c Ratio		0.34			0.21			0.04			0.08	
Control Delay		8.0			7.1			16.2			11.0	
Queue Delay		1.0			0.0			0.0			0.0	
Total Delay		9.1			7.1			16.2			11.0	
LOS		A			A			B			B	
Approach Delay		9.1			7.1			16.2			11.0	
Approach LOS		A			A			B			B	
Stops (vph)		273			172			16			20	
Fuel Used(gal)		4			2			0			0	
CO Emissions (g/hr)		248			174			16			18	
NOx Emissions (g/hr)		48			34			3			3	
VOC Emissions (g/hr)		58			40			4			4	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		61			38			6			6	
Queue Length 95th (ft)		89			58			20			26	
Internal Link Dist (ft)		171			237			369			98	

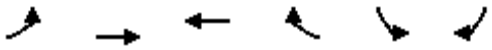
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1837			2008			495			507	
Starvation Cap Reductn		918			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.67			0.21			0.04			0.08	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 32 (49%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay: 8.5		Intersection LOS: A	
Intersection Capacity Utilization 43.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: S Morgan St & W 119th St



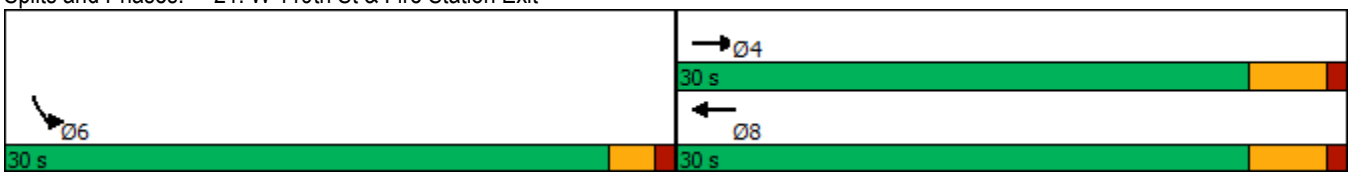
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	565	416	0	2	3
Future Volume (vph)	0	565	416	0	2	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt					0.919	
Flt Protected					0.980	
Satd. Flow (prot)	0	3539	3539	0	1678	0
Flt Permitted					0.980	
Satd. Flow (perm)	0	3539	3539	0	1678	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					3	
Link Speed (mph)		30	30		30	
Link Distance (ft)		2443	251		158	
Travel Time (s)		55.5	5.7		3.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	614	452	0	2	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	614	452	0	5	0
Turn Type		NA	NA		Prot	
Protected Phases		4	8		6	
Permitted Phases						
Detector Phase		4	8		6	
Switch Phase						
Minimum Initial (s)		5.0	5.0		10.0	
Minimum Split (s)		22.5	22.5		13.0	
Total Split (s)		30.0	30.0		30.0	
Total Split (%)		50.0%	50.0%		50.0%	
Yellow Time (s)		3.5	3.5		2.0	
All-Red Time (s)		1.0	1.0		1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5		3.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode		None	None		Min	
Act Effct Green (s)		11.0	11.0		10.1	
Actuated g/C Ratio		0.38	0.38		0.35	
v/c Ratio		0.45	0.33		0.01	
Control Delay		7.6	6.7		6.2	
Queue Delay		0.0	0.0		0.0	
Total Delay		7.6	6.7		6.2	
LOS		A	A		A	
Approach Delay		7.6	6.7		6.2	
Approach LOS		A	A		A	
Stops (vph)		334	231		5	
Fuel Used(gal)		13	3		0	
CO Emissions (g/hr)		942	186		3	
NOx Emissions (g/hr)		183	36		1	
VOC Emissions (g/hr)		218	43		1	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Dilemma Vehicles (#)		0	0		0	
Queue Length 50th (ft)		31	22		0	
Queue Length 95th (ft)		51	36		4	
Internal Link Dist (ft)		2363	171		78	
Turn Bay Length (ft)						
Base Capacity (vph)		3276	3276		1605	
Starvation Cap Reductn		0	78		0	
Spillback Cap Reductn		0	0		0	
Storage Cap Reductn		0	0		0	
Reduced v/c Ratio		0.19	0.14		0.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 28.6			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 7.2		Intersection LOS: A	
Intersection Capacity Utilization 31.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 21: W 119th St & Fire Station Exit



Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	513	21	7	339	5	29	5	4	0	0	0
Future Vol, veh/h	8	513	21	7	339	5	29	5	4	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	558	23	8	368	5	32	5	4	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	373	0	0	581	0	0	788	977	291
Stage 1	-	-	-	-	-	-	588	588	-
Stage 2	-	-	-	-	-	-	200	389	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	1182	-	-	989	-	-	328	249	706
Stage 1	-	-	-	-	-	-	518	494	-
Stage 2	-	-	-	-	-	-	814	607	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1182	-	-	989	-	-	321	0	706
Mov Cap-2 Maneuver	-	-	-	-	-	-	321	0	-
Stage 1	-	-	-	-	-	-	507	0	-
Stage 2	-	-	-	-	-	-	814	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.2	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	344	1182	-	-	989	-	-
HCM Lane V/C Ratio	0.12	0.007	-	-	0.008	-	-
HCM Control Delay (s)	16.9	8.1	0	-	8.7	0	-
HCM Lane LOS	C	A	A	-	A	A	-
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↱	
Traffic Vol, veh/h	0	554	369	0	8	15
Future Vol, veh/h	0	554	369	0	8	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	602	401	0	9	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	702	201
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	301	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	0	-	-	0	372	806
Stage 1	0	-	-	0	645	-
Stage 2	0	-	-	0	725	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	372	806
Mov Cap-2 Maneuver	-	-	-	-	372	-
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	725	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	573
HCM Lane V/C Ratio	-	-	0.044
HCM Control Delay (s)	-	-	11.6
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

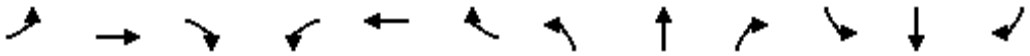
Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	20	20	27	20	2
Future Vol, veh/h	2	20	20	27	20	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	22	22	29	22	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	96	23	24	0	-	0
Stage 1	23	-	-	-	-	-
Stage 2	73	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	903	1054	1591	-	-	-
Stage 1	1000	-	-	-	-	-
Stage 2	950	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	890	1054	1591	-	-	-
Mov Cap-2 Maneuver	890	-	-	-	-	-
Stage 1	986	-	-	-	-	-
Stage 2	950	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	3.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1591	-	1037	-	-
HCM Lane V/C Ratio	0.014	-	0.023	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

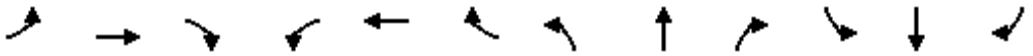


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	562	17	20	547	23	8	3	8	0	0	0
Future Volume (vph)	43	562	17	20	547	23	8	3	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.994			0.942				
Flt Protected		0.997			0.998			0.979				
Satd. Flow (prot)	0	3514	0	0	3511	0	0	1718	0	0	0	0
Flt Permitted		0.874			0.923			0.979				
Satd. Flow (perm)	0	3081	0	0	3247	0	0	1718	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			9			9				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		261			2443			191			877	
Travel Time (s)		5.9			55.5			4.3			19.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	611	18	22	595	25	9	3	9	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	676	0	0	642	0	0	21	0	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA				
Protected Phases		2			6			4				
Permitted Phases	2			6			4					
Minimum Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (s)	56.0	56.0		56.0	56.0		29.0	29.0				
Total Split (%)	65.9%	65.9%		65.9%	65.9%		34.1%	34.1%				
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0				
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0				
Lost Time Adjust (s)		0.0			0.0			0.0				
Total Lost Time (s)		4.0			4.0			4.0				
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		52.0			52.0			25.0				
Actuated g/C Ratio		0.61			0.61			0.29				
v/c Ratio		0.36			0.32			0.04				
Control Delay		8.8			8.4			16.1				
Queue Delay		0.0			0.0			0.0				
Total Delay		8.8			8.4			16.1				
LOS		A			A			B				
Approach Delay		8.8			8.4			16.1				
Approach LOS		A			A			B				
Stops (vph)		284			261			12				
Fuel Used(gal)		4			14			0				
CO Emissions (g/hr)		276			958			11				
NOx Emissions (g/hr)		54			186			2				
VOC Emissions (g/hr)		64			222			3				
Dilemma Vehicles (#)		0			0			0				
Queue Length 50th (ft)		84			77			5				
Queue Length 95th (ft)		116			107			21				
Internal Link Dist (ft)		181			2363			111			797	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1887			1989			511				
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.36			0.32			0.04				

