MS1-00005
Massachusetts Street Multimodal Improvements Study
14th Street to 23rd Street

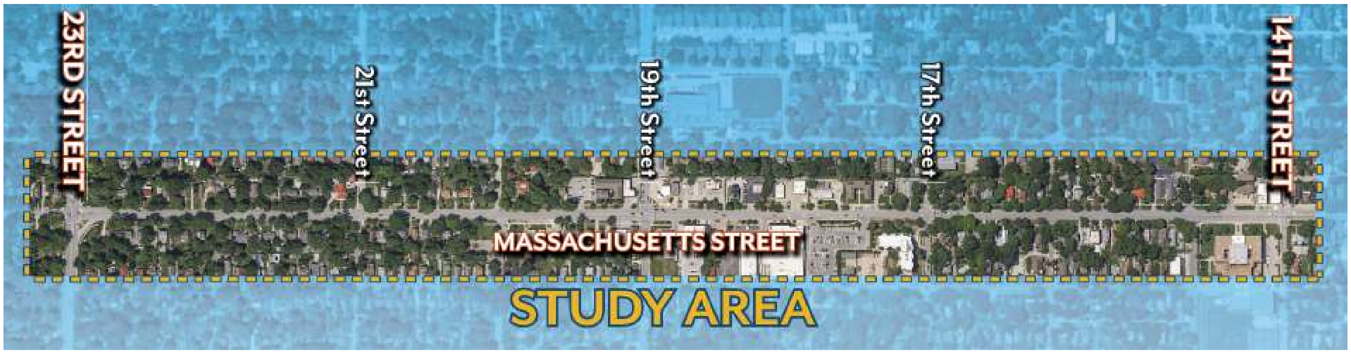
Presented to: City of Lawrence, KS

Prepared by: TREKK Design Group

April 26th, 2024

Introduction

The City of Lawrence, Kansas, in coordination with TREKK Design Group and Shockey Consulting, is performing a Multimodal Improvements Study to provide recommendations for construction of multimodal facilities on Massachusetts (Mass) Street from 14th Street to 23rd Street.



The Multimodal Improvements Study area includes Mass Street from 14th Street to 23rd Street in Lawrence, KS.

Project Need

The Lawrence Bike Plan identifies the study limits as either a priority link (14th to 21st Street) or secondary link (21st to 23rd Street) identifying the need for bicycle infrastructure improvements. The full extents of the study area along Mass Street has been identified by City of Lawrence staff, considering survey results from residents, as least comfortable when comparing comfortability of bikers along corridors as there are no dedicated bike facilities.

KDOT recently conducted the 2023 Kansas Vulnerable Road User (VRU) Safety Assessment to improve understanding of the conditions and behaviors present in fatal and serious injury crashes involving VRUs. As part of this assessment, crashes from 2014 to 2021 were analyzed considering crash trends and contributing circumstances to develop a High-Injury Network (HIN). Areas that are identified on the HIN are locations where VRU crashes resulting in fatal and serious injury crashes are overrepresented.

Mass Street from 14th Street to 20th Street has been identified on the KDOT Vulnerable Road User High Injury Network as either High Priority (15th to 16th Street) or Medium Priority (16th to 20th Street). These segments are on the HIN due to the vulnerable road user crash history and should be taken into consideration when evaluating vulnerable road user facilities such as bikeways, pedestrian crossings, and other facilities.

Project Purpose

The purpose of this Multimodal Improvements Study is to provide recommendations for construction of multimodal (vehicular, bicycle, pedestrian, and transit) facilities along Mass Street from 14th Street to 23rd Street. Recommendations should consider existing conditions, traffic analysis, safety for all users, and input from the community.

Project Background

Mass Street, from 11th to 14th Street, recently underwent a roadway reconfiguration in 2019 to convert from a 4-lane roadway to 3-lane roadway (one lane in each direction with a two-way-left-turn lane) and buffered bike lanes, which should be considered as part of the recommendations. Additionally, this project is intended to provide recommendations to connect to the bicycle boulevard infrastructure recently constructed in 2020 on 21st Street from Iowa to Mass.

Existing Conditions & Data Collection

Existing Roadway Corridor

Mass Street is classified as a Minor Arterial per the T2050 Major Thoroughfares Map, developed by the Lawrence MPO Policy Board. The typical roadway width of Mass Street from 14th Street to 23rd Street is 52-ft from back of curb to back of curb, which includes four 12-ft lanes with 2-ft curb and gutter on each side. Parking is generally prohibited for the extent of the project limits, with the exception of restricted bus parking between 14th street and 15th street near Liberty Memorial Central Middle School. Angled/perpendicular parking is also present near 14th Street, 17th Street, 19th Street, and 20th Street at select businesses. The posted speed limit is 30 miles per hour (mph). The existing right-of-way width within the study area along Mass Street is 100 feet. The area directly adjacent to Mass Street is mostly residential, with some areas zoned for commercial use.

Existing Bicycle Facilities

There are no dedicated bicycle facilities along Mass Street within the study area. Recently, in 2020, the City of Lawrence completed a project converting 21st Street to a bike boulevard from Iowa Street to Mass Street. This project provided bike boulevard pavement markings along 21st Street to indicate to motorists that the roadway is intended as a shared space for drivers and bicyclists. At Mass Street, left turns from 21st Street are prohibited, and a pedestrian hybrid beacon was installed along with green pavement marking bicycle crossings. The full extent of the study area along Mass Street has been identified by City of Lawrence staff, considering survey results from residents, as least comfortable when comparing comfortability of bikers along the corridor.

Existing Pedestrian Facilities

The study area has been identified as a priority link in the Lawrence Pedestrian Plan and should include sidewalks on both sides. From 14th Street to 21st Street, there is an existing sidewalk on both sides of Mass Street. However, from 21st Street to 23rd Street, there is no sidewalk on the west side. Much of the sidewalk within the study area is deteriorating and some segments are paved with brick.

Several intersections within the study area do not have proper pedestrian facilities such as ADA compliant ramps and crosswalk markings. At 15th Street & Mass Street and 16th Street & Mass Street, there are pedestrian ramps to cross Mass Street on the east side, however there are no receiving ramps on the west side.

Existing Traffic Volumes

According to the KDOT AADT map, Mass Street serves about 11,000 vehicles per day (vpd) according to data collected in 2019. Turning movement counts were also collected at key intersections for use in traffic analysis. In general, the majority of traffic movements during the AM and PM peak hours within the study area are along Mass Street with a heavy influence of east/west traffic on 19th Street and 23rd Street. Most side street movements are low volume within the study area.

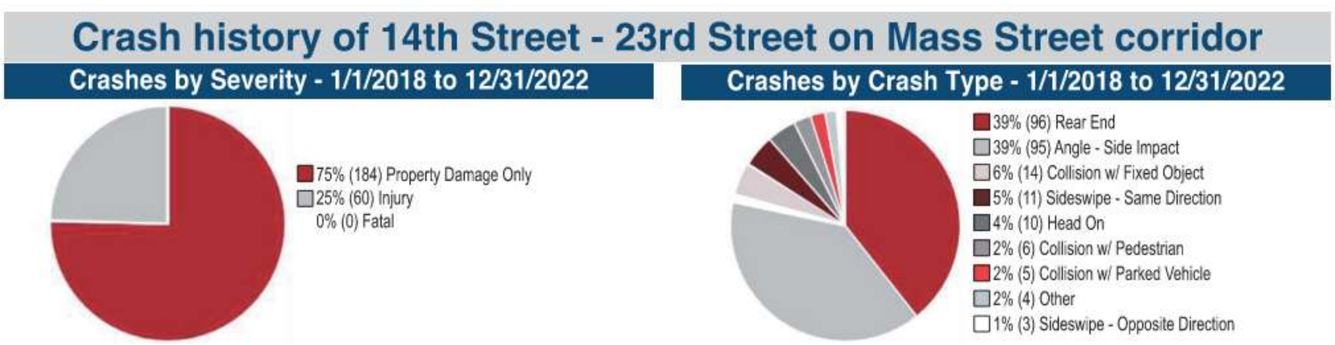
Crash History

According to the US Department of Transportation Federal Highway Administration (FHWA), four-lane roadways, like Mass Street, experience several crash types including the following:

- Rear-end and sideswipe crashes caused by speed differential between vehicles;
- Sideswipe crashes caused by frequent and sudden lane changing between two through lanes;
- Rear-end crashes caused by left-turning vehicles stopped in the inside travel lane;
- Left-turn crashes caused by mainline left-turning motorists feeling pressure to depart the shared through/left lane by following motorists making a poor gap judgement;
- Right angle crashes caused by side street traffic crossing four lanes to make a through movement across an intersection, or turning left across two lanes;
- Bicycle crashes due to a lack of available space for bicyclists to ride comfortably; and
- Pedestrian crashes due to the high number of lanes for pedestrians to cross with no refuge.

Crash data provided by the City of Lawrence was analyzed to identify crash patterns and trends. During the five-year period, January 1, 2018, to December 31, 2022, 244 crashes were reported within the study area. Of these crashes, 75% (184) were reported as property damage only and 25% (60) as injury crashes. Seven (7) of the injury crashes involved VRU's (pedestrian or bicyclists). No fatal crashes were reported.

Crash types included rear end (39%), angle – side impact (39%), collision with fixed object (6%), sideswipe – same direction (5%), head on (4%), collision with pedestrian (3%), collision with parked motor vehicle (2%), others (2%), and sidewalk – opposite direction (1%). This breakdown of crash types closely follows the FHWA four-lane roadway typical crash pattern experience.



Locations where crashes are overrepresented are the following:

- 17th Street where a high number of rear end crashes resulted from speeding, adverse conditions, and stopped vehicles awaiting to make a left turn from Mass Street.
- 19th Street where a high number of crashes resulted from failing to yield right-of-way and rear end crashes due to speeding, adverse conditions, and inattention.
- 23rd Street where a high number of crashes resulted from running red lights and failing to yield right-of-way and rear end crashes due to speeding, adverse conditions, and inattention.

Public Open House #1 - Project Understanding

Representatives from the City of Lawrence, TREKK Design Group, and Shockey Consulting facilitated an open house format public meeting on October 25th, 2023 from 4:30 to 6:30 PM at Liberty Memorial Central Middle School within the study area of the project.

There were four boards with content for review and feedback including project background, potential multimodal improvements, and a strip map showing existing conditions along the corridor to collect general feedback. Attendees were given green dots to identify multimodal improvement priorities as well as sticky notes for general feedback/observations on the strip map. A survey of questions was also provided via QR code and hardcopy to collect formal feedback. An online survey was also available on the City's website for those that couldn't attend the meeting in person. Content shared at the public meeting is shown in **Exhibit A**.

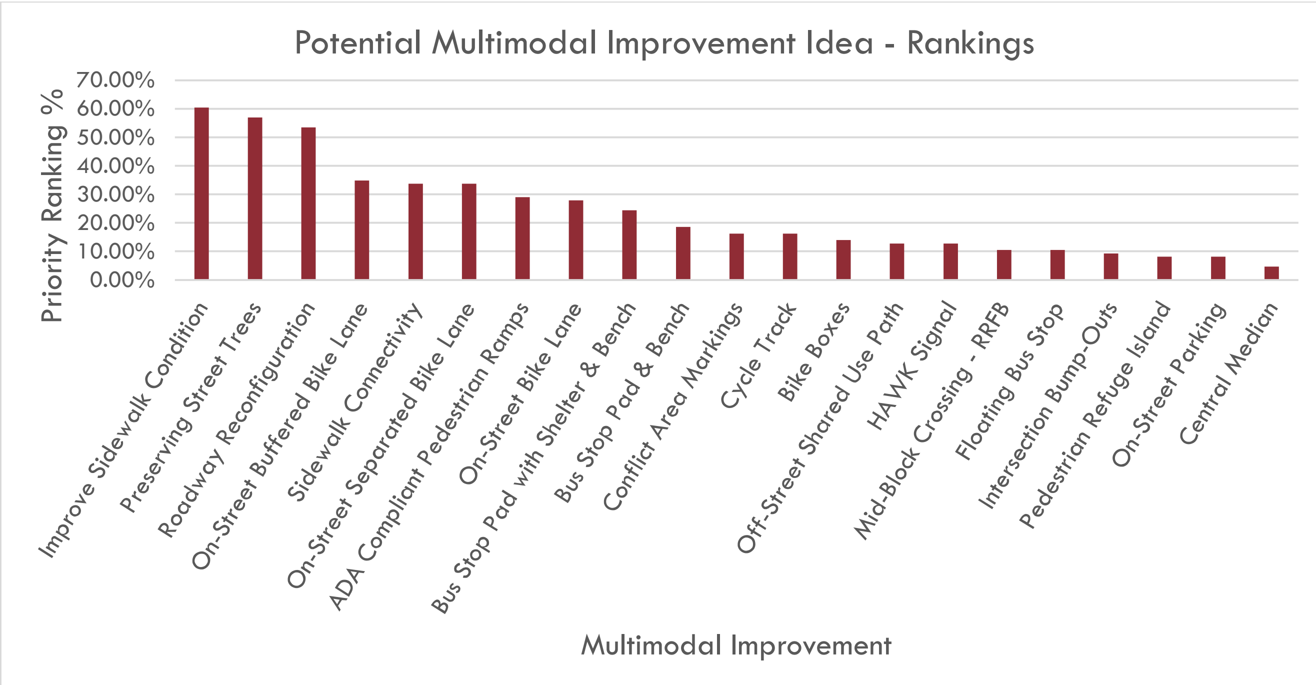
Refer to Exhibit A – Public Open House #1 Content

There were 72 people who signed-in and joined the event to provide feedback. A total of 86 survey responses were collected.

Open House #1 was well attended by the Lawrence community to gain feedback on the Multimodal Improvements Study.

Based on the multimodal priority rankings (Survey Question 9), the public's most desired multimodal improvements included:

- Improve Sidewalk Conditions
- Preserve Street Trees
- Roadway Reconfiguration
- On-Street Buffered Bike Lanes
- Sidewalk Connectivity
- On-Street Separated Bike Lanes
- ADA Compliant Pedestrian Ramps



Community priorities from Open House #1 are as shown in the figure above.

In general, the community is in support of a roadway reconfiguration (4-lane to 3-lane conversion) on Mass Street. Preserving street trees and improving sidewalk conditions and connectivity are top priorities. Bike lanes are preferred in the form of on-street buffered bike lanes or on-street separated bike lanes.

Other key takeaways from general public comments include the following:

- Slow down traffic
- Provide bike lanes
- Provide mid-block crossings
- Roadway reconfiguration on Mass Street
- Preserve on-street parking for businesses
- Consider roundabouts where applicable

Further details of the feedback received is outlined in **Exhibit B.**

Refer to Exhibit B – Public Meeting – Open House #1 Feedback Summary

Multimodal Transportation Commission (MMTC) Meeting #1

City representatives attended and presented the project to the City of Lawrence MMTC on December 4, 2023. The goal of the presentation was to provide a background of the project, initial findings, and share the feedback from the community as part of Open House #1. The content shared with the commission is shown in **Exhibit C.**

Refer to Exhibit C – MMTC #1 Agenda – Project Summary

The commission was receptive of the project and looks forward to further design development. Some representatives advocated for involvement of artists and landscape architecture as design progresses to help create a sense of place along Mass Street. Additionally, it was identified that this may be a good opportunity for the City to partner with students in the area as a learning opportunity and for additional engagement.

In response to the MMTC meeting, the City met with the student bodies of both Liberty Memorial Central Middle School (LMCMS) and The University of Kansas (KU) to discuss the study. Students provided feedback on the community engagement process and noted areas of potential improvements as more engagement is conducted.

Concept Development

In coordination with the City, the design team developed a traffic study evaluating various aspects of the conceptual design including the feasibility of a roadway reconfiguration (4-lane to 3-lane conversion) along Mass Street from 14th Street to 23rd Street. The study also included an evaluation of intersection control at both 17th Street and 19th Street based on crash history and traffic operations. A summary of the multimodal improvement recommendations is included in the following sections.

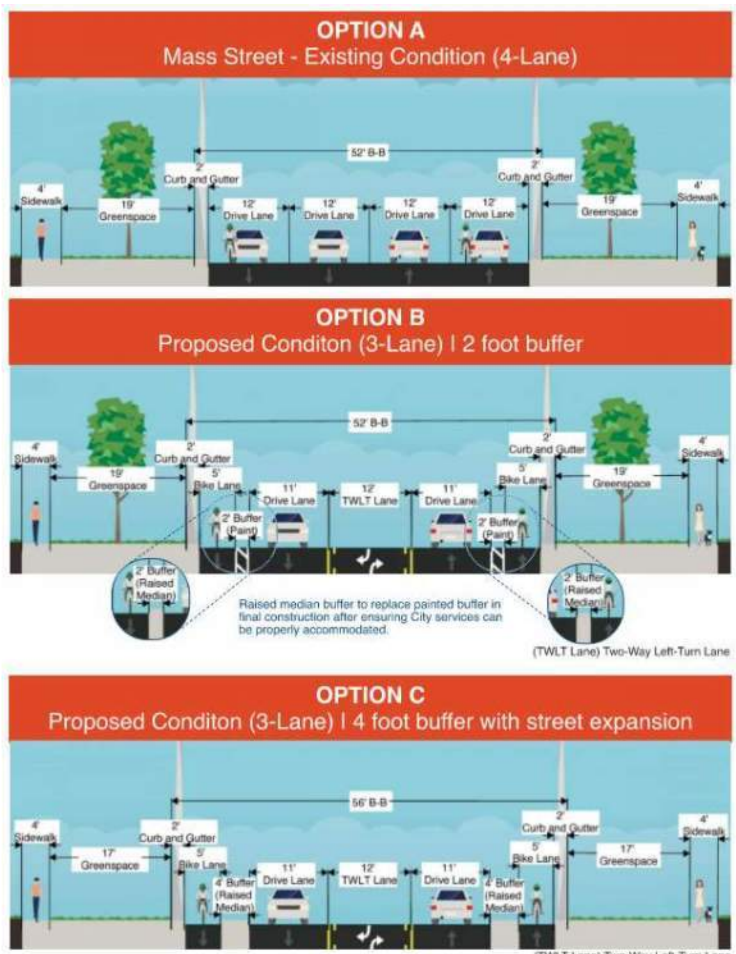
Further detail is shown in the traffic study in **Exhibit D**.

Refer to Exhibit D – Traffic Study

Engineering Influence

Roadway Reconfiguration & Bikeway Selection

In general, 3-lane roadways can serve up to 25,000 vehicles per day (vpd) depending on other factors such as key intersection operations. As identified, Mass Street is anticipated to serve 11,000 to less than 13,000 vpd in the current and future year. Detailed traffic analysis was performed to confirm adequate operations at key intersections and determined that roadway reconfiguration is an operationally feasible solution. Reconfiguring Mass Street is anticipated to slow down traffic, reduce crashes, provide less distance for pedestrians to cross and improve the overall safety of the corridor for all users.



Based on feedback from the public, engineering guidelines, and in coordination with the City, the on-street bikeway should be either a buffered bike lane or a separated bike lane. Option B as shown maintains the existing curb location, which reduces impacts to the street trees while having the option to install a buffered bike lane in the interim and a separated bike lane in the ultimate configuration. Option C provides more separation between vehicles and bicyclists, which would provide a bit more comfort. However, widening Mass Street would have a major impact to the existing trees as identified by the City's arborist (74% impact).

Intersection Geometrics

Intersections along Mass Street were evaluated based on crash history and operational analysis to determine potential solutions as part of the Mass Street roadway reconfiguration. Below is a summary of the high-level findings at each key intersection.

Mass Street & 14th Street

Based on the traffic analysis, it is recommended to maintain traffic signal control at 14th Street. Bike markings should be installed to clearly identify bike crossings and reduce conflict points between different modes of travel.

Mass Street & 17th Street

Based on the analyzed crash history, there have been several rear end collisions on Mass Street at 17th Street due to vehicles stopping in the inside lane awaiting to make a left turn. Additionally, the traffic signal is not warranted due to the low traffic volumes on 17th Street. As such, it is recommended to remove the traffic signal to promote vehicle progression through the corridor and reduce the likelihood of rear-end collisions. Based on the high number of pedestrian and bike volumes crossing Mass Street at 17th Street, a High Intensity Activated Crosswalk (HAWK) signal, also referred to as a pedestrian hybrid beacon, is warranted and recommended to be installed in place of the removed traffic signal.

Furthermore, the existing traffic signal at Mass Street and 17th Street was installed in 2000 at the request of the community due to the increasing pedestrian concerns. The City noted at the time of installation that this intersection did not meet traffic signal warrants for volume thresholds as identified in the Manual on Uniform Traffic Control Devices (MUTCD). At the time of installation, HAWK signals were not an approved pedestrian safety device. Since then, HAWK signals have become an approved pedestrian safety device and used nationwide to improve pedestrian safety.

Mass Street & 19th Street

There have been ongoing conversations in the community about the intersection of Mass Street and 19th Street for over a decade. Specifically, in a report from AARP titled, "Walkability and Complete Street" from the summer of 2014 discussed the opportunity to change the intersection to a roundabout as a means of increasing "walkability and livability".

The intersection of Mass Street and 19th Street was evaluated to determine the feasibility of installing a roundabout due to the crash history, safety for all users, and ongoing community conversations. It was determined that a single-lane roundabout would require a significant amount of right-of-way and is anticipated to operate less efficiently than a traffic signal at 19th Street. As such, it is recommended to maintain traffic signal control at this intersection.

Although maintaining traffic signal control, other measures could be considered to promote safety for all users and reduce traffic speed such as implementing a protected intersection. Protected intersections, as identified by the Lawrence Bike Plan, control the speed of turning vehicles at conflict points, minimizes exposure to conflict areas, communicates right-of-way priorities for all users, provides improved sight distance, and provides a high level of comfort for vulnerable road users. Implementing a protected intersection at Mass Street and 19th Street is anticipated to calm traffic and promote safety for all users at this busy intersection.

Mass Street & 23rd Street

Based on the traffic analysis, it is recommended to maintain traffic signal control at Mass Street and 23rd Street. However, the existing high-speed channelized westbound right turn lane has resulted in an elevated crash rate and is recommended to be removed and replaced with a standard right turn lane to reduce traffic speeds and improve safety.

Parking Considerations

Parking should be maintained where existing on-street parking is provided for use by nearby businesses on Mass Street. According to the Lawrence Bicycle and Pedestrian Guideline as well as prescribed by National Association of City Transportation Officiation (NACTO) guidance, reverse angle parking should be placed on any street that includes bike facilities separating the parking from the travel lane. In general, back-in angle parking allows drivers to see bicyclists in bike lanes that would have been behind the vehicle when leaving the parking space. Cities across the nation have shown a decrease in overall crashes and almost no pedestrian/bicycle crashes in locations with reverse angle parking.

Although back-in angle parking is preferred, the vicinity of the parking adjacent to intersections should be taken into consideration when choosing parking types as through and turning vehicles are not anticipating vehicles stopping in the travel lane and backing into parking spaces near intersection. The recommended parking configurations are as follows:

Near 14th Street – Adjacent to Elevate Arts & Wellness and Head Rush

Standard angle-in parking maintains parking for nearby businesses and improves sight of bicycle riders by routing bike facilities around the parking spaces near the intersection. This configuration reduced conflict areas with vehicles and bicyclists.

Near 17th Street – Adjacent to Vikingtown Apartments

Back-in angled parking improves sight of bicyclists for vehicles exiting parking space.

Near 19th Street – Adjacent to Cottins Hardware & Rental

Back-in angled parking improves sight of bicyclists for vehicles exiting parking space.

Near 20th Street – Adjacent to Victory Bible Church

Standard angle-in parking maintains parking for nearby businesses and improves sight of bicycle riders by routing bike facilities around the parking spaces near the intersection. This configuration reduced conflict areas with vehicles and bicyclists.

Pedestrian Improvements

Sidewalk should be constructed on the west side of Mass Street from 21st Street to 23rd Street to improve the pedestrian connectivity along the corridor and adhere to the Lawrence Pedestrian Plan. This sidewalk should vary in distance from the back of curb to avoid or minimize impacts to the existing trees.

Mid-block crossings are recommended between 15th and 16th Street as well as between 17th and 19th Street near the existing bus stop locations to promote safe pedestrian connectivity every 400 to 600 feet as desired along Mass Street. These crossings are recommended to have median refuge islands and be controlled with Rectangular Rapid Flashing Beacons (RRFB's).

Transit Improvements

No additional bus stop locations are recommended. However, the existing bus stop locations should be improved to accommodate the reconfiguration of Mass Street. Floating bus stops may be installed to reduce conflicts between all users and provide a dedicated space for transit amenities such as shelters, benches, trash cans, etc.

Access Management

During the design phase, access management should be considered as part of the roadway reconfiguration. Driveways may be modified to share access to avoid potential conflicts within the two-way left turn lane (TWLTL) and a central median may be installed near key intersections, such as Mass and 19th Street, to prevent driveway conflicts within the functional area of the intersection to improve the safety of the roadway.

Public Engagement Influence

In addition to engineering analysis, the recommended concepts considered the priorities as identified by the community during Open House #1 as shown below.

- **Improve Sidewalk Conditions:** The City of Lawrence plans to analyze existing sidewalk conditions during the design phase and improve sidewalk conditions as recommended.
- **Preserve Street Trees:** The City of Lawrence's arborist conducted a detailed analysis to determine the potential impact to street trees if Mass Street was widened in both directions. Findings identified that 74% of the existing street trees would be impacted if widening occurred. As such, one of the options identified considers maintaining the existing curb locations.
- **Roadway Reconfiguration:** The recommended concepts consider reconfiguring Mass Street from 4-lanes to 3-lanes to promote safety for all users and slow down vehicular traffic.
- **On-Street Buffered Bike Lanes:** The recommended concepts consider on-street buffered bike lanes on Mass Street.
- **Sidewalk Connectivity:** The recommended concepts include constructing sidewalk on the west side of Mass Street from 21st to 23rd Street to improve connectivity.
- **On-Street Separated Bike Lanes:** The recommended concepts consider on-street separated bike lanes on Mass Street.
- **ADA Compliant Pedestrian Ramps:** The recommended concepts consider improving pedestrian ramps to meet ADA compliance and providing adequate pedestrian crossings.
- **Mid-Block Crossings:** Pedestrian crossings have been recommended in key locations to reduce the likelihood of jaywalking and improve pedestrian safety.
- **On-Street Parking:** Parking has been accommodated in key locations to maintain existing parking for nearby businesses. No additional or new parking is anticipated.

Feedback from the community during Open House #1 was considered during the Concept Development phase of the study.

Concept Vision - Public Open House #2

Similar to Open House #1, representatives from the City of Lawrence, TREKK Design Group, and Shockey Consulting facilitated an open house format public meeting on February 7th, 2024 from 4:30 to 6:30 PM at Liberty Memorial Central Middle School within the study area of the project.

There were ten boards with content for review and feedback including the following:

- Project Background
- Community Feedback Influence
- Traffic Analysis Findings
- Mass Street Conceptual Options
- 19th Street & Mass Street Intersection Findings
- 17th Street & Mass Street Intersection Findings
- Next Steps & Upcoming Engagement Opportunities

A strip map of one of the potential options (Option B) was also shared to collect general feedback, similar to the first public meeting. A comment form was provided to collect feedback on the information shared, which was also uploaded to the City's website for those that couldn't attend the meeting in person. Content shared at the public meeting is shown in **Exhibit E**.

Refer to Exhibit E – Public Open House #2 Content

There were 43 people who signed-in and joined the event to provide feedback. A total of 72 comment form responses were collected.

Open House #2 was well attended by the Lawrence community to gain feedback on Multimodal Improvements Study concepts.

In general, based on the comments provided, both Options B and C were perceived as improvements from the existing condition, Option A, due to the improved safety, walkability, and more balanced use of space.

Option B was generally seen as an improvement over the existing condition, however there were concerns about the effectiveness of the buffered bike lane for cyclists. Many community members advocated for the implementation of physical barriers such as a raised median to promote safety for all users. Although Option B considered installing a raised median in the ultimate configuration, some community members were skeptical of when the ultimate configuration would be implemented. Maintaining the existing curb location was seen as a strength to the community as the solution reduces impacts to the existing trees.

Option C was favorable as it relates to safety improvements and multimodal enhancements. However, tree removal was not a popular tradeoff for the community. Maintenance should be considered as raised medians are installed for snow and debris removal.

Other key takeaways from general comments on the strip map are listed below:

- Some of the community members support the removal of the traffic signal at 17th Street and installation of a pedestrian hybrid beacon, whereas some aren't as supportive and are concerned with the ability to cross Mass Street.
- Many community members are in support of the protected intersection solution at 19th Street.
- Many community members are in support of the addition of sidewalk to improve connectivity on the west side of Mass Street from 21st Street to 23rd Street.
- Many community members are in support of removing the high-speed westbound right turn lane at 23rd Street.

Further details of the feedback received are shown in **Exhibit F**.

Refer to Exhibit F – Public Open House #2 Feedback Summary

Multimodal Transportation Commission (MMTC) Meeting #2

TREKK and City representatives attended and presented the conceptual findings and options to the City of Lawrence MMTC on March 4, 2024. The goal of the presentation was to provide a summary of findings and potential conceptual options as shared at Open House #2, including public feedback. The content shared with the commission is shown in **Exhibit G**.

Refer to Exhibit G – MMTC #2 Agenda – Concept Vision

There were two general topics of discussion during the MMTC meeting as summarized below.

Lane Narrowing

MMTC asked staff to consider further lane narrowing to 10-foot lanes. Upon further coordination with the City and the design team, the City Engineer recommends 11-foot travel lanes. Transit and Solid Waste stakeholders agree with this recommendation, providing adequate lane widths for larger vehicles. The proposed lane count reduction to a 3-lane roadway and lane width reduction to 11-foot lanes is anticipated to effectively slow vehicle speeds.

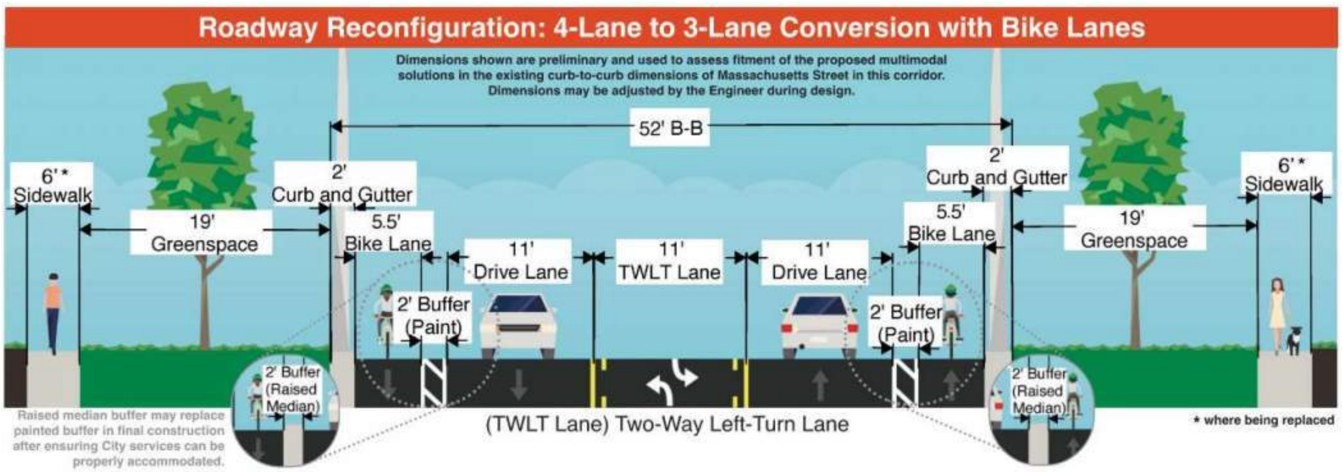
Center Median

A MMTC Commissioner inquired about use of a center median through the corridor. The City Engineer does not support this as the proposed two-way left-turn lane (TWLTL) accommodates left turning movements that are anticipated to be safer than the existing condition. A center median would significantly change traffic patterns throughout the corridor, which was not included as part of the study. Additionally, the MMTC Commissioner suggested treed center medians, which would have maintenance, sight distance, and other challenges and is not recommended without further analysis.

Further evaluation on these topics will be presented to the final MMTC meeting April 1, 2024.

Preferred Alternative – Cost Estimate

Based on the engineering analysis, feedback from the community, and coordination with the City, the preferred alternative is Option B. This alternative includes a roadway reconfiguration along Mass Street from 14th Street to 23rd Street with bike lanes on each side. The bike lanes are recommended to have a painted buffer in the interim with implementation of raised medians, contingent on coordination with MSO Operations, to provide more comfort to bicyclists. The existing curb is intended to remain in it's existing location, which will minimize impacts to the existing street trees as identified as a priority during community engagement.



Typical Section of the Preferred Alternative (Option B)

Other key scope items of the preferred alternative are included in the list below:

- Remove existing traffic signal at 17th Street due to not meeting MUTCD traffic signal warrants and elevated crash history. Install pedestrian hybrid beacon to provide a safe crossing for pedestrians.
- Construct a protected intersection at 19th Street including modifications to the traffic signal and safe bike/pedestrian crossings.
- Remove the westbound high-speed right turn at 23rd Street and install a standard right turn lane. Modify the traffic signal accordingly.
- Provide mid-block crossings between 15th and 16th Street as well as 17th and 19th Street. Crossings should include pedestrian refuge islands and be controlled with Rectangular Rapid Flashing Beacons (RRFB's).
- Improve bus stops by installing floating bus stops to reduce conflicts between all users and provide a dedicated space for transit amenities such as shelters, benches, and trash receptacles.
- Install a 5-foot sidewalk on the west side of Mass Street from 21st Street to 23rd Street to improve the pedestrian connectivity along the corridor.
- Replace existing sidewalk due to poor conditions. It is assumed in the estimate that 25% of the existing sidewalk may be replaced. Additionally, improve the pedestrian crossings along Mass Street to meet ADA compliance.

A conceptual construction cost estimate was developed for purposes of securing funding for the construction of the improvements identified. The estimate assumes a 2-inch mill and overlay for the extents of the project along with the improvements identified. The project construction cost is estimated to be $2,970,000. A summary of the construction cost estimate is shown in **Exhibit H.**

Refer to Exhibit H – Conceptual Construction Cost Estimate

Concept Refinement (Preferred Alternative) – Public Open House #3

Representatives from the City of Lawrence, TREKK Design Group, and Shockey Consulting facilitated an open house format public meeting on March 27th, 2024 from 4:30 to 6:30 PM at Liberty Memorial Central Middle School within the study area of the project.

There were three boards with content for informational purposes including the following:

- Project Background
- Preferred Concept Design
- Next Steps and Upcoming Engagement Opportunities

A strip map of the final concept design was also shared. Attendees were encouraged to reach out to the City Project Manager and/or attend the upcoming commission meetings to provide any further feedback or questions. Content shared at the public meeting is shown in **Exhibit I**.

Refer to Exhibit I – Public Open House #3 Content

Multimodal Transportation Commission (MMTC) Meeting #3

Multimodal Transportation Commission at the April 1, 2024 meeting voted 4-2 to recommend approval of the study contingent on including raised median protected bicycle lanes. However, City staff recommends a painted buffer in place of a raised median due to Solid Waste and operational concerns. A raised median would complicate snow and debris removal adding equipment, equipment maintenance, logistics, and personnel costs. A raised median would add to potential solid waste personnel safety concerns. There is no funding available to support increased operational and maintenance requirements of this type of service level enhancement.

The content shared with the commissions is shown in **Exhibit J**.

Refer to Exhibit J – MMTC #3 Agenda – Preferred Alternative

City Commission Meeting

City representatives attended and presented the project to the City of Lawrence City Commission on April 9, 2024. The goal of the presentation was to share the draft of this Multimodal Improvement Study and request approval. The content shared with the commissions is shown in **Exhibit K**.

Refer to Exhibit K – City Commission Agenda – Preferred Alternative

The City Commission voted unanimously 4-0 to approve the Multimodal Improvement Study with a request to report back before or during the design phase with additional information for City Commission feedback. The additional information requested was in reference to the options of providing physically separated bike lanes (raised medians) or painted buffer bike lanes. It is understood that there may be challenges with maintenance and trash pickup with raised medians, however City Commission requested further design considerations and cost implications to be considered before approval of the preferred alternative.

Other Design Considerations & Next Steps

The next step before construction and implementation of the proposed improvements includes securing funding and developing construction plans during a design phase. Design should adhere to the recommendations summarized, however further details should be developed including, but not limited to, the following:

- On-street bikeway geometrics (raised medians, painted buffer, cycle track, etc.)
- Median extents, if provided, considering maintenance and trash services.
- Geometrics of on-street parking and access management evaluation and design.
- Crosswalk considerations at intersections.
- Traffic signal modifications due to lane adjustments on Mass Street.
- Traffic signal phasing and timing including modifications to pedestrian crossing timing where applicable, such as at 23rd Street.
- Turn lane storage length recommendations at intersections.
- Evaluation of existing sidewalk and sidewalk ramps per ADA compliance requirements and conditions.
- Lighting considerations and potential upgrades/improvements.

Exhibit A

Public Open House #1 Content

MASS. STREET MULTIMODAL IMPROVEMENTS STUDY – 14th to 23rd Street
Community Conversation – Open House #1 – Questionnaire

1. **Which form of transportation do you use the most on a weekly basis?** *[check one]*

- ☐ Bicycling (including electric assist bikes/e-bikes)
- ☐ Driving
- ☐ Public transit (Lawrence Transit/KU on Wheels bus, Independence Inc., Senior Resource Center)
- ☐ Ride sharing app such as Uber or Lyft
- ☐ Ride from a friend or family
- ☐ Walking (including the use of a mobility device such as a wheelchair or walker)
- ☐ Other (please specify):____

2. What are the reasons that you walk? *[check all that apply]*

- ☐ Exercise/Health/Relaxation
- ☐ Get to and from the bus
- ☐ Go to school or take my children to school
- ☐ Go to work
- ☐ Other (please specify):____
- ☐ Run errands
- ☐ To save time/money and/or the environment
- ☐ I rarely walk

____

3. What makes it difficult or unpleasant for you to walk (travel by foot or using scooters, wheelchairs and other mobility devices, that are not a bicycle)? *[check all that apply]*

- ☐ Amount of traffic on the street
- ☐ Curb ramps missing or in disrepair, steep slopes or stairs
- ☐ Drivers going too fast
- ☐ Drivers not watching for or yielding to people crossing streets or driveways
- ☐ I worry about my personal security
- ☐ Lack of a connection from the sidewalk to businesses
- ☐ Lack of shade or conditions that are slippery when wet
- ☐ Landscaping, brush, dirt, debris, signposts, light posts, parked vehicles, etc., blocks the sidewalk
- ☐ Long distances between my destinations (work, school, parks, shopping, etc.)
- ☐ No grass or landscaping between the sidewalk and the road
- ☐ Not enough time to cross with signal
- ☐ Poor lighting
- ☐ Safety of crossing needs improvement or distance is too far
- ☐ Sidewalk is in disrepair/is a tripping hazard
- ☐ Sidewalks connected to my destination
- ☐ Other (please specify):____

4. **Do you currently own a bicycle?** *[check one]*

- ☐ Yes
- ☐ No, but I would like to (Skip Question 5, Go to Question 6)
- ☐ No, and I am not interested in owning a bike (Skip Question 6, Go to Question 7)

5. **What are the reasons you bike?** *[check all that apply]*
   - ☐ Exercise/Health/Relaxation
   - ☐ Get to and from bus
   - ☐ Go to school or take my children to school
   - ☐ Go to work
   - ☐ To save time/money and/or the environment
   - ☐ Run errands
   - ☐ I rarely bike
   - ☐ Other (please specify):____

     ____

6. **What prevents you from bicycling more?** *[check all that apply]*
   - ☐ Ability to afford a bicycle
   - ☐ Aggressive/speeding drivers
   - ☐ Bicycle facilities don't connect
   - ☐ Concerned about personal hygiene/nowhere to shower after riding
   - ☐ Concerned about personal safety (crime, harassment, dogs, etc.)
   - ☐ I don't know the best route
   - ☐ Intersections are too wide/busy
   - ☐ Lack of bike racks at my destination
   - ☐ Lack of dedicated on road bicycle facilities (such as protected bike lanes)
   - ☐ My destination is too far away, or I don't have enough time
   - ☐ Personal ability (physical limitation or don't know how to ride a bicycle)
   - ☐ Physical barriers (railroads, rivers, hills, highways)
   - ☐ Poor street lighting
   - ☐ Unsafe roadway conditions (potholes, inlet grates, debris, etc.)
   - ☐ Weather (rain, heat, cold, snow)
   - ☐ Other (please specify):____

     ____

7. **This study will be considering ways to improve conditions along Massachusetts Street from 14th Street to 23rd Street. Please rank the following in order of importance to you. (1 is the most important, 7 is the least)**

   ____ Bike Improvements (Bike Lane, Shared Use Path, Separated Bike Lane, etc.)

   ____ Pedestrian Improvements (Sidewalks, Shared Use Path, etc.)

   ____ Bus Stop Improvements (ADA Access Pad, Benches, Shelters, etc.)

   ____ Traffic Calming/Reduced Speeds

   ____ Preserving On-Street Parking between 14th and 23rd Street

   ____ Landscape/Trees

   ____ Lighting

8. **How often do you travel on Massachusetts Street from 14th to 23rd Street?** *[check one]*

   ☐ Daily ☐ Weekly ☐ Monthly ☐ Rarely

9. Potential Multimodal Improvement Ideas:

Reducing impacts to street trees or adding street trees, shared use paths, sidewalk connectivity, improving pedestrian ramps, installing medians, installing mid-block crossing with adequate signage and visibility such as a rectangular rapid flashing beacon, road sharing, bike lanes, buffered bike lanes, separated bike lanes, benches, bus shelters, floating bus stops, access management control with the use of medians, roadway reconfiguration, on-street parking, or intersection bump-outs.

Please let us know your priorities: check your priorities and if you have additional feedback/input on specific approaches please add that information.