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Pretimed			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 8.7		Intersection LOS: A	
Intersection Capacity Utilization 68.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: S Loomis St & W 119th St

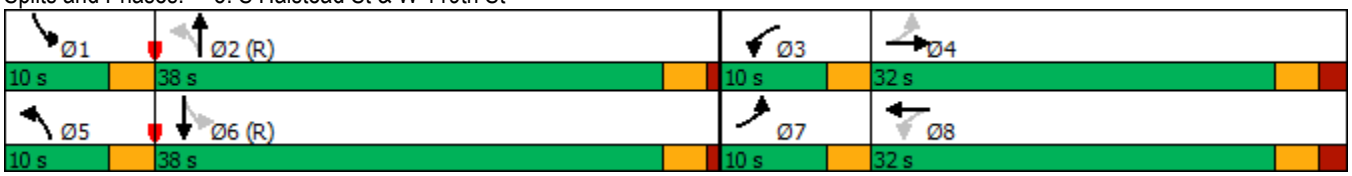


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	300	99	64	252	88	94	457	45	123	658	151
Future Volume (vph)	155	300	99	64	252	88	94	457	45	123	658	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	115		0	120		0	120		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.963			0.961			0.987			0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3408	0	1770	3401	0	1770	3493	0	1770	3440	0
Flt Permitted	0.480			0.423			0.177			0.361		
Satd. Flow (perm)	894	3408	0	788	3401	0	330	3493	0	672	3440	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			55			13			35	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		665			675			757			907	
Travel Time (s)		15.1			15.3			17.2			20.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	168	326	108	70	274	96	102	497	49	134	715	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	434	0	70	370	0	102	546	0	134	879	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (s)	10.0	32.0		10.0	32.0		10.0	38.0		10.0	38.0	
Total Split (%)	11.1%	35.6%		11.1%	35.6%		11.1%	42.2%		11.1%	42.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	1.0		0.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0		3.0	5.0		3.0	4.0		3.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Act Effct Green (s)	36.0	27.0		36.0	27.0		42.0	34.0		42.0	34.0	
Actuated g/C Ratio	0.40	0.30		0.40	0.30		0.47	0.38		0.47	0.38	
v/c Ratio	0.40	0.41		0.18	0.35		0.38	0.41		0.34	0.67	
Control Delay	19.4	23.4		16.4	21.9		16.4	21.3		14.7	25.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	19.4	23.4		16.4	21.9		16.4	21.3		14.7	25.3	
LOS	B	C		B	C		B	C		B	C	
Approach Delay		22.3			21.0			20.5			23.9	
Approach LOS		C			C			C			C	
Stops (vph)	98	271		37	218		49	347		65	625	
Fuel Used(gal)	2	5		1	5		1	7		2	13	
CO Emissions (g/hr)	137	382		53	315		80	493		112	932	
NOx Emissions (g/hr)	27	74		10	61		15	96		22	181	
VOC Emissions (g/hr)	32	89		12	73		18	114		26	216	
Dilemma Vehicles (#)	0	0		0	0		0	0		0	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	58	90		23	72		29	115		39	206	
Queue Length 95th (ft)	101	133		48	111		56	159		71	272	
Internal Link Dist (ft)		585			595			677			827	
Turn Bay Length (ft)	135			115			120			120		
Base Capacity (vph)	425	1058		391	1058		266	1327		399	1321	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.40	0.41		0.18	0.35		0.38	0.41		0.34	0.67	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 79.5 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 61.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: S Halstead St & W 119th St