Preserve Street Trees

☐ Preserving Street Trees:


Pedestrian Refuge Island

☐ Pedestrian Refuge Island:


ADA Compliant Pedestrian Ramps

☐ ADA Compliant Pedestrian Ramps:


Mid-Block Crossing - Rectangular Rapid Flashing Beacon

☐ Mid-Block Crossing – Rectangular Rapid Flashing Beacon:


HAWK Signal

☐ HAWK Signal:


Sidewalk Connectivity

☐ Sidewalk Connectivity:


Improve Sidewalk Condition

☐ Improve Sidewalk Condition:


On-Street Bike Lane

☐ On-Street Bike Lane:


On-Street Buffered Bike Lane

☐ On-Street Buffered Bike Lane:


On-Street Separated Bike Lane

☐ On-Street Separated Bike Lane:


Intersection Improvements - Bike Boxes

☐ Intersection Improvements – Bike Boxes:

9. (continued) Potential Multimodal Improvement Ideas:


Intersection Improvements - Conflict Area Markings

☐ Intersection Improvements – Conflict Area Markings:_______


Off-Street Shared Use Path

☐ Off-Street Shared Use Path:___


Cycle Track

☐ Cycle Track:_______________


Separated Bike Lane with Floating Bus Stop

☐ Separated Bike Lane with Floating Bus Stop:__________


Central Median - Access Management

☐ Central Median – Access Management:______________


Bus Stop Pad & Bench

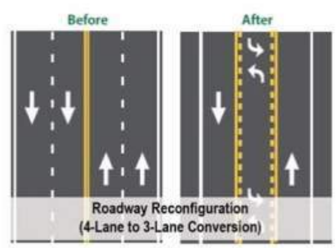
☐ Bus Stop Pad & Bench:_____


Bus Stop Pad with Shelter & Bench

☐ Bus Stop Pad with Shelter & Bench:________________


On-Street Parking

☐ On-Street Parking:_________



Roadway Reconfiguration (4-Lane to 3-Lane Conversion)

☐ Roadway Reconfiguration (4-lane to 3-lane conversion):


Intersection Bump-Outs

☐ Intersection Bump-Outs:____

Additional Comments:

10. What excites you most about this project?

____
____
____
____
____
____

11. What concerns you most about this project?

____
____
____
____
____
____

12. To help us understand the transportation options available to you, where do you live?

Street:____

Nearest Cross Streets/Intersection:

______________________*(First Street) and*______________________*(Second Street)*

Zip Code: ____

13. What is your age? *[check one]*

- ☐ Under 18 years
- ☐ 18-24 years
- ☐ 25-34 years
- ☐ 35-44 years
- ☐ 45-54 years
- ☐ 55-64 years
- ☐ 65 years and over
- ☐ Prefer not to answer

14. Which race/ethnicity best describes you? *[check all that apply]*

- ☐ American Indian & Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Hispanic
- ☐ Native Hawaiian or Pacific Islander
- ☐ White
- ☐ Other (please specify):
- ☐ Prefer not to answer

15. Please provide your <u>email</u> if you want to receive updates on the project. *[optional]*

____

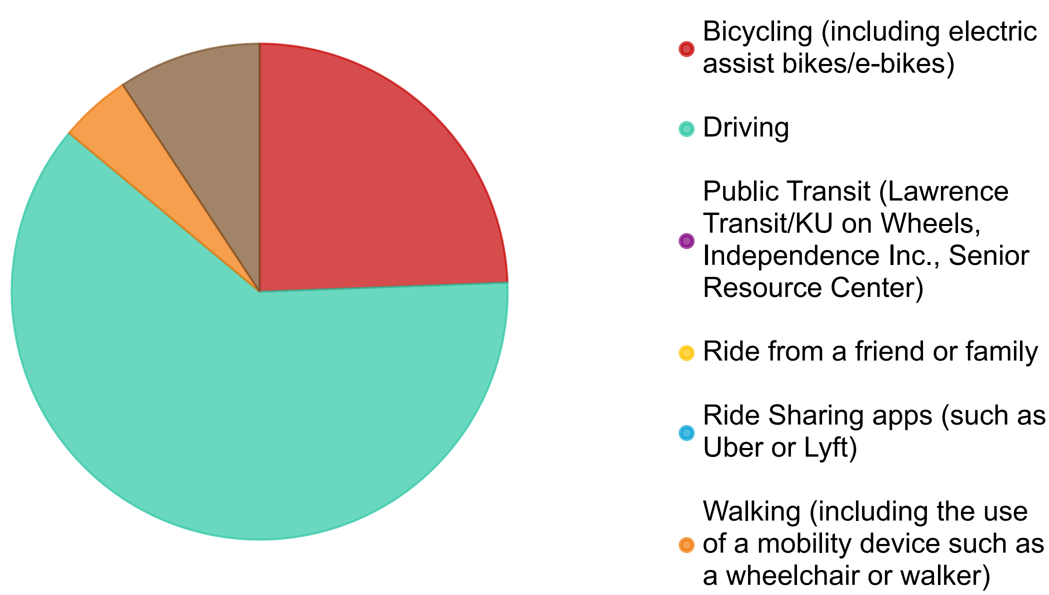
Exhibit B

Public Open House #1 Feedback Summary

Mass. Street Multimodal Improvements Study

Walking/Biking

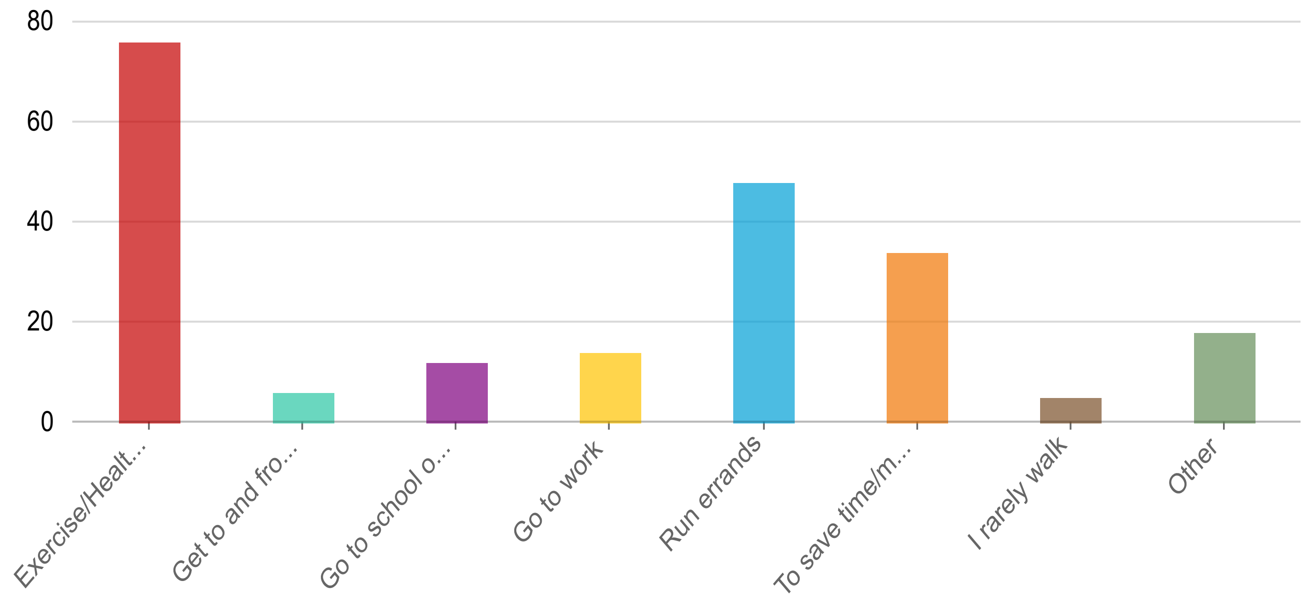
1. Which form of transportation do you use the most on a weekly basis?



Answers	Count	Percentage
Bicycling (including electric assist bikes/e-bikes)	21	24.42%
Driving	53	61.63%
Public Transit (Lawrence Transit/KU on Wheels, Independence Inc., Senior Resource Center)	0	0%
Ride from a friend or family	0	0%
Ride Sharing apps (such as Uber or Lyft)	0	0%
Walking (including the use of a mobility device such as a wheelchair or walker)	4	4.65%
Other	8	9.3%

Answered: 86 Skipped: 0

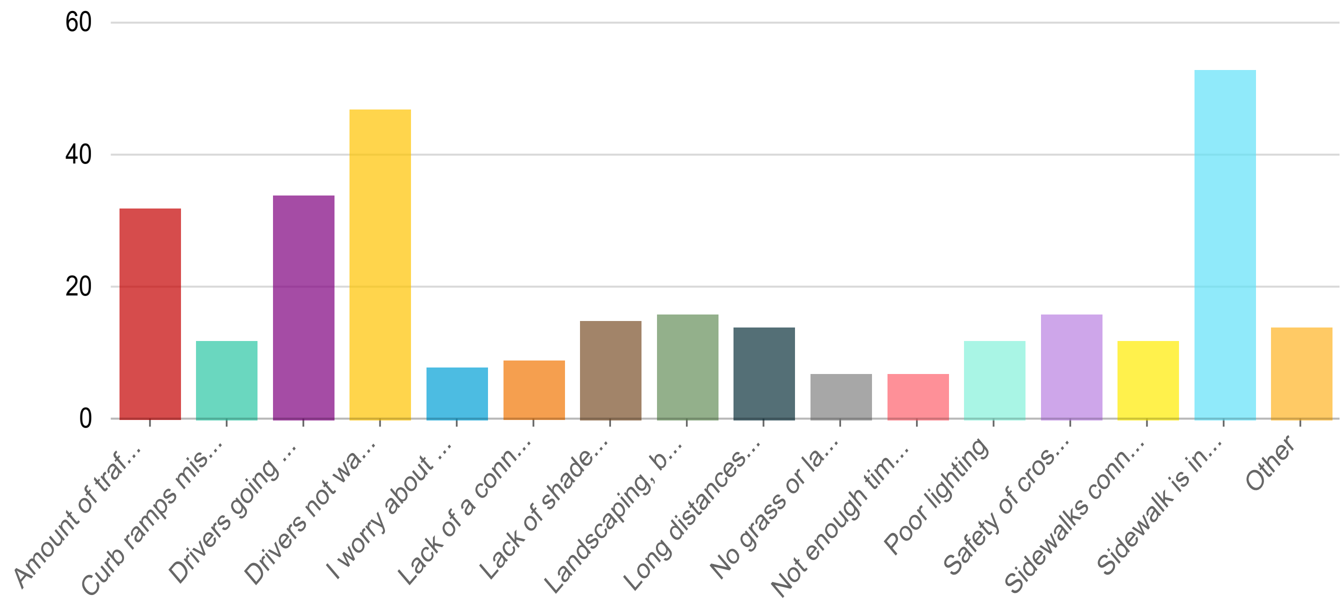
2. What are the reasons that you walk?



Answers	Count	Percentage
Exercise/Health/Relaxation	76	88.37%
Get to and from the bus	6	6.98%
Go to school or take my children to school	12	13.95%
Go to work	14	16.28%
Run errands	48	55.81%
To save time/money and/or the environment	34	39.53%
I rarely walk	5	5.81%
Other	18	20.93%

Answered: 86 Skipped: 0

3. What makes it difficult or unpleasant for you to walk (travel by foot or use a scoote…



Answers	Count	Percentage
Amount of traffic on the street	32	37.21%
Curb ramps missing or in disrepair, steep slopes or stairs	12	13.95%
Drivers going too fast	34	39.53%
Drivers not watching for or yielding to people crossing streets or driveways	47	54.65%
I worry about my personal security	8	9.3%
Lack of a connection from the sidewalk to businesses	9	10.47%
Lack of shade or conditions that are slippery when wet	15	17.44%
Landscaping, brush, dirt, debris, signposts, light posts, parked vehicles, etc., blocks the sidewalk	16	18.6%
Long distances between my destinations (work, school, parks, shopping, etc.)	14	16.28%
No grass or landscaping between the sidewalk and the road	7	8.14%
Not enough time to cross with signal	7	8.14%
Poor lighting	12	13.95%

Safety of crossing needs improvement or distance is too far	16	18.6%
Sidewalks connected to my destination	12	13.95%
Sidewalk is in disrepair/is a tripping hazard	53	61.63%
Other	14	16.28%

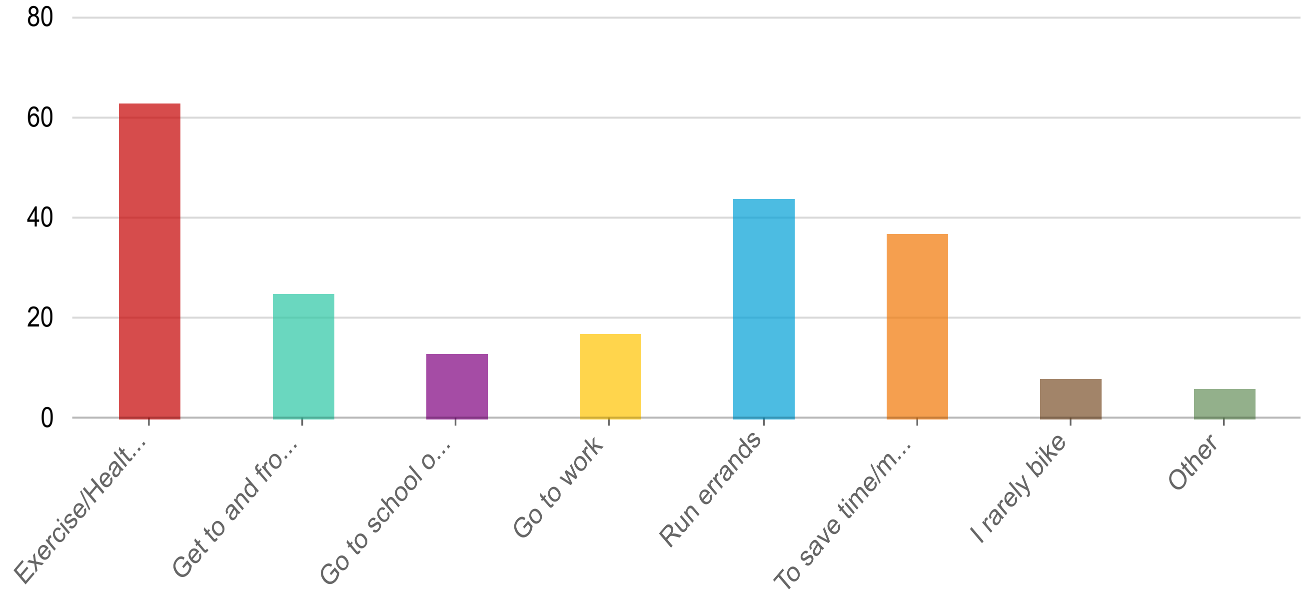
Answered: 83 Skipped: 3

4. Do you currently own a bicycle?

Answers	Count	Percentage
Yes	72	83.72%
No, but I would like to (Skip Question 5, Go to Question 6)	2	2.33%
No, and I am not interested in owning a bike (Skip Questions 5 and 6, Go to Question 7)	10	11.63%

Answered: 84 Skipped: 2

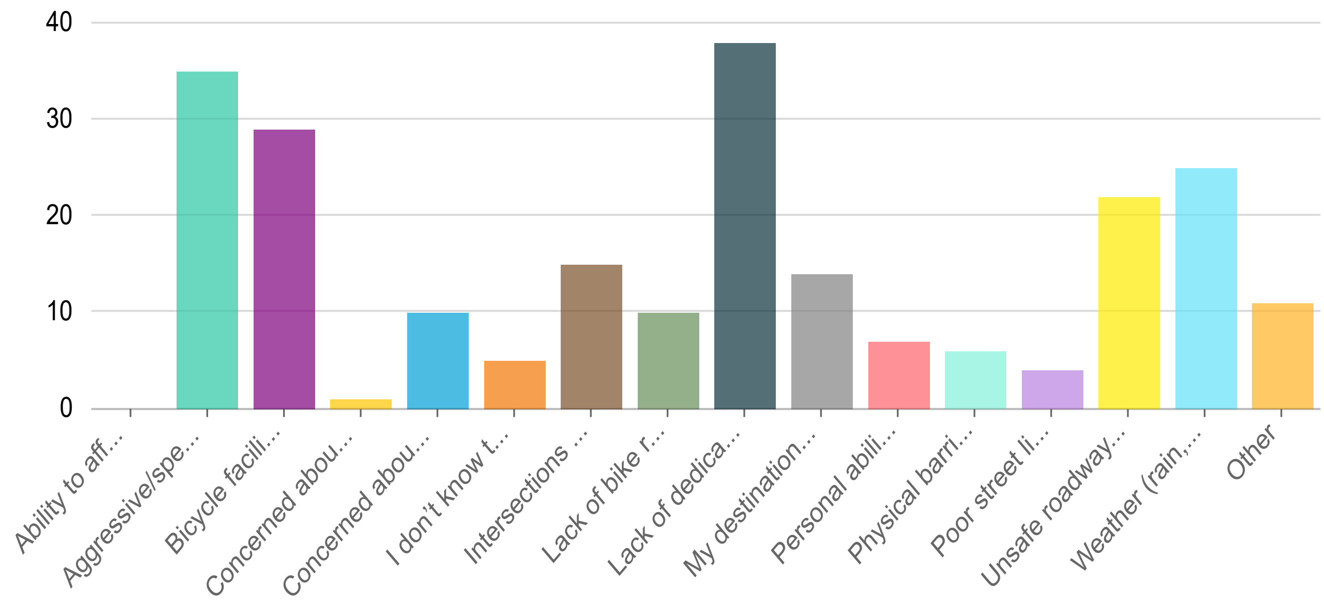
5. What are the reasons you ride a bicycle?



Answers	Count	Percentage
Exercise/Health/Relaxation	63	73.26%
Get to and from the bus	25	29.07%
Go to school or take my children to school	13	15.12%
Go to work	17	19.77%
Run errands	44	51.16%
To save time/money and/or the environment	37	43.02%
I rarely bike	8	9.3%
Other	6	6.98%

Answered: 75 Skipped: 11

- **6. What prevents you from bicycling more?**

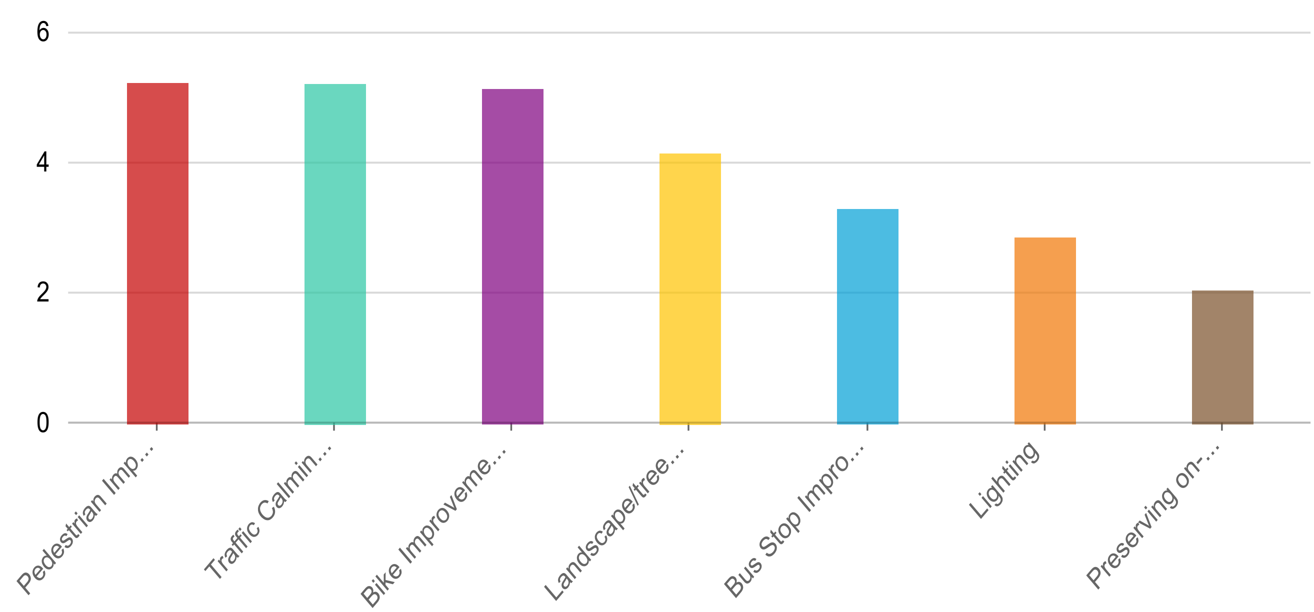


Answers	Count	Percentage
Ability to afford a bicycle	0	0%
Aggressive/speeding drivers	35	40.7%
Bicycle facilities don’t connect	29	33.72%
Concerned about personal hygiene/nowhere to shower after ri ding	1	1.16%
Concerned about personal safety (crime, harassment, dogs, et c.)	10	11.63%
I don’t know the best route	5	5.81%
Intersections are too wide/busy	15	17.44%
Lack of bike racks at my destination	10	11.63%
Lack of dedicated on road bicycle facilities (such as protected bike lanes)	38	44.19%
My destination is too far away or I don’t have enough time	14	16.28%
Personal ability (physical limitation or don’t know how to ride a bicycle)	7	8.14%
Physical barriers (railroads, rivers, hills, highways)	6	6.98%

Poor street lighting	4	4.65%
Unsafe roadway conditions (potholes, inlet grates, debris, etc.)	22	25.58%
Weather (rain, heat, cold, snow)	25	29.07%
Other	11	12.79%

Answered: 73 Skipped: 13

7. This study will be considering ways to improve conditions along…

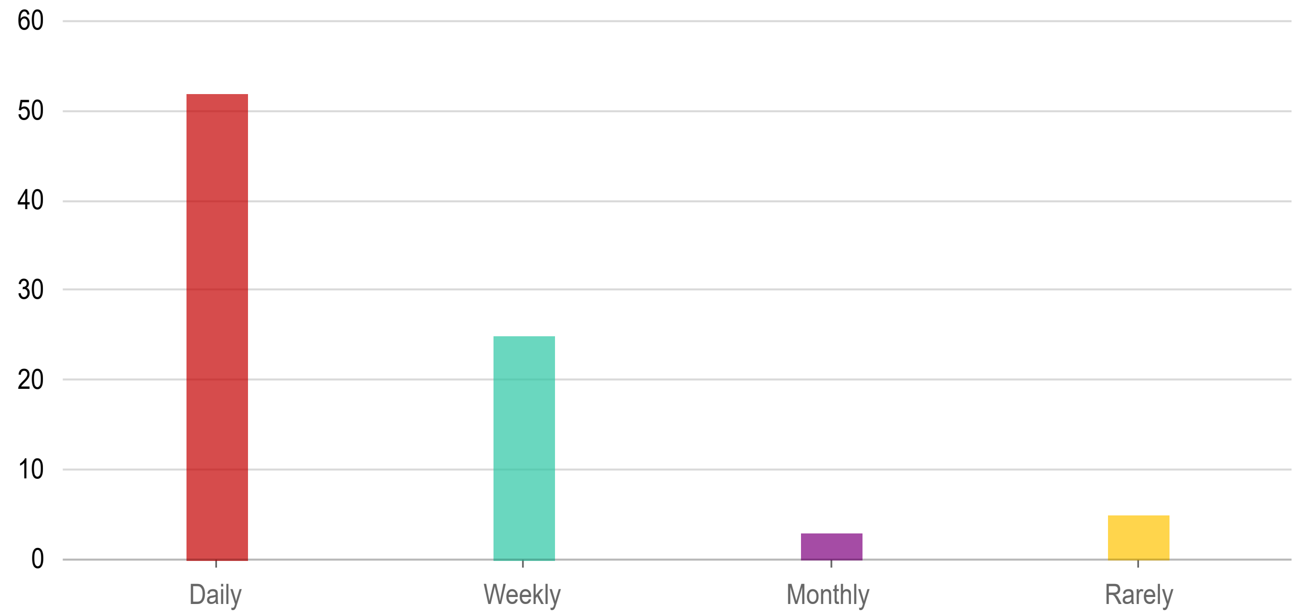


Rank	Answers	1	2	3	4	5			Average score
1	Pedestrian Improvements (Sidewalks, Shared Use Path, etc.)	13.33% 10	28% 21	36% 27	16% 12	5.33% 4	1.33% 1	0% 0	5.24
2	Traffic Calming/Reduced Speeds	29.33% 22	24% 18	17.33% 13	12% 9	8% 6	5.:		5.23
3	Bike Improvements (Bike Lane, Shared Use Path, Separated Bike Lane, etc.)	38.67% 29	14.67% 11	14.67% 11	8% 6	9.33% 7	8% 6	6.67% 5	5.15
									4.16

4	Landscape/trees	9.33% 7	17.33% 13	16% 12	17.33% 13	20% 15	17.3 13	4.16 2

Answered: 75 Skipped: 11

8. How often do you travel on Massachusetts Street from 14th Street to 23rd Street?



Answers	Count	Percentage
Daily	52	60.47%
Weekly	25	29.07%
Monthly	3	3.49%
Rarely	5	5.81%

Answered: 85 Skipped: 1

Multimodal Improvement Ideas/Feedback

Multimodal Improvement Ideas/Feedback > 9a. Preserve Street Trees

Please share any additional feedback/input.

Response	Count
very important	3
Top priority.	2
your really asking that?	1
Yes keep the trees.	1
Would love to keep street trees in areas where appropriate. Gives shade when walking and adds a nice feeling to the neighborhood.	1
What makes Mass. special. Need to be preserved.	1
Trees have been removed but not replaced. Older trees need more attention.	1
Trees are such a great mental bonus	1
Trees are nice for shade and aesthetics, but they will regrow if we need to prune or cut a few. Don't cut 'em all, though. Not the highest priority.	1
The large trees are nice, but many look to be at the end of life and would likely limit sidewalk extension on the west side of the street given existing grades. They could be removed/replaced in my opinion.	1
Street trees need preventive maintenance-- large limbs annually fall on road/power lines	1
Street trees are one of Lawrence's best assets. It is very important to preserve street trees.	1

So many old beautiful trees that we need to keep.	1
provide protection from weather + beautiful	1
preserving trees is very important to our town	1
Please save the trees.	1
Please preserve trees on Mass. They are very we lcoming.	1
Please do not make Massachusetts Street undrivable like 21st Street! Please use our tax dollars to fix our existing streets and sidewalks.	1
plant more trees	1
Moving curbs may impact root structures.	1
makes walking nicer, helps with traffic calming	1
Looks lovely. Helps reduce heat islands effect	1
less important than improving safety + saving lives	1
If this project goes forward, saving existing trees is a primary concern.	1
I think this is very important for all users	1
I love how Lawrence is full of trees, it's one of the reasons I love living here and it's important to have t rees both for beauty and shade.	1
I am listing my priorities numerically. this is: PRIORITY #3 Trees on this part of Mass. Street have bee n somewhat neglected. The city needs to take better care of them.	1
I actually have a tree on Mass that should come down, as one of its two trunks is leaning about ~1/4 o ver Mass. Of course, would like it replaced with another or sound-reducing landscaping.	1
High priority for me	1
Can we do something about illegal mufflers noise too?	1
Plant trees in medians, islands, more trees	1
Natural speed reducers	1
depends, love trees but might have to sacrifice	1

any widening of st should be only 1-2 feet	1

Answered: 37 Skipped: 49

Multimodal Improvement Ideas/Feedback > 9b. Sidewalk Connectivity

Please share any additional feedback/input.

The word cloud requires at least 20 answers to show.

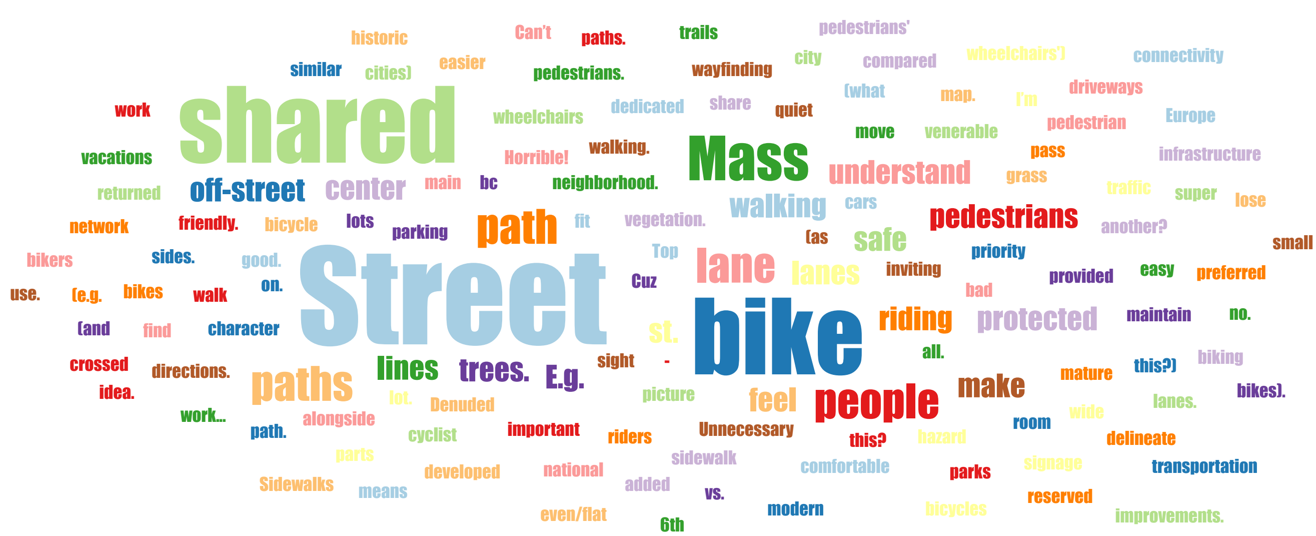
Response	Count
Yes and widen enough for bike & ped	1
Wider sidewalks	1
There are no sidewalks on the west side of Mass St from 23rd to 21st. Sidewalks on the east side are narrow and deteriorated. Additional connectivity on the arterial roadway is needed.	1
The west side of Massachusetts from 21 to 23 has no sidewalk and forces pedestrians to travel in uns afe ways.	1
Some sidewalks in the area tend to just end or even on some side of the streets don't exist (east side of mass st on 23rd to 21st).	1
Sidewalks on both sides of Mass. street are very important. If it is possible to make one of them a sha red-use path, with center line markings, it will get much more use than it does now.	1
Sidewalks are in poor shape (cracks, uneven) along many portions of this study route. But this is not a highest priority.	1
Sidewalk upkeep is not ideal in this section of Massachusetts. Brick sidewalks are particularly uneven.	1
Sidewalk is great as is toward north at least.	1
Sidewalk cut cuts and Painted crosswalks at all intersections...Crosswalks double as traffic calming d evices...	1
Narrower streets for slower cars and shorter crossings.	1
important must be ADA compliant	1
Fill gaps and repair sidewalks	1

Essential	1
Construction signs often block sidewalks unnecessarily.	1
Cant get to 23rd st business. Want crossing 23rd too dangerous.	1
Brick sidewalks are unsafe and not held to same accessibility requirements as other sidewalks	1

Answered: 17 Skipped: 69

Multimodal Improvement Ideas/Feedback > 9c. Off-Street Shared Use Path

Please share any additional feedback/input.



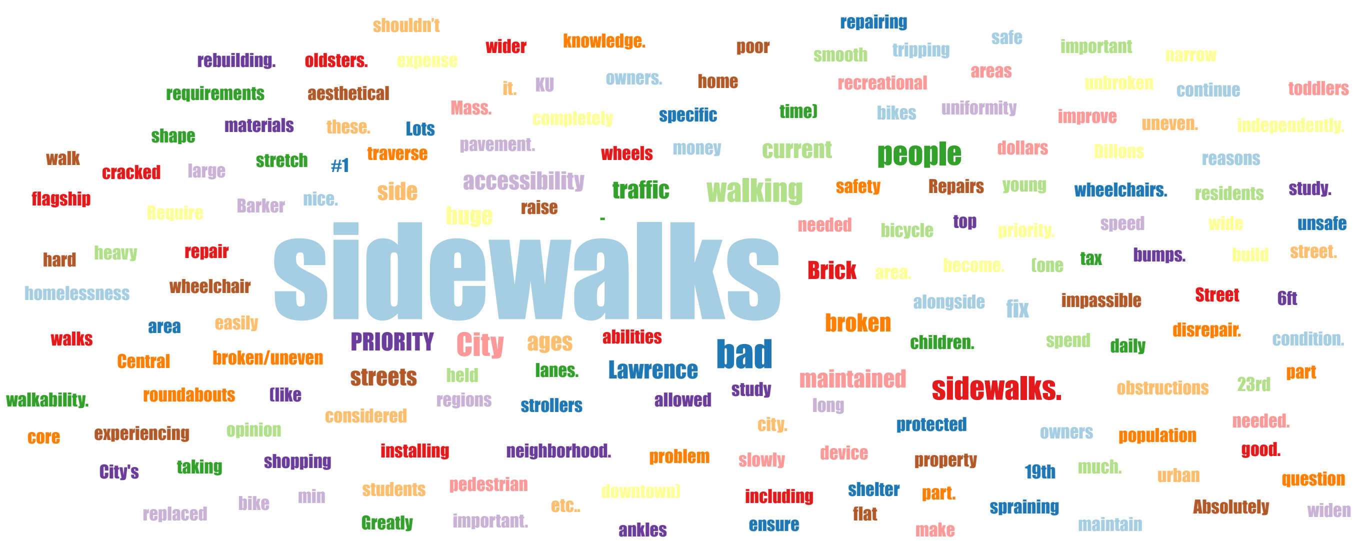
Response	Count
yes everywhere	1
With a center lane	1
Unnecessary on Mass street	1
Top priority	1
This picture says it all. No trees. Who would want our main street to look like this? Denuded of all mat ure vegetation. It might as well be a parking lot. Not inviting at all and doesn't fit with the character of t his venerable old neighborhood. Horrible!	1

This is very important	1
The bicycle riders use the sidewalk instead of the bike lanes provided which make it a hazard for peop le using them for walking.	1
That's be good.	1
Shared use as in room for people in wheelchairs to move alongside people walking without either havi ng to walk on the grass to pass by one another? Cuz Mass street is wide enough and quiet enough fo r a dedicated bike lane on both sides.	1
Off-street paths are safe for cyclist and pedestrians.	1
Off street shared use paths are both bike and pedestrian friendly. However center lines make it much easier to understand how pedestrians and bikes can share them and maintain traffic in two directions. I always feel more comfortable riding off the street than on. Just returned from vacations in several nat ional parks that have developed a network of shared use paths and have added lots of signage to hel p with wayfinding (what street is this?) It was super easy to find our way around - even without a map.	1
Not preferred bike infrastructure bc I'm not within sight lines of cars on a shared use path. Better to ha ve protected on street bike lanes.	1
not as safe as it seems	1
no. bikers take over all shared paths. would lose trees. no	1
NO off-street shared use path	1
If you can clearly delineate the biking vs. walking parts of the path (as e.g. in Europe or modern citie s), this could work... though so many driveways will be crossed along Mass St., it might not be the mo st even/flat for bike riding (e.g. compared to a protected street lane for bikes).	1
If by shared, you mean a path that could be used both by pedestrians and bicycles or other small mea ns of transportation, like on many city trails, I believe this is a bad idea. Sidewalks need to be reserve d for pedestrians' (and wheelchairs') use.	1
I wouldn't say no, but I don't understand what the connectivity would be to other similar improvements.	1
E.g. on 6th st.	1
Can't see how this could work on Mass Street and keep historic feel	1
definitely no bike lanes	1

Answered: 21 Skipped: 65

Multimodal Improvement Ideas/Feedback > 9d. Improve Sidewalk Condition

- - **Please share any additional feedback/input.**



Response	Count
Yes, there are many broken/uneven regions in this study area. Repairs would be nice. But I'd rather have protected bicycle lanes.	1
Yes needed	1
Yes	1
Walking for people of all ages and abilities should be considered when it comes to safety and how long and how broken some sidewalks are allowed to become. There is wheelchair accessibility alongside strollers for young children. And no just because a device has wheels does not mean they can easily traverse broken pavement.	1
top priority	1
This should be a huge priority. We should have the city raise money for specific streets (one at a time) and slowly repair these.	1
This is a huge problem in the Barker neighborhood. Some of the sidewalks are completely impassible, especially for those using bikes or wheelchairs.	1

The city should fix them	1
The City of Lawrence should spend our tax dollars to fix our current streets and sidewalks, not installin g more traffic obstructions like roundabouts and speed bumps.	1
Require property owners to do this	1
PRIORITY #1 In my opinion, sidewalks in this stretch of Mass. Street should be maintained by the city. These sidewalks are used by the Lawrence population at large (like the sidewalks downtown) and not only by home owners. This is an area with heavy daily pedestrian traffic, including students walking to and from Central and KU, people shopping at Dillons, people experiencing homelessness walking to a nd from the shelter, residents taking recreational walks, etc.. Many of the current sidewalks are in bad disrepair. There also needs to be uniformity in the materials used to build the sidewalks, for both aesth etical reasons, and to ensure smooth walkability.	1
Please do improve the sidewalks.	1
Old sidewalks are cracked and uneven.	1
Not bad to my knowledge.	1
min 6ft wide	1
Many sidewalks are in poor condition.	1
Many from 19th to 23rd are in bad shape as well as some areas without sidewalks.	1
Its a flagship street. it should look the part.	1
important.	1
I have bad ankles, unbroken flat sidewalks keep me from tripping and spraining them as much.	1
Greatly needed.	1
good. Just do it.	1
Does not seem like this should be part of a bike study. Can it be done independently.	1
brick sidewalks hard to maintain	1
Brick sidewalks are unsafe and not held to same accessibility requirements as other sidewalks	1
And make them wider	1

All sidewalks in urban core need to be replaced at City's expense	1
Absolutely must continue repairing sidewalks. Its important for all ages - toddlers to oldsters.	1
shouldn’t even need to ask that question	1
please widen when rebuilding. Currently a little too narrow to walk side by side	1
need safe sidewalks	1
Lots of sidewalks haven't been well maintained	1

Answered: 32 Skipped: 54

Multimodal Improvement Ideas/Feedback > 9e. Pedestrian Refuge Island

Please share any additional feedback/input.

The word cloud requires at least 20 answers to show.

Response	Count
yes yes if change to 3 lanes then will keep motorcycles from using center lane as racing	1
Would make it easier to cross busy sections of mass st.	1
This doesn't appear to be needed between 14th and 23rd.	1
This could be nice at the 17th-and-Mass crossing (and perhaps also at 19th?). Many neighborhood ch ildren cross Mass St at those locations to get to Cordley Elementary -- and crossing at 17th is a popul ar route to get to the back (lower) side of the KU campus.	1
These could increase pedestrian safety.	1
These are really good	1
These are a useless waste of our tax dollars. Please stop building them. Please use our tax dollars to fix our existing streets and sidewalks, not build more traffic obstructions.	1
Ridiculous for this area. Most of the day the traffic is fairly low. I walk across Mass St. frequently. I'm 7 2 years old. I don't think this is needed at all.	1
Pedestrian islands make crossing safer and they can be very attractive, with plantings, etc.	1

Not needed. Mass isn't that wide to start with	1
Not needed. Existing crossings are good.	1
Not necessary on Mass street	1
It's be great for no cars, just bus, peds, and bikes. That said, residents need access to drive home, so missing alleys need restoration.	1
If possible, this would be helpful, especially for older people and school kids and parents	1
I would love more of these throughout our city. Our city engineers ain't gonna roll with that so unless o ur city is replacing that whole team, let's move on to more productive talking points.	1

Answered: 15 Skipped: 71

Multimodal Improvement Ideas/Feedback > 9f. On-Street Bike Lane

Please share any additional feedback/input.

Response	**Count**
yes 100%	1
wont worry as much about traffic	1
With protective bumps or barriers	1

When I'm driving I worry about hitting bikers so I like plenty of room to pass them by.	1
This might be ok but why? Vermont street is a perfectly serviceable bike route from 15th going south. Extend the bike lane on Mass from 14th to 15th and that's all that's needed. Why spend all the money on a Mass St. bike lane all the way to 23rd? Its a wasteful use of our tax dollars.	1
This is the minimum acceptable standard for Mass St. bicycle facilities. Protected lanes would be bett er. Whatever the form: extend the lanes from 14th St. south at least as far as 21st, to connect with the E/W bike route there.	1
This feels less safe on a bike than a buffered lane	1
They should be available, but not to the extent that they negatively impact car traffic flow.	1
The newer lanes added at 21st and Massachusetts are usually impassable due to parked cars so I wo uld not be in favor of adding more.	1
Protected bike lane preferred but designated bike lane the entire length of Mass Street is necessary	1
Not needed. Would not tie to existing infrastructure.	1
Not ideal at all but its something. This is a bicycle gutter	1
No, this isn’t safe.	1
No shit Sherlock. People won’t bike more unless they feel protected and the reality is most drivers do n’t think or consider the safety of bicyclists anymore. Behavior must be modeled into our infrastructure plans.	1
no not safe	1
no brainer	1
Need safe bike access on Mass st. south of 14th; cars do not respect bicyclist right to use a lane of tra ffic, and as a result bicyclists regularly use the sidewalk, contributing to overall unsafe conditions.	1
Its nice to have designated bike lanes, but they do not feel very protected from inattentive drivers. I us ually prefer to move to the sidewalk or multi-use path.	1
Good if no room for buffer	1
good	1
Already doing this and thank you!	1

A stop in the right direction, but buffer space or protection are ideal.	1
insufficient	1

Answered: 23 Skipped: 63

Multimodal Improvement Ideas/Feedback > 9g. ADA Compliant Pedestrian Ramps

Please share any additional feedback/input.

The word cloud requires at least 20 answers to show.

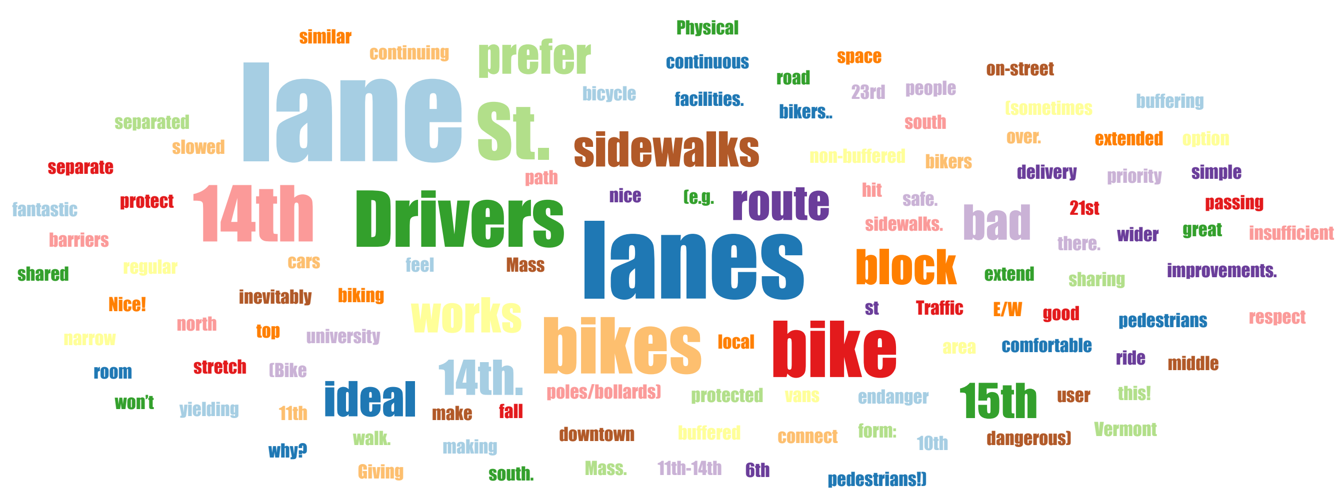
Response	Count
Yes!!	1
Yes this is important for accessibility	1
yes	1
Works well for baby strollers.	1
This is fine if it's needed.	1
These are needed at all intersections. My wife uses a wheelchair and some sidewalks in this area are lacking these.	1
Skate board friendly	1
See Emery Road and High Street.	1
Not a priority for me, but I'd like them for those who need them	1
Missing ramps near Memorial and South Park	1
It is hard enough to get a stroller up.down ramps, it can't be ADA compliant. Just a block over, 17th an d vermont "ramp" is extremely unsafe, forces you into traffic if you cannot get over a curb.	1
Improvements needed at 19th St.	1
I use for biking	1
I dont believe those are negotiable per ADA Law.	1

Elevate the street at crossings rather then dropping footpath to street level	1
all for bike lanes + ADA walkability but also want to make sure businesses on Mass St. are still activity accessible	1
ADS very important	1
Absolutely must have.	1
14th & Mass crosswalk is not in line with the sidewalk	1

Answered: 19 Skipped: 67

Multimodal Improvement Ideas/Feedback > 9h. On-Street Buffered Bike Lane

- • Please share any additional feedback/input.



Response	Count
better	2
Yes, Yes, Yes, especially on a block with no sidewalks.	1
Traffic must be slowed down before biking is safe.	1
this would be nice	1

This would be better than non-buffered lanes for for Mass St. bicycle facilities. But protected lanes (e.g. poles/bollards) would be better, to protect bikers from bad local drivers, bad university drivers, and delivery vans which will otherwise inevitably block the lanes and endanger bikers.. Whatever the form: extend the lanes from 14th St. south at least as far as 21st, to connect with the E/W bike route there.	1
This wider area would make me feel more comfortable about sharing the road and less like I'll hit someone if they fall over.	1
This is my top priority for improvements. The buffered lane between 14th and downtown works very well	1
They might use them then instead of making pedestrians using sidewalks to walk.	1
These are great north of 14th.	1
The stretch from 11th to 14th is much better than it used to be	1
Should be extended from 23rd to 6th	1
regular user of lane from 10th to 14th. needs to be continuous down Mass.	1
Physical barriers to separate cars and bikes	1
Nice! As it is, many people ride bikes on the sidewalks (sometimes right in the middle of them and not yielding to pedestrians!)	1
Less ideal	1
I prefer separated or shared use path	1
good	1
Giving bikes as much space as possible is ideal (Bike lane on e 15th st is narrow and dangerous)	1
fantastic if is there room for this	1
even better this!	1
Drivers still won’t respect the passing	1
Definitely prefer continuing the lane similar to 11th-14th	1
Better than simple bike lane	1
Better option than on-street without buffering	1

Again, why? Vermont St. as a bike route works well from 15th on south.	1
insufficient	1

Answered: 27 Skipped: 59

Multimodal Improvement Ideas/Feedback > 9i. Mid-Block Crossing – Rectangular Rapid Flashing Beacon

Please share any additional feedback/input.

The word cloud requires at least 20 answers to show.

Response	Count
Yes please!	1
where needed to connect to other paths	1
These are very useful on a street where bikes/pedestrians occasionally need to cross, and traffic may be heavy only at certain times of day.	1
These are okay but often drivers don’t yield	1
These are cool devices when vehicle drivers choose to respect the flashing lights and the fact someon e is in the street. As a pedestrian and a driver observing other driver’s behavior it has become clear th at many in this community view these items as a joke and not a safety feature. Is there a way to beef up these devices?	1
The new crossing at 21st and Massachusetts is helpful but traffic overall must be slowed down.	1
Sure, if needed. It’s hard to cross Mass at 16th street	1
Stop lights are wasteful, inefficient and unnecessary if enough other traffic calming devices are used	1
PRIORITY #5	1
Perhaps useful at 15th or 16th... I'm not convinced this is essential, though.	1

Once again, extending the bike route south on Mass seems foolish to me. Using parallel, less busy streets for bike routes makes more sense than trying to make bike travel safe on more heavily trafficked main thoroughfares. I live on Vermont street just south of 15th. We have dozens of happy safe bike riders pass daily. Joggers and walkers are happy and safe on our street also. It is clear to me that the proposed project is not needed. Fix the sidewalks, add ADA compliant ramps where needed, extend the bike lane to 15th and keep the bike route on Vermont. Thanks for considering my feedback.	1
Not needed.	1
Not clear that cars respect these; a HAWK signal is preferred. But in general more mid-block crossing would be great-- very dangerous and difficult to cross between 17th and 14th as a pedestrian.	1
I'd like to see something like this implemented in the curved right turn yield when turning north onto mass from 23rd. Drivers go way too fast through that section and it's dangerous for pedestrians to cross there. That area is also a hazard for the driveways just past the turn.	1
do it	1
Dislike. could also add traffic calming speed bumps.	1
Current configuration for crossing Mass (with a light) seems adequate for this stretch of roadway	1
As a driver I've never liked these as they're harder to notice than stop lights.	1
Adding additional crosswalks would be huge for pedestrians and cyclist.	1

Answered: 19 Skipped: 67

Multimodal Improvement Ideas/Feedback > 9j. On-Street Separated Bike Lane

- **Please share any additional feedback/input.**

Response	Count
YES! This is what I want please	1
Would require additional street sweeping - with that, would be great.	1
Would really like the curb to help calm traffic and protect cyclist.	1
Would love to see Lawrence incorporate more of these on major streets.	1
We cant ride on the road due to speeders and not on sidewalk due to them being in bad shape.	1
Uh, no.	1
This would be the best possible outcome for Lawrence bikers. Protect our citizens, our children, and e ncourage SAFE biking. Whether with curbs, poles, bollards, etc. -- this design protects bikers from ba d local drivers, bad university drivers, and delivery vans which will otherwise inevitably block the lanes and endanger bikers. Whatever the form: extend the lanes from 14th St. south at least as far as 21st, t o connect with the E/W bike route there.	1
This would be even better.	1
This will be amazing and safe	1
This really is what we need to build along this stretch	1
This most of all. It can work but we need people willing to work this stuff into our plans. So again, are we replacing the team cuz they have been resistant to these ideas for years.	1

really the only option to get all users comfortable. Plenty of room for this.	1
oh yes please.	1
Not on Mass. I'd rather preserve trees and the historic character	1
Not needed and would cause too much impact for traffic.	1
Nice and expensive and not at the expense of trees.	1
need strong infrastructure for N/S bike connectivity	1
Ideal solution along Mass street from 15tg to 11th	1
I like these the most.	1
I don't like being in road with cars.	1
great	1
Even better	1
Do it! seriously we need protection from cars. General comment: Raised intersection for cars / traffic c alming.	1
better	1
best	1
A protected bike lane is the safest option	1
not realistic too expensive + not enough room;	1

Answered: 27 Skipped: 59

Multimodal Improvement Ideas/Feedback > 9k. HAWK Signal

● ● **Please share any additional feedback/input.**

The word cloud requires at least 20 answers to show.

Response	Count
This may need to be in addition to other things because people still do not pay attention to the one put in recently on 20th.	1
This is useful at 21st.	1
This is probably the best piece of multimodal infrastructure in Lawrence right now	1
This is good	1
The signal installed at 21st and mass has been great. My spouse and I (along with our dogs) have us ed it multiple times and it’s greatly appreciated. We’d love to see something to make it safer to cross t he right turn yield lane from 23rd to mass.	1
Sure	1
seems they work well depending on location	1
Please dont	1
People rarely know how to use these correctly	1
No.	1
love it but the sidewalk doesn't connect.	1
i observe much driver confusion in reguard to signal lights	1
I love the intersection at 21st street	1
Existing at 21st is good.	1
Biker-activated signals would be nice, but not essential.	1
A waste of resources if more passive traffic calming is used	1
the one @ 21st +Mass is great	1
Drivers hate these. They yell at pedestrians for stopping traffic, fail to slow on yellow, ignore turn-only l anes. As a pedestrian you cannot trust these	1

Answered: 18 Skipped: 68

Multimodal Improvement Ideas/Feedback > 9l. Intersection Improvements – Bike Boxes

Please share any additional feedback/input.

The word cloud requires at least 20 answers to show.

Response	Count
No.	2
Shouldn't be needed much along Mass St., since you're going to extend the bike lanes most/all of the way alone the route.	1
No. Had these in Seattle. Sets up a lot of hostility between drivers and bikers.	1
Indifferent, again just paint	1
I'm not sure how to use these	1
Green paint serves as reminder to drivers.	1
Education about how to use these has not been very successful. Public service announcements need ed. Only a few folks in town know what to call them, or how to use them.	1
E.G. 11th and Mass	1
Cross walk markings	1
Bike boxes are a must as a population in Lawrence is stealing bikes that are locked through sheer ag gression on the locks or bikes. Bike parts are being stolen from bikes that are locked up. Bikes are not cheap. Replacing bike parts is not cheap and becomes a major choke point for those individuals who bike for many of their personal needs. I guess we could instead look at Magnavolt anti theft devices lik e from the movie Robocop 2. That might be the better choice anyway.	1
Almost impossible to get the traffic light crossing Mass st. at 17th to recognize me when I am on my bi cycle. Need to have traffic crossings that allow bicycles to consistently act like cars-- as they should-- rather than forcing them into the sidewalks to cross the street.	1
I am ambivalent about the bike boxes. It might be better if there were more	1

Answered: 13 Skipped: 73

Multimodal Improvement Ideas/Feedback > 9m. Bus Stop Pad & Bench

Please share any additional feedback/input.

The word cloud requires at least 20 answers to show.

Response	Count
Sure.	2
Yes, benches please. It's the very least we can do for the folks forced to use our second-class bus sys tem. Why not shelters, too... go nuts!	1
Yes please!	1
yes	1
Yea	1
Van Go benches as way to brand the city	1
This would make a lot of the stops nicer.	1
Minimum standards	1
Lovely	1
Im a fan of the bus benches that have been popping up around town.	1
I think so, but need to work with homeowners whose yards will be bus stops	1
Hmmm, can we get benches with back support for those who need such support. Do I need to really li st them. Oh wait yes I do. A parent with a child, a worker after a long day, a person with back issues, t he elderly, etc. low hanging fruit here.	1
Decorated bike shelter at 17th and mass is extremely nice-- more please!	1
Bus stops should have a consistent look (seating & shelter)	1
Bus shelters need a roof to be effective shelter in all weather conditions.	1
and some shelter from sun and rain	1

Adding more of these simple bike benches and pads is a fantastic way to advertise the transit system, identify where to catch a bus, and where to put litter when you pick it up along a city street. Oops, whe re is the trash can?	1

Answered: 18 Skipped: 68

Multimodal Improvement Ideas/Feedback > 9n. Intersection Improvements – Conflict Area Markings

Please share any additional feedback/input.

The word cloud requires at least 20 answers to show.

Response	Count
This is ridiculous.	1
These are very, very helpful. It is a big improvement for pedestrians and everyone on wheels.	1
These are good especially if they restrict right hand turns	1
Sure.	1
no brainer	1
Nice!	1
I'm not sure drivers know what those are	1
I'd like to see something like this implemented in the curved right turn yield when turning north onto m ass from 23rd. Drivers go way too fast through that section and it's dangerous for pedestrians to cross there.	1
I have no idea how to read this intersection, what is the green area for?	1
bump outs	1
At 21st is good. Not needed elsewhere.	1
add crosswalks to every intersection.	1

Answered: 12 Skipped: 74

Multimodal Improvement Ideas/Feedback > 9o. Bus Stop Pad with Shelter & Bench

Please share any additional feedback/input.

The word cloud requires at least 20 answers to show.

Response	Count
Yes, more shelters.	1
Yes!	1
would like one around 21st st.	1
Would also be good to have a light + bike rack as a standard	1
This is SO important	1
This is great! Far too few of these in town, making bus riding in poor weather very difficult. Many peopl e use this, for example, on grocery runs.	1
So, so glad to see more of these shelters being installed around the city. Also love the unique designs on some of them. I encourage you to talk to art teachers at all the schools who could help coordinate t he development of artwork for all bus shelters near schools. Taking part in creating the artwork will hel p prevent vandalism. The ten shelters with designs by indigenous artists are fantastic!	1
Sheltered bus stops would be great	1
Preferred standard	1
Not good in residential, single family context.	1
I really like these designs. Not too big but perhaps a bit too small. I appreciate the recent artistic impro vements to some of the stops around town. I use the bus from time to time and it’s cool to see local ar tists making so much of Lawrence more beautiful.	1
I hate this specific example of shelter in the photo, back when I took the bus frequently they were hott er than staying outside the shelter in the summer. There's no air circulation and it's just boxed in super heated air. They weren't very good in winter either. It's like it was trying to split the difference between summer and winter needs and missing the mark for both.	1
Good for protection from extreme weather	1
Flagship street.	1

Excessive except at heavily used stops.	1
Better than just a bench for bus riders, I am guessing	1
All Lawrence bus stops should have a shelter, and a carve out for the bus to get out of the traffic lanes when it is stopped.	1

Answered: 17 Skipped: 69

Multimodal Improvement Ideas/Feedback > 9p. On-Street Parking

Please share any additional feedback/input.

The word cloud requires at least 20 answers to show.

Response	Count
Would be great for me, but not for most.	1
We need less of car parking	1
We don't need it along Mass St. Roads should be for moving *people*, not moving (or storing) automo biles.	1
We do not currently have on street parking at 23rd and Massachusetts but it would be helpful if traffic were slowed down. It is too dangerous to park in front of our house during the hours currently allowed.	1
Preserve/ improve street parking	1
Plenty of parking on side streets. Not needed.	1
Please, no.	1
please god no more car parking	1
On street parking needs to be available for existing businesses that need it as well as existing apartm ent building across from Dillon's	1
Not necessary but could be used for protected bike lsnes	1
Not important to me. I park on the side streets or on NH and walk over	1
need more	1

Less of this please	1
If you remove parking @ 1401 Mass my business will fail. My business is small and local.	1
I'd also like to see this as an option for residences on Mass st in lieu of 4 lanes.	1
Hard one here because it makes driving down some streets very unsafe. Take Maine street outside the hospital, now with the TRC in place cars are always driving up and down that street and with cars parked up one side people act like it's a one lane street. Take that into our streets with only housing and the situation is compounded. Sometimes there is only room for one car to drive down the street and it becomes a game a chicken and less working together. We need to have dedicated street parking like I want dedicated bike lanes. No street parking would also force people to make decisions about transportation modes which is what we should be trying to encourage.	1
Eliminate head-in parking	1
Current on street parking is hour restricted and unsafe when utilized. Would be happy to see it go.	1
NO on-street parking	1

Answered: 19 Skipped: 67

Multimodal Improvement Ideas/Feedback > 9q. Cycle Track

● ● **Please share any additional feedback/input.**

The word cloud requires at least 20 answers to show.

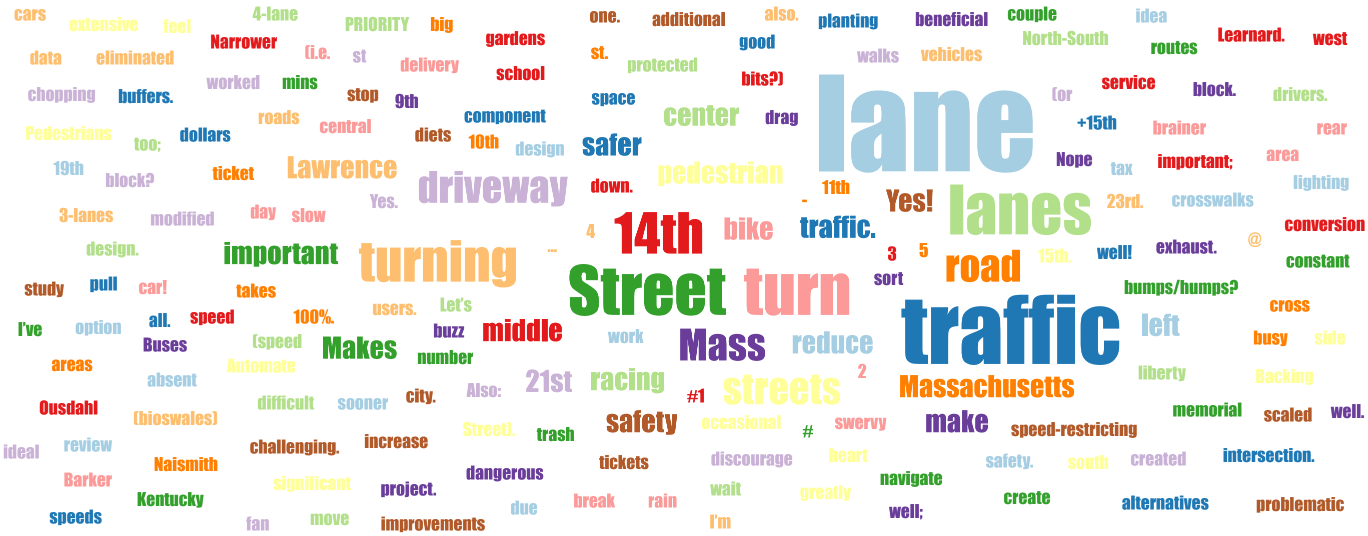
Response	Count
You've got to be kidding.	1
Yes! This looks like real road safety!	1
yes	1
this would be cool	1
These have not gone over well in other neighborhoods. I don't see bikers using them but I do see cars parked in and driving over cones.	1
o. probably not realistic	1

Not on Mass.	1
Not necessary but preferred	1
not at the expense of trees.	1
No. Not safe.	1
More protected bike infrastructure please	1
It certainly works in New York City.	1
I'm not opposed, but perhaps one-way protected bike routes on each side of Mass St would work better. Whichever your design experts prefer, so long as we get protected bike lanes.	1
I really think this is a good idea	1
I don't see how that would tie to existing infrastructure elsewhere given the limited area under evaluation.	1
Dedicated full lane for cycle traffic keeps cycle traffic together.	1
awesome. Pretty close to ideal.	1
as a cyclist, these are often awful to use unless done really really well.	1
could be really good on east side of street. Needs strong protection from cars	1

Answered: 19 Skipped: 67

Multimodal Improvement Ideas/Feedback > 9r. Roadway Reconfiguration (4-lane to 3-lane conversion)

- - **Please share any additional feedback/input.**



Response	Count
Yes. Nope	1
Yes, from 14th to 15th.	1
Yes! Road diets work well!	1
Yes! Let's reduce the number of lanes to slow traffic down. It will be safer for all road users.	1
Yes please, 100%. Also: some sort of occasional speed-restricting design component (speed bumps/humps? swervy bits?) ... whatever it takes to discourage drag racing through the heart of our city.	1
yes please sooner the better	1
yes if it makes space for protected bike lanes	1
yes	1
with bike lane	1
what happens on trash day	1
we need to reduce speed off 23rd. Also ticket for modified exhaust. Automate tickets	1
We need crosswalks on 14th +15th by liberty memorial central middle school	1

We do not need any more one lane roads in Lawrence, particularly not on a busy through street, like Massachusetts (or 21st Street or 9th Street). Please stop using our tax dollars to make Lawrence eve n more difficult to navigate in a car!	1
very important; Pedestrian safety @ cross walks	1
Very dangerous to turn left into driveway from the left lane of traffic. A middle turn lane would greatly in crease road safety.	1
This is a good design.	1
There are constant delivery and service vehicles on this st. Will they block? Buses too Backing out of your driveway onto a 4 lane street is already challenging. If all traffic must be absent to pull out into on e lane, you can wait 5 mins or more for a break in traffic	1
The conversion to 3-lanes from 11th to 14th seems to have worked well; the center turn lane south of 14th is a must	1
safer for turning	1
provides additional option for planting, too; create rain gardens (bioswales) in appropriate areas creat ed in this project. Pedestrians scaled lighting, more safety buffers.	1
PRIORITY # 2	1
no brainer	1
Narrower lanes also. 10th st can do	1
May be beneficial with significant improvements to the 19th and Mass intersection. This is one of the f ew North-South routes in the area since Ousdahl has been eliminated and Naismith is next on the cho pping block. This will need extensive study and review of alternatives to move traffic to other streets s uch as Kentucky, Barker, or Learnard.	1
I’m a big fan of this as well. Turning off of mass either into my driveway or a side street can often be pr oblematic due to speeds of other drivers. I’ve nearly been rear ended numerous times trying to turn w est on to 21st or into my driveway.	1
I would appreciate a longer turn lane for residents turning into and out of their driveways.	1
I want to see the data but I believe this is feasible without impacting traffic too much - and there is so me positive benefits for cars.	1

I like the 3 lane conversion. This would have been so ideal on Bob Billings and Kasold and Wakarusa. Again, we need engineers willing to think of multi modal transportation as a reality not buzz words.	1
I feel like this will make traffic worse condensing two lanes each way down to one.	1
Great idea	1
For sure. Makes the most sense for all.	1
Converting 4-lane to 3-lane streets should be accomplished on Massachusetts, and most other street s city-wide, with only a couple of exceptions. We really do not have to race across town with four lane s of traffic. We can do that on the by-pass (i.e. future expansion of K-10).	1
but fewer/narrower is even better	1
After is preferred on Mass Street	1
#1 most important to me as traffic has too many speeders turning off 23rd onto Mass.	1
yes,yes, but must include pedestrian refuge islands to keep cars and motorcycles from racing down c enter lane	1
This is very important	1

Answered: 37 Skipped: 49

Multimodal Improvement Ideas/Feedback > 9s. Separated Bike Lane with Floating Bus Stop

Please share any additional feedback/input.

The word cloud requires at least 20 answers to show.

Response	Count
yes	1
Yea, I'm very into this as long as the protected bike lane continues	1
Uhhhh	1
this can work	1
Same comment as Cycle track.	1

Preferred	1
Not opposed to this, but also not sure we have enough bus service to justify. Your call.	1
Not on Mass	1
Not needed	1
No.	1
No, no.	1
Cool idea but we don’t have the real estate for it.	1
Awesome. Close to ideal.	1

Answered: 13 Skipped: 73

Multimodal Improvement Ideas/Feedback > 9t. Intersection Bump-Outs

Please share any additional feedback/input.

The word cloud requires at least 20 answers to show.

Response	Count
yes	1
Works best with on-street parking.	1
These are nice for crossing but difficult to integrate with a bike lane	1
Something like this along Mass St, except still maintaining through access for the bikers.	1
Only if we are bumping out to protect that dedicated on street parking. Otherwise if we have bike lane s you would be cutting those off and why cut off our nose to spite our face?	1
No. Need more space for traffic movements at 19th and Mass intersection -- not less.	1
No. All these "fancy" solutions just make navigating for all confusing.	1
No. This is a neighborhood, not a business district.	1

Is the city willing to maintain more bump-outs than just downtown?	1
Indifferent	1
easy fix here	1
these can be great cant picture how they'd work on Mass. I live on Mass near 21st. Last 3-4 years there has been an exponential increase in motorcycles and pumped-up cars racing up Mass st from 19th to 23rd (both directions). They easily get to 60 mph. Love the 3 lane config - just need to make sure center lane cant become racing lane. Pedestrian refuge islands like on Louisiana would be great for this.	1

Answered: 12 Skipped: 74

Multimodal Improvement Ideas/Feedback > 9u. Central Median – Access Management

Please share any additional feedback/input.

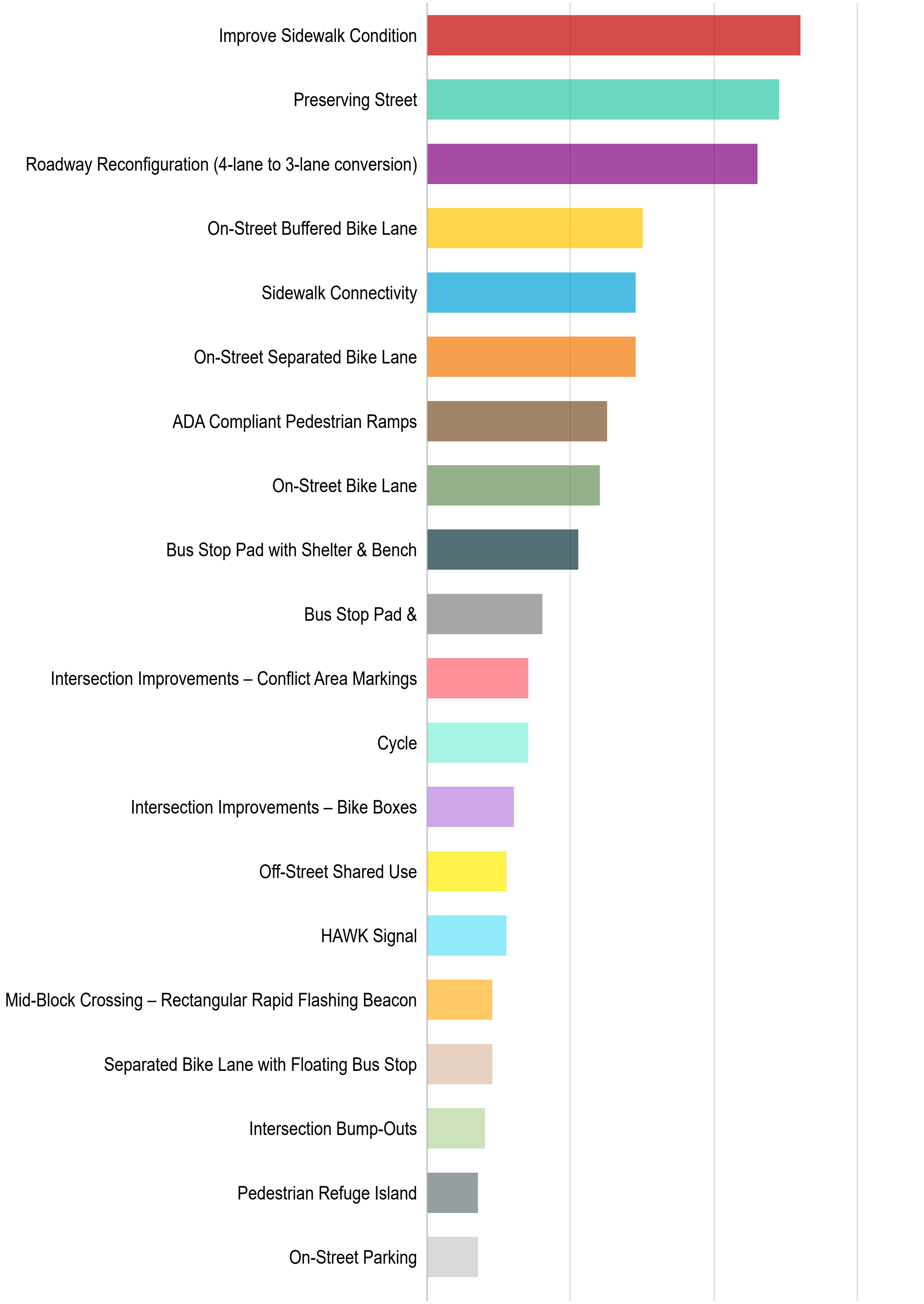
The word cloud requires at least 20 answers to show.

Response	Count
Would this be needed?	1
This helps to slow cars so in favor	1
PROPRITY #4 We do need traffic calming devices on Mass. Street. I think the intersection with 16th street would be a good spot for it. I have noticed many cars and motorcycles speeding (way beyond the allowed limit) from the traffic light on 17th street to the traffic light on 14 street.	1
Please don't make it any harder to access the cross streets from this section of Mass than has already been done, particularly south of 19th. The current access configuration at 21st has forced much more of the neighborhood traffic onto 20th	1
Not only is this a waste of our tax dollars, it is bad for the environment.	1
Not on Mass	1
Not helpful on Mass street	1
No, again.	1

Maybe too restrictive for traffic, not sure. Would calm traffic, maybe more so with trees planted in the median?	1
but im open to hearing about consequences.	1
Absolutely not. Residents access mass throughout the corridor. This would truly ruin access and be d etrimental to those property owners (myself included).	1
no, will block driveways	1

Answered: 12 Skipped: 74

9v. Potential Multimodal Improvement Ideas:


Improve Sidewalk Condition
Preserving Street
Roadway Reconfiguration (4-lane to 3-lane conversion)
On-Street Buffered Bike Lane
Sidewalk Connectivity
On-Street Separated Bike Lane
ADA Compliant Pedestrian Ramps
On-Street Bike Lane
Bus Stop Pad with Shelter & Bench
Bus Stop Pad &
Intersection Improvements – Conflict Area Markings
Cycle
Intersection Improvements – Bike Boxes
Off-Street Shared Use
HAWK Signal
Mid-Block Crossing – Rectangular Rapid Flashing Beacon
Separated Bike Lane with Floating Bus Stop
Intersection Bump-Outs
Pedestrian Refuge Island
On-Street Parking

Answers	Count	Percentage
Improve Sidewalk Condition	52	60.47%
Preserving Street Trees	49	56.98%
Roadway Reconfiguration (4-lane to 3-lane conversion)	46	53.49%
On-Street Buffered Bike Lane	30	34.88%
Sidewalk Connectivity	29	33.72%
On-Street Separated Bike Lane	29	33.72%
ADA Compliant Pedestrian Ramps	25	29.07%
On-Street Bike Lane	24	27.91%
Bus Stop Pad with Shelter & Bench	21	24.42%
Bus Stop Pad & Bench	16	18.6%
Intersection Improvements – Conflict Area Markings	14	16.28%
Cycle Track	14	16.28%
Intersection Improvements – Bike Boxes	12	13.95%
Off-Street Shared Use Path	11	12.79%
HAWK Signal	11	12.79%
Mid-Block Crossing – Rectangular Rapid Flashing Beacon	9	10.47%
Separated Bike Lane with Floating Bus Stop	9	10.47%
Intersection Bump-Outs	8	9.3%
Pedestrian Refuge Island	7	8.14%

On-Street Parking	7	8.14%
Central Median – Access Management	4	4.65%

Answered: 83 Skipped: 3

10a. What excites you most about this project?

Response	Count
Would love to see protected bike lane down this entire stretch. Also reducing this road down to 3 lane s to slow traffic is important	1
We need protected bike lanes to provide safety for cyclist like me. It shouldn't be dangerous to do the right thing for the environment and it shouldn't be dangerous for less fortunate people and college stu dents who have to ride bike because its affordable. Bike lanes and protected bike lanes especially.	1
We bike Mass 1-3 times a week. Like the bike lanes we have.	1
Traffic calming, safer bike ride.	1
Traffic Calming, pedestrian friendly, bike friendly	1
traffic calming	1
the potential of lower traffic speeds on this roadway	1
The possibility of protected North-South bike route	1

The possibility of on-street parking and better controlling traffic (speed) on mass st, especially near my house on 23rd and mass and going north from there. Improving the safety and walkability of the area.	1
The opportunity to turn the street into the showcase it was meant to be and to be inclusive of all people.	1
The opportunity to slow down driving traffic and make our street safer for pedestrians!	1
The opportunity to increase and improve cycling and pedestrian infrastructure. Chance to increase visibility of bikers and pedestrians.	1
the bicycle lanes between 11th & 14th on Mass are a step in the right direction. However, the dedicated lanes are narrow and put cyclist dangerously close to vehicles and there is few safe connections to other bike infrastructure in the city. There are several N-S thoroughfares near Mass St. This gives the city the opportunity to use our historic main st to accommodate more that just auto. Mass St. between 14th + 23rd prioritizes cars, which often speed and create noise pollution. Changes to the street that lessons traffic, slows traffic, and encourages pedestrians and cyclist will have an immense benefit to the entire Lawrence community.	1
That someone is paying attention to this road section	1
That it could be more pedestrian friendly.	1
Speeders continue deep into the night also with some cars racing each other. This is often so bad that I can not sleep in my bedroom which faces Mass @ 22nd st. Calming the traffic to try to stop speeders getting safe biking on Mass as we can not bike where we live off 22nd and mass due to dangerous traffic.	1
Slowing traffic + getting fast loud cares + motorcycles to reconsider whether they want to be on Mass St. Safer for bikes + pedestrians. Loads of kids (and Adults) walk in the neighborhood.	1
slowing motor vehicle speeds	1
Slowing down traffic + reducing drag racing. Bike lanes added	1
slower traffic, reduce noise	1
Slow speed on 15th from Mass to Kentucky. Speed bump or stop sign.	1
Sidewalk improvements, ADA ramps. The rest all seems unneeded.	1
Sidewalk connectivity and improvements.	1

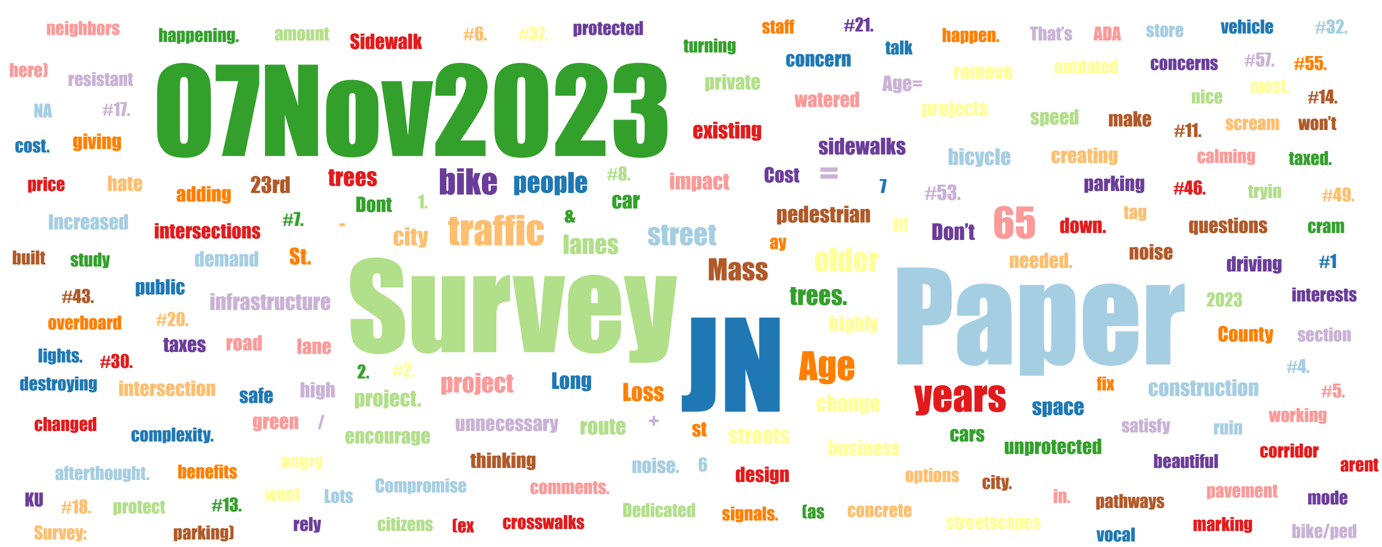
Separate lanes for bike and cars 14th to 23rd	1
safety for bikers improved ; Please pass to whoever cares, I would really like intersections of 7th, 8th, 9th and Mass to be closed. Maybe 10th as well.	1
Safety - walking & driving	1
Safer bike riding south of 14th. In the future it would be nice to connect the 21st st. bike boulevard to t he burrough creek trail	1
Safe and easy bike to store & hardware de-constructed w cars. Wide smooth sidewalks & curb ramps. I bike on the sidewalk by preference.	1
Reduce Speed. Start ticketing for modified exhaust	1
Providing more opportunity for bikes and ped. It builds community and the health of everyone.	1
Overall, really supportive of the project! I think we can improve safety and infrastructure for many resi dents, and make the neighborhoods much better for residents on and near Mass. Calmer Traffic, bikin g infrastructure, safer streets.	1
Nothing	1
Not getting pushed off sidewalks while out walking by people on bikes.	1
Multi-use transit on Mass. We love our 21st bikeway	1
Making transit more equitable for all ages, abilities, and incomes, and creating a safer and more envir onmentally friendly space for all.	1
Making our city more bike friendly. I would absolutely ride more if it were safer. Also traffic calming on Mass - change to 3 lanes makes a lot of sense. Separated bike lanes + save the trees.	1
Making Mass St a safer, quieter, and more human-friendly route along which to bike and walk.	1
Making Mass safer, more efficient and more attractive for all forms of transportation	1
Making mass safer and more vibrant	1
Let’s get this stretch of mass outfitted with a dedicated on street protected bike lanes	1
Less cars, less parking. Protected bike lanes. Less traffic. More biking facilities.	1
Lawrence getting on board with transport outside of cars. I look forward to seeing Mass St. as an indic ator for the rest of Lawrence.	1

increasing bike lanes hopefully	1
Importance given to non-car transportation	1
I love biking around town. Cant wait for it to feel safer with more designated biking lanes.	1
I have been thinking for sometime now that this section of Mass. street needed a make-over, to impro ve conditions for walkers and bicycle riders. It is after all an extension of downtown!	1
I don't really understand what problem you're trying to fix with these options.	1
I don’t get excited talking about projects because all we are doing is talking right now. I get excited wh en things get built.	1
Hopefully, Massachusetts Street can become the first North-South axis across Lawrence on which ev eryone feels safe while walking, rolling, biking, or driving. It is not a long distance, and represents the "heart", if not the center, of our city. It can serve as a good example to imitate on other routes.	1
high visibility for bikes and pedestrians improving my daily travel by bike	1
Having Mass street be safer for families, walking, and biking. Fewer car accidents, less drag racing, et c. Has the potential not just to be a neighborhood asset, but to be a city highlight--- a greenway destin ation for walking/biking/running outdoor activities going all the way to south park, downtown, and the ri ver.	1
Getting better sidewalk conditions. Getting a bus stop closer to 21st st.	1
Get sidewalks fixed. More sidewalks on Mass - westside.	1
Enhanced bicycle + Pedestrian safety	1
Drastically reduces street racing. It sometimes is nightmarish for a few hours a few days and nights pe r week.	1
Continuous bike lane that makes it normal to bike	1
continuity of bike facilities to 23rd st.; Lowering Speeds; 4 lane - 2 lane with turning lane	1
considering people other than drivers. Making things easier for people with all different abilities.	1
Consideration needs to be given to flooding along Mass with heavy rains. Issue with drivers hitting ligh t pole at 16th/Mass - multiple events occurred over past several years. The possibility of reduced traffi c noise.	1
Connectivity of bine infrastructure. Better Sidewalk conditions	1

Better bike safety. I could ride my bike across 23rd and over to Checkers	1
Being able to safely bike to work	1
Another "Spoke" in the Lawrence loop more accessible to set former part of city to another	1
3-lane conversion on Mass. The center turn lane is critical. Sidewalks need to connect from 21st to 23 rd on the west side of Mass	1
1. your openness to hear from us; 2. being proud of my city that's created a welcoming sense to users of Mass st.; 3. the idea of a road diet is long overdue.	1

Answered: 65 Skipped: 21

11. What concerns you most about this project?



Response	Count
Would like to see traffic study before comments. Paper Survey #46. JN 07Nov2023	1
With so many options we'll go overboard trying to satisfy all interests	1
Traffic, angry cars Paper Survey #11. JN 07Nov2023	1
Too much Compromise and complexity. Dedicated bike lanes and a turning lane along with traffic calming crosswalks at all intersections are all that is needed. Think twice about adding unnecessary infrastructure, concrete or traffic signals.	1

This section of Mass is one of the most beautiful streetscapes in the city. Don’t ruin it by destroying trees or tryin to cram too much in. The price tag vs the benefits Paper Survey #17. JN 07Nov2023 Age = 65 years or older	1
The protected bike infrastructure wont be built Paper Survey #4. JN 07Nov2023	1
The cost.	1
The cost to citizens who are already highly taxed.	1
That what is working well will be changed Paper Survey #6. JN 07Nov2023 Age = 65 years or older	1
That we have city staff who seem resistant to change and rely on outdated thinking regarding pedestrian and bicycle pathways as an afterthought. This talk will amount to nothing happening. The neighbors along the corridor will come out and scream against change so nothing will happen. That’s what concerns me most.	1
That the above won’t be done	1
that people will demand public space to store their private vehicle & that bike protect infrastructure would be watered down. Paper Survey #7. JN 07Nov2023	1
That is will only be a pavement marking project. Paper Survey: #55. JN 07Nov2023	1
That bike/ped needs will be overridden by those against any mode except for auto/trucks. Paper Survey #37. JN 07Nov2023	1
So many people want public space for their private use (private parking) Paper Survey #32. JN 07Nov 2023	1
Removing trees or adfing unnecessary sidewalks. Imorove what we have.	1
Prioritizing the interest of the vocal people who participate in these conversations. Does represent all stakeholders. Paper Survey #8. JN 07Nov2023	1
Please keep trees. So important. Shade is necessary. Paper Survey #57.1 JN 07Nov2023	1
People hate giving up car lanes/parking even when (as here) they arent needed. Paper Survey #49. JN 07Nov2023	1
People clinging to car dominance that will demand watering down ay progressive ideas. Paper Survey #48. JN 07Nov2023	1
Over thinking / Spending. Paper Survey #53. JN 07Nov2023	1

over complication Paper Survey #21. JN 07Nov2023	1
On street parking availability Paper Survey #22. JN 07Nov2023	1
Off street parking for business Paper Survey #23. JN 07Nov2023	1
Nothing. I love it!	1
Nothing	1
Noise impact on at home business during construction. internet outage also.	1
No provisions for noise. Illegal muffler noise is insane on our block Paper Survey #10. JN 07Nov2023	1
negative impact to existing tress/landscape. Paper Survey #43. JN 07Nov2023	1
NA Paper Copy #1 - JN 06Nov2023	1
My concern is that not enough will be done to encourage pedestrian and bicycle use on Mass St. Unprotected bike lanes are unsafe. There needs to be full commitment to a more pedestrian and bicycle friendly Mass St. Paper Survey #34. JN 07Nov2023	1
Mild concern about it taking longer to get out of driveway, but should be fine. Please don’t widen road - keep the nice parkways + trees. Paper Survey #13. JN 07Nov2023	1
mandatory brick sidewalks	1
Loss of trees. Paper Survey #42. JN 07Nov2023	1
Loss of trees. Paper Survey #26. JN 07Nov2023 Age = 65 years and older	1
Loss of trees. Heights of activation buttons at controlled crosswalk. Should be low enough for wheelchair and recumbent trikes users. Is there ADA compliance standard for this. Paper Survey #25. JN 07Nov2023	1
Loss of trees and historic feel to entrance to downtown	1
Losing Mass Streets charm + personality. Paper Survey #35. JN 07Nov2023 Age = 65 years and older.	1
Local, reactionary pushback against whatever design is proposed (no matter how modest).	1
Like many more general surveys like this one, there are some needs that begin to overshadow others (ex creating walkability in a space at the detriment of those with physical limitations). I hope this project can come up with an equitable solution for all. Paper Survey #27. JN 07Nov2023	1

Lawrence is rapidly becoming unaffordable because the City, County, and School Board seem to believe that there is no limit on how high our property taxes can go. Instead of spending our tax dollars on unneeded projects like this, the City needs to prioritize fixing our existing streets and sidewalks so that they are drivable.	1
Just questions about funding. Would special taxes be increased to fund this? Paper Survey #44. JN 07Nov2023	1
Its too busy a street to encourage cycling Paper Survey #20. JN 07Nov2023 Age = 65 years and over	1
Impending or slowing traffic. Paper survey #39. JN 07Nov2023 Age = 65 years and over	1
Im concerned that it will be watered down. No one feels safe in the unprotected bike lanes. Paper Survey #53. JN 07Nov2023	1
I live at 23rd and Massachusetts and the traffic speed is dangerous. I see car wrecks nearly every week. I walk every day and always go one street east or west to avoid high speed traffic and traffic noise. We are technically allowed to park in front of our house after 6 pm but no one ever has due to traffic speed. The curve is highly dangerous and should be eliminated creating a normal right hand turn. Additional bike lanes would not reflect the needs I see in my neighborhood.	1
I dont want this to impact the green strip between the sidewalk and the street that contains our oak tree. one of the best in Lawrence. Paper Survey #47. JN 07Nov2023	1
I don't really understand what problem you're trying to fix with these options.	1
How will this project help bring more active transportation to the neighborhoods that Mass. Street serves, and how will it help connect them to the Loop and other venues for recreation? I don't know for sure how this project helps complete the overall bikeability plan for Douglas County, but assume there are some connections. Will it help create some continuity in design with the bike boulevard? with downtown? with the Loop? There were no questions about signage for this project. Isn't that an important part it?	1
hoping that intersection improvements will happen Paper Survey #57. JN 07Nov2023	1
Hopefully the construction doesn’t take long, it took a long while to open 19th st again Paper Survey #16. JN 07Nov2023	1
Half way completed	1
Funds to fuel the project in timely fashion. Paper Survey #31. JN 07Nov2023	1

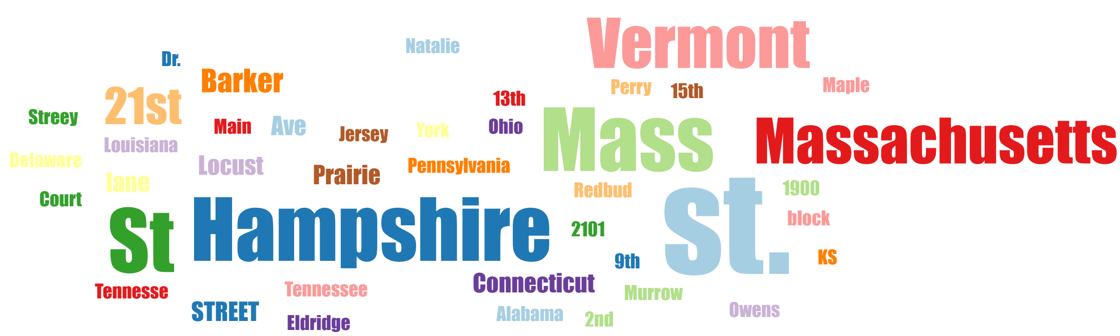
Failure to take into account the very functional bike route we have now on Vermont Street. This massi ve project seems very ill conceived to me.	1
dumping traffic on Ten and Ken & Barker/NH and Learned Paper Survey #3. JN 7 Nov 2023 Age= 65 years or older	1
Drivers hate "calming" and retaliate with worse driving, driving over curbs, jackrabbit starts. They also treat "calmed" roads as broken and route around them, speeding through adjacent neighborhoods. Po pular KU sport events will cause standstill traffic in both southbound lanes for an hour or more. Paper Survey #12. JN 07Nov2023	1
don't want traffic to increase on streets parallel to mass Paper Survey #2. JN 07Nov2023 Age = 65 ye ars or older	1
Don’t remove trees Paper Survey #24. JN 07Nov2023	1
Destruction of green space. Paper Survey #40. JN 07Nov2023	1
Cost - but I believe some/most maybe covered by grants. Paper Survey #45. JN 07Nov2023	1
construction times- its hard to wait Paper Survey #14. JN 07Nov2023	1
Connectivity with existing projects i.e. 14th st North @ Mass St. Also 23rd and Mass terminus. The as pect of not including safe additions and giving a false sense of security. Lots to do right. Paper Survey #36. JN 07Nov2023	1
Bike lanes remove at traffic lights. Dont seem to be looking at city behavior visuals sidewalks + bike p aths. Examples, Iowa at 21st. Sidewalk blocked for weeks after construction ended. Long alternate ro ute for pedestrians. Paper Survey #41. JN 07Nov2023 Age = 65 years and over	1
Available funding to do it properly. Paper Survey #33. JN 07Nov2023	1
Anytime you make change people complain! Paper Survey #29. JN 07Nov2023 Age = 65 years and ol der	1
Anti-bike sentiment and opposition after the 23rd street project.	1
Access restrictions to residents. Increased traffic stacking/backups specifically at intersections. Both i ntersections (19th and 23rd) perform very poorly in their current state. Reducing queuing with lane red uctions would make this much, much worse.	1
1. Widening road 2. adding more intersection limitations for cars turning. Paper Survey #56. JN 07Nov 2023	1

Paper Survey #5. JN 07Nov2023	1
Paper Survey 56.1 JN 07Nov2023	1
Paper Survey #9. JN 07Nov2023	1
Paper Survey #54. JN 07Nov2023	1
Paper Survey #51. JN 07Nov2023	1
Paper Survey #38. JN 07Nov2023 Age = 65 years and older (84)	1
Paper Survey #30. JN 07Nov2023 Age = 65 years and older	1
Paper Survey #28. JN 07Nov2023 Age = 65 years and over	1
Paper Survey #19. JN 07Nov2023 Age= 65 years and over	1
Paper Survey #18. JN 07Nov2023	1
Paper Survey #15. JN07Nov2023	1

Answered: 79 Skipped: 7

Demographics

- **12a. To help us understand the transportation options available to you, where do yo…**



Response	Count
New Hampshire	7
Vermont	5
Mass St.	5
Vermont St.	4
Massachusetts St	4
Mass	4
New Hampshire St	3
New Hampshire St.	2
Locust	2
Connecticut st.	2
21st St	2
21st	2
Tennessee St.	1
Tennesse	1
Redbud Lane	1
Prairie Ave	1
Prairie	1
Pennsylvania st.	1
Owens	1
Ohio	1
New York St.	1
New Jersey St.	1

Natalie Dr.	1
Murrow Court	1
Massachusetts	1
mass st	1
Mass St.	1
Maple lane	1
Main St. Perry KS	1
Louisiana	1
Eldridge St.	1
Delaware	1
Barker Ave	1
Barker and 15th	1
Barker	1
Alabama	1
9th	1
2nd Street	1
21st Streey	1
21st st.	1
2101 Massachusetts St	1
1900 block of Mass	1
13th	1
MASSACHUSETTS STREET	1
Massachusetts St	1

Answered: 75 Skipped: 11

- **12b. To help us understand the transportation options available to you, where do yo…**

Response	Count
20th	5
19th	4
17th St	3
16th	3
15th	3
Louisiana	2
9th	2
8th	2
21st	2
16th,17th	2
15th, 16th	2
15th street	2

14th	2
Ninth Street	1
Natalie Dr	1
Michigan street	1
Madd	1
Louisana	1
Iowa	1
Haskell, 15th	1
Haskell Ave	1
Haskell and 26th	1
Harvard	1
Greener Ter	1
Delaware St.	1
Barker said 15th	1
7th St.	1
25th street	1
23rd St.	1
23rd St	1
22nd,23rd	1
22nd, 21st	1
22nd st	1
22nd	1
21st,22nd	1

21st st.	1
20th,21st	1
19th St,	1
19th and Mass	1
18th,19th	1
17th st., New Hampshire St.	1
17th	1
15th,16th	1
13th,19th	1
13th	1
12th,13th	1
11th,10th	1
11th	1
10th, 11th	1
10th St.	1

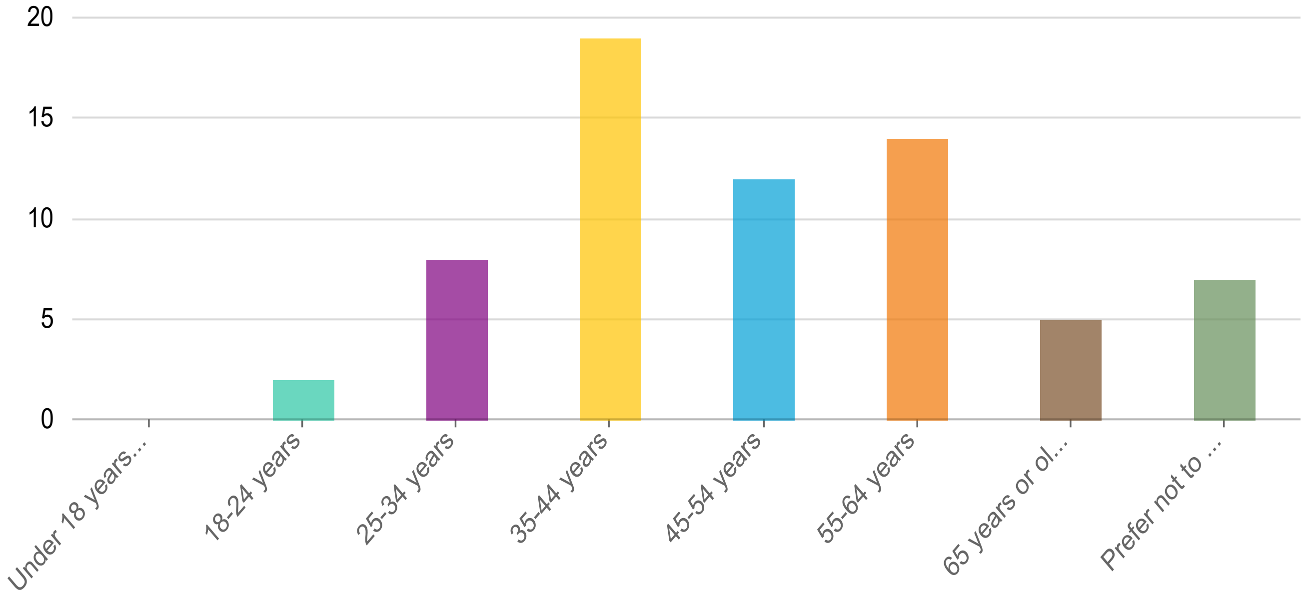
Answered: 71 Skipped: 15

13. What is your Zip Code?

Word	Count
66044	36
66046	26
66045	2
66049	2
age	2
66073	1
66044.	1
kidding	1
ranges	1
below?	1
choices	1
64?	1

Answered: 68 Skipped: 18

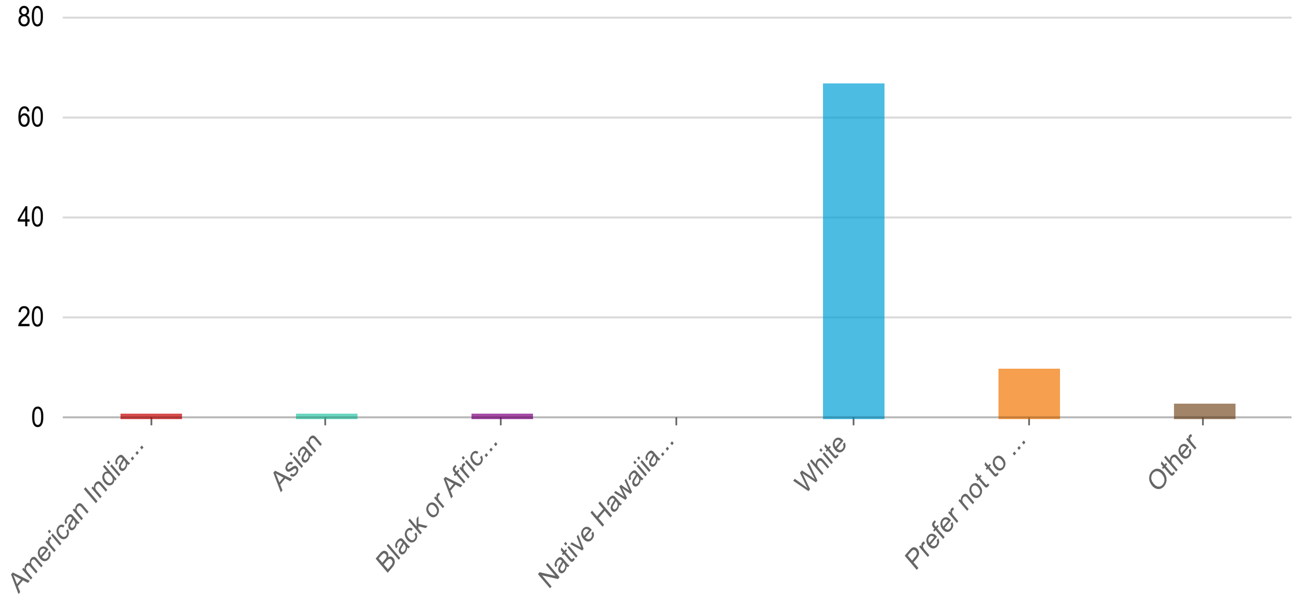
14. What is your age?