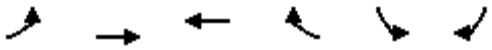


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	501	4	0	532	22	12	2	0	32	0	38
Future Volume (vph)	31	501	4	0	532	22	12	2	0	32	0	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.994						0.927	
Flt Protected		0.997						0.958			0.977	
Satd. Flow (prot)	0	3525	0	0	3518	0	0	1785	0	0	1687	0
Flt Permitted		0.904						0.853			0.896	
Satd. Flow (perm)	0	3196	0	0	3518	0	0	1589	0	0	1547	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			11						41	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		251			317			449			178	
Travel Time (s)		5.7			7.2			10.2			4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	34	545	4	0	578	24	13	2	0	35	0	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	583	0	0	602	0	0	15	0	0	76	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (%)	63.1%	63.1%		63.1%	63.1%		36.9%	36.9%		36.9%	36.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)		37.0			37.0			20.0			20.0	
Actuated g/C Ratio		0.57			0.57			0.31			0.31	
v/c Ratio		0.32			0.30			0.03			0.15	
Control Delay		8.0			7.6			16.1			10.2	
Queue Delay		0.9			0.0			0.0			0.0	
Total Delay		8.9			7.6			16.1			10.2	
LOS		A			A			B			B	
Approach Delay		8.9			7.6			16.1			10.2	
Approach LOS		A			A			B			B	
Stops (vph)		257			259			12			29	
Fuel Used(gal)		3			4			0			0	
CO Emissions (g/hr)		233			256			11			28	
NOx Emissions (g/hr)		45			50			2			5	
VOC Emissions (g/hr)		54			59			3			7	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		57			57			4			10	
Queue Length 95th (ft)		84			83			16			37	
Internal Link Dist (ft)		171			237			369			98	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1820			2007			488			504	
Starvation Cap Reductn		917			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.65			0.30			0.03			0.15	

Intersection Summary			
Area Type:	Other		
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 32 (49%), Referenced to phase 2:NBTL, Start of Green			
Natural Cycle: 65			
Control Type: Pretimed			
Maximum v/c Ratio: 0.32			
Intersection Signal Delay: 8.5		Intersection LOS: A	
Intersection Capacity Utilization 46.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: S Morgan St & W 119th St