Answers	Count	Percentage
Under 18 years	0	0%
18-24 years	2	2.33%
25-34 years	8	9.3%
35-44 years	19	22.09%
45-54 years	12	13.95%
55-64 years	14	16.28%
65 years or older	5	5.81%
Prefer not to answer	7	8.14%

Answered: 67 Skipped: 19

- **15. Which race/ethnicity best describes you?**



Answers	Count	Percentage
American Indian & Alaskan Native	1	1.16%
Asian	1	1.16%
Black or African American	1	1.16%
Native Hawaiian & Other Pacific Islander	0	0%
White	67	77.91%
Prefer not to answer	10	11.63%
Other	3	3.49%

Answered: 82 Skipped: 4

- **16. Please provide your email if you want to receive updates on the project.**

Word	Count
ian.j.crossfield@gmail.com	2
zackandrew29@gmail.com	1
wirely.lisa@gmail.com	1
shaunoshman@gmail.com	1
sandyjaneseiter@gmail.com	1
rose.jessica@gmail.com	1
robdewhirst@gmail.com	1
rangerconnolly@gmail.com	1
phil@ku.edu	1
peetupuppydog@gmail.com	1
patty_roberts@sbcglobal.net	1
noelrasor@gmail.com	1
mschulme@ku.edu	1
minadelaluna@gmail.com	1

millbets@gmail.com	1
matthkleine@gmail.com	1
maridefazio@gmail.com	1
lseib@ku.edu	1
littlejj123@hotmail.com	1
josh_carson20@me.com	1
jonathan.keffer@gmail.com	1
johnsonmary@gmail.com	1
jennyjkramer@gmail.com	1
jadhayes@hotmail.com	1
jack10h@uptoeleven.com	1
Heycobo@hotmail.com	1
hayes.kendra@gmail.com	1
handyandiyks@gmail.com	1
goodwinthiel@sbcglobal.net	1
gooberella92@hotmail.com	1
geoterrysmith@sunflower.com	1
edrose@gmail.com	1
dlittle54321@hotmail.com	1
davedamill@sunflower.com	1
crice@lawrenceks.org	1
cottins@sunflower.com	1
connellyswm@yahoo.com	1

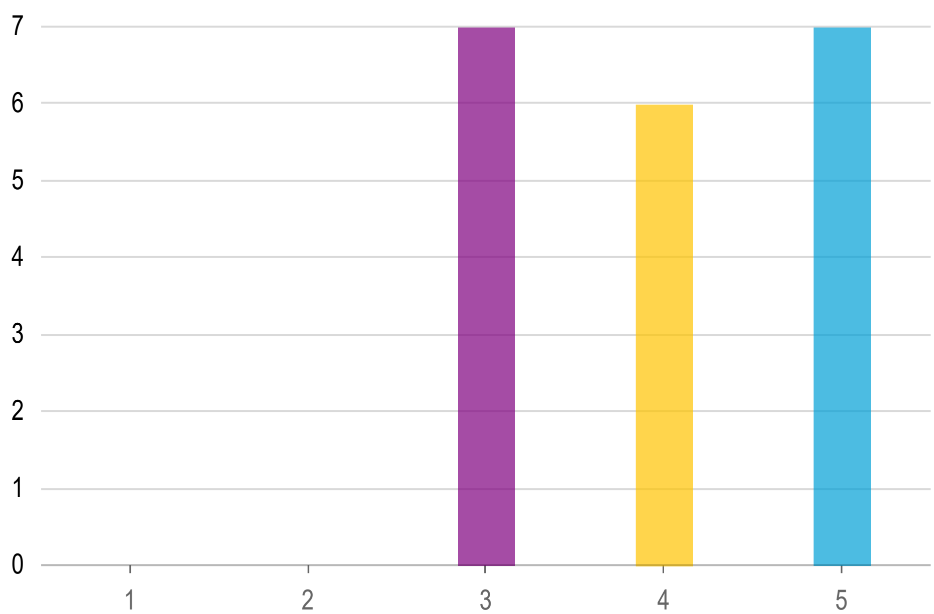
ckorte1339@gmail.com	1
chauntelburpee19@gmail.com	1
careymm@sunflower.com	1
bkemp66044@gmail.com	1
alison-littell7@gmail.com	1

Answered: 43 Skipped: 43

17. Please rate this survey.

Average

4



Answers	Count	Percentage
1	0	0%
2	0	0%
3	7	8.14%
4	6	6.98%
5	7	8.14%

Answered: 20 Skipped: 66

Mass. Street Multimodal Improvements Study – 14th to 23rd Street
Public Open House #1 – October 25, 2023

Liberty Memorial Central Middle School – 1400 Massachusetts

Attendees: 72 signed-in

FEEDBACK

Potential Multimodal Improvements
Priority Dots (each attending received 3)
Top five priorities highlighted.

31	Preserve Street Trees
5	Pedestrian Refuge Island
6	ADA Compliant Pedestrian Ramps
1	Mid-Block Crossing – Rectangular Rapid Flashing Beacon
0	HAWK Signal
3	Sidewalk Connectivity
24	Improve Sidewalk Conditions
8	On-Street Bike Lane
24	On-Street Buffered Bike Lane
24	On-Street Separated Bike Lane
1	Intersection Improvements – Bike Boxes
5	Intersection Improvements – Conflict Area Markings
3	Off-Street Shared Use Path
8	Cycle Track
6	Separated Bile Lane with Floating Bus Stop
0	Central Median – Access Management
1	Bus Stop Pad & Bench
2	Bus Stop Pad with Shelter & Bench
4	On-Street Parking
39	Roadway Reconfiguration
4	Intersection Bump-Outs

Project Area Map
Public Comment Notes

23rd

- How do we get across 23rd street
- Dragging starts here
- Illegal muffler noise
- No sidewalk on west side *(plus 1 yes)*

- Noise and/or internet connectivity impact would be for home business
- (turn on southeast corner) People taking this way too fast hearing them have to break hard to not hit those walking
- Would like bike lanes near my home
- Separated, protected bike lanes would make this street so much better
- People going 20+ over the speed limit here, all night long racing *(plus 1 yes)*

22^{nd}

- Do whatever can be done to slow down traffic!
- I support separated protected bi-directional bike lanes down this entire stretch
- Wide double lanes include speeding
- Cars go to fast – lanes too wide

21^{st}

- Crosswalk has created "retaliatory acceleration" mentality behavior
- Currently there is not a good route from the Bike Blvd to the Burroughs Creek Trail. *(plus 2 yes)*
- At minimum, connect bike lanes from 14^{th} to the 21^{st} street bike route
- Concerned about not losing beautiful oak and green space beteen the sidewalk and street
- Motorcycles us 19^{th} and 23^{rd} (both directions) as racing lane. Add pedestrian refuge islands so center turn lane doesn't become the race lane.
- The crossing light at 21^{st} is great
- This priority bind/ped light is fabulous

20^{th}

- Motorcycle racing

19^{th}

- Make sure bike lane continues across 19^{th} and 14^{th}
- Improve safety for kids going to Cordley, Lawrence High, KU
- Roundabout slows and flows traffic *(plus 1 yes)*
- Important intersection for pedestrians/school walkers
- Mass to Alabama on 19^{th} has no bike lane which would be nice to have to connect up to Iowa
- Trees on Boulevard
- Mid-block crosswalk (bus stop to Dillons?)

18^{th}

- Ride Bikes on less busy streets of protect the bike lanes
- 14^{th} – 19^{th} needs traffic calming and protected bike lanes. Bikes going south bound need access to Dillons.
- Road diets please! 4 lanes is too wide for this stretch. Support the reduction.

17th

- Roundabout here! *(plus 1 yes)*
- I agree, 17th is main throughfare and is too narrow
- 17th – a main access to KU and Cordley from the east
- 17th- Mass crosswalk needs relocated
- 17th is too narrow between Vermont & Louisiana. Make it one way – one lane E to W
- 17th and Mass signal – car signal pleasing, too short for ped who don't realize they need to push the button for more time *(plus 1 yes)*
- I live between 16 and17th – let's do this.
- Mid block crosswalks

16th

- Too few cars for 2x2 car lanes – road diet time *(plus 2 yes)*
- 3 lane conversion + narrowed lanes?
- Signaled crosswalks at every intersection!!!
- Safe crossing of Mass to Vermont for N-S connectivity
- Vermont is the best north/south bike road

15th

- 15th between Mass and Kentucky is a speedway and not good for bikes or childen
- Dangerous intersection
- 15th and Mass intersection is dangerous. Add a roundabout here? Danger present for all modes
- Priority concern for kiddos crossing her to LMCMS
- Vermont Bike Ped Continuity

14th

- Crosswalks for Central Students on 14th and 15th
- The 14th & Mass intersection is hairy for cyclists. The interchange to get to 15th St involve crossing 4 lanes (3 one-way, 1 the other)
- Less Parking, fewer cars. Break the stranglehold of the auto.
- Vermont cut through here not continuous.
- Currently the crosswalk across 14th is not aligned with the sidewalk
- Preserve off street parking for small local businesses – 1401 Mass.
- 14th and Mass – Head in parking is scary for biking – they might backup at any moment.
- Head in parking is unsafe! Parallel parking is safer.
- 14 & 15th important intersection for Pedestrians
- 14th and North connection will be important
- Keep parking 1401-1404 Mass
- Would be nice to have protected cycle track from the middle school to 23rd on the east side of the street

Exhibit C

MMTC #1 Agenda – Project Summary

Agenda Item Report

Multi-modal Transportation Commission - Dec 04 2023

Department	Staff Contact
Municipal Services & Operations (MSO)	Aaron Parker, Senior Project Engineer

Recommendations

Consider receiving an update to the Massachusetts Street 14th Street to 23rd Street Multimodal Improvement Project MS1-00005.

Executive Summary

The Lawrence Bikes Plan identifies Massachusetts Street from 14th Street to 21st Streets as a priority funding segment in the City's bikeway network. Massachusetts Street from 21st Street to 23rd Street is on the secondary funding network. The Massachusetts Street roadway from 14th Street to 23rd Street is currently mostly unmarked for bicycling (sharrows) and contains no bike lanes. The entire corridor is rated 5 out of 5 for least comfortable to cyclists.

Adding a bikeway within the right-of-way of Massachusetts Street from 14th Street to 23rd Street would complete gaps in the bikeway network and connect the educational, residential, and commercial area of Iowa Street and the University of Kansas with downtown Lawrence. The segment of Massachusetts Street from 11th Street to 14th Street to the north of this project was restriped from a 4-lane section to a 3-lane section with bike lanes and 21st Street from Massachusetts Street to Iowa Street to the west of this project was reconstructed as a bike boulevard.

The Lawrence Pedestrian Plan requires arterial roads to have connected sidewalk on both sides of the roadway. This project will assure sidewalk is in good condition and connected from 14th Street to 23rd Street. This project will address sidewalk gaps, panel ADA deficiencies, and ADA ramps at intersections and driveways.

This multimodal project will consider all modes of transportation including walking, rolling, bus ridership, and safe auto transport along with cycling. A corridor transportation safety and efficiency study is being conducted by the consultant, Trekk Design Group (Trekk). The study will result in two to three design alternatives for improving multimodal functionality of the corridor.

The attached Project Summary includes all project information to date.

A public open house was conducted October 25, 2023 to gather community input. 72 attendees provided feedback via a survey, strip map sticky notes, and multimodal best management practices selection. Additional feedback was received in an online version of the survey. The consultant will consider the community feedback into the design alternatives for the corridor.

Once design alternatives have been developed, the City will host a second public open house to gather public input on the alternatives and options. Design adjustments may follow, and subsequently staff will present the revised alternatives to the Lawrence Multi-modal Transportation Commission (MMTC) for feedback. From MMTC feedback, Trekk will develop the preferred design alternative and the City will present this at a third public open house. After the third open house, staff and Trekk will present the preferred alternative to MMTC for recommendation and to the City Commission for approval.

Design of the preferred alternative has been funded in the 2024 - 2028 Capital Improvement Plan (CIP) for Fiscal Year 2024 at $300,000. Construction is currently unfunded in the CIP, however the construction design package for this project would likely be a successful applicant for a grant.

Alignment to Strategic Plan

Connected City

Fiscal Impact

The fiscal impact to the City is $0.

Action Requested

Receive an update to the Massachusetts Street 14th Street to 23rd Street Multimodal Improvement Project MS1-00005.

Attachments

Project Summary

MS1-00005 MMTC Meeting #1 Presentation Content

The intent of this document is to provide content that may be used as part of a presentation to the City of Lawrence Multimodal Transportation Commission (MMTC) Meeting #1 for Lawrence project MS1-00005. The goal of this presentation is to introduce the project and gather any input to take forward into conceptual design. At a follow-up meeting (MMTC Meeting #2), concepts will be shared to gain further feedback.

Project Name: Massachusetts Street Multimodal Improvements Study – 14th to 23rd Street

Project Purpose: The City of Lawrence is performing a Multimodal Improvements Study to provide recommendations for construction of multimodal facilities on Massachusetts Street from 14th Street to 23rd Street.

Project Background: Massachusetts (Mass) Street from 14th Street to 21st Street is a link in the future primary network in the Lawrence Bike Plan. This project will complete the gap in the bike network and improve safe multimodal access to downtown Lawrence. This project will provide recommended improvements to connect to the recently constructed bicycle boulevard on 21st Street between Iowa and Mass. In regard to pedestrians, Mass Street from 14th Street to 23rd Street is identified in the Lawrence Pedestrian Plan as a priority link (sidewalk should be provided on both sides). This project will complete the gap in the pedestrian facilities on the west side of Mass Street from 21st Street to 23rd Street.

Project Budget & Timeline:

Currently, there are no set aside funds for construction. The general project timeline is as follows:

Public Open House #1:	Completed October 25th, 2023
Concept Development:	October 2023 to January 2024
Public Open House #2:	January 2024
Concept Refinement:	January 2024 to March 2024
Public Open House #3:	March 2024
Concept Approval:	Spring 2024
Potential Funding & Design:	Spring 2024 to Winter 2024
Construction:	2025

Public Open House #1 Summary:

The team of the City of Lawrence, TREKK Design Group, and Shockey Consulting facilitated an open house format public meeting on October 25th from 4:30 to 6:30 at Liberty Memorial Central Middle School within the study area of the project.

There were 4 boards with content for review and feedback including project background, potential multimodal improvements with photos of each, and a strip map along the corridor to collect general feedback. The community was given 4 green dots to identify their priorities on the potential multimodal improvements as well as sticky notes for general feedback/observations on the strip map. A survey of questions was also provided via QR code and hardcopy to collect additional feedback. There were 72 people who signed-in and joined the event providing feedback. **Exhibit A** shows the boards, strip map and survey that was shared with the public. **Exhibit B** provides a summary of the feedback.

Draft Summary of Findings:

The following content is a summary of initial findings as part of the conceptual study. All findings are subject to change prior to finalizing the conceptual study.

Introduction

The City of Lawrence, Kansas, in coordination with TREKK Design Group and Shockey Consulting, has developed a multimodal improvements study to provide recommendations for construction of multimodal facilities along Massachusetts Street (Mass Street) from 14th Street to 23rd Street. Mass Street from 11th to 14th Street recently underwent a roadway reconfiguration in 2018 to convert from a 4-lane roadway to 3-lane roadway (one lane in each direction with a two-way-left-turn lane) and buffered bike lanes.

The study area has been identified as a priority/secondary link in the Lawrence Bike Plan and has also been identified on the KDOT Vulnerable Road User High Injury Network as a medium/high priority. The study area has also been identified as a priority link in the Lawrence Pedestrian Plan and should include sidewalks on both sides as Mass Street is an arterial. This study will provide recommended improvements to complete the gaps in the pedestrian and bike networks and improve safe multimodal access to downtown Lawrence.

Potential geometric improvements include a roadway reconfiguration, converting Mass Street from a 4-lane undivided roadway into a 3-lane roadway including two through lanes in each direction and a two-way-left-turn-lane (TWLTL). A number of bike facility options have been investigated to complete the gap in the bike network and improve safety. Recommendations include proposed geometrics at intersections, including an evaluation of alternatives at 19th Street such as a roundabout.

The project location map is shown in **Figure 1**.

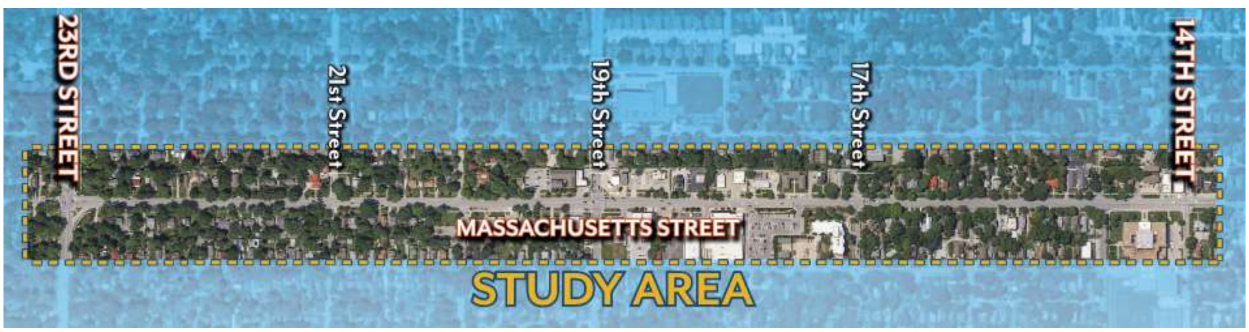


Figure 1 – Project Location Map

Existing Roadway Characteristics

Mass Street is classified as a Minor Arterial per the T2050 Major Thoroughfares Map, developed by the Lawrence MPO Policy Board. The typical roadway width of Mass Street from 14th Street to 23rd Street is 52-ft from back of curb to back of curb, which includes four 12-ft lanes with 2-ft curb and gutter on each side. Parking is prohibited for the extent of the project limits, with the exception of restricted bus parking between 14th street and 15th street near Liberty Memorial Central Middle School. Angled/perpendicular parking is also present near 14th Street, 17th Street, 19th Street, and 20th Street at select businesses. The posted speed limit is 30 miles per hour (mph). Existing typical sections are shown in **Figure 2**.

Figure 2 – Existing Typical Section

Existing Lawrence Transit Bus Routes / Stops

Lawrence Transit has one bus route, Downtown to South Iowa – Route 7, and four (4) bus stops in the study area. **Table 1** summarizes the bus stop locations, corresponding frequencies, and bus stop characteristics for the bus stops within the study area.

Table 1 – Lawrence Transit Bus Stops within Study Area – Downtown to South Iowa – Route 7

Bus Stop Location	Stop Frequency	Wheel Chair Accessible	Shelter	Bench	Bike Rack
117 - Mass @ 17th Southbound	30 min.	No	No	No	No
118 - Mass @ 17th (Babcock) Northbound	30 min.	Yes	Yes	No	No
365 - Mass @ 19th (Dillons) Northbound	30 min.	Yes	No	No	No
116 - Mass @ 19th Southbound	30 min.	Yes	No	Yes	No

Existing Bike Facilities

There are no dedicated bicycle facilities along Massachusetts Street within the study area. Recently, in 2020, Lawrence completed a project converting 21st Street to a bike boulevard from Iowa Street to Mass Street. This project included provided marked bicycle crossings and the installation of a hybrid beacon at Mass Street. The full extents of the study area along Mass Street has been identified by Lawrence as least comfortable when comparing comfortability of bikers along the corridor.

Mass Street from 14th to 21st street is identified as a priority network per the Lawrence Bike Plan. From 21st Street to 23rd Street is identified as a secondary network as shown in **Figure 3**.

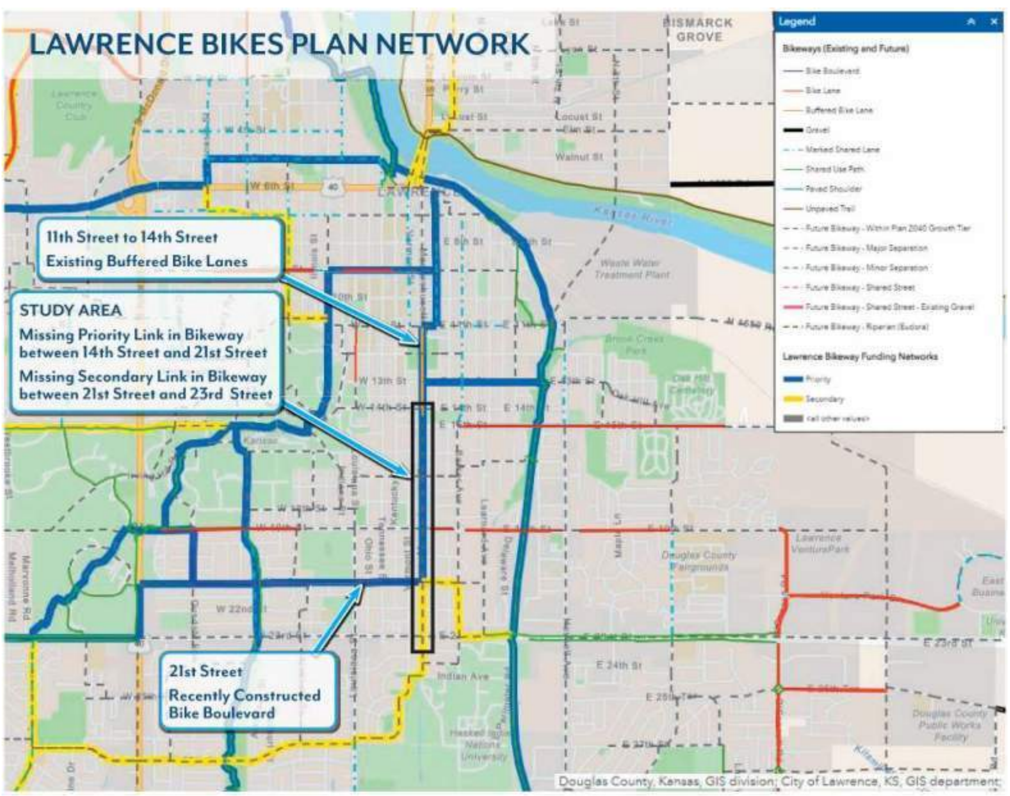


Figure 3: Lawrence Bike Plan Network

Mass Street from 14th Street to 20th Street has been identified on the KDOT Vulnerable Road User High Injury Network as a High Injury Network – Medium Priority except for 15th Street to 16th Street as that segment is identified as a High Injury Network – High Priority as shown in **Figure 4**.

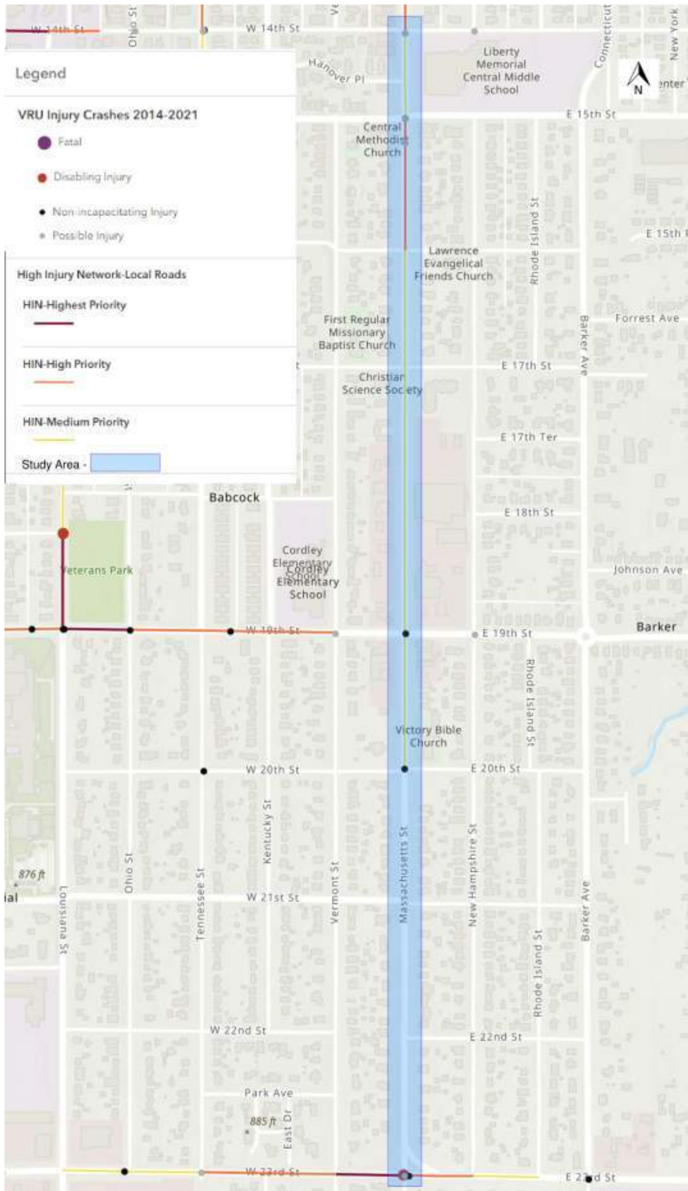


Figure 4: KDOT Vulnerable Road User – High Injury Network Map

Pedestrian Facilities

The study area has been identified as a priority link in the Lawrence Pedestrian Plan and should include sidewalks on both sides as Mass Street is an arterial. From 14th Street to 21st Street, there is a sidewalk on both sides of Mass Street. However, from 21st Street to 23rd Street, there is no sidewalk on the west side. Much of the sidewalk within the study area is deteriorating and some segments are paved with brick.

Several intersections within the study area do not have proper pedestrian facilities such as ADA compliant ramps and crosswalk markings. At 15th & Mass Street and 16th & Mass Street, there are pedestrian ramps to cross Mass Street, however there are no receiving ramps on the other side.

Existing Turning Movement Counts

Turning movement counts were collected and analyzed at the identified intersections. Data was collected for 24 hours to determine the AM and PM peak hours for analysis. These peak hours were utilized as they represent the highest capacity requirements and are the most critical periods for operation. The data for each location is shown in Table 2.

Table 2 – Date of Data Collection & Identified Peak Hours

Location		Date of Data Collection	Morning Peak Hour	Afternoon Peak Hour
1	Mass St. & 14th St.	Tuesday, October 3rd, 2023	7:30AM	4:45PM
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6	Mass St. & 20th St.	Tuesday, October 3rd, 2023	7:45AM	4:15PM
7	Mass St. & 21st St.	Tuesday, October 3rd, 2023	7:45AM	4:15PM
8	Mass St. & 23rd St.	Tuesday, October 3rd, 2023	7:30AM	4:15PM

The existing 2023 AM and PM peak hour turning movement traffic volumes are shown in **Figure 5**, adjusted up to the nearest 5. The volumes in the paratheses correlate to the PM traffic volumes, whereas the volumes with no paratheses correlates to the AM traffic volumes.

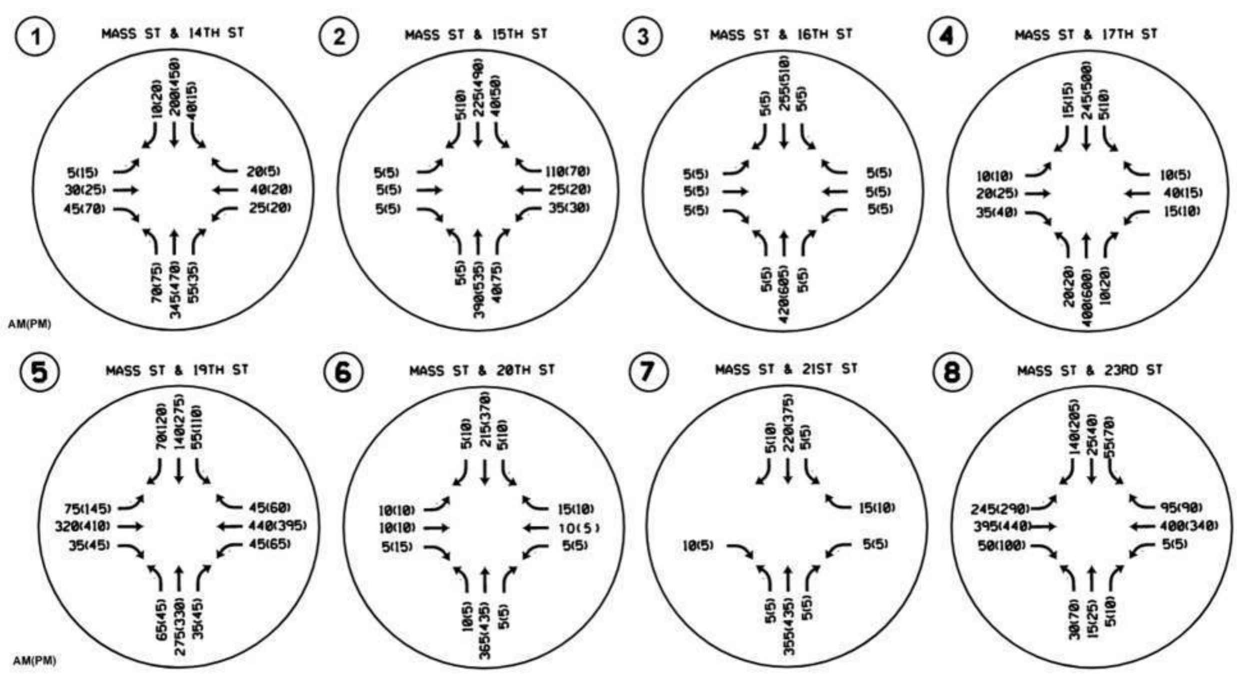

Figure 5 – 2023 Peak Hour Volumes – Existing Traffic Configurations

Crash & Safety Analysis

Crash data provided by the City of Lawrence was analyzed to identify any existing locations where safety improvements may be needed. During the five-year period, January 1, 2018, to December 31, 2022, 244 crashes were reported within the study area. Of these crashes, 75% (184) were reported as property damage only and 25% (60) as injury crashes. No fatal crashes were reported. **Figure 6** presents the crashes by crash severity within the study area.

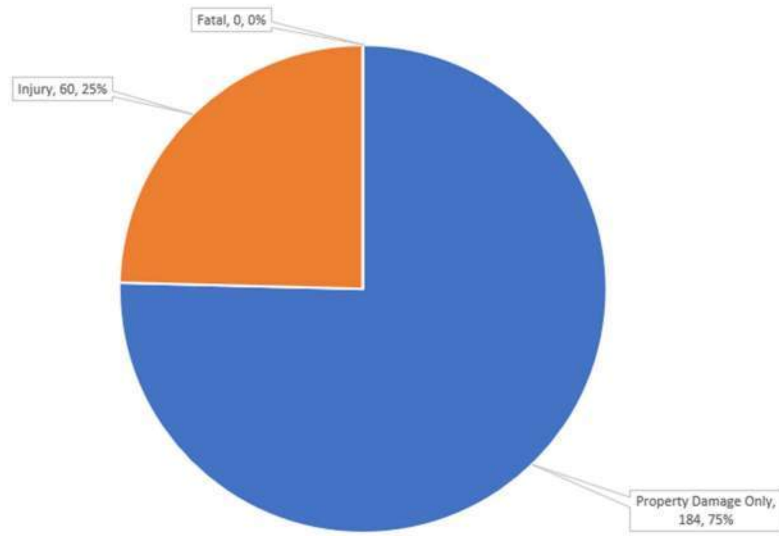

Figure 6 – Crashes by Crash Severity

Crash types included **Figure 7** shows the crashes by crash type within the study area. Crash types included rear end (39%), angle – side impact (39%), collision with fixed object (6%), sideswipe – same direction (5%), head on (4%), collision with pedestrian (3%), collision with parked motor vehicle (2%), and others (2%).

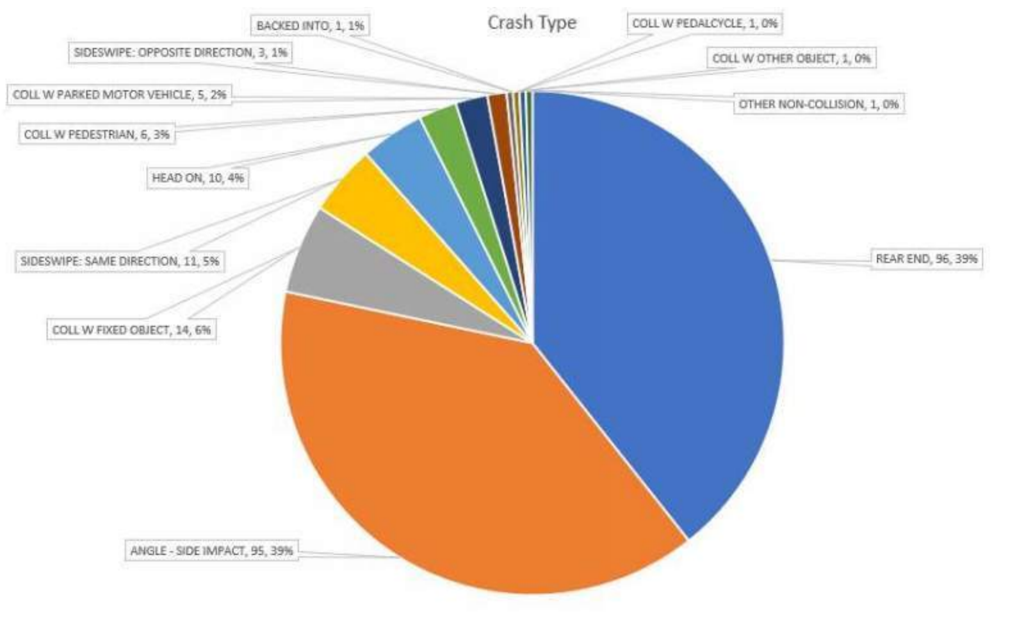

Figure 7 – Crashes by Crash Type

Comparing crash rates is an effective tool to measure safety at a specified location. The crash rate of an intersection considers the number of reported crashes as well as the total entering traffic volume for that intersection over a specified period. The formula that represents the intersection crash rate calculation is as follows according to the FHWA:

$$R = \frac{1{,}000{,}000 * C}{365 * N * V}$$

Where:

R = Crash rate for the intersection expressed as crashes per million entering vehicles (MEV)

C = Total number of intersection crashes in the study period

N = Number of years of data

V = Traffic volumes entering the intersection daily

An intersection crash rate was determined for each identified intersection based on the intersection Average Annual Daily Traffic (AADT), number of crashes, and number of years in the study period. The intersection AADT was developed from the 24-hour traffic volumes collected on October 3rd, 2023. **Table 3** provides a summary of the calculated intersection crash rates. A crash rate higher than 1.0 represents an elevated crash rate as 1.0 crashes per million entering vehicles is considered average for this type of intersection. The intersections of 17th Street, 19th Street, and 23rd Street are operating at an elevated crash rate as compared to the average.

Table 3 – Intersection Crash Rates

Intersection		Intersection AADT	Total Crashes	Crash Rate
1	Mass St. & 14th St.	13,180	19	0.79
2	Mass St. & 15th St.	13,893	17	0.67
3	Mass St. & 16th St.	12,460	12	0.53
4	Mass St. & 17th St.	13,389	34	1.39
5	Mass St. & 19th St.	22,362	49	1.20
6	Mass St. & 20th St.	10,006	6	0.33
7	Mass St. & 21st St.	9,756	8	0.45
8	Mass St. & 23rd St.	22,694	84	2.03

According to the US Department of Transportation Federal Highway Administration (FHWA), four-lane roadways, like Mass Street within the study area, experience several crash types including the following:

- Rear-end and sideswipe crashes caused by speed differential between vehicles;
- Sideswipe crashes caused by frequent and sudden lane changing between two through lanes;
- Rear-end crashes caused by left-turning vehicles stopped in the inside travel lane;
- Left-turn crashes caused by mainline left-turning motorists feeling pressure to depart the shared through/left lane by following motorists making a poor gap judgement;
- Right angle crashes caused by side street traffic crossing four lanes to make a through movement across an intersection, or turning left across two lanes;
- Bicycle crashes due to a lack of available space for bicyclists to ride comfortably; and
- Pedestrian crashes due to the high number of lanes for pedestrians to cross with no refuge.

These crash types follow closely to what has been reported and observed in the crash data.

Operational Analysis & Potential Improvements

Operational analysis is in progress. The initial findings indicate that a 4-lane to 3-lane conversion may be feasible on Mass Street from 14th Street to 23rd Street. The additional width due to the reconfiguration may be used to install a bikeway.

Next Steps

Once the operational analysis is complete, potential design alternatives will be developed further including bikeway/pedestrian facilities and a potential option of a roundabout at 19th Street. Other items to consider are pedestrian crossings, accommodations for bike facilities at intersections, transit improvements, etc.

Once design alternatives have been developed, the City will host another public open house in early 2024 to gather additional public input. Design adjustments will follow, and subsequently staff will meet with MMTC to discuss and gather feedback. From MMTC feedback, a preferred alternative will be refined and the City will present this at a third public open house. The City and TREKK will finally meet with MMTC and City Commission to solicit preferred alternative approval.

Open House #1 Content and Feedback Summary was also shared as part of the MMTC #1 Agenda.

Removed from document to minimize redundancy.

See Exhibit A and Exhibit B for further information.

Exhibit D

Traffic Study

MS1-00005 Massachusetts Street Multimodal Improvements Study – Traffic Study

Presented to: City of Lawrence, Kansas

Prepared by: TREKK Design Group

February 29, 2024

TABLE OF CONTENTS

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DOCUMENT INTENT

The intent of this document is to provide a summary of the traffic analysis and engineering decisions as part of the City of Lawrence project MS1-00005 – Massachusetts Street Multimodal Improvements Study from 14th Street to 23rd Street.

It is intended that a follow-up document will summarize the public engagement process and document decisions based on community feedback. The follow-up document will identify the recommended alternative, including estimated construction cost and potential next steps and further considerations during design.

INTRODUCTION

The City of Lawrence, Kansas, in coordination with TREKK Design Group and Shockey Consulting, is developing a multimodal improvements study to provide recommendations for construction of multimodal facilities along Massachusetts Street (Mass Street) from 14th Street to 23rd Street. Mass Street, from 11th to 14th Street, recently underwent a roadway reconfiguration in 2018 to convert from a 4-lane roadway to 3-lane roadway (one lane in each direction with a two-way-left-turn lane) and buffered bike lanes.

The study area has been identified as a priority/secondary link in the Lawrence Bike Plan and has also been identified on the KDOT Vulnerable Road User High Injury Network as a medium/high priority. The study area has also been identified as a priority link in the Lawrence Pedestrian Plan and should include sidewalks on both sides. This study will provide recommended improvements to complete the gaps in the pedestrian and bike networks and improve safe multimodal access to downtown Lawrence.

Potential geometric improvements include a roadway reconfiguration, converting Mass Street from a 4-lane undivided roadway into a 3-lane roadway including one through lane in each direction and a two-way-left-turn-lane (TWLTL). A number of bike facility options have been investigated to complete the gap in the bike network and improve safety. Recommendations include proposed geometrics at intersections, including an evaluation of signal warrants at 17th Street and an evaluation of alternatives at 19th Street such as a roundabout. Multimodal improvements considerations are also summarized including parking, pedestrian facilities, transit improvements, etc.

The project location map is shown in **Figure 1**.

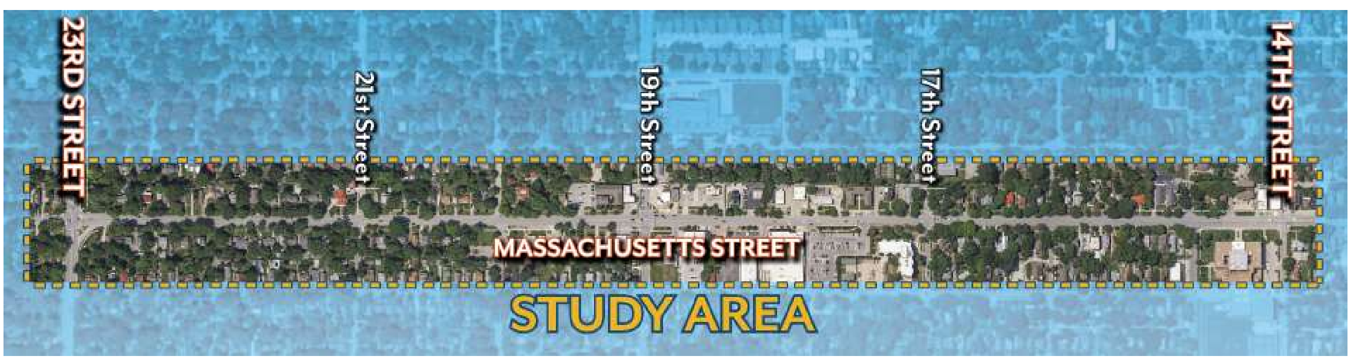

Figure 1 – Project Location Map

EXISTING ROADWAY CHARACTERISTICS AND CONDITION

Existing Roadway Characteristics

Mass Street is classified as a Minor Arterial per the T2050 Major Thoroughfares Map, developed by the Lawrence MPO Policy Board. The typical roadway width of Mass Street from 14th Street to 23rd Street is 52-ft from back of curb to back of curb, which includes four 12-ft lanes with 2-ft curb and gutter on each side. Parking is generally prohibited for the extent of the project limits, with the exception of restricted bus parking between 14th street and 15th street near Liberty Memorial Central Middle School. Angled/perpendicular parking is also present near 14th Street, 17th Street, 19th Street, and 20th Street at select businesses. The posted speed limit is 30 miles per hour (mph). Existing typical sections are shown in **Figure 2**.

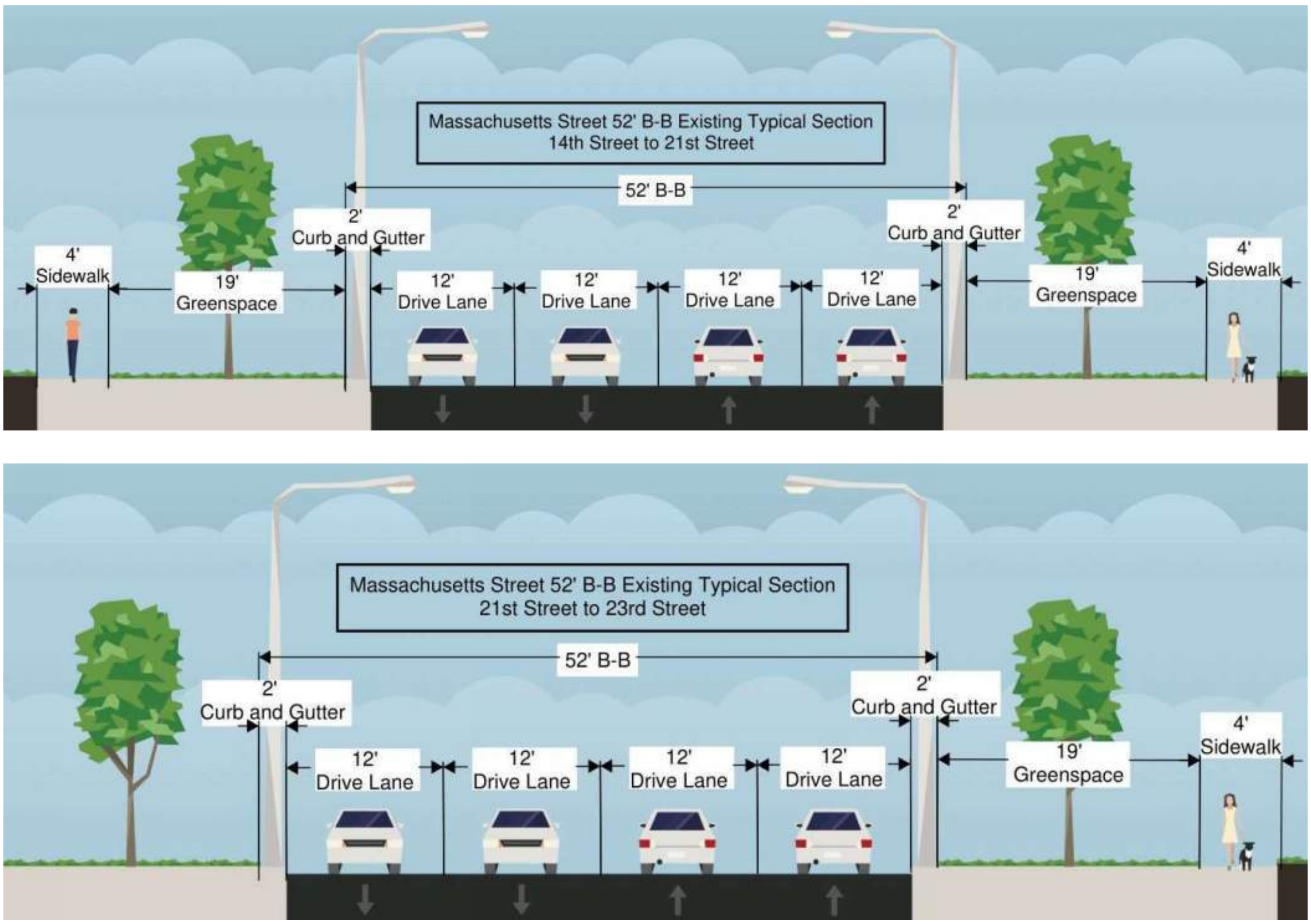

Figure 2 – Existing Typical Sections

Existing Right-of-Way

The existing right-of-way width within the study area along Mass Street is 100'. **Figure 3** shows the right-of-way map according to the Douglas County Property Viewer GIS application.

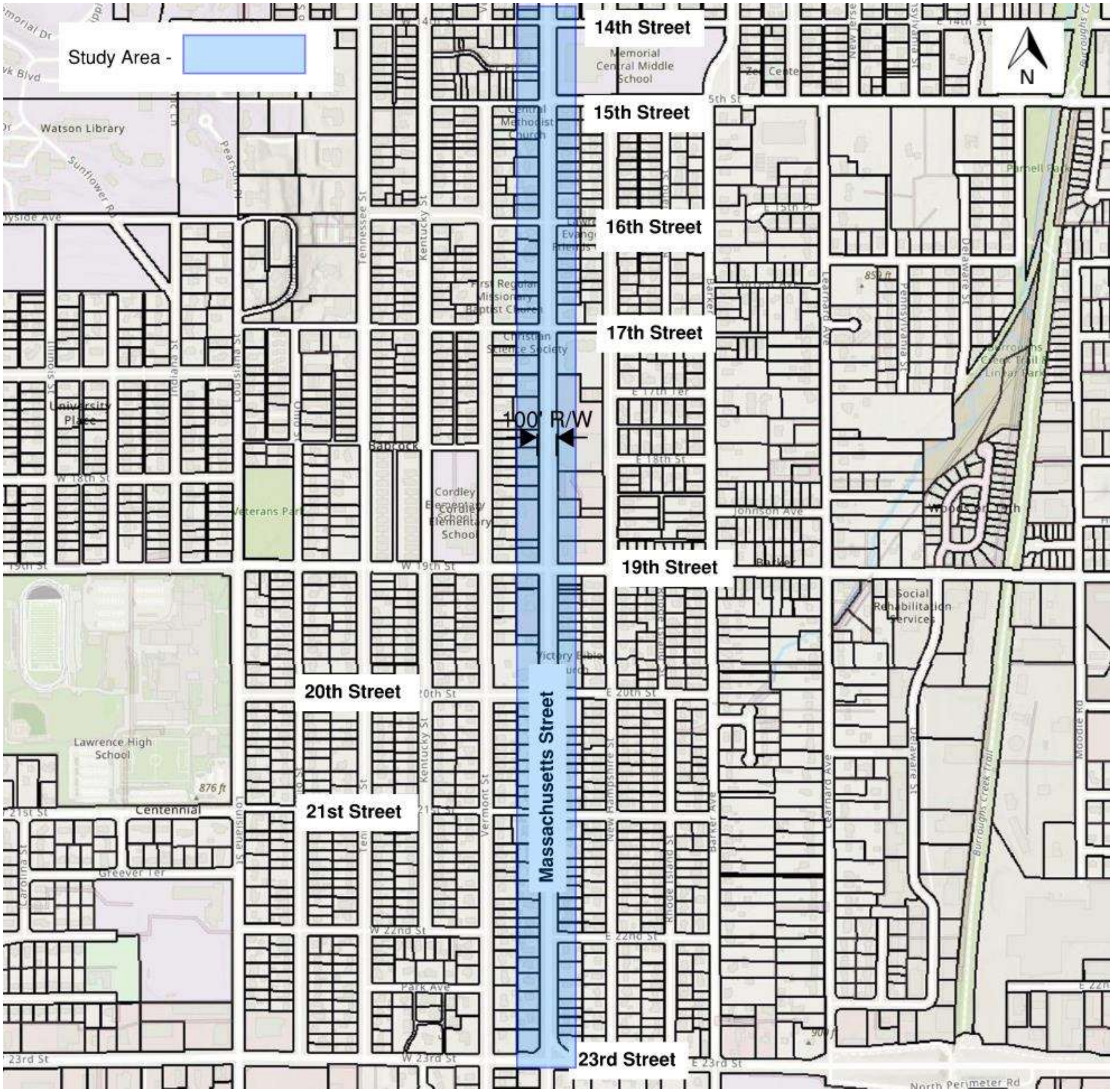

Figure 3 – Right-of-Way Map

Existing Land Use

The area directly adjacent to Mass Street within the study area is mostly residential, with some areas zoned for commercial use. **Figure 4** shows the land use map as identified by the Douglas County Property Viewer – Lawrence Zoning.

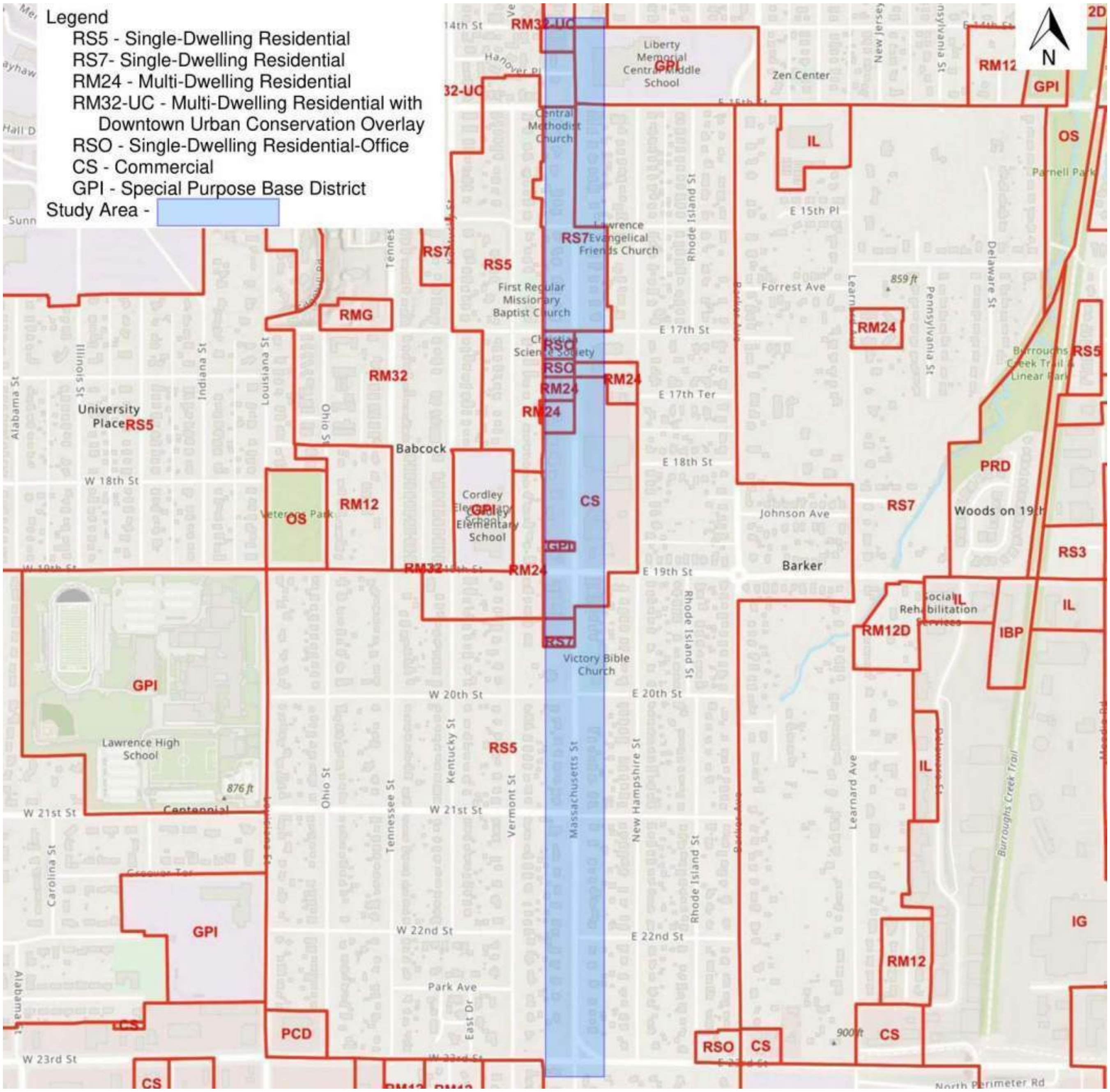

Figure 4 – Land Use Map

Existing Lawrence Transit Bus Routes / Stops

Lawrence Transit has one bus route, Downtown to South Iowa – Route 7, and four (4) bus stops in the study area. **Table 1** summarizes the bus stop locations, corresponding frequencies, and bus stop characteristics for the bus stops within the study area.

Table 1 – Lawrence Transit Bus Stops within Study Area – Downtown to South Iowa – Route 7

Bus Stop Location	Stop Frequency	Wheel Chair Accessible	Shelter	Bench	Bike Rack
117 - Mass @ 17th Southbound	30 min.	No	No	No	No
118 - Mass @ 17th (Babcock) Northbound	30 min.	Yes	Yes	No	No
365 - Mass @ 19th (Dillons) Northbound	30 min.	Yes	No	No	No
116 - Mass @ 19th Southbound	30 min.	Yes	No	Yes	No

Existing Bike Facilities

There are no dedicated bicycle facilities along Massachusetts Street within the study area. Recently, in 2020, Lawrence completed a project converting 21st Street to a bike boulevard from Iowa Street to Mass Street. This project provided bike boulevard pavement markings along 21st Street to indicate to motorists that the roadway is intended as a shared space for drivers and bicyclists. At Mass Street, left turns from 21st Street are prohibited, and a pedestrian hybrid beacon was installed along with green marked bicycle crossings. The full extent of the study area along Mass Street has been identified by Lawrence as least comfortable when comparing comfortability of bikers along the corridor.

Mass Street from 14th to 21st street is identified as a priority network per the Lawrence Bike Plan. From 21st Street to 23rd Street is identified as a secondary network as shown in **Figure 5**.

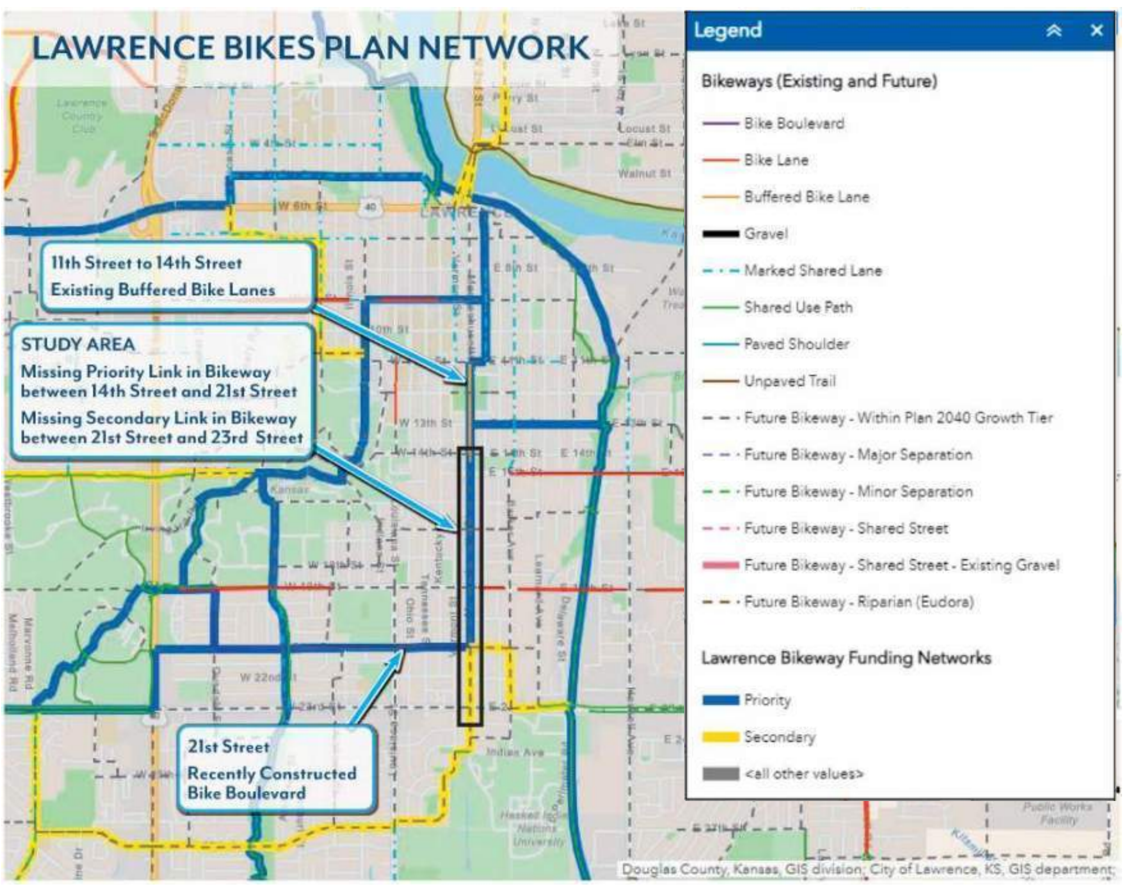

Figure 5 - Lawrence Bike Plan Network

The Federal Highway Administration (FHWA) defines a vulnerable road user (VRU) as anyone walking, biking, or rolling by non-motorized forms of transportation on public roads or on foot in work zones. KDOT conducted a Vulnerable Road User Safety Assessment to improve understanding of the conditions and behaviors present in fatal and serious injury crashes involving VRUs. As part of this assessment, crashes from 2014 to 2021 were analyzed considering crash trends and contributing circumstances to develop a High-Injury Network (HIN). Areas that are identified on the HIN are locations where VRU crashes resulting in fatal and serious injury crashes are overrepresented.

Mass Street from 14th Street to 20th Street has been identified on the KDOT Vulnerable Road User High Injury Network as a High Injury Network – Medium Priority except for 15th Street to 16th Street as that segment is identified as a High Injury Network – High Priority as shown in **Figure 6**. These segments are on the high-injury network due to the vulnerable road user crash history and should be taken into consideration when evaluating vulnerable road user facilities such as bikeways and pedestrian crossings and other facilities. Crash analysis during the five-year period, January 1, 2018, to December 31, 2022, is included in the Crash and Safety Analysis section, which considers VRU crashes.

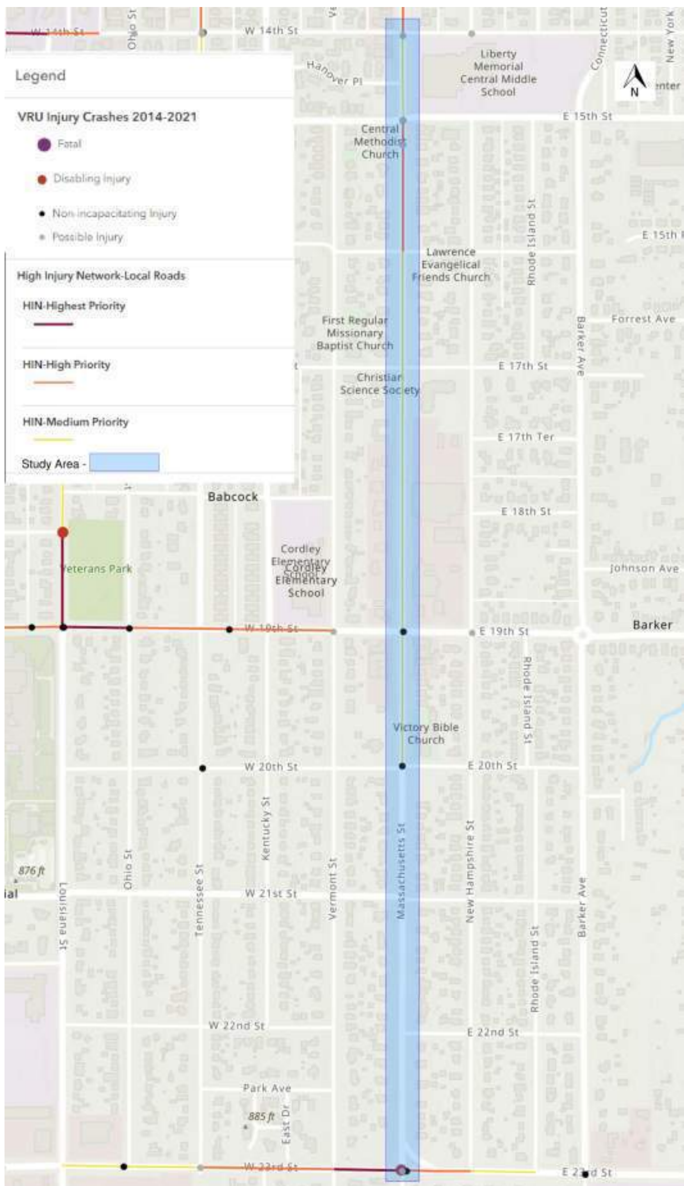

Figure 6 - KDOT Vulnerable Road User – High Injury Network Map

Existing Pedestrian Facilities

The study area has been identified as a priority link in the Lawrence Pedestrian Plan and should include sidewalks on both sides. From 14th Street to 21st Street, there is an existing sidewalk on both sides of Mass Street. However, from 21st Street to 23rd Street, there is no sidewalk on the west side. Much of the sidewalk within the study area is deteriorating and some segments are paved with brick.

Several intersections within the study area do not have proper pedestrian facilities such as ADA compliant ramps and crosswalk markings. At 15th Street & Mass Street and 16th Street & Mass Street, there are pedestrian ramps to cross Mass Street on the east side, however there are no receiving ramps on the west side.

EXISTING TURNING MOVEMENT COUNTS

Turning movement counts were collected and analyzed at the identified intersections. Data was collected for 24 hours to determine the AM and PM peak hours for analysis. These peak hours were utilized as they represent the highest capacity requirements and are the most critical periods for operation. The resulting peak hour information for each location is shown in **Table 2**.

Table 2 – Date of Data Collection & Identified Peak Hours

Location		Date of Data Collection	Morning Peak Hour	Afternoon Peak Hour
1	Mass St. & 14th St.	Tuesday, October 3rd, 2023	7:30 AM	4:45 PM
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The existing 2023 AM and PM peak hour turning movement traffic volumes are shown in **Figure 7**, adjusted up to the nearest 5. The volumes in the parentheses correlate to the PM traffic volumes, whereas the volumes with no parentheses correlates to the AM traffic volumes. North is upward in each diagram. Detailed reports of the collected traffic volumes are shown in **Appendix A.**

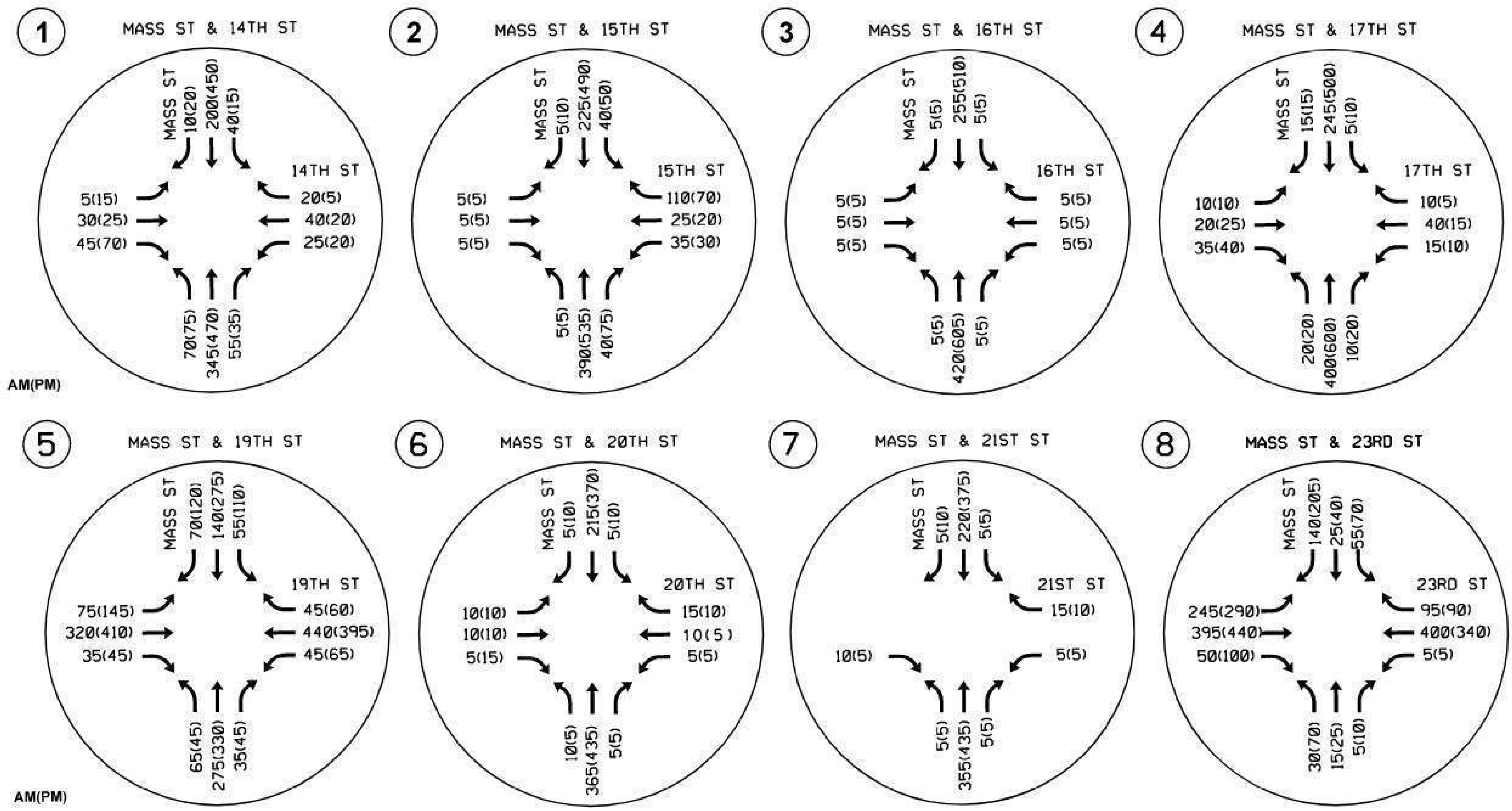

Figure 7 – 2023 Peak Hour Volumes – Existing Traffic Configurations

CRASH & SAFETY ANALYSIS

Crash data provided by the City of Lawrence was analyzed to identify any existing locations where safety improvements may be needed. During the five-year period, January 1, 2018, to December 31, 2022, 244 crashes were reported within the study area. Of these crashes, 75% (184) were reported as property damage only and 25% (60) as injury crashes. No fatal crashes were reported. **Figure 8** presents the crashes by crash severity within the study area.

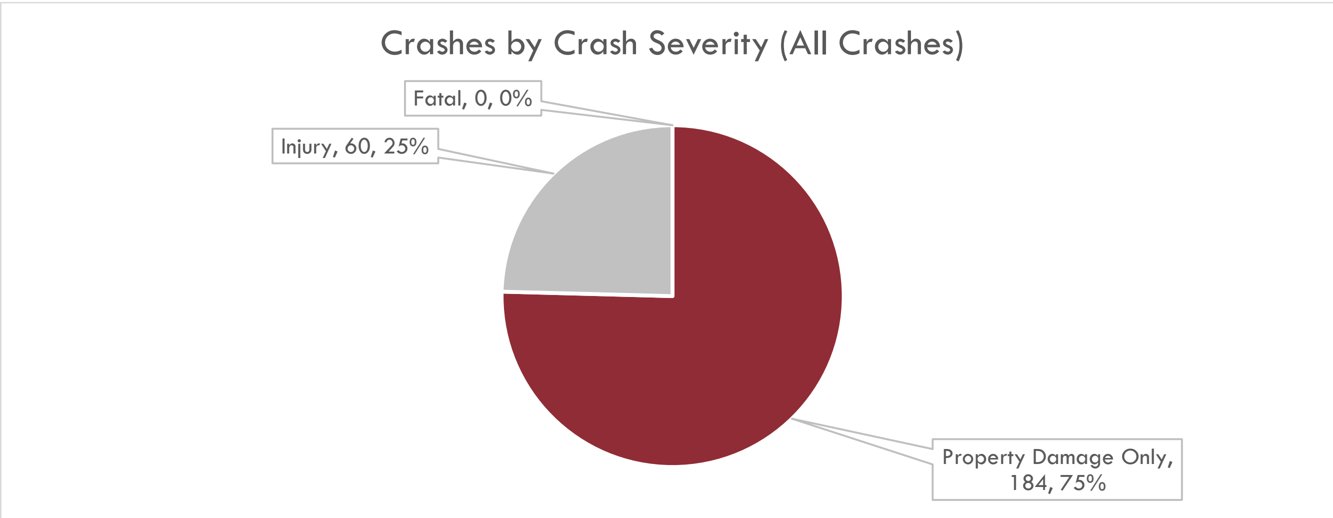

Figure 8 – Crashes by Crash Severity

Figure 9 shows the documented crashes, by crash type, within the study area. Crash types included rear end (39%), angle – side impact (39%), collision with fixed object (6%), sideswipe – same direction (5%), head on (4%), collision with pedestrian (3%), collision with parked motor vehicle (2%), others (2%), and sidewalk – opposite direction (1%). Locations where crashes were overrepresented (elevated crash rate) were investigated further to determine patterns, trends, and potential factors such as speeding as shown on page 12.

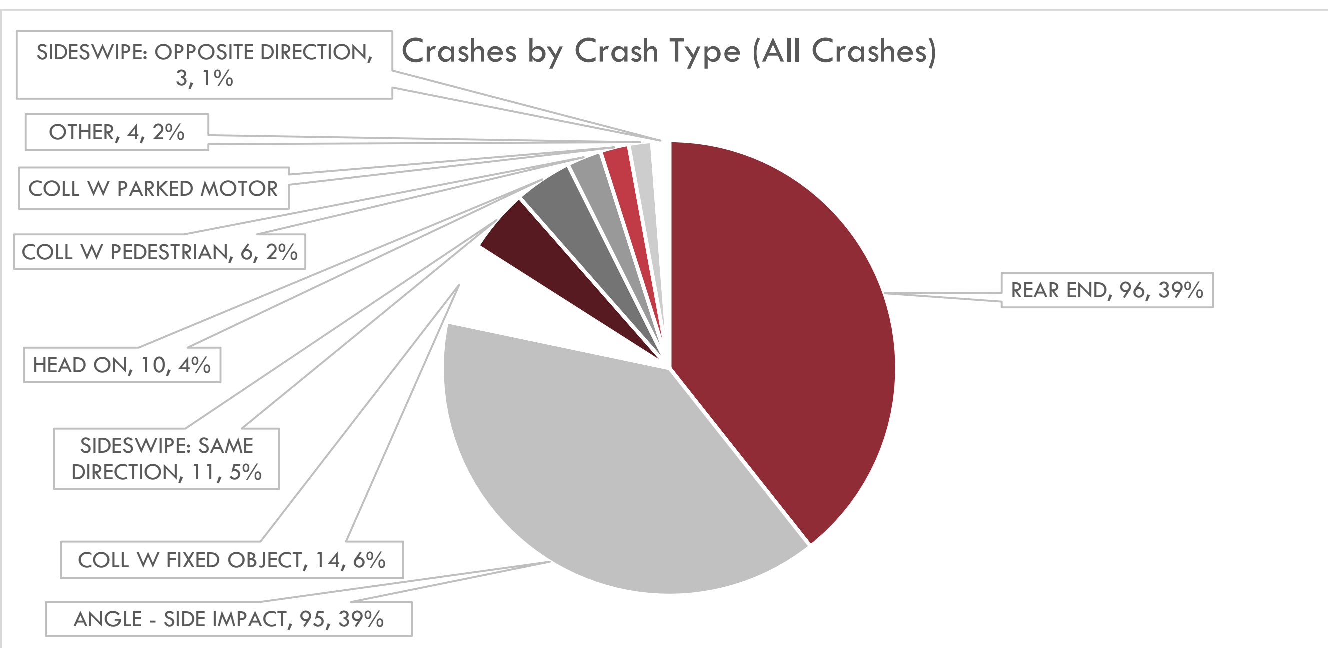

Figure 9 – Crashes by Crash Type

The existing corridor is lit with roadway street lighting. **Figure 10** shows the reported crashes, by lighting condition, within the study area. Of the crashes, 76% occurred during daylight conditions, 21% dark with streetlights on, 2% at dawn, and 1% at dusk.

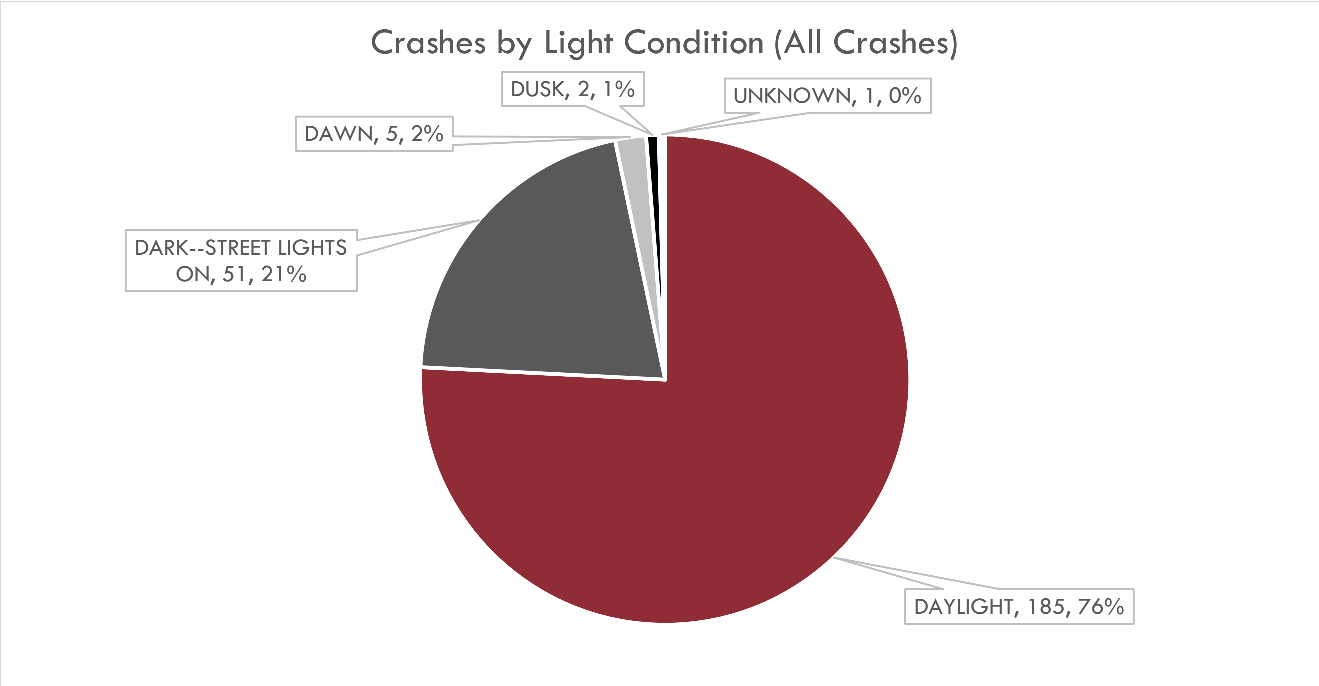

Figure 10 – Crashes by Light Condition

Of the 244 crashes reported, 7 were reported as VRU crashes (6 pedestrian, 1 bicycle), each resulting in injuries. Individual crash reports, as provided by the City, were investigated further for these VRU crashes. A summary of those crashes is listed below.

- Mass & 15th Street – Westbound vehicle struck pedestrian crossing 15th Street traveling northbound in marked crosswalk. Light conditions were reported as daylight.
- Mass & 15th Street – Southbound vehicle struck running pedestrian crossing Mass Street near 15th Street at an unmarked location. Light conditions were reported as dark – street lights on.
- Mass & 15th Street – Westbound vehicle making a right turn onto Mass Street struck a southbound traveling cyclist at crosswalk location. Light conditions were reported as dusk.
- Mass & 19th Street – Vehicle making a NBL turn at 19th Street struck northbound traveling pedestrian in crosswalk. Light conditions were reported as daylight.
- Mass & 20th Street – Southbound vehicle struck running pedestrian crossing Mass Street near 20th Street. Light conditions were reported as daylight.
- Mass & 23rd Street – Southbound vehicle making left turn at 23rd Street struck northbound traveling pedestrian in crosswalk. Light conditions were reported as daylight.
- Mass & 23rd Street – Southbound vehicle making left turn at 23rd Street struck northbound traveling pedestrian in crosswalk. Light conditions were reported as daylight.

Comparing crash rates is an effective tool to measure safety at a specified location. The crash rate of an intersection considers the number of reported crashes as well as the total entering traffic volume for that intersection over a specified period. The formula that represents the intersection crash rate calculation is as follows according to the FHWA:

$$R = \frac{1{,}000{,}000 * C}{365 * N * V}$$

Where:

R = Crash rate for the intersection expressed as crashes per million entering vehicles (MEV)

C = Total number of intersection crashes in the study period

N = Number of years of data

V = Traffic volumes entering the intersection daily

An intersection crash rate was determined for each identified intersection based on the intersection Average Annual Daily Traffic (AADT), number of crashes, and number of years in the study period. The intersection AADT was developed from the 24-hour traffic volumes collected on October 3rd, 2023. **Table 3** provides a summary of the calculated intersection crash rates. A crash rate higher than 1.0 represents an elevated crash rate as 1.0 crashes per million entering vehicles is considered average for this type of intersection. **The intersections of 17th Street, 19th Street, and 23rd Street are operating at an elevated crash rate as compared to the average.**

Table 3 – Intersection Crash Rates

Intersection		Intersection AADT	Total Crashes	Crash Rate
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According to the US Department of Transportation Federal Highway Administration (FHWA), four-lane roadways, like Mass Street within the study area, experience several crash types including the following:

- Rear-end and sideswipe crashes caused by speed differential between vehicles;
- Sideswipe crashes caused by frequent and sudden lane changing between two through lanes;
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- Left-turn crashes caused by mainline left-turning motorists feeling pressure to depart the shared through/left lane by following motorists making a poor gap judgement;
- Right angle crashes caused by side street traffic crossing four lanes to make a through movement across an intersection, or turning left across two lanes;
- Bicycle crashes due to a lack of available space for bicyclists to ride comfortably; and
- Pedestrian crashes due to the high number of lanes for pedestrians to cross with no refuge.

These crash types follow closely to what has been reported and observed in the crash data.

Individual crash reports, as provided by the City, were investigated further at the locations where crash rates are elevated (17^{th} Street, 19^{th} Street, and 23^{rd} Street). The following observations or trends have been identified at each intersection.

At 17^{th} Street, the following crashes were recorded during the study period.

- 18 rear end crashes due to speeding, adverse conditions, and stopped vehicles awaiting to make a left turn from Mass Street
- 5 crashes due to private drives near the intersection
- 3 crashes due to changing lanes near the intersection
- 3 angle crashes at the intersection due to running red lights
- 3 crashes due to vehicles being out of control and colliding with fixed objects
- 2 crashes due to collisions with parked vehicles

At 19^{th} Street, the following crashes were recorded during the study period.

- 22 angle crashes at the intersection due to failing to yield right-of-way
- 21 rear end crashes due to speeding, adverse conditions, and inattention.
- 4 crashes due to private drives near the intersection
- 2 crashes due to changing lanes near the intersection
- 1 crash due to vehicles colliding with fixed objects
- 1 crash due to collisions with parked vehicles

At 23^{rd} Street, the following crashes were recorded during the study period.

- 41 angle crashes at the intersection due to running red lights and failing to yield right-of-way
- 32 rear end crashes due to speeding, adverse conditions, and inattention.
- 4 crashes due to changing lanes near the intersection
- 3 crashes due to vehicles colliding with fixed objects
- 2 crashes due to vehicles colliding with pedestrians
- 2 crashes due to vehicles being out of control and colliding with other vehicles

In general, it is anticipated that converting Mass Street from 4-lanes to 3-lanes with dedicated left turn lanes in the northbound and southbound directions will reduce the number of angle and rear end crashes (due to speed differential) at intersections such as 17^{th}, 19^{th}, and 23^{rd} Street. A 4-lane to 3-lane conversion is also anticipated to reduce traffic speeds within the study area, which may reduce the number of crashes due to being out of control. Further benefits of a 4-lane to 3-lane conversion, such as at unsignalized intersections, are summarized in the Potential Proposed Improvements section.

Additionally, rear end crashes are anticipated to be reduced at 17^{th} Street due to providing dedicated left turn lanes and removing the traffic signal if unwarranted.

Access management solutions could be implemented to reduce the number of crashes due to private drive turning movements near the intersections. At 23^{rd} Street, removing the westbound channelized right-turn lane and converting to a standard right turn lane is anticipated to reduce speeds and improve the safety of the intersection.

PROPOSED IMPROVEMENTS EVALUATION

Roadway Reconfiguration

According to the US Department of Transportation Federal Highway Administration (FHWA), a roadway reconfiguration can improve safety, calm traffic, provide better mobility and access for all road users, and enhance overall quality of life. A roadway reconfiguration typically involves converting an existing four-lane undivided roadway, similar to Mass Street, to a three-lane roadway consisting of two through lanes and a center TWLTL.

Benefits of roadway reconfigurations may include the following:

- Reduction of rear-end and left-turn crashes due to the dedicated left-turn lane.
- Reduced right-angle crashes as side street motorists cross three versus four travel lanes.
- Fewer lanes for pedestrians to cross.
- Opportunity to install pedestrian refuge islands, bikeways, on-street parking, or transit stops.
- Traffic calming and more consistent speeds.
- A more community-focused, Complete Streets environment that better accommodates the needs of all road users.

Mass Street from 14th Street to 23rd Street was evaluated to determine the feasibility of a roadway reconfiguration to reduce travel lanes from 4-lanes to 3-lanes. **Figure 11** shows a potential typical section of the proposed improvements. Note that the recommended bikeway type is discussed in the Conceptual Design Considerations section of this study.

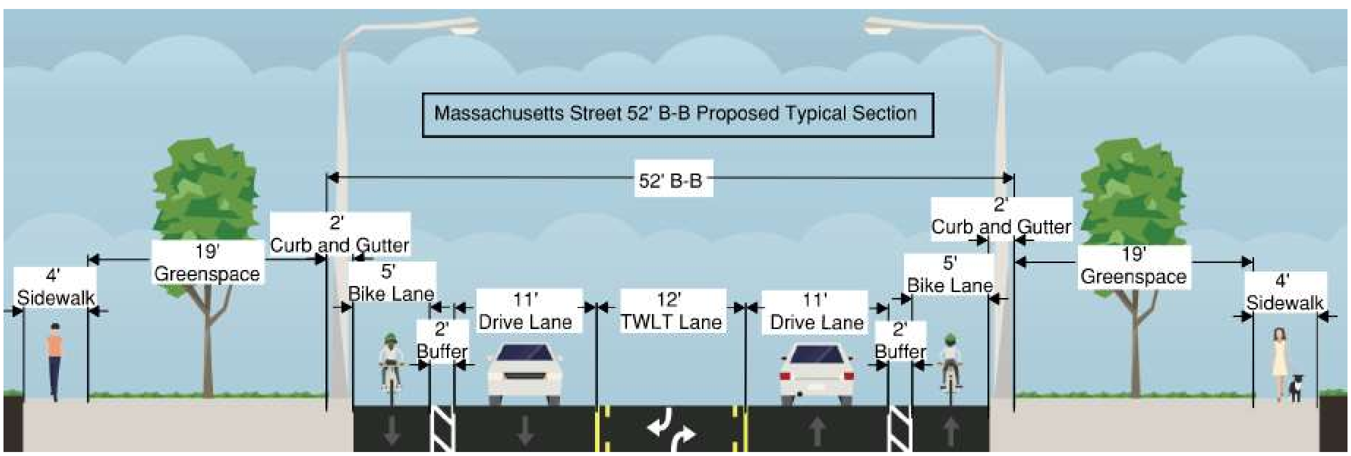


Figure 11 – Proposed Typical Section – 4-Lane to 3-Lane Roadway Reconfiguration

Intersection Alternatives at Mass Street & 17th Street – MUTCD Signal Warrant

Based on the crash history and number of rear end crashes as summarized and discussed with the City, traffic signal warrants were analyzed at Mass Street and 17th Street per the Manual on Uniform Traffic Control Devices (MUTCD). If the traffic signal is not warranted per MUTCD guidance, removing the traffic signal is anticipated to reduce the number of rear end crashes along Mass Street at 17th Street.