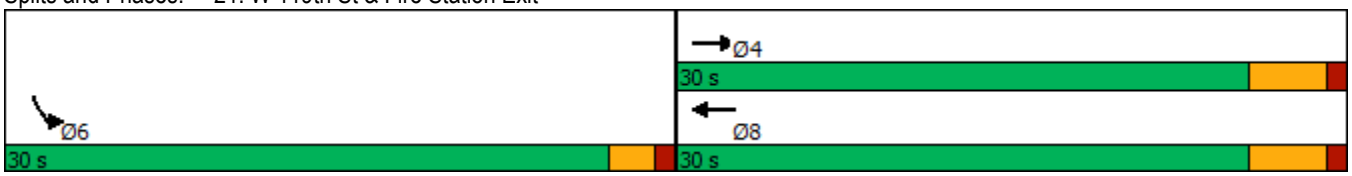


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	534	582	0	2	3
Future Volume (vph)	0	534	582	0	2	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt					0.919	
Flt Protected					0.980	
Satd. Flow (prot)	0	3539	3539	0	1678	0
Flt Permitted					0.980	
Satd. Flow (perm)	0	3539	3539	0	1678	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					3	
Link Speed (mph)		30	30		30	
Link Distance (ft)		2443	251		158	
Travel Time (s)		55.5	5.7		3.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	580	633	0	2	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	580	633	0	5	0
Turn Type		NA	NA		Prot	
Protected Phases		4	8		6	
Permitted Phases						
Detector Phase		4	8		6	
Switch Phase						
Minimum Initial (s)		5.0	5.0		10.0	
Minimum Split (s)		22.5	22.5		13.0	
Total Split (s)		30.0	30.0		30.0	
Total Split (%)		50.0%	50.0%		50.0%	
Yellow Time (s)		3.5	3.5		2.0	
All-Red Time (s)		1.0	1.0		1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	
Total Lost Time (s)		4.5	4.5		3.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode		None	None		Min	
Act Effct Green (s)		11.4	11.4		10.1	
Actuated g/C Ratio		0.39	0.39		0.35	
v/c Ratio		0.42	0.46		0.01	
Control Delay		7.2	7.5		6.2	
Queue Delay		0.0	0.0		0.0	
Total Delay		7.2	7.5		6.2	
LOS		A	A		A	
Approach Delay		7.2	7.5		6.2	
Approach LOS		A	A		A	
Stops (vph)		310	346		5	
Fuel Used(gal)		13	4		0	
CO Emissions (g/hr)		886	276		3	
NOx Emissions (g/hr)		172	54		1	
VOC Emissions (g/hr)		205	64		1	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Dilemma Vehicles (#)		0	0		0	
Queue Length 50th (ft)		29	32		0	
Queue Length 95th (ft)		47	52		4	
Internal Link Dist (ft)		2363	171		78	
Turn Bay Length (ft)						
Base Capacity (vph)		3131	3131		1552	
Starvation Cap Reductn		0	77		0	
Spillback Cap Reductn		0	0		0	
Storage Cap Reductn		0	0		0	
Reduced v/c Ratio		0.19	0.21		0.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 29			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 7.4		Intersection LOS: A	
Intersection Capacity Utilization 31.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 21: W 119th St & Fire Station Exit



Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	517	27	5	494	7	33	7	5	0	0	0
Future Vol, veh/h	10	517	27	5	494	7	33	7	5	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	562	29	5	537	8	36	8	5	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	545	0	0	591	0	0	878	1154	296
Stage 1	-	-	-	-	-	-	599	599	-
Stage 2	-	-	-	-	-	-	279	555	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	1020	-	-	981	-	-	287	196	700
Stage 1	-	-	-	-	-	-	511	489	-
Stage 2	-	-	-	-	-	-	743	511	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1020	-	-	981	-	-	280	0	700
Mov Cap-2 Maneuver	-	-	-	-	-	-	280	0	-
Stage 1	-	-	-	-	-	-	499	0	-
Stage 2	-	-	-	-	-	-	743	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0.1	19.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	304	1020	-	-	981	-	-
HCM Lane V/C Ratio	0.161	0.011	-	-	0.006	-	-
HCM Control Delay (s)	19.1	8.6	0.1	-	8.7	0	-
HCM Lane LOS	C	A	A	-	A	A	-
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↱	
Traffic Vol, veh/h	0	540	546	0	16	9
Future Vol, veh/h	0	540	546	0	16	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	587	593	0	17	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	887	297
Stage 1	-	-	-	-	593	-
Stage 2	-	-	-	-	294	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	0	-	-	0	284	699
Stage 1	0	-	-	0	515	-
Stage 2	0	-	-	0	730	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	284	699
Mov Cap-2 Maneuver	-	-	-	-	284	-
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	730	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.8
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	361
HCM Lane V/C Ratio	-	-	0.075
HCM Control Delay (s)	-	-	15.8
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.2

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	20	20	30	50	2
Future Vol, veh/h	2	20	20	30	50	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	22	22	33	54	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	132	55	56	0	-	0
Stage 1	55	-	-	-	-	-
Stage 2	77	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	862	1012	1549	-	-	-
Stage 1	968	-	-	-	-	-
Stage 2	946	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	850	1012	1549	-	-	-
Mov Cap-2 Maneuver	850	-	-	-	-	-
Stage 1	954	-	-	-	-	-
Stage 2	946	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	2.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1549	-	995	-	-
HCM Lane V/C Ratio	0.014	-	0.024	-	-
HCM Control Delay (s)	7.4	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-