Traffic volumes utilized for the analysis were collected on October 3rd, 2023 during typical weekday traffic operations. The signal warrant analyses were performed using Highway Capacity Software (HCS) Warrants. The Warrant analysis details are shown in **Appendix B**. Due to the low minor approach volumes on 17th Street, traffic volumes do not meet MUTCD Traffic Signal Warrants 1, 2, or 3 (8-Hour Volume, 4-Hour Volume, and Peak Hour Volume, respectively). As such, it is recommended to remove the traffic signal.

Although recommended to remove the traffic signal at 17th and Mass Street, an adequate pedestrian crossing should be provided. According to the MUTCD, a pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants.

Figure 4F-1 from the MUTCD, as shown in **Figure 12**, identifies guidelines for justification of installation of a pedestrian hybrid beacon based on crossing width (50'), traffic volumes (1,165 vph), and pedestrian crossing volume (20). The traffic volumes collected on October 3rd, 2023 were reviewed and the number of pedestrians crossing Mass Street were above the recommended threshold during the PM peak hour to justify installation of a pedestrian hybrid beacon. As such, it is recommended to install a pedestrian hybrid beacon in addition to removing the existing traffic signal.

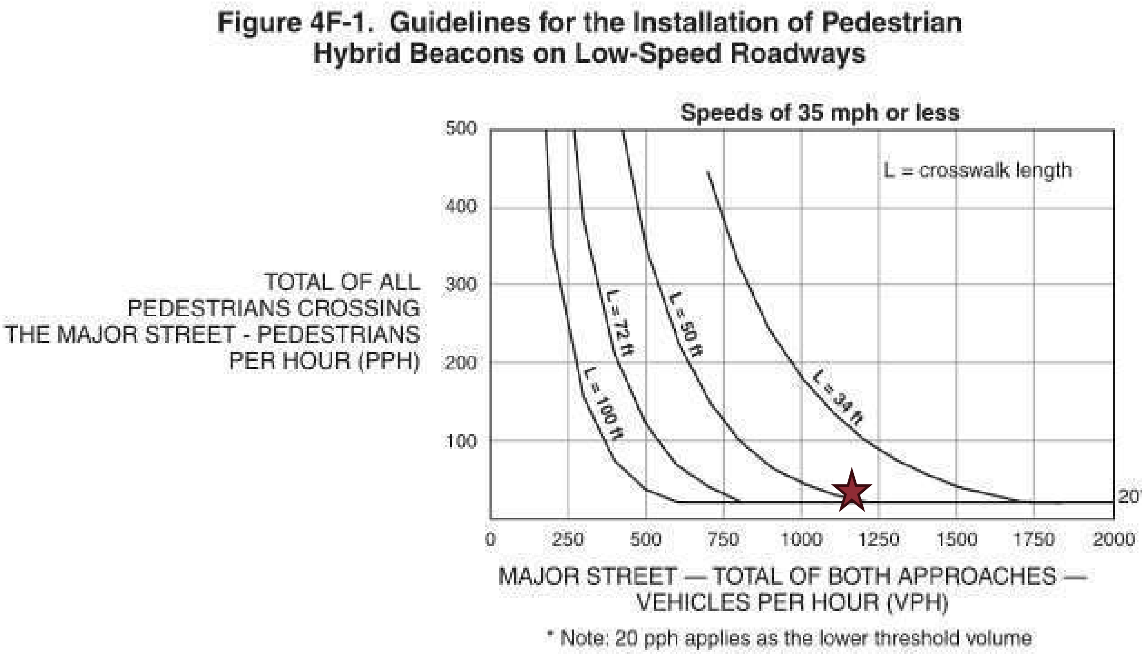


Figure 12 – Guidelines for the Installation of Pedestrian Hybrid Beacons on Low-Speed Roadways

Intersection Alternatives at Mass Street & 19th Street – Roundabout Evaluation

Roundabouts are a proven safety countermeasure according to FHWA because they can substantially reduce crashes that result in serious injury or death. Roundabouts can improve safety, lower speeds, provide traffic calming, reduce conflict points, improve operational performance, and meet a wide range of traffic conditions due to their versatile size, shape, and design.

Converting an existing signalized intersection, such as Mass Street and 19th Street, to a roundabout is estimated to reduce fatal and injury crashes by up to 82%. Standard signalized intersections have 32 vehicular conflicts and 24 pedestrian conflicts whereas single-lane roundabouts have a total of 8 vehicular conflict points and 8 pedestrian conflict points.

From a traffic operations standpoint, roundabouts are more flexible than traffic signals as they self-regulate and often operate more effectively during the non-peak hours, reducing congestion and traffic emissions. In many scenarios, depending on traffic volumes and patterns, a single-lane roundabout may also operate more effectively than traffic signals during the peak hours.

However, as roundabouts reach capacity constraints, they are less flexible than traffic signals as traffic signal timing can be adjusted to improve operations, whereas roundabout geometry is locked in and challenging to expand due to potential right-of-way and site constraints.

Comparing costs, roundabouts typically cost more to install than traffic signals. However, traffic signals are more costly to maintain due to the amount of equipment to maintain as compared to roundabouts.

A roundabout was considered at the intersection of Massachusetts Street and 19th Street. **Figure 13** presents a conceptual plan of a roundabout at the location identified.

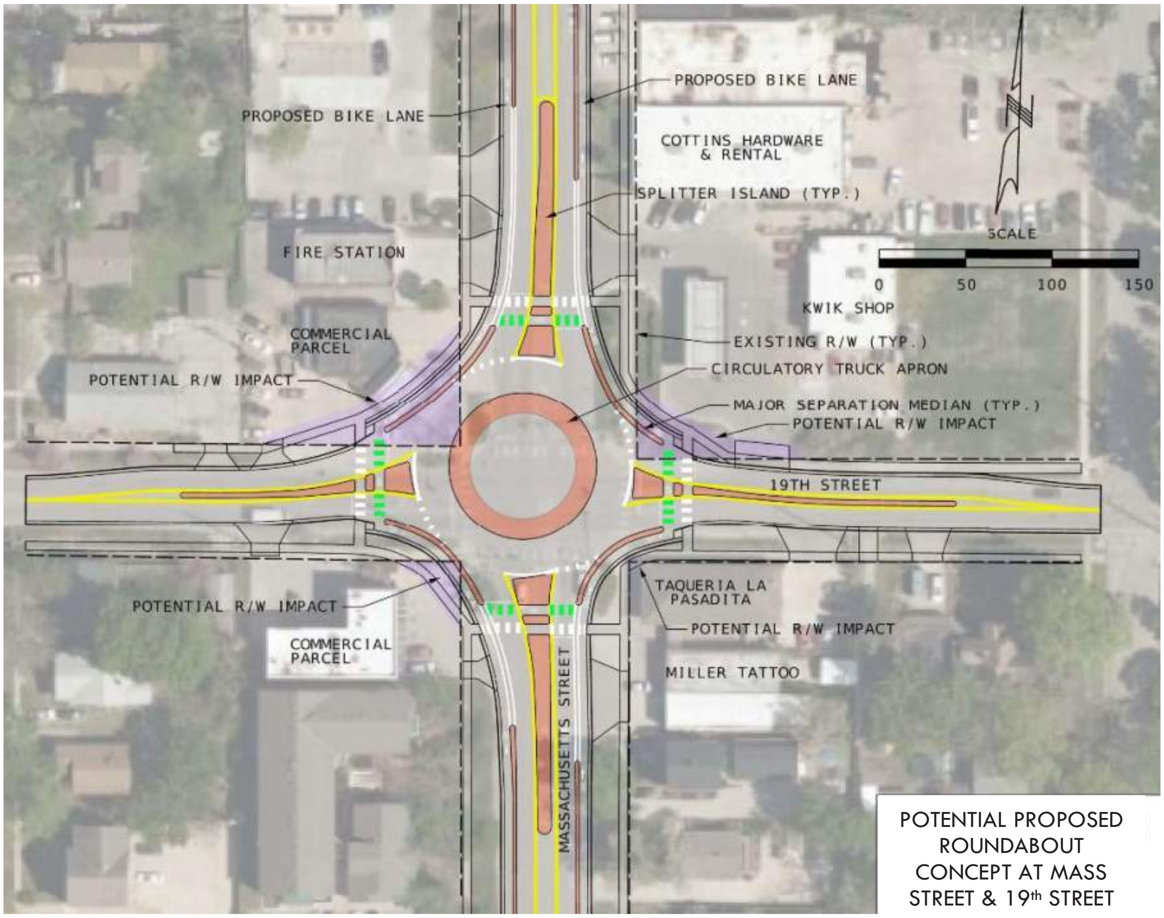


Figure 13 – Potential Proposed Roundabout Concept at Mass Street & 19th Street

The inscribed circle diameter (ICD) is proposed to be 125’, which is within the recommended range of 90’ to 180’ for a single-lane roundabout per NCHRP 1043: Guide for Roundabouts (NCHRP Report 1043). It is proposed to maintain separation between the bikeway and pedestrian path as shown through the intersection. Splitter islands are proposed to be approximately 150’ in length to control movements from nearby driveways within the functional area of the roundabout per NCHRP Report 1043.

As shown, this geometric layout would require some right-of-way acquisition. It may be a challenge to modify existing parking lot layouts due to the reduced available footprint and driveway modifications to accommodate parking spaces and turning movements. Note that the proposed layout is conceptual in nature and recommended performance evaluations such as fastest path calculations and design vehicle truck turning movements have not been developed. It is anticipated that the conceptual layout may accommodate adequate fastest path and truck turning movements with some potential minor adjustments, however it is recommended that performance evaluations be developed during the design phase if a roundabout is the preferred alternative at Mass Street and 19th Street. **Appendix C** presents an exhibit with further details on the roundabout conceptual layout.

OPERATIONAL CAPACITY ANALYSIS

Roadway Reconfiguration Evaluation

Various analysis methods should be considered when determining if a roadway reconfiguration is feasible. These methods include, but are not limited to AADT comparison, peak hour volume per direction, turning volumes/patterns and frequent stopping/slow-moving vehicles, and key intersection operations. The City of Lawrence Bicycle and Pedestrian Design Guidelines prescribes a flow chart, as followed, of roadway reconfiguration feasibility as it relates to traffic volumes as shown in **Figure 14**.

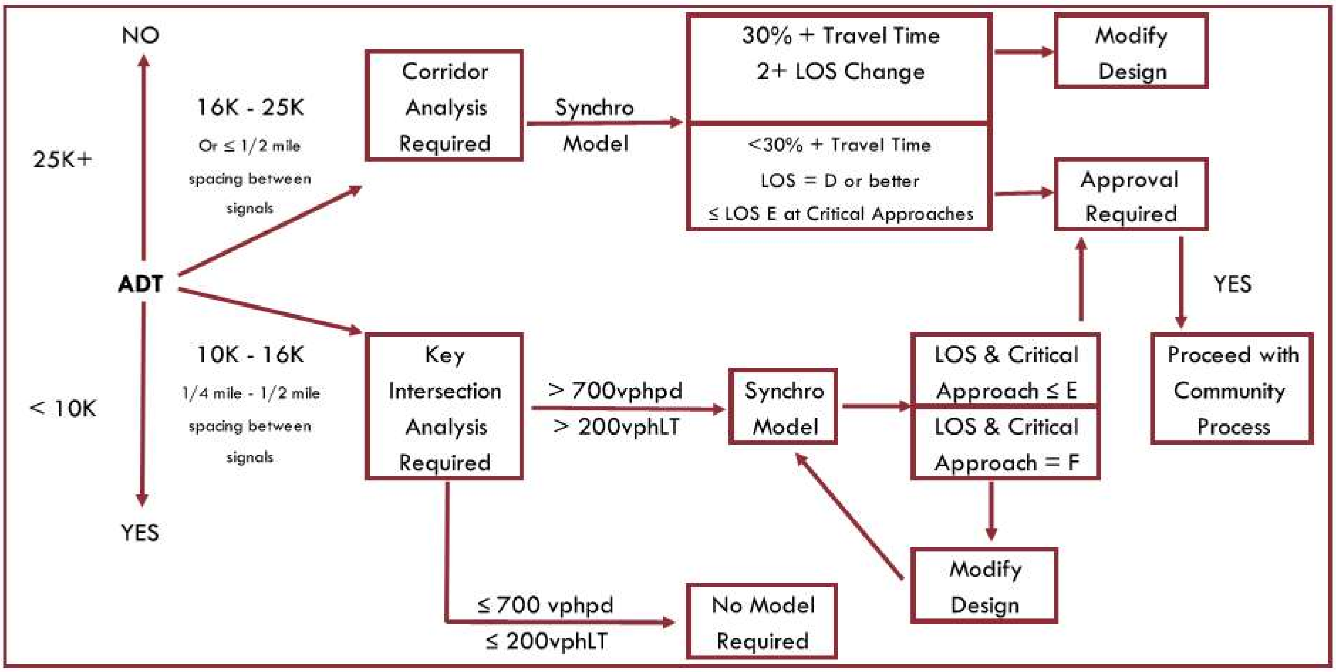


Figure 14 – Four-Lane to Three-Lane Roadway Reconfiguration Evaluation

Traffic Forecasting

The traffic analysis herein includes analysis under current traffic conditions as well as future projected traffic conditions to estimate how improvements will operate within the estimated 20-year design life of the improvements. The City performed a TransCAD traffic demand model analysis predicting traffic growth from 2019 to 2050. The result of this analysis was an annual growth rate of 0.6%, which was utilized to estimate 2043 traffic volumes.

AADT Comparison

FHWA recommends that roadways with current and future Average Annual Daily Traffic (AADT) of 25,000 vehicles per day (VPD) or less may be a good candidate for a 4-lane to 3-lane roadway reconfiguration. According to the KDOT AADT map, Mass Street served 10,960 vpd in 2019 which is anticipated to be 12,650 vpd in 2043 assuming an annual growth rate of 0.6%. The current and future year AADT is below the threshold of the FHWA recommendation; therefore, a 4-lane to 3-lane roadway reconfiguration may be feasible based on AADT.

Peak Hour Volume Per Direction

Another key indication to determine the feasibility of a 4-lane to 3-lane roadway reconfiguration is the peak hour volume per direction. The following are guidelines as described by FHWA:

- Probably feasible at or below 750 vehicles per hour per direction (vphpd) during the peak hour.
- Consider cautiously between 750-875 vphpd during the peak hour
- Feasibility less likely above 875 vphpd during the peak hour and expect reduced arterial LOS during the peak period.

Traffic data collected identified the PM peak hour volumes as 640 vehicles northbound and 550 vehicles southbound. In 2043 the PM peak hour volumes are anticipated to be 720 vehicles northbound and 620 vehicles southbound. Therefore, a roadway reconfiguration may be feasible based on peak hour volume per direction.

Turning Volumes/Patterns & Frequently Stopping/Slow-Moving Vehicles

Additionally, as described by FHWA, the volume and pattern of turning vehicles influences roadway safety and operations. In some instances, four-lane undivided roadways begin to operate in a manner similar to a three-lane roadway as more access points are present. In this scenario, the roadway operates as a de-facto three-lane roadway as motorists use the inside lane for left turning movements and the outside lane as through travel. As such, the operational impacts of a roadway reconfiguration are smaller.

If major driveways exist along a corridor, it could impact the overall operations and safety of the corridor considering if motorists are trying to turn into driveways opposite of one another, opposite-direction vehicles could end up in the TWLTL and have potential conflicts as shown in **Figure 15**. Offset intersections could cause similar challenges, which should be considered during design.

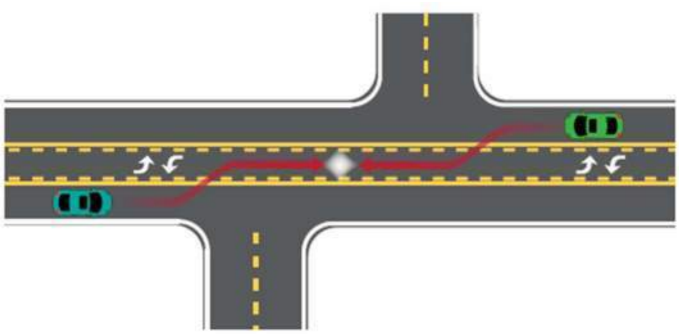


Figure 15 – Offset Driveways/Intersections Causing Conflicts in TWLTL – Per FHWA

The number and frequency of slow-moving and frequently stopping vehicles using a roadway corridor is also a factor when considering a roadway reconfiguration. Some examples of these types of vehicles include transit buses, trash pickup, delivery trucks, and other large vehicles. These types of vehicles have a greater impact on the operations of a three-lane roadway than a four-lane roadway as there is an inability for other vehicles to legally pass frequently stopping or slow-moving vehicles.

Based on the existing bus routes and trash pickup at the residences in the area, frequently stopping/slow-moving vehicles may have an impact on the operations of a 3-lane roadway along this corridor. For reference, the number of articulated trucks and single-unit trucks/buses makes up 2% of the traffic volumes along Mass Street. Other measures can be taken to provide a location for these vehicles to operate to minimize impacts such as providing the ability for trash vehicles to utilize the bike lane/space outside of the travel lane to pick up trash and potential bus pullout areas for buses. If vehicles are illegally passing stopped or slow-moving vehicles in the TWLTL, the City should consider enforcement and education about the use of TWLTLs as appropriate.

Key Intersection Evaluations

In addition to the factors described above, the operations of key intersections along a corridor should be analyzed to determine the feasibility of a roadway reconfiguration. The intersections identified for this study were analyzed using Trafficware Synchro 11 (Synchro) and SIDRA 9.1. Synchro is an analysis package based, in part, on the methodologies outlined in the Highway Capacity Manual (HCM) 6th Edition, which was utilized for two-way stop controlled and signalized intersections. SIDRA is a software that complements the HCM as an advanced intersection tool and is widely-used for roundabout capacity and performance analysis.

Capacity analysis defines the quality of traffic operations for motorists for an intersection using a grading system referred to as Level of Service (LOS). LOS ranges from A, free-flow conditions, to F, congested conditions. The primary measure used to determine the LOS at signalized intersections and roundabouts is the average intersection control delay as outlined in Chapters 19 and 22 of the HCM, respectively. Whereas, the primary measure used to determine the LOS at Two-way Stop-Controlled (TWSC) intersections is not defined for the entire intersection, but rather for each minor-street approach and major-street left turn movements. LOS F is assigned to a movement if its volume-to-capacity ratio (v/c) exceeds 1.0, regardless of the control delay.

The intersections were analyzed for five scenarios as described below for the AM and PM peak hour to determine the feasibility of the proposed lane configurations.

- **No-Build 2023 (Current Timing Plan):** 2023 traffic volumes with existing traffic configuration (4-lanes on Mass St) and current signal timing plans.
- **Build 2023 (Current Timing Plan):** 2023 traffic volumes with proposed traffic configuration (3-lanes on Mass St) and current signal timing plans.
- **Build 2023 (Optimized Timing Plan):** 2023 traffic volumes with proposed traffic configuration (3-lanes on Mass St) and independent intersection optimized signal cycle lengths and splits.
- **No-Build 2043 (Optimized Timing Plan):** 2043 traffic volumes with existing traffic configuration (4-lanes on Mass St) and independent intersection optimized signal cycle lengths and splits.
- **Build 2043 (Current Timing Plan):** 2043 traffic volumes with proposed traffic configuration (3-lanes on Mass St) and current signal timing plans.
- **Build 2043 (Optimized Timing Plan):** 2043 traffic volumes with proposed traffic configuration (3-lanes on Mass St) and independent intersection optimized signal cycle lengths and splits.

The current and optimized timing plan cycle lengths are shown in **Table 4** for reference.

Table 4 – Timing Plan Cycle Lengths

Intersection	2023 Current Timing Plan Cycle Length (s) AM (PM)	2023 Optimized Timing Plan Cycle Length (s) AM (PM)	2043 Current Timing Plan Cycle Length (s) AM (PM)	2043 Optimized Timing Plan Cycle Length (s) AM (PM)
Mass St. & 14th St.	93.0 (93.0)	90.0 (60.0)	93.0 (93.0)	90.0 (90.0)
Mass St. & 17th St.	72.0 (72.0)	N/A - TWSC	72.0 (72.0)	N/A - TWSC
Mass St. & 19th St.	120.0 (120.0)	75.0 (75.0)	120.0 (120.0)	80.0 (80.0)
Mass St. & 23rd St.	120.0 (140.0)	60.0 (60.0)	120.0 (140.0)	60.0 (75.0)

Table 5 shows the range of vehicle delays associated with LOS for signalized/unsignalized intersections.

Table 5 – Level of Service for Signalized and Unsignalized Intersections per HCM

Level of Service	Signalized Average Intersection Control Delay (seconds/vehicle)	Unsignalized (TWSC or Roundabout) Control Delay (seconds/vehicle)
A	0-10 Seconds	0-10 Seconds
B	>10-20 Seconds	>10-15 Seconds
C	>20-35 Seconds	>15-25 Seconds
D	>35-55 Seconds	>25-35 Seconds
E	>55-80 Seconds	>35-50 Seconds
F	>80 Seconds	>50 Seconds*

*LOS F is assigned to a movement if its v/c ratio exceeds 1.0.

LOS D or better is generally identified as acceptable in urban conditions similar to the identified project limits. LOS E may be acceptable for an approach or single movement if the intersection operates at LOS D or better. For TWSC intersections, the LOS criteria differs from the signalized intersections primarily because of the road users perceptions among facility types. The expectation is signalized intersections carry higher traffic volumes and will experience greater delay than unsignalized intersections.

The intersection layout in the build scenarios assumes the following:

- No lane modifications to the minor street approaches.
- The major approaches (Mass Street) include one through lane in each direction with a dedicated left turn lane.
- Mass Street and 17th Street modified from traffic signal control to two-way stop-controlled per the recommendations outlined in the Intersection Alternatives at Mass Street & 17th Street section.
- Traffic signals at 14th Street, 19th Street, and 23rd Street assume protected/permissive phasing with the use of a flashing yellow arrow.
- Westbound right turn channelization lane at Mass Street and 23rd Street is proposed to be modified to a standard right-turn lane, which is anticipated to improve safety for all users at the intersection and reduce travel speeds.

Table 6, on the following page, summarizes the LOS at each intersection for the 2023 and projected 2043 traffic conditions. The TWSC intersections report each minor-street approach and major-street left turn movements, whereas signalized intersections report a summary of each approach as well as the overall intersection control delay per the HCM. The 2023 Build scenario includes a current timing plan scenario considering the timing plans provided by the City as well as an optimized timing plan including optimized cycles and splits. Detailed Synchro reports are presented in **Appendix D**.

The identified intersections are anticipated to operate at an acceptable level of service in both the No-Build and Build scenarios during the current and future design years, except for the intersection at 15th St due to poor operations in the westbound direction during the 2043 No-Build and Build Scenarios. This intersection should be monitored for operations as traffic volumes increase and may benefit from installation of a dedicated left-turn lane or other potential geometric alternatives.

On average, through traffic on Mass Street can anticipate approximately 10 seconds of additional delay due to the intersection operations under 2023 traffic conditions based on converting the roadway from 4-lanes to 3-lanes.

As noted above, the Build scenario assumes the Mass Street and 19th Street intersection control remains as a traffic signal. Another potential option is to construct a roundabout at Mass Street and 19th Street. Anticipated operations of a single-lane roundabout is summarized below.

Roundabout Operations at Mass Street & 19th Street

There are several analysis techniques to estimate roundabout operations including both planning-level techniques as well as operational performance measures based on the HCM. Applicable planning-level techniques include comparing intersection ADT volumes and comparing entry volumes vs. conflicting circulating volumes at each approach. More detailed operational performance measures, based on the HCM, include control delay and level of service, queue lengths, and volume-to-capacity (v/c) ratios. The following sections summarize the results and findings of each applicable analysis tool for a single-lane roundabout at Mass Street and 19th Street.

Planning-Level - Intersection ADT Comparison

According to NCHRP Report 1043 Exhibit 8.2, single-lane roundabouts, similar to the conceptual plan shown, can serve up to approximately 25,000 vehicles per day, depending on the percentage of left turn volume. Based on KDOT developed ADT volumes, the intersection of Mass and 19th Street serves approximately 20,000 vpd in the existing condition, which is anticipated to be 22,500 vpd in the future year analysis. As such, a single-lane roundabout may be sufficient based on intersection ADT volumes.

Planning Level - Peak Hour Turning Movements (Entry Volumes vs. Conflicting Circulating Volumes)

Another planning level operational assessment per NCHRP Report 1043 includes comparing peak hour turning movements. Roundabout entry capacity is generally driven by the combination of entering and conflicting traffic present at each roundabout entry. According to NCHRP Report 1043 Exhibit 8.6, the following are thresholds for the sum of peak period entering and conflicting flows (vph):

- 700 or less; Single-lane roundabout with traversable or non-traversable central island is likely sufficient.
- 701 to 900; Single-lane roundabout with non-traversable central island is likely sufficient; single-lane roundabout with traversable central island may be sufficient.
- 901 to 1,300; Single-lane roundabout with non-traversable central island may be sufficient.

In the 2023 Build scenario with a roundabout (non-traversable central island) at 19th Street, conflicting flows are 1,085 at the northbound entry and less for the other approaches. The conflicting flows increase to 1,220 at the northbound entry in the 2043 Build scenario with other approaches being less. **Appendix E** shows the conflicting movements during the AM and PM peak hours for all approaches under 2023 and 2043 traffic conditions. Based on this evaluation, a single-lane roundabout may be sufficient, however is anticipated to operate near capacity during the PM peak hour.

Operational Performance – Control Delay & LOS, Queue Length, Volume-to-Capacity Ratio

An operational analysis was performed per HCM methodologies to compare operational performance measures for the signalized and roundabout build scenarios at Mass Street and 19th Street.

The HCM identifies that its analytic methods have several key scope limitations that should be taken into consideration when estimating traffic operations such as the effect of adjacent signals or roundabouts. The HCM assumes that the intersection is independent of adjacent intersections. It is understood that the nearby signals adjacent to the intersection (650' west, 1,300' north, and 2,650' south) as well as the roundabout 900' east may affect the operations of a roundabout at Mass and 19th Street due to platooning effects from these nearby intersections. However, for purposes of this study, the intersection at Mass Street and 19th Street was analyzed assuming to be an independent intersection without considering potential effects of nearby intersections, which would require development of a micro-simulation model.

Table 7 and Table 8 summarize the operational performance measures at Mass and 19th Street for both the current 2023 and projected 2043 traffic conditions, respectively. Traffic signal timings assume the current timing plan under 2023 conditions. However, it is understood that timings may be optimized as traffic volumes increase. As such, 2043 conditions assume optimized timings for comparison.

Table 7 – Build 2023 – Mass & 19th Street Operational Summary (Signal vs. Roundabout)

Control Type & Approach	Build 2023 (Current Timing Plan)							
	AM Peak Hour				PM Peak Hour			
	Control Delay (s)	LOS	95th %tile Queue (ft)	V/C Ratio	Control Delay (s)	LOS	95th %tile Queue (ft)	V/C Ratio
Signal	**33.6**	**C**			**36.8**	**D**		
EB Approach	18.4	B	268	0.46	22.6	C	403	0.58
WB Approach	23.2	C	413	0.63	24.4	C	435	0.64
NB Approach	59.1	E	409*	0.86	54.2	D	518*	0.91
SB Approach	43.0	D	231	0.60	52.0	D	485*	0.82
Roundabout	**16.9**	**C**		**0.82**	**22.1**	**C**		**0.81**
EB Approach	10.2	B	104	0.53	23.9	C	318	0.81
WB Approach	25.4	D	321	0.82	21.8	C	232	0.76
NB Approach	15.0	B	129	0.61	22.7	C	163	0.73
SB Approach	13.1	B	73	0.49	19.6	C	203	0.73

*95th percentile volume exceed capacity; queue may be longer

Table 8 – Build 2043 – Mass & 19th Street Operational Summary (Signal vs. Roundabout)

Control Type & Approach	Build 2043 (Optimized Timing Plan)							
	AM Peak Hour				PM Peak Hour			
	Control Delay (s)	LOS	95th %tile Queue (ft)	V/C Ratio	Control Delay (s)	LOS	95th %tile Queue (ft)	V/C Ratio
Signal	**25.3**	**C**			**29.9**	**C**		
EB Approach	18.1	B	251	0.57	24.2	C	395*	0.72
WB Approach	25.8	C	378	0.76	29.7	C	417*	0.81
NB Approach	34.0	C	271*	0.80	41.9	D	340*	0.88
SB Approach	24.5	C	129	0.42	27.0	C	242	0.60
Roundabout	**27.8**	**D**		**0.98**	**41.9**	**E**		**0.98**
EB Approach	13.1	B	177	0.63	48.7	E	637	0.98
WB Approach	49.3	E	626	0.98	40.9	E	428	0.92
NB Approach	21.2	C	181	0.72	42.3	E	286	0.90
SB Approach	18.1	C	105	0.61	34.6	D	355	0.88

*95th percentile volume exceeds capacity; queue may be longer

Based on the control delay and LOS shown during the AM and PM peak hours under both 2023 and 2043 traffic conditions, it is anticipated that a roundabout will operate more effectively than a traffic signal at Mass Street and 19th Street during the 2023 scenario. However, as volumes are projected to 2043, it is anticipated that a traffic signal will operate more effectively than a roundabout at Mass Street and 19th Street.

The 95th-percentile queue is shown in the table above for each approach (longest movement). The 95th-percentile queue is defined to be the queue length in which there is a 5% probability of being exceeded during the analysis period. This is a useful parameter when comparing between signalized vs. roundabout control types but is not an average that drivers would experience. As shown, it is anticipated that drivers would experience shorter queue lengths at Mass Street and 19th Street under roundabout control during the 2023 scenario for both peak hours. As volumes are projected to 2043, longer queue lengths are anticipated at Mass Street and 19th Street under both roundabout control vs. signalized control. However, signal timings may be adjusted to minimize queue lengths under signalized control.

Roundabout volume-to-capacity ratio (degree of saturation) compares demand at a roundabout entry with its capacity and directly assesses a given design's sufficiency. Although the HCM does not define standards for the allowable threshold, international and domestic experience has suggested that volume-to-capacity ratios in the range of 0.85 to 0.90 represent an approximate threshold for satisfactory operations. As shown in the tables above, the v/c ratio is above the recommended threshold under 2043 traffic conditions and suggests that a roundabout could potentially operate poorly during the peak periods. Detailed SIDRA reports are shown in **Appendix F**.

CONCEPTUAL DESIGN CONSIDERATIONS

Bikeway Selection

According to the Lawrence Bike Plan, there is no "one size fits all" criteria for bikeway design decisions, as user preference varies with bicycle rider's skill level, trip purpose, and individual characteristics. In general, as motor vehicle speed and volumes increase, bicyclists are less comfortable and prefer greater separation for comfort. The Lawrence Bicycle and Pedestrian Design Guideline states that bikeways on arterial roadways should be either protected (major separations) or buffered (minor separation). **Figure 16** shows facility selection criteria as prescribed in the Lawrence Bike Plan for Mass Street at the identified speed (30 mph) and traffic volume (11,000 vpd). As shown, protected bike lanes are preferred and buffered bike lanes may be a potential solution. Shared use paths or conventional bike lanes may also be potential solutions.

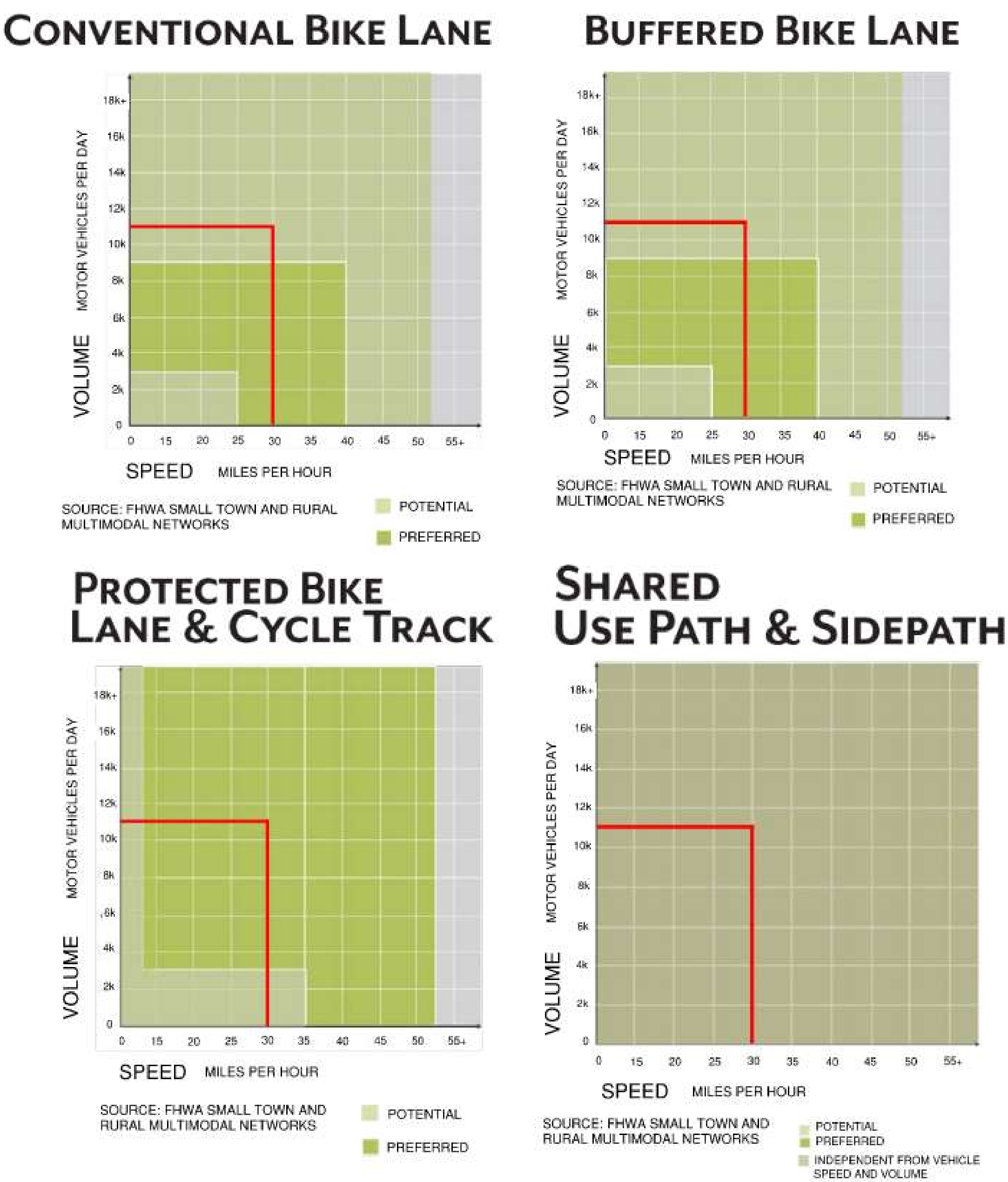


Figure 16 – Bikeway Facility Section Criteria

Based on the feedback during public engagement, protected bike lanes and buffered bike lanes were of the top priorities for bikeway types according to the public. As such, it is recommended that on-street bike lanes be provided in the form of either buffered bike lanes or protected bike lanes. According to the National Association of City Transportation Officials (NACTO) Separated Bike Lane Planning and Design Guide, form of separation can be any of the following, including recommended widths:

- Delineator Posts – 3 ft. buffer preferred
- Bollards – 1.5 to 3 ft. buffer preferred
- Concrete Barrer – 3 ft. minimum
- Raised Median – 16 in. minimum
- Planters – 3 ft. typical
- Parking Stops – 1 to 2 ft. minimum
- Parked Cars – 7 to 8 ft. typical with 3 ft. minimum painted buffer

In discussions with the City, it is recommended to provide a buffered bike lane as an interim solution and ultimately install separated bike lanes in the form of a raised median as budgets and funding allows. The City may monitor the interim solution to identify any negative operational impacts at intersections, impacts from frequently stopping or slow-moving vehicles, or other aspects of the design prior to installing medians. The width of the bike lane should follow NACTO and Lawrence Bicycle and Pedestrian Guidelines of 5' minimum (measured from face of curb). Clear width should be considered based on separation type as widths narrower than 7' may require specialized maintenance equipment. In coordination with City staff, it was determined that current street sweepers are 65" wide, which should be operable within a 6.5' clear width (1.5' gutter pan + 5' bike lane). **Figure 17** shows the recommended typical section along Mass Street.

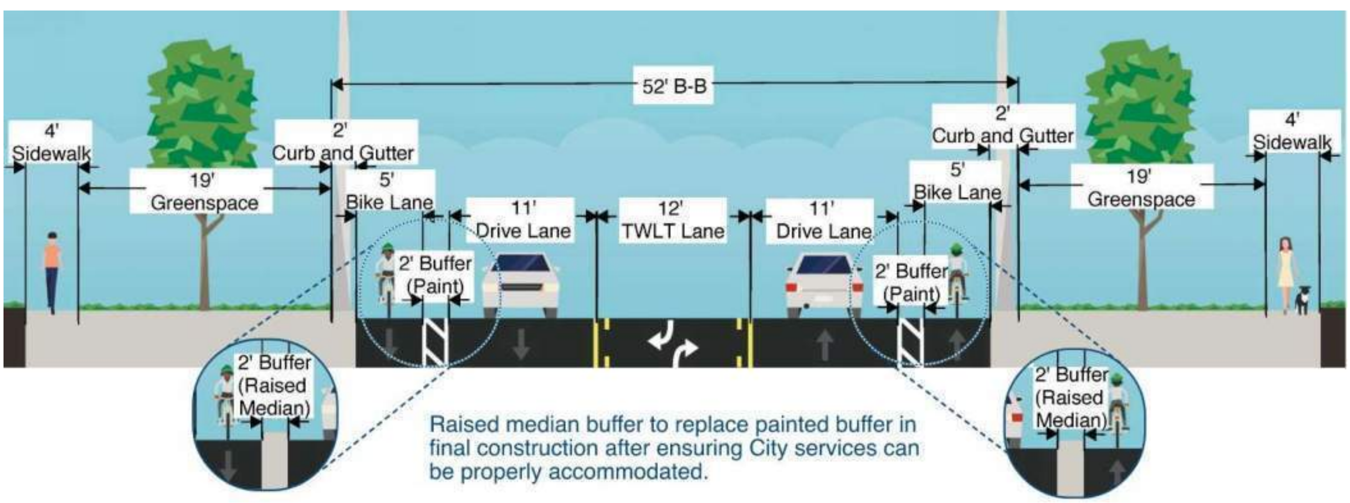


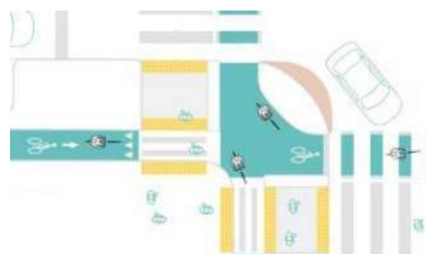
Figure 17 – Recommended Typical Section – Mass Street

Intersection Considerations

The Lawrence Bike Plan identifies several bike lane treatments at intersections and conflict zones. Example treatments and the corresponding benefits are shown below:

- Separated Bike Lane Mixing Zone
  - Increases visibility of bicycle riders and drivers in advance of the intersection
  - Reduces the risk of "left or right-hook" crashes with turning drivers
  - Cost efficient

- Conflict Area Markings/Conventional Bike Lanes at Intersection
  - Improves visibility of bicycle riders to drivers
  - Increases bicycle riders' level of comfort at intersections
  - Facilitates more accurate positioning of bicycle riders
  - Increases driver awareness of potential bicycle riders



- Protected Intersection
  - Controls speed of turning vehicles at conflict points
  - Minimizes exposure to conflict areas
  - Communicates right-of-way priority
  - Provides increased sight distance
  - Forward bicycle queuing areas allow stopped bicycle riders to wait in direct sight of drivers and enter the intersection before them
  - High level of comfort

The Lawrence Bicycle and Pedestrian Guideline identifies on-street bicycle crossing marking recommendations based on intersection types as identified in **Figure 18**. Green bicycle markings are for arterial streets, such as Mass Street, where bicycles interact with a higher volume of motor vehicles. Arterial intersections with local streets greater than 40 ft. wide should be marked with chevrons.

	Arterial	Collector	Major Driveway	Minor Driveway	Local > 40 ft	Local ≤ 40 ft
Arterial	Green	Green	Green	Chevron	Chevron	None
Collector	Green	Chevron	Chevron	None	None	None
Local	Green	Dashes	None	None	None	None

Green: Dashed 2-ft green markings with 6-ft spacing
Chevron: Double chevron at 4-ft width
Dashes: Edge Markings including 2-ft x 4-in white stripes placed every 6-ft
None: Markings are not necessary, due to low volume of conflicting movements and operating speeds

Figure 18 – Lawrence Bicycle and Pedestrian Guide – On-Street Bicycle Marking Recommendations

Understanding that the recommendations identified above are a guide, there is a benefit to providing consistency along the corridor for both motorists and bicyclists. In general, it is recommended to provide green markings at arterial/collector intersections per the guidance and dashed markings at arterial/local intersections to increase visibility of the bike lane, clarity of direction, and provide a consistent approach along Mass Street. In areas where the bike lane is changing direction/alignment, green markings may be used. Recommended intersection layouts, including bikeway marking treatments are identified below:

- Mass Street & 14th Street (Arterial/Local)
    - Maintain traffic signal control
    - Provide conflict area markings adjacent to northbound right turn lane
    - Provide conventional bike lane markings at intersection denoting bike lane crossings due to routing bike lane behind parking (unparallel crossing).
- Mass Street & 15th Street (Arterial/Collector)
    - Maintain two-way stop-control
    - Provide green bike lane markings at intersection denoting bike lane crossings
- Mass Street & 16th Street (Arterial/Local)
    - Maintain two-way stop-control
    - Provide dashed bike lane markings at intersection
- Mass Street & 17th Street (Arterial/Local)
    - Remove existing traffic signal due to not meeting MUTCD traffic signal warrants and crash history and install pedestrian hybrid beacon as summarized in Proposed Improvements Evaluation section.
    - Provide dashed bike lane markings at intersection
- Mass Street & 19th Street (Arterial/Arterial)
    - Maintain traffic signal control
    - Provide protected intersection to promote safety for all users
- Mass Street & 20th Street (Arterial/Local)
    - Maintain two-way stop-control
    - Provide dashed bike lane markings at intersection
- Mass Street & 21st Street (Arterial/Local)
    - Maintain two-way stop-control and bike boulevard crossings
    - Provide dashed bike lane markings at intersection
- Mass Street & 23rd Street (Arterial/Arterial)
    - Maintain traffic signal control and remove westbound high-speed channelized right turn and provide standard right turn lane.
    - End southbound bike lane and convert to shared roadway north of 23rd Street
    - Begin northbound bike lane north of 23rd Street

Parking Considerations

As identified in the Existing Roadway Conditions section, angled/perpendicular parking is present near 14th Street, 17th Street, 19th Street, and 20th Street at select businesses. These parking spaces should be maintained, however may need to be altered due to the roadway reconfiguration and the addition of on-street bike facilities.

According to the Lawrence Bicycle and Pedestrian Guidelines as well as prescribed by NACTO guidance, reverse angle parking should be placed on any street that includes bike facilities separating the parking from the travel lane. However, the vicinity of the parking to adjacent intersections should be taken into consideration when choosing parking types as through and turning vehicles are not anticipating vehicles stopping in the travel lane and backing into parking spaces near intersections.

In general, back-in angled parking allows drivers to see bicyclists in bike lanes that would have been behind the vehicle when leaving the parking space. Cities across the nation have shown a decrease in overall crashes and almost no pedestrian/bicycle crashes in locations with reverse angle parking. The recommended parking configurations are as follows:

- Near 14th Street – Adjacent to Elevate Arts & Wellness and Head Rush
    - Standard angle-in parking maintains parking for nearby businesses and improves sight of bicycle riders by routing bike facilities around the parking spaces near the intersection. This configuration reduces conflict areas with vehicles and bicyclists.
- Near 17th Street – Adjacent to Vikingtown Apartments
    - Back-in angled parking improves the driver's ability to see bicyclists that would have been behind the vehicles when leaving the parking space.
- Near 19th Street – Adjacent to Cottins Hardware & Rental
    - Back-in angled parking improves the driver's ability to see bicyclists that would have been behind the vehicles when leaving the parking space.
- Near 20th Street – Adjacent to Victory Bible Church
    - Standard angle-in parking maintains parking for nearby businesses and improves sight of bicycle riders by routing bike facilities around the parking spaces near the intersection. This configuration reduces conflict areas with vehicles and bicyclists.

Pedestrian Considerations

As mentioned in the Existing Roadway Characteristics and Conditions section, there is a gap in sidewalk connectivity south of 21st Street on the west side of Mass Street. Sidewalk should be constructed in this section to improve the pedestrian connectivity along the corridor and adhere to the Lawrence Pedestrian Plan as it is recommended to provide sidewalk on both sides of arterial roadways. This sidewalk should vary in distance from the back of curb to avoid/minimize impacts to the existing trees as identified by the City Arborist. In addition to filling in the gap of the sidewalk, sidewalk ramps should be installed throughout the corridor that comply with the American Disability Act (ADA).

Mid-Block Crossing Considerations

In urban settings, such as the study area identified, pedestrian crossings should be available every 400 to 600 feet to discourage jaywalking along collector and arterial routes. All pedestrian facilities must comply with American Disabilities Act (ADA) to provide facilities for all users to move safely within the public right-of-way. Pedestrian crossings across Mass Street are either provided, or recommended to be provided at each intersection. It is recommended to provide mid-block crossings between 15th and 16th Street as well as between 17th and 19th Street near the bus stop locations and Dillons. Installing these mid-block crossings are anticipated to promote safe pedestrian connectivity every 400 to 600 feet as desired.

The Lawrence Bike Plan identifies contextual guidance when determining crossing treatments considering the number of lanes and speed as shown in **Figure 19**.

	Local Streets 15-25 mph		Collector Streets 25-30 mph			Arterial Streets 30-45 mph							
FACILITY TYPE	2 lane	3 lane	2 lane	2 lane with median refuge	3 lane	2 lane	2 lane with median refuge	3 lane	4 lane	4 lane with median refuge	5 lane	6 lane	6 lane with median refuge
Crosswalk Only (high visibility)	✓	✓	EJ	EJ	X	EJ	EJ	X	X	X	X	X	X
Crosswalk with warning signage and yield line	EJ	✓	✓	✓	✓	EJ	EJ	EJ	X	X	X	X	X
Active Warning Beacon (RRFB)	X	EJ	✓	✓	✓	✓	✓	✓	X	✓	X	X	X
Hybrid Beacon	X	X	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓	✓	✓
Full Traffic Signal	X	X	EJ	EJ	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓
Grade Separation	X	X	EJ	EJ	EJ	X	EJ	EJ	✓	✓	✓	✓	✓

Legend	
Most Desirable	✓
Engineering Judgement	EJ
Not Recommended	X

Figure 19 – Pedestrian Crossing Contextual Guidance

Median refuge islands can offer protection in the center of the street to facilitate bicycle and pedestrian crossings. These raised medians allow pedestrians to cross one direction of traffic at a time and reduces the complexity of the crossing. Based on a 3-lane roadway, with the installation of a median refuge, according the guidance prescribed, it is most desirable to install an active warning beacon in the form of a Rectangular Rapid Flashing Beacon (RRFB) at the proposed mid-block crossings. These crossings should be marked with high-visibility continental crosswalks and have appropriate signage to promote pedestrian safety.

Transit Considerations

The majority of the existing bus stops do not have comfortable accommodations for transit users. Improvements to the existing bus stops could include the following:

- Nearby shade
- Concrete bus pad
- Trash Can
- Bench
- Shelter

Coordination with the Lawrence Transit System should be done to obtain current ridership and bus stop services information to help prioritize the proposed improvements at each bus stop location as other roadway improvements are done along the corridor.

In coordination with City of Lawrence Transit staff, no new bus stop locations are planned for. Existing bus stops may be improved to be floating bus stops (island stops). Floating bus stops reduce conflicts between all users and provides a dedicated space for transit amenities such as shelters, benches, trash cans, etc. Buses would continue to stop in-lane to load/off-load riders.

Access Management

Access management is the management of vehicular access points to land parcels adjacent to roadways. Good access management promotes safe and efficient use of the transportation network by reducing conflict points along a corridor. Efficient spacing can increase roadway capacity, reduce crashes, and shorten travel time for motorists. According to the FHWA, crash rates and crash severity increase as unsignalized access density increases; each additional access point per mile increases the crash rate along a corridor by 3 to 5 percent.

Due to the parcel sizes and land uses along Mass Street within the project area, there are many driveways that are closely spaced and present safety challenges. From 19th Street to 17th Street there are 19 access points. Although all parcels are already developed, there is an opportunity to educate landowners of the benefits of proper access management and provide shared access between lots with shared driveway access. There is also an opportunity to add a raised median through this area of the corridor with left turns placed strategically to allow access to business along the corridor. Access management should be considered as design progresses, especially within the functional area of the Mass Street and 19th Street intersection.

Summary of Conceptual Design Considerations

A summary of the conceptual design considerations is shown in **Appendix G**. This concept is subject to change and was presented to the public during the 2nd public meeting. A follow-up document is intended to present the recommended preferred alternative, which may differ slightly from the concept shown.

CONCLUSION & RECOMMENDATIONS

Roadway Reconfiguration & Bikeway Selection

Based on the analysis herein, it is recommended to convert Mass Street from 14th Street to 23rd Street from a 4-lane roadway to a 3-lane roadway (roadway reconfiguration). Reconfiguring Mass Street is anticipated to slow down traffic, reduce crashes, provide less distance for pedestrians to cross and improve the overall safety of the corridor for all users. The additional roadway width should be used for an on-street bikeway. Based on feedback from the public and in coordination with the City, it is recommended to provide a buffered bike lane as an interim solution and ultimately install separated bike lanes in the form of a raised median as budgets and funding allows.

Intersection Geometrics

Intersections along Mass Street should be improved as part of the roadway reconfiguration with dedicated left turn lanes and permissive-protected left turn phasing. Based on the analysis herein, a summary of recommendations at key intersections is shown below:

- Mass Street & 14th Street (Arterial/Local)
    - Maintain traffic signal control
    - Provide conflict area markings adjacent to northbound right turn lane
    - Provide conventional bike lane markings at intersection denoting bike lane crossings due to routing bike lane behind parking (unparallel crossing).
- Mass Street & 17th Street (Arterial/Local)
    - Remove existing traffic signal due to not meeting MUTCD traffic signal warrant and crash history and install pedestrian hybrid beacon as summarized in Proposed Improvements Evaluation section.
- Mass Street & 19th Street (Arterial/Arterial)
    - Maintain traffic signal control
    - Provide protected intersection to promote safety for all users
- Mass Street & 23rd Street (Arterial/Arterial)
    - Maintain traffic signal control and remove westbound high-speed channelized right turn and provide standard right turn lane.
    - End southbound bike lane and convert to shared roadway north of 23rd Street
    - Begin northbound bike lane north of 23rd Street

Parking Considerations

Parking should be maintained where existing on-street parking is provided for use by nearby businesses on Mass Street. The recommended parking configurations, based on the analysis herein, is as follows:

- Near 14th Street – Adjacent to Elevate Arts & Wellness and Head Rush
  - Standard angle-in parking maintains parking for nearby businesses and improves sight of bicycle riders by routing bike facilities around the parking spaces near the intersection. This configuration reduces conflict areas with vehicles and bicyclists.
- Near 17th Street – Adjacent to Vikingtown Apartments
  - Back-in angled parking improves the driver's ability to see bicyclists that would have been behind the vehicles when leaving the parking space.
- Near 19th Street – Adjacent to Cottins Hardware & Rental
  - Back-in angled parking improves the driver's ability to see bicyclists that would have been behind the vehicles when leaving the parking space.
- Near 20th Street – Adjacent to Victory Bible Church
  - Standard angle-in parking maintains parking for nearby businesses and improves sight of bicycle riders by routing bike facilities around the parking spaces near the intersection. This configuration reduces conflict areas with vehicles and bicyclists.

Pedestrian Considerations

Sidewalk should be constructed on the west side of Mass Street from 21st Street to 23rd Street to improve the pedestrian connectivity along the corridor and adhere to the Lawrence Pedestrian Plan. This sidewalk should vary in distance from the back of curb to avoid/minimize impacts to the existing trees.

Mid-block crossings are recommended between 15th and 16th Street as well as between 17th and 19th Street near the existing bus stop locations to promote safe pedestrian connectivity every 400 to 600 feet as desired along Mass Street. These crossings are recommended to have median refuge islands and be controlled with Rectangular Rapid Flashing Beacons (RRFB's).

Transit Considerations

No new bus stop locations are recommended. However, the existing bus stop locations should be improved as applicable as Mass Street is improved. Floating bus stops may be installed to reduce conflicts between all users and provide a dedicated space for transit amenities such as shelters, benches, trash cans, etc.

Access Management

During the design phase, access management should be considered as part of the roadway reconfiguration. Driveways may be modified to share access to avoid potential conflicts within the TWLTL and a central median may be installed near key intersections, such as Mass and 19th Street, to prevent driveway conflicts within the functional area of the intersection to improve the safety of the roadway.

Next Steps

It is intended that a follow-up document will summarize public engagement process and document decisions based on community feedback. The follow-up document will identify the recommended alternative, including estimated construction cost and potential next steps and further considerations during design.

Appendix A

Traffic Data Collection – Turning Movement Counts

Mass St. & 14th St. - TMC

Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115689, Location: 38.9582, -95.23591

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg Direction	Mass St. Southbound					14th St. Westbound					Mass St. Northbound					14th St. Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2023-10-03 12:00AM	0	3	0	0	**3**	0	0	0	0	**0**	0	7	2	0	**9**	1	0	1	0	**2**	**14**
12:15AM	0	6	0	0	**6**	0	0	0	0	**0**	0	3	1	0	**4**	2	0	0	0	**2**	**12**
12:30AM	0	7	0	0	**7**	0	0	0	0	**0**	0	5	2	0	**7**	4	0	2	0	**6**	**20**
12:45AM	0	4	0	0	**4**	0	0	0	0	**0**	0	6	1	0	**7**	1	0	0	0	**1**	**12**
Hourly Total	0	20	0	0	**20**	0	0	0	0	**0**	0	21	6	0	**27**	8	0	3	0	**11**	**58**
1:00AM	0	6	0	0	**6**	0	1	0	0	**1**	0	4	0	0	**4**	0	0	0	0	**0**	**11**
1:15AM	0	2	0	0	**2**	1	1	0	0	**2**	0	2	0	0	**2**	0	0	0	0	**0**	**6**
1:30AM	0	3	0	0	**3**	0	0	0	0	**0**	0	3	1	0	**4**	0	0	1	0	**1**	**8**
1:45AM	0	6	0	0	**6**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	1	0	**1**	**10**
Hourly Total	0	17	0	0	**17**	1	2	0	0	**3**	0	12	1	0	**13**	0	0	2	0	**2**	**35**
2:00AM	0	8	0	0	**8**	0	0	0	0	**0**	0	2	2	0	**4**	0	0	0	0	**0**	**12**
2:15AM	0	4	0	0	**4**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**5**
2:30AM	0	3	0	0	**3**	0	0	0	0	**0**	0	1	1	0	**2**	1	1	0	0	**2**	**7**
2:45AM	0	2	0	0	**2**	0	0	0	0	**0**	0	1	0	0	**1**	1	0	0	0	**1**	**4**
Hourly Total	0	17	0	0	**17**	0	0	0	0	**0**	0	5	3	0	**8**	2	1	0	0	**3**	**28**
3:00AM	0	3	0	0	**3**	0	0	0	0	**0**	0	3	1	0	**4**	0	0	0	0	**0**	**7**
3:15AM	0	2	0	0	**2**	0	0	0	0	**0**	0	1	0	0	**1**	1	1	0	0	**2**	**5**
3:30AM	0	4	0	0	**4**	0	0	0	0	**0**	0	0	1	0	**1**	0	0	0	0	**0**	**5**
3:45AM	0	2	0	0	**2**	0	0	0	0	**0**	1	2	1	0	**4**	0	0	0	0	**0**	**6**
Hourly Total	0	11	0	0	**11**	0	0	0	0	**0**	1	6	3	0	**10**	1	1	0	0	**2**	**23**
4:00AM	0	2	0	0	**2**	0	0	0	0	**0**	0	2	1	0	**3**	1	0	0	0	**1**	**6**
4:15AM	0	1	0	0	**1**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	**4**
4:30AM	0	1	0	0	**1**	0	0	0	0	**0**	0	5	0	0	**5**	1	0	0	0	**1**	**7**
4:45AM	0	3	0	0	**3**	0	0	0	0	**0**	0	1	3	0	**4**	0	0	0	0	**0**	**7**
Hourly Total	0	7	0	0	**7**	0	0	0	0	**0**	0	11	4	0	**15**	2	0	0	0	**2**	**24**
5:00AM	0	2	0	0	**2**	0	0	0	0	**0**	0	7	0	0	**7**	2	0	0	0	**2**	**11**
5:15AM	0	7	0	0	**7**	0	0	0	0	**0**	0	6	2	0	**8**	0	0	0	0	**0**	**15**
5:30AM	0	8	1	0	**9**	0	0	1	0	**1**	5	7	1	0	**13**	2	0	0	0	**2**	**25**
5:45AM	0	10	9	0	**19**	0	0	0	0	**0**	10	12	2	0	**24**	3	7	1	0	**11**	**54**
Hourly Total	0	27	10	0	**37**	0	0	1	0	**1**	15	32	5	0	**52**	7	7	1	0	**15**	**105**
6:00AM	0	17	0	0	**17**	0	1	1	0	**2**	3	14	3	0	**20**	6	0	1	0	**7**	**46**
6:15AM	1	14	0	0	**15**	0	1	0	0	**1**	1	24	3	0	**28**	3	1	1	0	**5**	**49**
6:30AM	0	18	0	0	**18**	0	1	4	0	**5**	0	23	6	0	**29**	1	0	0	0	**1**	**53**
6:45AM	0	23	1	0	**24**	9	6	3	0	**18**	1	33	9	0	**43**	6	1	0	0	**7**	**92**
Hourly Total	1	72	1	0	**74**	9	9	8	0	**26**	5	94	21	0	**120**	16	2	2	0	**20**	**240**
7:00AM	0	16	1	0	**17**	10	5	1	0	**16**	2	25	13	0	**40**	2	4	0	0	**6**	**79**
7:15AM	1	24	2	0	**27**	1	8	0	0	**9**	2	40	9	0	**51**	9	6	0	0	**15**	**102**
7:30AM	1	34	11	0	**46**	4	14	7	0	**25**	11	50	13	0	**74**	13	6	0	0	**19**	**164**
7:45AM	3	43	13	0	**59**	7	11	6	0	**24**	16	108	18	0	**142**	11	11	2	0	**24**	**249**
Hourly Total	5	117	27	0	**149**	22	38	14	0	**74**	31	223	53	0	**307**	35	27	2	0	**64**	**594**
8:00AM	2	67	14	0	**83**	8	12	7	0	**27**	23	98	16	0	**137**	9	10	1	0	**20**	**267**
8:15AM	0	56	0	0	**56**	0	2	2	0	**4**	5	89	19	0	**113**	10	1	0	0	**11**	**184**
8:30AM	3	38	1	0	**42**	0	3	4	0	**7**	6	69	18	0	**93**	8	1	2	0	**11**	**153**
8:45AM	1	55	1	0	**57**	0	3	2	0	**5**	4	81	9	1	**95**	9	0	2	0	**11**	**168**
Hourly Total	6	216	16	0	**238**	8	20	15	0	**43**	38	337	62	1	**438**	36	12	5	0	**53**	**772**
9:00AM	1	48	2	0	**51**	3	2	2	0	**7**	4	83	10	0	**97**	7	0	2	0	**9**	**164**
9:15AM	1	44	0	0	**45**	1	1	1	0	**3**	1	91	11	0	**103**	11	1	4	0	**16**	**167**
9:30AM	0	54	1	0	**55**	0	2	1	0	**3**	4	84	9	0	**97**	6	1	2	0	**9**	**164**
9:45AM	0	53	3	0	**56**	1	4	1	0	**6**	6	87	7	0	**100**	6	2	1	0	**9**	**171**
Hourly Total	2	199	6	0	**207**	5	9	5	0	**19**	15	345	37	0	**397**	30	4	9	0	**43**	**666**
10:00AM	0	55	0	0	**55**	0	5	1	0	**6**	5	49	13	0	**67**	9	2	1	0	**12**	**140**
10:15AM	4	43	3	0	**50**	0	0	1	0	**1**	3	67	9	0	**79**	5	0	2	0	**7**	**137**
10:30AM	4	47	0	0	**51**	2	1	2	0	**5**	3	64	15	0	**82**	10	4	0	0	**14**	**152**
10:45AM	4	52	2	0	**58**	0	3	1	0	**4**	5	101	17	0	**123**	4	0	1	0	**5**	**190**

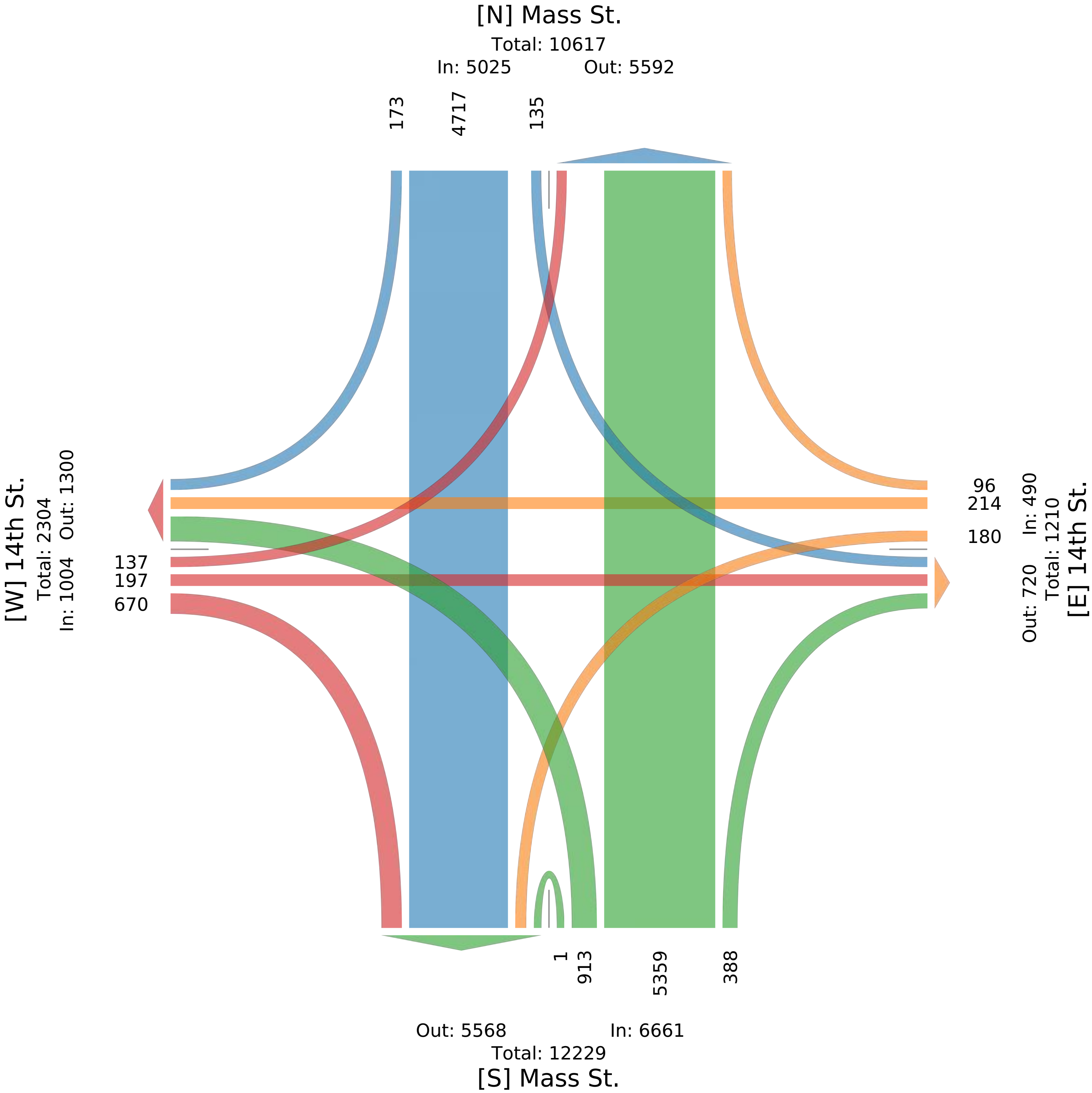
Leg	Mass St.					14th St.					Mass St.					14th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
Hourly Total	12	197	5	0	**214**	2	9	5	0	**16**	16	281	54	0	**351**	28	6	4	0	**38**	**619**
11:00AM	2	80	2	0	**84**	1	3	3	0	**7**	3	76	12	0	**91**	8	0	1	0	**9**	**191**
11:15AM	1	69	2	0	**72**	1	0	5	0	**6**	1	83	5	0	**89**	9	0	1	0	**10**	**177**
11:30AM	0	78	0	0	**78**	0	1	2	0	**3**	5	91	10	0	**106**	9	2	1	0	**12**	**199**
11:45AM	4	81	1	0	**86**	0	3	0	0	**3**	5	76	12	0	**93**	15	3	2	0	**20**	**202**
Hourly Total	7	308	5	0	**320**	2	7	10	0	**19**	14	326	39	0	**379**	41	5	5	0	**51**	**769**
12:00PM	4	90	0	0	**94**	2	1	2	0	**5**	5	74	10	0	**89**	9	2	2	0	**13**	**201**
12:15PM	4	93	1	0	**98**	2	2	1	0	**5**	6	84	21	0	**111**	7	0	1	0	**8**	**222**
12:30PM	4	96	2	0	**102**	0	3	2	0	**5**	4	99	14	0	**117**	10	2	1	0	**13**	**237**
12:45PM	1	90	0	0	**91**	1	2	3	0	**6**	4	120	8	0	**132**	11	6	3	0	**20**	**249**
Hourly Total	13	369	3	0	**385**	5	8	8	0	**21**	19	377	53	0	**449**	37	10	7	0	**54**	**909**
1:00PM	0	91	1	0	**92**	1	5	2	0	**8**	4	100	10	0	**114**	10	3	0	0	**13**	**227**
1:15PM	4	77	0	0	**81**	1	3	2	0	**6**	1	86	14	0	**101**	10	1	1	0	**12**	**200**
1:30PM	5	86	3	0	**94**	0	1	1	0	**2**	6	85	15	0	**106**	7	1	3	0	**11**	**213**
1:45PM	1	62	2	0	**65**	0	2	5	0	**7**	4	94	13	0	**111**	16	3	3	0	**22**	**205**
Hourly Total	10	316	6	0	**332**	2	11	10	0	**23**	15	365	52	0	**432**	43	8	7	0	**58**	**845**
2:00PM	3	110	1	0	**114**	0	2	2	0	**4**	8	89	14	0	**111**	13	2	2	0	**17**	**246**
2:15PM	4	65	0	0	**69**	1	1	1	0	**3**	9	82	12	0	**103**	7	3	1	0	**11**	**186**
2:30PM	2	69	4	0	**75**	3	1	3	0	**7**	8	89	18	0	**115**	10	3	2	0	**15**	**212**
2:45PM	0	74	7	0	**81**	3	3	3	0	**9**	9	96	14	0	**119**	19	7	4	0	**30**	**239**
Hourly Total	9	318	12	0	**339**	7	7	9	0	**23**	34	356	58	0	**448**	49	15	9	0	**73**	**883**
3:00PM	4	89	3	0	**96**	9	5	8	0	**22**	11	88	18	0	**117**	9	3	1	0	**13**	**248**
3:15PM	7	82	4	0	**93**	3	8	1	0	**12**	12	124	17	0	**153**	9	4	3	0	**16**	**274**
3:30PM	8	105	2	0	**115**	1	6	5	0	**12**	5	102	19	0	**126**	12	4	4	0	**20**	**273**
3:45PM	2	93	0	0	**95**	1	1	5	0	**7**	8	102	23	0	**133**	9	8	7	0	**24**	**259**
Hourly Total	21	369	9	0	**399**	14	20	19	0	**53**	36	416	77	0	**529**	39	19	15	0	**73**	**1054**
4:00PM	3	98	3	0	**104**	2	7	6	0	**15**	9	99	17	0	**125**	18	10	3	0	**31**	**275**
4:15PM	1	100	1	0	**102**	1	2	3	0	**6**	7	112	13	0	**132**	19	5	1	0	**25**	**265**
4:30PM	3	107	3	0	**113**	2	0	2	0	**4**	8	94	21	0	**123**	9	5	1	0	**15**	**255**
4:45PM	4	105	4	0	**113**	1	5	4	0	**10**	4	132	12	0	**148**	18	6	3	0	**27**	**298**
Hourly Total	11	410	11	0	**432**	6	14	15	0	**35**	28	437	63	0	**528**	64	26	8	0	**98**	**1093**
5:00PM	2	135	4	0	**141**	0	6	5	0	**11**	10	106	21	0	**137**	16	3	2	0	**21**	**310**
5:15PM	6	107	1	0	**114**	1	3	2	0	**6**	5	116	20	0	**141**	16	6	4	0	**26**	**287**
5:30PM	6	102	2	0	**110**	1	3	5	0	**9**	12	113	21	0	**146**	16	10	2	0	**28**	**293**
5:45PM	1	98	3	0	**102**	1	8	1	0	**10**	13	124	26	0	**163**	13	4	4	0	**21**	**296**
Hourly Total	15	442	10	0	**467**	3	20	13	0	**36**	40	459	88	0	**587**	61	23	12	0	**96**	**1186**
6:00PM	4	100	0	0	**104**	0	3	7	0	**10**	7	97	12	0	**116**	15	6	3	0	**24**	**254**
6:15PM	2	94	2	0	**98**	0	8	2	0	**10**	8	121	23	0	**152**	10	1	4	0	**15**	**275**
6:30PM	3	86	1	0	**90**	0	3	3	0	**6**	9	103	11	0	**123**	9	3	6	0	**18**	**237**
6:45PM	5	79	2	0	**86**	2	7	5	0	**14**	4	108	14	0	**126**	12	3	2	0	**17**	**243**
Hourly Total	14	359	5	0	**378**	2	21	17	0	**40**	28	429	60	0	**517**	46	13	15	0	**74**	**1009**
7:00PM	4	80	0	0	**84**	2	3	2	0	**7**	4	91	15	0	**110**	11	1	2	0	**14**	**215**
7:15PM	3	69	1	0	**73**	0	1	3	0	**4**	4	81	19	0	**104**	13	3	3	0	**19**	**200**
7:30PM	8	84	0	0	**92**	0	2	3	0	**5**	4	66	15	0	**85**	11	0	3	0	**14**	**196**
7:45PM	4	59	0	0	**63**	0	2	1	0	**3**	9	68	12	0	**89**	14	1	3	0	**18**	**173**
Hourly Total	19	292	1	0	**312**	2	8	9	0	**19**	21	306	61	0	**388**	49	5	11	0	**65**	**784**
8:00PM	5	81	4	0	**90**	3	1	1	0	**5**	4	69	16	0	**89**	9	1	3	0	**13**	**197**
8:15PM	4	58	1	0	**63**	1	1	5	0	**7**	5	57	6	0	**68**	5	0	3	0	**8**	**146**
8:30PM	3	54	1	0	**58**	0	1	6	0	**7**	3	54	7	0	**64**	3	2	0	0	**5**	**134**
8:45PM	3	57	0	0	**60**	0	1	5	0	**6**	5	50	15	0	**70**	7	0	1	0	**8**	**144**
Hourly Total	15	250	6	0	**271**	4	4	17	0	**25**	17	230	44	0	**291**	24	3	7	0	**34**	**621**
9:00PM	2	66	0	0	**68**	0	0	0	0	**0**	2	44	8	0	**54**	7	2	1	0	**10**	**132**
9:15PM	1	35	0	0	**36**	0	1	1	0	**2**	3	47	8	0	**58**	3	2	1	0	**6**	**102**
9:30PM	1	36	1	0	**38**	0	1	1	0	**2**	3	40	5	0	**48**	6	1	2	0	**9**	**97**
9:45PM	1	33	0	0	**34**	0	0	1	0	**1**	2	27	7	0	**36**	3	1	4	0	**8**	**79**
Hourly Total	5	170	1	0	**176**	0	2	3	0	**5**	10	158	28	0	**196**	19	6	8	0	**33**	**410**
10:00PM	0	25	0	0	**25**	0	1	0	0	**1**	2	31	12	0	**45**	8	0	0	0	**8**	**79**
10:15PM	1	21	0	0	**22**	0	0	1	0	**1**	2	23	8	0	**33**	5	0	2	0	**7**	**63**
10:30PM	0	17	0	0	**17**	0	0	0	0	**0**	1	18	6	0	**25**	7	0	1	0	**8**	**50**
10:45PM	1	42	0	0	**43**	1	0	0	0	**1**	0	15	3	0	**18**	2	1	0	0	**3**	**65**

Leg	Mass St.					14th St.					Mass St.					14th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	2	105	0	0	**107**	1	1	1	0	**3**	5	87	29	0	**121**	22	1	3	0	**26**	**257**
11:00PM	4	64	0	0	**68**	0	1	0	0	**1**	0	9	2	0	**11**	5	0	1	0	**6**	**86**
11:15PM	2	17	0	0	**19**	0	2	1	0	**3**	0	12	3	0	**15**	3	0	0	0	**3**	**40**
11:30PM	0	18	1	0	**19**	1	1	0	0	**2**	0	16	3	0	**19**	0	1	1	0	**2**	**42**
11:45PM	0	10	0	0	**10**	0	0	0	0	**0**	0	9	4	0	**13**	3	2	0	0	**5**	**28**
Hourly Total	6	109	1	0	**116**	1	4	1	0	**6**	0	46	12	0	**58**	11	3	2	0	**16**	**196**
Total	173	4717	135	0	**5025**	96	214	180	0	**490**	388	5359	913	1	**6661**	670	197	137	0	**1004**	**13180**
% Approach	3.4%	93.9%	2.7%	0%	-	19.6%	43.7%	36.7%	0%	-	5.8%	80.5%	13.7%	0%	-	66.7%	19.6%	13.6%	0%	-	-
% Total	1.3%	35.8%	1.0%	0%	**38.1%**	0.7%	1.6%	1.4%	0%	**3.7%**	2.9%	40.7%	6.9%	0%	**50.5%**	5.1%	1.5%	1.0%	0%	**7.6%**	-
Lights	172	4627	134	0	**4933**	96	212	178	0	**486**	384	5243	897	1	**6525**	663	196	135	0	**994**	12938
% Lights	99.4%	98.1%	99.3%	0%	**98.2%**	100%	99.1%	98.9%	0%	**99.2%**	99.0%	97.8%	98.2%	100%	**98.0%**	99.0%	99.5%	98.5%	0%	**99.0%**	98.2%
Articulated Trucks	0	10	0	0	**10**	0	0	0	0	**0**	0	18	1	0	**19**	0	0	0	0	**0**	29
% Articulated Trucks	0%	0.2%	0%	0%	**0.2%**	0%	0%	0%	0%	**0%**	0%	0.3%	0.1%	0%	**0.3%**	0%	0%	0%	0%	**0%**	0.2%
Buses and Single-Unit Trucks	1	80	1	0	**82**	0	2	2	0	**4**	4	98	15	0	**117**	7	1	2	0	**10**	213
% Buses and Single-Unit Trucks	0.6%	1.7%	0.7%	0%	**1.6%**	0%	0.9%	1.1%	0%	**0.8%**	1.0%	1.8%	1.6%	0%	**1.8%**	1.0%	0.5%	1.5%	0%	**1.0%**	1.6%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 14th St. - TMC
Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115689, Location: 38.9582, -95.23591

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 14th St. - TMC

Tue Oct 3, 2023
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115689, Location: 38.9582, -95.23591

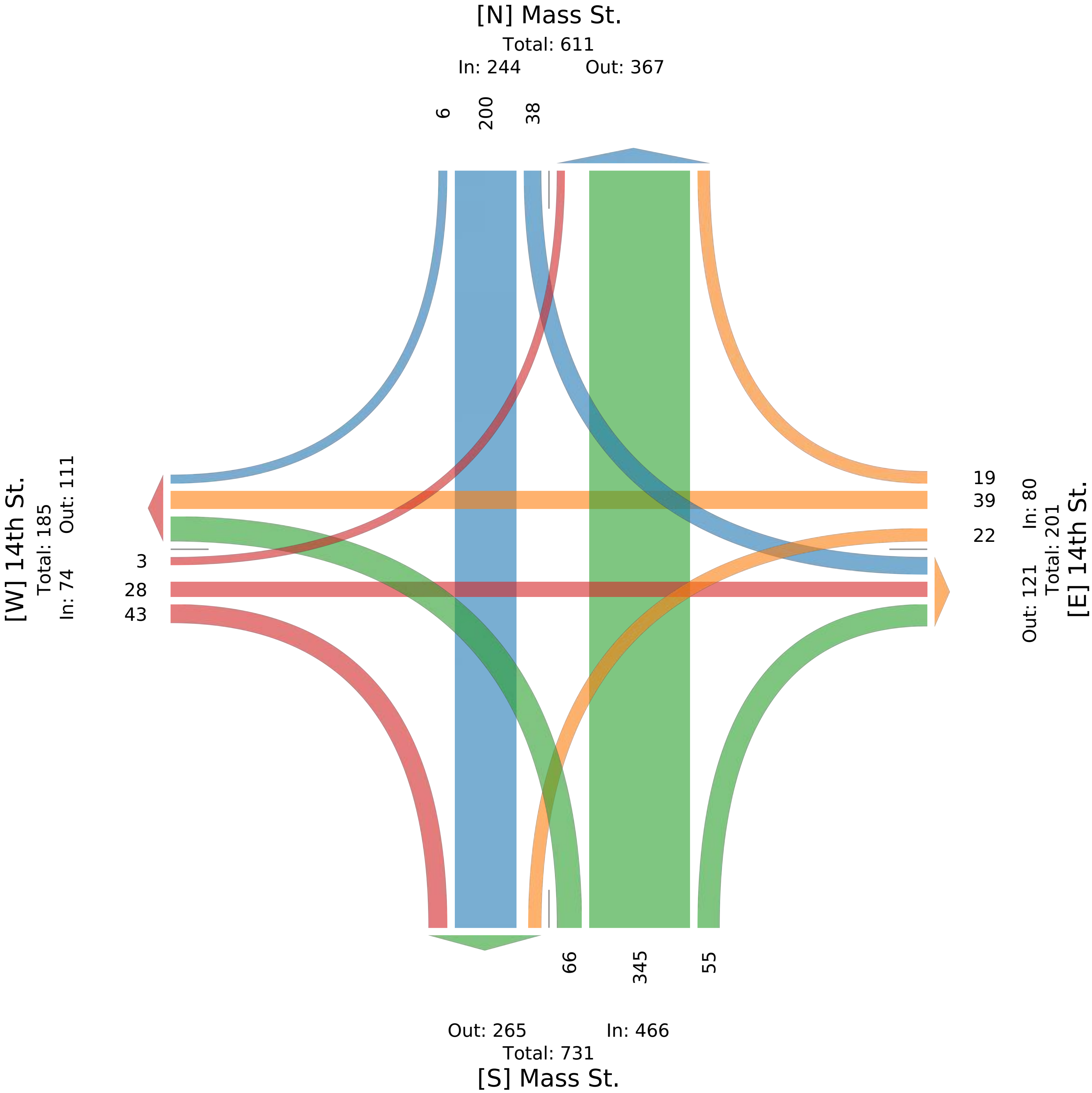
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg Direction	Mass St. Southbound					14th St. Westbound					Mass St. Northbound					14th St. Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2023-10-03 7:30AM	1	34	11	0	**46**	4	14	7	0	**25**	11	50	13	0	**74**	13	6	0	0	**19**	**164**
7:45AM	3	43	13	0	**59**	7	11	6	0	**24**	16	108	18	0	**142**	11	11	2	0	**24**	**249**
8:00AM	2	67	14	0	**83**	8	12	7	0	**27**	23	98	16	0	**137**	9	10	1	0	**20**	**267**
8:15AM	0	56	0	0	**56**	0	2	2	0	**4**	5	89	19	0	**113**	10	1	0	0	**11**	**184**
Total	6	200	38	0	**244**	19	39	22	0	**80**	55	345	66	0	**466**	43	28	3	0	**74**	**864**
% Approach	2.5%	82.0%	15.6%	0%	-	23.8%	48.8%	27.5%	0%	-	11.8%	74.0%	14.2%	0%	-	58.1%	37.8%	4.1%	0%	-	-
% Total	0.7%	23.1%	4.4%	0%	**28.2%**	2.2%	4.5%	2.5%	0%	**9.3%**	6.4%	39.9%	7.6%	0%	**53.9%**	5.0%	3.2%	0.3%	0%	**8.6%**	-
PHF	0.500	0.746	0.679	-	**0.735**	0.594	0.696	0.786	-	**0.741**	0.598	0.799	0.868	-	**0.820**	0.827	0.636	0.375	-	**0.771**	0.809
Lights	5	195	38	0	**238**	19	38	22	0	**79**	54	333	63	0	**450**	43	28	3	0	**74**	841
% Lights	83.3%	97.5%	100%	0%	**97.5%**	100%	97.4%	100%	0%	**98.8%**	98.2%	96.5%	95.5%	0%	**96.6%**	100%	100%	100%	0%	**100%**	97.3%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	1
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0.3%	0%	0%	**0.2%**	0%	0%	0%	0%	**0%**	0.1%
Buses and Single-Unit Trucks	1	5	0	0	**6**	0	1	0	0	**1**	1	11	3	0	**15**	0	0	0	0	**0**	22
% Buses and Single-Unit Trucks	16.7%	2.5%	0%	0%	**2.5%**	0%	2.6%	0%	0%	**1.3%**	1.8%	3.2%	4.5%	0%	**3.2%**	0%	0%	0%	0%	**0%**	2.5%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 14th St. - TMC
Tue Oct 3, 2023
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115689, Location: 38.9582, -95.23591

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 14th St. - TMC

Tue Oct 3, 2023
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115689, Location: 38.9582, -95.23591

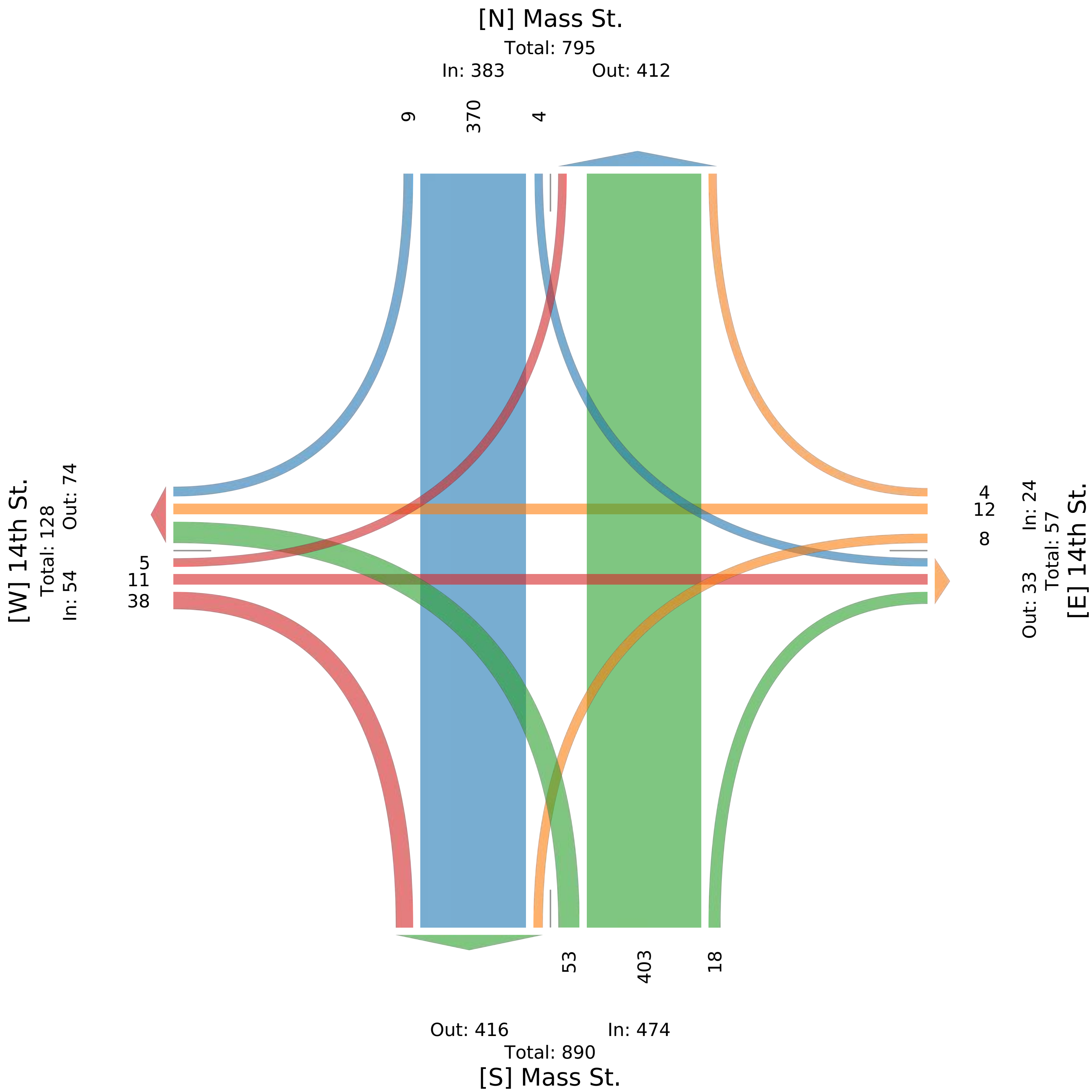
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					14th St.					Mass St.					14th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2023-10-03 12:15PM	4	93	1	0	**98**	2	2	1	0	**5**	6	84	21	0	**111**	7	0	1	0	**8**	**222**
12:30PM	4	96	2	0	**102**	0	3	2	0	**5**	4	99	14	0	**117**	10	2	1	0	**13**	**237**
12:45PM	1	90	0	0	**91**	1	2	3	0	**6**	4	120	8	0	**132**	11	6	3	0	**20**	**249**
1:00PM	0	91	1	0	**92**	1	5	2	0	**8**	4	100	10	0	**114**	10	3	0	0	**13**	**227**
Total	9	370	4	0	**383**	4	12	8	0	**24**	18	403	53	0	**474**	38	11	5	0	**54**	**935**
% Approach	2.3%	96.6%	1.0%	0%	-	16.7%	50.0%	33.3%	0%	-	3.8%	85.0%	11.2%	0%	-	70.4%	20.4%	9.3%	0%	-	-
% Total	1.0%	39.6%	0.4%	0%	**41.0%**	0.4%	1.3%	0.9%	0%	**2.6%**	1.9%	43.1%	5.7%	0%	**50.7%**	4.1%	1.2%	0.5%	0%	**5.8%**	-
PHF	0.563	0.964	0.500	-	**0.939**	0.500	0.600	0.667	-	**0.750**	0.750	0.840	0.631	-	**0.898**	0.864	0.458	0.417	-	**0.675**	0.939
Lights	9	363	4	0	**376**	4	12	8	0	**24**	18	394	52	0	**464**	36	11	5	0	**52**	916
% Lights	100%	98.1%	100%	0%	**98.2%**	100%	100%	100%	0%	**100%**	100%	97.8%	98.1%	0%	**97.9%**	94.7%	100%	100%	0%	**96.3%**	98.0%
Articulated Trucks	0	1	0	0	**1**	0	0	0	0	**0**	0	1	1	0	**2**	0	0	0	0	**0**	3
% Articulated Trucks	0%	0.3%	0%	0%	**0.3%**	0%	0%	0%	0%	**0%**	0%	0.2%	1.9%	0%	**0.4%**	0%	0%	0%	0%	**0%**	0.3%
Buses and Single-Unit Trucks	0	6	0	0	**6**	0	0	0	0	**0**	0	8	0	0	**8**	2	0	0	0	**2**	16
% Buses and Single-Unit Trucks	0%	1.6%	0%	0%	**1.6%**	0%	0%	0%	0%	**0%**	0%	2.0%	0%	0%	**1.7%**	5.3%	0%	0%	0%	**3.7%**	1.7%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 14th St. - TMC
Tue Oct 3, 2023
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115689, Location: 38.9582, -95.23591

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 14th St. - TMC

Tue Oct 3, 2023
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115689, Location: 38.9582, -95.23591

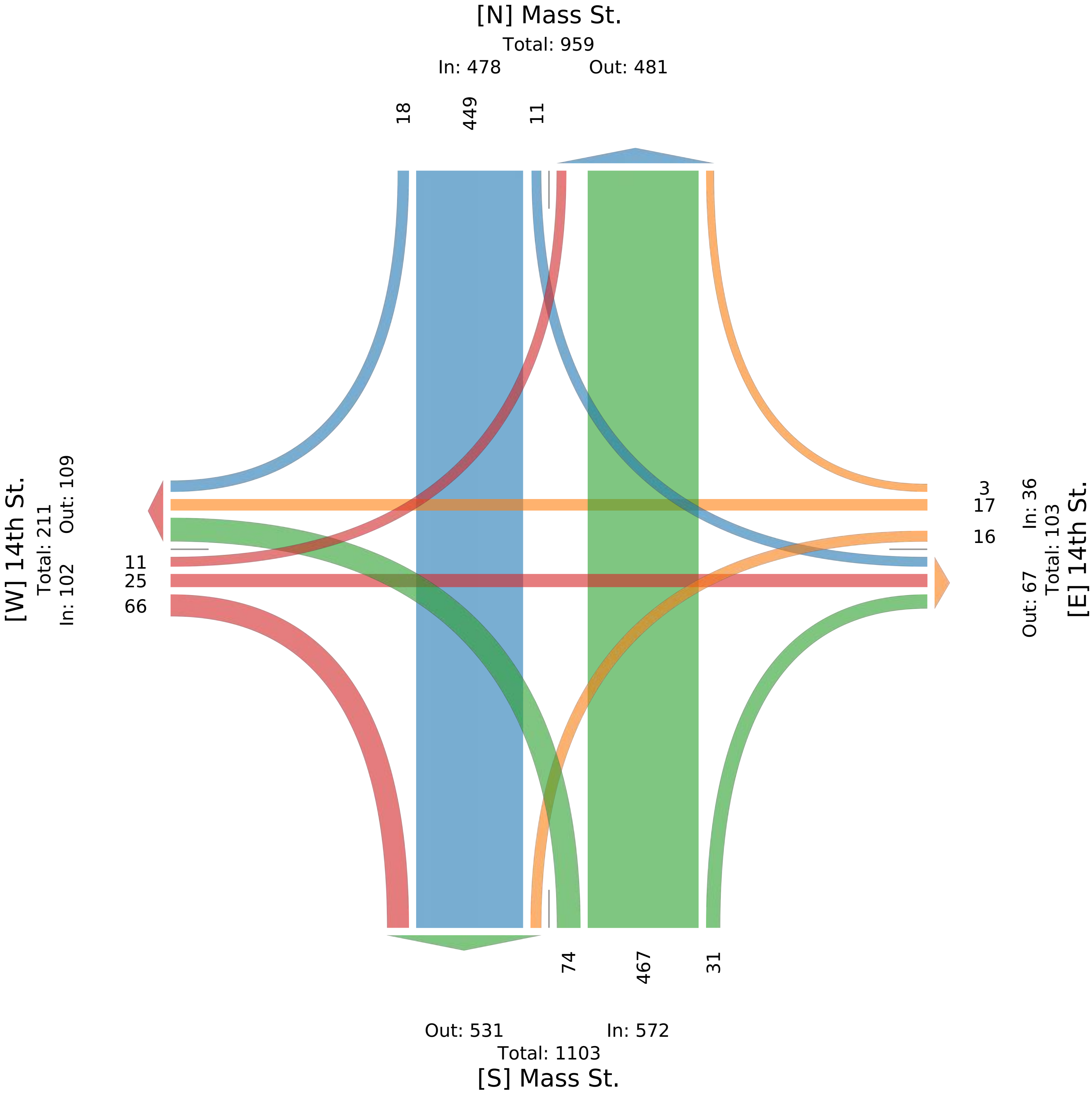
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					14th St.					Mass St.					14th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 4:45PM	4	105	4	0	**113**	1	5	4	0	**10**	4	132	12	0	**148**	18	6	3	0	**27**	**298**
5:00PM	2	135	4	0	**141**	0	6	5	0	**11**	10	106	21	0	**137**	16	3	2	0	**21**	**310**
5:15PM	6	107	1	0	**114**	1	3	2	0	**6**	5	116	20	0	**141**	16	6	4	0	**26**	**287**
5:30PM	6	102	2	0	**110**	1	3	5	0	**9**	12	113	21	0	**146**	16	10	2	0	**28**	**293**
Total	18	449	11	0	**478**	3	17	16	0	**36**	31	467	74	0	**572**	66	25	11	0	**102**	**1188**
% Approach	3.8%	93.9%	2.3%	0%	-	8.3%	47.2%	44.4%	0%	-	5.4%	81.6%	12.9%	0%	-	64.7%	24.5%	10.8%	0%	-	-
% Total	1.5%	37.8%	0.9%	0%	**40.2%**	0.3%	1.4%	1.3%	0%	**3.0%**	2.6%	39.3%	6.2%	0%	**48.1%**	5.6%	2.1%	0.9%	0%	**8.6%**	-
PHF	0.750	0.831	0.688	-	**0.848**	0.750	0.708	0.800	-	**0.818**	0.646	0.884	0.881	-	**0.966**	0.917	0.625	0.688	-	**0.911**	0.958
Lights	18	447	11	0	**476**	3	17	16	0	**36**	31	462	74	0	**567**	66	25	11	0	**102**	1181
% Lights	100%	99.6%	100%	0%	**99.6%**	100%	100%	100%	0%	**100%**	100%	98.9%	100%	0%	**99.1%**	100%	100%	100%	0%	**100%**	99.4%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%
Buses and Single-Unit Trucks	0	2	0	0	**2**	0	0	0	0	**0**	0	5	0	0	**5**	0	0	0	0	**0**	7
% Buses and Single-Unit Trucks	0%	0.4%	0%	0%	**0.4%**	0%	0%	0%	0%	**0%**	0%	1.1%	0%	0%	**0.9%**	0%	0%	0%	0%	**0%**	0.6%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 14th St. - TMC
Tue Oct 3, 2023
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115689, Location: 38.9582, -95.23591

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 15th St. - TMC
Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115722, Location: 38.957005, -95.235897

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					15th St.					Mass St.					15th St,					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 12:00AM	0	3	2	0	**5**	2	0	1	0	**3**	2	6	0	0	**8**	0	0	1	0	**1**	**17**
12:15AM	0	5	2	0	**7**	0	0	1	0	**1**	0	4	0	0	**4**	0	0	0	0	**0**	**12**
12:30AM	0	9	1	0	**10**	0	0	0	0	**0**	0	7	0	0	**7**	0	0	1	0	**1**	**18**
12:45AM	0	4	2	0	**6**	0	0	0	0	**0**	0	8	0	0	**8**	0	0	0	0	**0**	**14**
Hourly Total	0	21	7	0	**28**	2	0	2	0	**4**	2	25	0	0	**27**	0	0	2	0	**2**	**61**
1:00AM	0	5	1	0	**6**	2	0	0	0	**2**	1	3	0	0	**4**	0	0	0	0	**0**	**12**
1:15AM	0	2	0	0	**2**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**3**
1:30AM	0	3	0	0	**3**	1	0	1	0	**2**	0	4	0	0	**4**	0	0	0	0	**0**	**9**
1:45AM	0	6	0	0	**6**	0	1	0	0	**1**	0	2	1	0	**3**	0	0	0	0	**0**	**10**
Hourly Total	0	16	1	0	**17**	3	1	1	0	**5**	1	10	1	0	**12**	0	0	0	0	**0**	**34**
2:00AM	0	7	0	0	**7**	1	0	0	0	**1**	1	3	0	0	**4**	0	0	0	0	**0**	**12**
2:15AM	0	4	0	0	**4**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	**6**
2:30AM	0	4	0	0	**4**	1	1	0	0	**2**	0	1	0	0	**1**	0	0	0	0	**0**	**7**
2:45AM	0	3	0	0	**3**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**4**
Hourly Total	0	18	0	0	**18**	2	1	0	0	**3**	1	7	0	0	**8**	0	0	0	0	**0**	**29**
3:00AM	1	0	1	0	**2**	2	0	0	0	**2**	1	2	0	0	**3**	0	0	0	0	**0**	**7**
3:15AM	0	3	0	0	**3**	0	0	1	0	**1**	0	1	1	0	**2**	0	0	0	0	**0**	**6**
3:30AM	0	4	0	0	**4**	1	0	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	**5**
3:45AM	1	2	0	0	**3**	1	1	0	0	**2**	0	4	0	0	**4**	0	0	0	0	**0**	**9**
Hourly Total	2	9	1	0	**12**	4	1	1	0	**6**	1	7	1	0	**9**	0	0	0	0	**0**	**27**
4:00AM	0	0	1	0	**1**	0	0	0	0	**0**	1	3	0	0	**4**	0	0	0	0	**0**	**5**
4:15AM	0	1	0	0	**1**	0	0	1	0	**1**	0	3	0	0	**3**	0	0	0	0	**0**	**5**
4:30AM	0	2	1	0	**3**	1	0	1	0	**2**	0	4	0	0	**4**	0	0	0	0	**0**	**9**
4:45AM	0	3	0	0	**3**	3	1	2	0	**6**	0	2	0	0	**2**	0	0	0	0	**0**	**11**
Hourly Total	0	6	2	0	**8**	4	1	4	0	**9**	1	12	0	0	**13**	0	0	0	0	**0**	**30**
5:00AM	0	4	0	0	**4**	1	0	0	0	**1**	0	5	0	0	**5**	0	0	0	0	**0**	**10**
5:15AM	0	7	0	0	**7**	2	0	0	0	**2**	1	7	0	0	**8**	1	0	0	0	**1**	**18**
5:30AM	0	11	0	0	**11**	1	3	0	0	**4**	0	12	0	0	**12**	0	0	0	0	**0**	**27**
5:45AM	0	12	1	0	**13**	2	0	2	0	**4**	0	22	0	0	**22**	0	0	0	0	**0**	**39**
Hourly Total	0	34	1	0	**35**	6	3	2	0	**11**	1	46	0	0	**47**	1	0	0	0	**1**	**94**
6:00AM	0	20	4	0	**24**	3	2	0	0	**5**	2	17	0	0	**19**	1	0	0	0	**1**	**49**
6:15AM	0	15	4	0	**19**	2	6	1	0	**9**	1	25	0	0	**26**	0	0	0	0	**0**	**54**
6:30AM	0	18	4	0	**22**	7	5	3	0	**15**	0	24	0	0	**24**	1	1	0	0	**2**	**63**
6:45AM	0	29	5	0	**34**	11	2	2	0	**15**	4	33	0	0	**37**	0	0	0	0	**0**	**86**
Hourly Total	0	82	17	0	**99**	23	15	6	0	**44**	7	99	0	0	**106**	2	1	0	0	**3**	**252**
7:00AM	0	18	2	0	**20**	7	3	6	0	**16**	6	32	0	0	**38**	0	1	0	0	**1**	**75**
7:15AM	0	27	6	0	**33**	10	2	4	0	**16**	12	44	0	0	**56**	1	2	0	0	**3**	**108**
7:30AM	1	38	15	0	**54**	8	5	10	0	**23**	8	69	0	0	**77**	1	2	0	0	**3**	**157**
7:45AM	1	48	8	0	**57**	30	7	7	0	**44**	13	116	0	0	**129**	1	2	0	0	**3**	**233**
Hourly Total	2	131	31	0	**164**	55	17	27	0	**99**	39	261	0	0	**300**	3	7	0	0	**10**	**573**
8:00AM	0	74	9	1	**84**	42	7	13	0	**62**	9	104	1	0	**114**	0	0	0	0	**0**	**260**
8:15AM	0	61	12	1	**74**	15	1	6	1	**23**	7	89	0	0	**96**	0	1	0	0	**1**	**194**
8:30AM	0	39	11	0	**50**	20	8	5	0	**33**	7	80	0	0	**87**	2	1	0	0	**3**	**173**
8:45AM	2	58	7	0	**67**	17	4	4	0	**25**	5	86	3	0	**94**	2	1	0	0	**3**	**189**
Hourly Total	2	232	39	2	**275**	94	20	28	1	**143**	28	359	4	0	**391**	4	3	0	0	**7**	**816**
9:00AM	0	46	11	0	**57**	10	3	9	0	**22**	6	87	1	0	**94**	0	0	0	0	**0**	**173**
9:15AM	0	49	5	0	**54**	14	5	2	0	**21**	8	91	1	0	**100**	1	0	0	0	**1**	**176**
9:30AM	0	62	4	0	**66**	10	2	4	0	**16**	12	84	1	0	**97**	0	1	2	0	**3**	**182**
9:45AM	0	46	7	0	**53**	12	1	3	0	**16**	4	92	0	0	**96**	0	0	0	0	**0**	**165**
Hourly Total	0	203	27	0	**230**	46	11	18	0	**75**	30	354	3	0	**387**	1	1	2	0	**4**	**696**
10:00AM	1	66	6	0	**73**	15	2	4	0	**21**	2	59	0	0	**61**	0	0	0	0	**0**	**155**
10:15AM	1	46	6	0	**53**	7	3	2	0	**12**	6	76	0	0	**82**	1	1	1	0	**3**	**150**
10:30AM	0	53	8	0	**61**	11	2	7	0	**20**	8	71	1	0	**80**	1	1	0	0	**2**	**163**
10:45AM	1	53	2	0	**56**	12	1	3	0	**16**	5	111	0	0	**116**	1	0	1	0	**2**	**190**

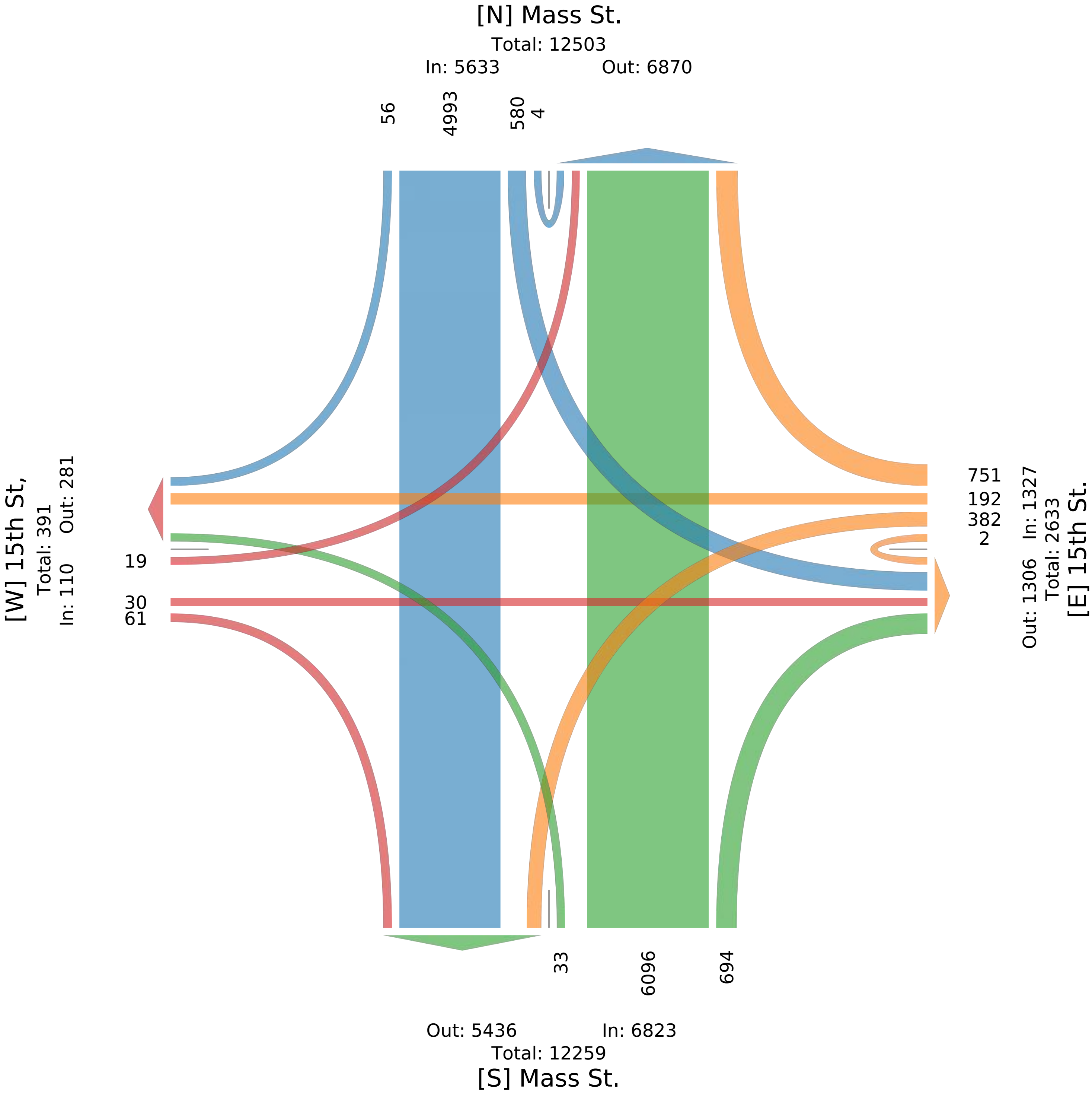
Leg	Mass St.					15th St.					Mass St.					15th St,					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	3	218	22	0	**243**	45	8	16	0	**69**	21	317	1	0	**339**	3	2	2	0	**7**	**658**
11:00AM	0	80	11	0	**91**	9	1	3	0	**13**	7	87	0	0	**94**	0	0	1	0	**1**	**199**
11:15AM	1	74	7	0	**82**	4	4	5	0	**13**	9	86	0	0	**95**	1	0	1	0	**2**	**192**
11:30AM	0	72	7	0	**79**	10	3	3	0	**16**	5	96	1	0	**102**	2	1	0	0	**3**	**200**
11:45AM	1	85	13	0	**99**	12	4	5	0	**21**	16	86	0	0	**102**	0	0	0	0	**0**	**222**
Hourly Total	2	311	38	0	**351**	35	12	16	0	**63**	37	355	1	0	**393**	3	1	2	0	**6**	**813**
12:00PM	1	91	13	0	**105**	8	1	9	0	**18**	15	80	2	0	**97**	1	0	0	0	**1**	**221**
12:15PM	0	93	10	0	**103**	5	0	3	0	**8**	13	113	0	0	**126**	0	0	0	0	**0**	**237**
12:30PM	3	96	9	0	**108**	9	4	3	0	**16**	19	113	1	0	**133**	1	0	0	0	**1**	**258**
12:45PM	0	91	9	0	**100**	6	1	5	0	**12**	13	123	0	0	**136**	0	1	1	0	**2**	**250**
Hourly Total	4	371	41	0	**416**	28	6	20	0	**54**	60	429	3	0	**492**	2	1	1	0	**4**	**966**
1:00PM	1	97	8	0	**106**	10	2	6	0	**18**	13	112	0	0	**125**	2	0	0	0	**2**	**251**
1:15PM	1	77	8	1	**87**	9	0	5	0	**14**	14	89	0	0	**103**	1	0	1	0	**2**	**206**
1:30PM	1	90	8	0	**99**	11	3	2	0	**16**	10	95	0	0	**105**	0	0	0	0	**0**	**220**
1:45PM	0	75	4	0	**79**	9	1	4	0	**14**	7	103	1	0	**111**	0	0	1	0	**1**	**205**
Hourly Total	3	339	28	1	**371**	39	6	17	0	**62**	44	399	1	0	**444**	3	0	2	0	**5**	**882**
2:00PM	1	113	11	0	**125**	19	2	4	0	**25**	10	97	0	0	**107**	0	0	0	0	**0**	**257**
2:15PM	3	71	8	0	**82**	9	1	8	0	**18**	8	94	0	0	**102**	4	0	1	0	**5**	**207**
2:30PM	2	76	7	0	**85**	4	1	7	0	**12**	14	114	0	0	**128**	0	0	0	0	**0**	**225**
2:45PM	0	77	20	0	**97**	11	3	7	1	**22**	15	116	0	0	**131**	0	0	0	0	**0**	**250**
Hourly Total	6	337	46	0	**389**	43	7	26	1	**77**	47	421	0	0	**468**	4	0	1	0	**5**	**939**
3:00PM	3	99	8	0	**110**	19	4	19	0	**42**	7	95	0	0	**102**	0	0	0	0	**0**	**254**
3:15PM	0	89	7	0	**96**	21	4	13	0	**38**	21	138	0	0	**159**	0	0	1	0	**1**	**294**
3:30PM	0	101	15	1	**117**	12	6	5	0	**23**	11	112	2	0	**125**	1	1	0	0	**2**	**267**
3:45PM	1	98	16	0	**115**	18	4	10	0	**32**	34	132	1	0	**167**	5	1	0	0	**6**	**320**
Hourly Total	4	387	46	1	**438**	70	18	47	0	**135**	73	477	3	0	**553**	6	2	1	0	**9**	**1135**
4:00PM	3	105	21	0	**129**	11	0	8	0	**19**	24	120	0	0	**144**	1	1	0	0	**2**	**294**
4:15PM	2	97	22	0	**121**	11	0	7	0	**18**	19	124	0	0	**143**	4	0	0	0	**4**	**286**
4:30PM	2	110	8	0	**120**	11	5	4	0	**20**	13	117	1	0	**131**	0	1	0	0	**1**	**272**
4:45PM	0	107	16	0	**123**	13	5	3	0	**21**	8	141	3	0	**152**	1	0	0	0	**1**	**297**
Hourly Total	7	419	67	0	**493**	46	10	22	0	**78**	64	502	4	0	**570**	6	2	0	0	**8**	**1149**
5:00PM	1	148	12	0	**161**	24	6	10	0	**40**	15	109	0	0	**124**	3	0	1	0	**4**	**329**
5:15PM	2	112	11	0	**125**	13	4	8	0	**25**	17	134	1	0	**152**	1	1	1	0	**3**	**305**
5:30PM	0	119	12	0	**131**	22	5	8	0	**35**	21	132	0	0	**153**	0	1	0	0	**1**	**320**
5:45PM	3	107	11	0	**121**	11	5	3	0	**19**	19	159	1	0	**179**	1	1	0	0	**2**	**321**
Hourly Total	6	486	46	0	**538**	70	20	29	0	**119**	72	534	2	0	**608**	5	3	2	0	**10**	**1275**
6:00PM	0	104	13	0	**117**	9	1	11	0	**21**	12	106	0	0	**118**	2	1	1	0	**4**	**260**
6:15PM	0	92	12	0	**104**	10	2	5	0	**17**	13	149	1	0	**163**	1	1	0	0	**2**	**286**
6:30PM	1	93	10	0	**104**	13	5	10	0	**28**	15	120	0	0	**135**	2	2	0	0	**4**	**271**
6:45PM	1	80	9	0	**90**	10	4	5	0	**19**	14	123	1	0	**138**	1	0	0	0	**1**	**248**
Hourly Total	2	369	44	0	**415**	42	12	31	0	**85**	54	498	2	0	**554**	6	4	1	0	**11**	**1065**
7:00PM	0	85	10	0	**95**	11	5	6	0	**22**	13	102	0	0	**115**	2	0	0	0	**2**	**234**
7:15PM	0	79	9	0	**88**	11	3	2	0	**16**	22	92	2	0	**116**	0	0	0	0	**0**	**220**
7:30PM	0	84	6	0	**90**	12	1	9	0	**22**	12	77	0	0	**89**	0	1	1	0	**2**	**203**
7:45PM	1	74	6	0	**81**	9	3	7	0	**19**	9	80	0	0	**89**	1	0	1	0	**2**	**191**
Hourly Total	1	322	31	0	**354**	43	12	24	0	**79**	56	351	2	0	**409**	3	1	2	0	**6**	**848**
8:00PM	1	88	5	0	**94**	5	0	9	0	**14**	5	77	1	0	**83**	1	0	0	0	**1**	**192**
8:15PM	2	64	4	0	**70**	6	0	4	0	**10**	7	75	0	0	**82**	0	1	0	0	**1**	**163**
8:30PM	2	63	2	0	**67**	4	2	7	0	**13**	10	60	0	0	**70**	1	0	1	0	**2**	**152**
8:45PM	1	61	6	0	**68**	5	2	7	0	**14**	3	67	0	0	**70**	1	0	0	0	**1**	**153**
Hourly Total	6	276	17	0	**299**	20	4	27	0	**51**	25	279	1	0	**305**	3	1	1	0	**5**	**660**
9:00PM	1	66	2	0	**69**	4	2	2	0	**8**	3	51	0	0	**54**	0	0	0	0	**0**	**131**
9:15PM	1	40	5	0	**46**	4	0	0	0	**4**	5	61	0	0	**66**	1	0	0	0	**1**	**117**
9:30PM	0	37	1	0	**38**	2	1	2	0	**5**	3	45	1	0	**49**	1	0	0	0	**1**	**93**
9:45PM	0	37	5	0	**42**	1	1	1	0	**3**	6	36	0	0	**42**	0	0	0	0	**0**	**87**
Hourly Total	2	180	13	0	**195**	11	4	5	0	**20**	17	193	1	0	**211**	2	0	0	0	**2**	**428**
10:00PM	1	27	2	0	**30**	4	0	1	0	**5**	4	41	1	0	**46**	1	0	0	0	**1**	**82**
10:15PM	0	26	3	0	**29**	1	0	3	0	**4**	4	32	0	0	**36**	0	0	0	0	**0**	**69**
10:30PM	0	15	3	0	**18**	5	2	5	0	**12**	0	21	1	0	**22**	1	0	0	0	**1**	**53**
10:45PM	0	41	0	0	**41**	1	1	0	0	**2**	3	17	0	0	**20**	0	0	0	0	**0**	**63**

Leg Direction	Mass St. Southbound					15th St. Westbound					Mass St. Northbound					15th St, Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	1	109	8	0	**118**	11	3	9	0	**23**	11	111	2	0	**124**	2	0	0	0	**2**	**267**
11:00PM	2	69	3	0	**74**	1	0	0	0	**1**	0	10	0	0	**10**	1	0	0	0	**1**	**86**
11:15PM	1	20	1	0	**22**	1	0	2	0	**3**	1	17	0	0	**18**	0	1	0	0	**1**	**44**
11:30PM	0	17	1	0	**18**	5	0	1	0	**6**	1	14	0	0	**15**	0	0	0	0	**0**	**39**
11:45PM	0	11	2	0	**13**	2	0	1	0	**3**	0	9	1	0	**10**	1	0	0	0	**1**	**27**
Hourly Total	3	117	7	0	**127**	9	0	4	0	**13**	2	50	1	0	**53**	2	1	0	0	**3**	**196**
Total	56	4993	580	4	**5633**	751	192	382	2	**1327**	694	6096	33	0	**6823**	61	30	19	0	**110**	**13893**
% Approach	1.0%	88.6%	10.3%	0.1%	-	56.6%	14.5%	28.8%	0.2%	-	10.2%	89.3%	0.5%	0%	-	55.5%	27.3%	17.3%	0%	-	-
% Total	0.4%	35.9%	4.2%	0%	**40.5%**	5.4%	1.4%	2.7%	0%	**9.6%**	5.0%	43.9%	0.2%	0%	**49.1%**	0.4%	0.2%	0.1%	0%	**0.8%**	-
Lights	55	4897	573	4	**5529**	737	190	380	2	**1309**	689	5967	32	0	**6688**	61	30	19	0	**110**	13636
% Lights	98.2%	98.1%	98.8%	100%	**98.2%**	98.1%	99.0%	99.5%	100%	**98.6%**	99.3%	97.9%	97.0%	0%	**98.0%**	100%	100%	100%	0%	**100%**	98.2%
Articulated Trucks	0	10	0	0	**10**	0	0	0	0	**0**	2	16	0	0	**18**	0	0	0	0	**0**	28
% Articulated Trucks	0%	0.2%	0%	0%	**0.2%**	0%	0%	0%	0%	**0%**	0.3%	0.3%	0%	0%	**0.3%**	0%	0%	0%	0%	**0%**	0.2%
Buses and Single-Unit Trucks	1	86	7	0	**94**	14	2	2	0	**18**	3	113	1	0	**117**	0	0	0	0	**0**	229
% Buses and Single-Unit Trucks	1.8%	1.7%	1.2%	0%	**1.7%**	1.9%	1.0%	0.5%	0%	**1.4%**	0.4%	1.9%	3.0%	0%	**1.7%**	0%	0%	0%	0%	**0%**	1.6%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 15th St. - TMC
Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115722, Location: 38.957005, -95.235897

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 15th St. - TMC

Tue Oct 3, 2023
AM Peak (7:45 AM - 8:45 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115722, Location: 38.957005, -95.235897

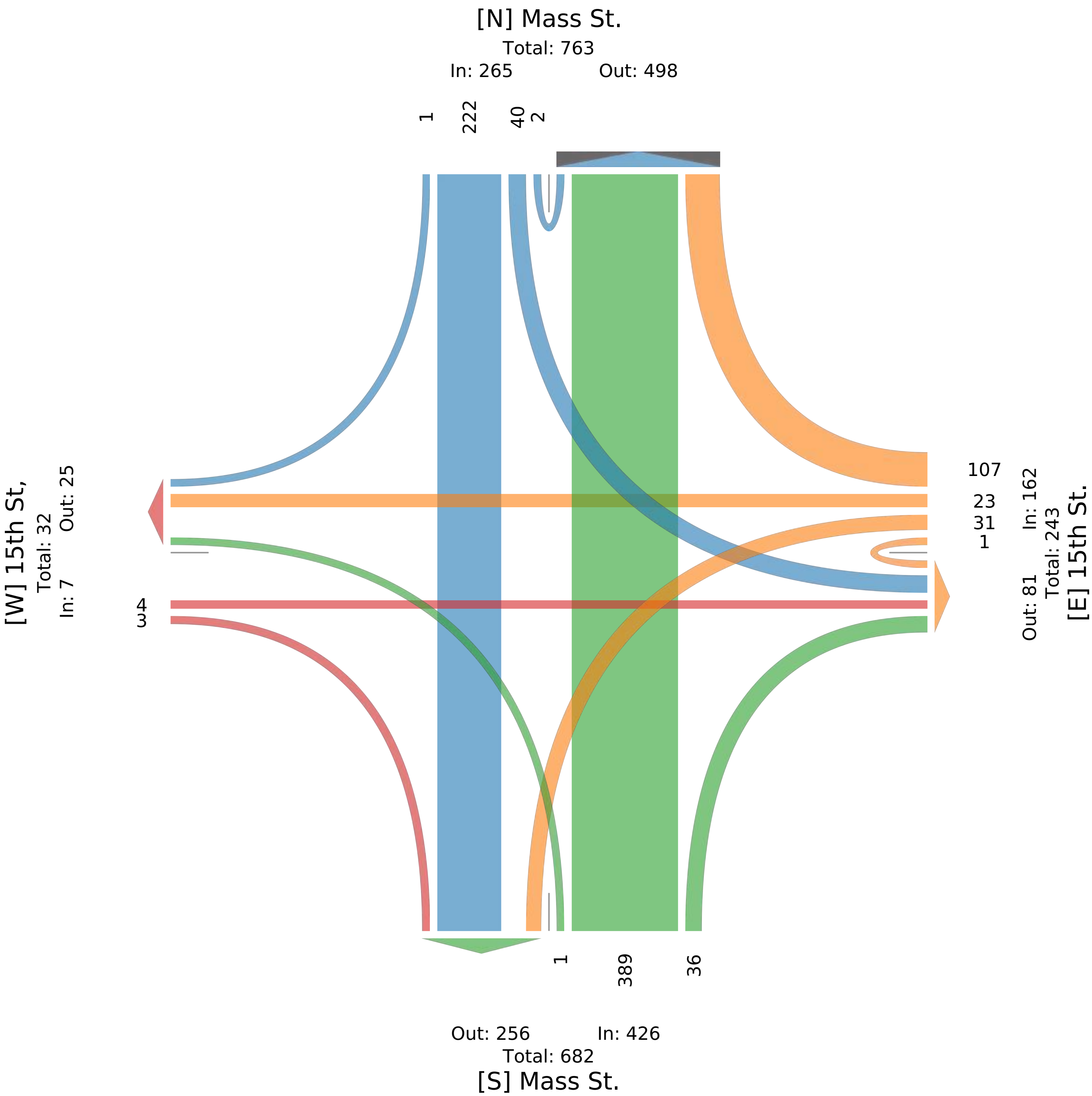
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					15th St.					Mass St.					15th St,					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 7:45AM	1	48	8	0	**57**	30	7	7	0	**44**	13	116	0	0	**129**	1	2	0	0	**3**	**233**
8:00AM	0	74	9	1	**84**	42	7	13	0	**62**	9	104	1	0	**114**	0	0	0	0	**0**	**260**
8:15AM	0	61	12	1	**74**	15	1	6	1	**23**	7	89	0	0	**96**	0	1	0	0	**1**	**194**
8:30AM	0	39	11	0	**50**	20	8	5	0	**33**	7	80	0	0	**87**	2	1	0	0	**3**	**173**
Total	1	222	40	2	**265**	107	23	31	1	**162**	36	389	1	0	**426**	3	4	0	0	**7**	**860**
% Approach	0.4%	83.8%	15.1%	0.8%	-	66.0%	14.2%	19.1%	0.6%	-	8.5%	91.3%	0.2%	0%	-	42.9%	57.1%	0%	0%	-	-
% Total	0.1%	25.8%	4.7%	0.2%	**30.8%**	12.4%	2.7%	3.6%	0.1%	**18.8%**	4.2%	45.2%	0.1%	0%	**49.5%**	0.3%	0.5%	0%	0%	**0.8%**	-
PHF	0.250	0.750	0.833	0.500	**0.789**	0.637	0.719	0.596	0.250	**0.653**	0.692	0.838	0.250	-	**0.826**	0.375	0.500	-	-	**0.583**	0.827
Lights	1	217	40	2	**260**	102	22	31	1	**156**	34	375	1	0	**410**	3	4	0	0	**7**	833
% Lights	100%	97.7%	100%	100%	**98.1%**	95.3%	95.7%	100%	100%	**96.3%**	94.4%	96.4%	100%	0%	**96.2%**	100%	100%	0%	0%	**100%**	96.9%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	1	2	0	0	**3**	0	0	0	0	**0**	3
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	2.8%	0.5%	0%	0%	**0.7%**	0%	0%	0%	0%	**0%**	0.3%
Buses and Single-Unit Trucks	0	5	0	0	**5**	5	1	0	0	**6**	1	12	0	0	**13**	0	0	0	0	**0**	24
% Buses and Single-Unit Trucks	0%	2.3%	0%	0%	**1.9%**	4.7%	4.3%	0%	0%	**3.7%**	2.8%	3.1%	0%	0%	**3.1%**	0%	0%	0%	0%	**0%**	2.8%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 15th St. - TMC
Tue Oct 3, 2023
AM Peak (7:45 AM - 8:45 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115722, Location: 38.957005, -95.235897

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 15th St. - TMC
Tue Oct 3, 2023
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115722, Location: 38.957005, -95.235897

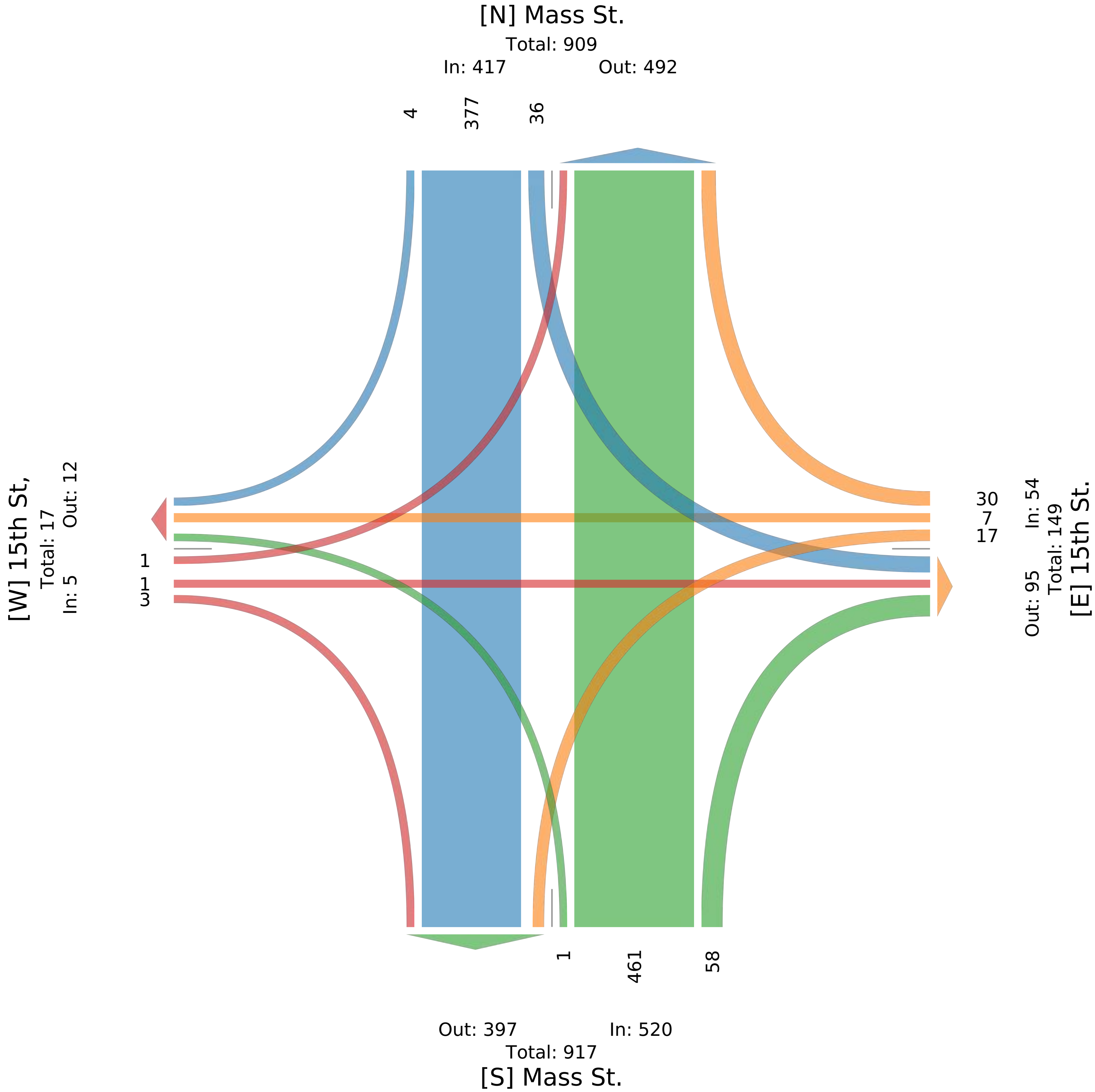
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					15th St.					Mass St.					15th St,					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 12:15PM	0	93	10	0	**103**	5	0	3	0	**8**	13	113	0	0	**126**	0	0	0	0	**0**	**237**
12:30PM	3	96	9	0	**108**	9	4	3	0	**16**	19	113	1	0	**133**	1	0	0	0	**1**	**258**
12:45PM	0	91	9	0	**100**	6	1	5	0	**12**	13	123	0	0	**136**	0	1	1	0	**2**	**250**
1:00PM	1	97	8	0	**106**	10	2	6	0	**18**	13	112	0	0	**125**	2	0	0	0	**2**	**251**
Total	4	377	36	0	**417**	30	7	17	0	**54**	58	461	1	0	**520**	3	1	1	0	**5**	**996**
% Approach	1.0%	90.4%	8.6%	0%	-	55.6%	13.0%	31.5%	0%	-	11.2%	88.7%	0.2%	0%	-	60.0%	20.0%	20.0%	0%	-	-
% Total	0.4%	37.9%	3.6%	0%	**41.9%**	3.0%	0.7%	1.7%	0%	**5.4%**	5.8%	46.3%	0.1%	0%	**52.2%**	0.3%	0.1%	0.1%	0%	**0.5%**	-
PHF	0.333	0.972	0.900	-	**0.965**	0.750	0.438	0.708	-	**0.750**	0.763	0.937	0.250	-	**0.956**	0.375	0.250	0.250	-	**0.625**	0.965
Lights	4	367	36	0	**407**	30	7	17	0	**54**	58	450	1	0	**509**	3	1	1	0	**5**	975
% Lights	100%	97.3%	100%	0%	**97.6%**	100%	100%	100%	0%	**100%**	100%	97.6%	100%	0%	**97.9%**	100%	100%	100%	0%	**100%**	97.9%
Articulated Trucks	0	2	0	0	**2**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	5
% Articulated Trucks	0%	0.5%	0%	0%	**0.5%**	0%	0%	0%	0%	**0%**	0%	0.7%	0%	0%	**0.6%**	0%	0%	0%	0%	**0%**	0.5%
Buses and Single-Unit Trucks	0	8	0	0	**8**	0	0	0	0	**0**	0	8	0	0	**8**	0	0	0	0	**0**	16
% Buses and Single-Unit Trucks	0%	2.1%	0%	0%	**1.9%**	0%	0%	0%	0%	**0%**	0%	1.7%	0%	0%	**1.5%**	0%	0%	0%	0%	**0%**	1.6%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 15th St. - TMC
Tue Oct 3, 2023
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115722, Location: 38.957005, -95.235897

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 15th St. - TMC

Tue Oct 3, 2023
PM Peak (5 PM - 6 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115722, Location: 38.957005, -95.235897

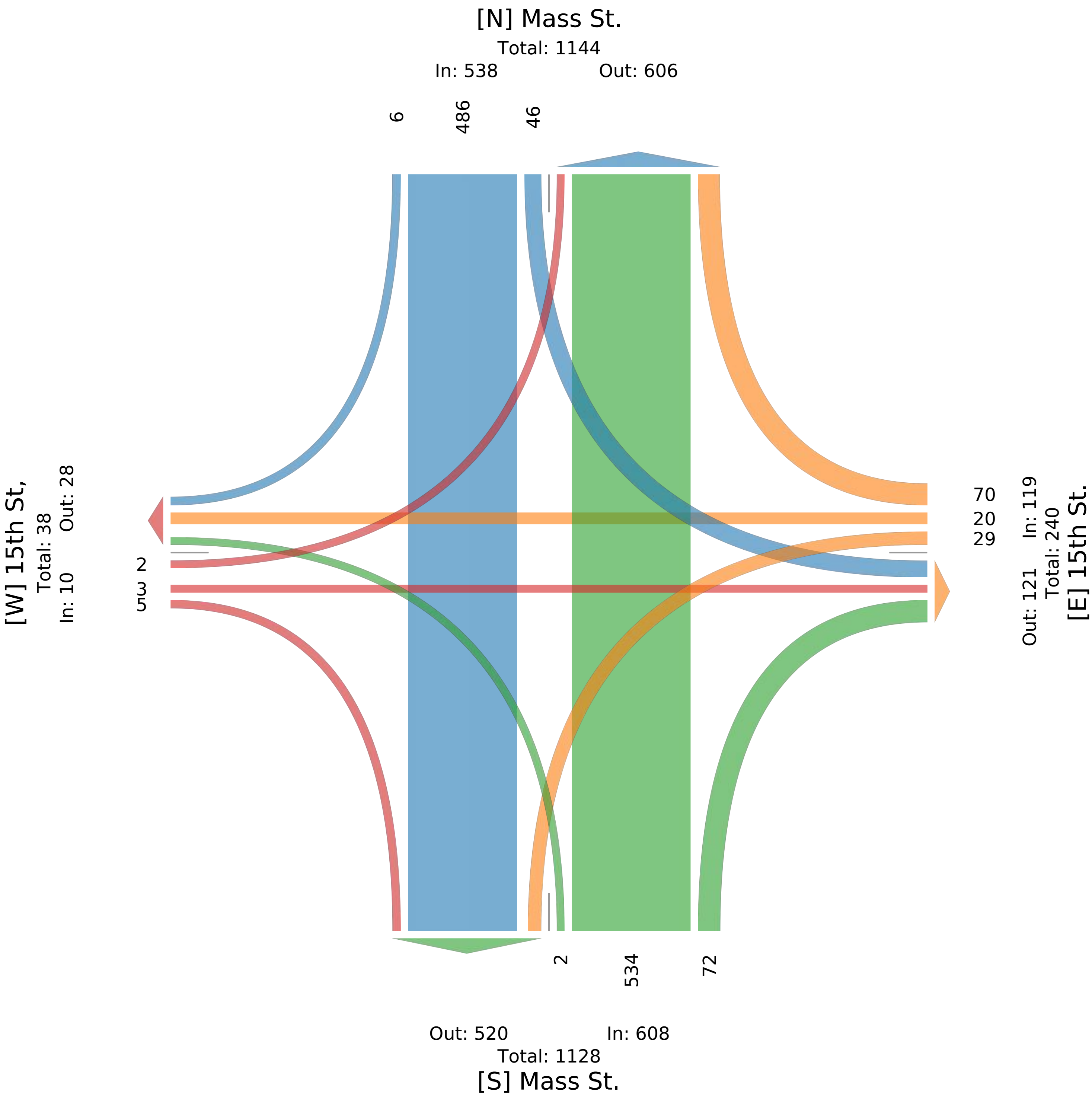
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					15th St.					Mass St.					15th St,					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 5:00PM	1	148	12	0	**161**	24	6	10	0	**40**	15	109	0	0	**124**	3	0	1	0	**4**	**329**
5:15PM	2	112	11	0	**125**	13	4	8	0	**25**	17	134	1	0	**152**	1	1	1	0	**3**	**305**
5:30PM	0	119	12	0	**131**	22	5	8	0	**35**	21	132	0	0	**153**	0	1	0	0	**1**	**320**
5:45PM	3	107	11	0	**121**	11	5	3	0	**19**	19	159	1	0	**179**	1	1	0	0	**2**	**321**
Total	6	486	46	0	**538**	70	20	29	0	**119**	72	534	2	0	**608**	5	3	2	0	**10**	**1275**
% Approach	1.1%	90.3%	8.6%	0%	-	58.8%	16.8%	24.4%	0%	-	11.8%	87.8%	0.3%	0%	-	50.0%	30.0%	20.0%	0%	-	-
% Total	0.5%	38.1%	3.6%	0%	**42.2%**	5.5%	1.6%	2.3%	0%	**9.3%**	5.6%	41.9%	0.2%	0%	**47.7%**	0.4%	0.2%	0.2%	0%	**0.8%**	-
PHF	0.500	0.821	0.958	-	**0.835**	0.729	0.833	0.725	-	**0.744**	0.857	0.840	0.500	-	**0.849**	0.417	0.750	0.500	-	**0.625**	0.969
Lights	6	483	46	0	**535**	70	20	29	0	**119**	72	530	2	0	**604**	5	3	2	0	**10**	1268
% Lights	100%	99.4%	100%	0%	**99.4%**	100%	100%	100%	0%	**100%**	100%	99.3%	100%	0%	**99.3%**	100%	100%	100%	0%	**100%**	99.5%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%
Buses and Single-Unit Trucks	0	3	0	0	**3**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	7
% Buses and Single-Unit Trucks	0%	0.6%	0%	0%	**0.6%**	0%	0%	0%	0%	**0%**	0%	0.7%	0%	0%	**0.7%**	0%	0%	0%	0%	**0%**	0.5%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 15th St. - TMC
Tue Oct 3, 2023
PM Peak (5 PM - 6 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115722, Location: 38.957005, -95.235897

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 16th St. - TMC
Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115727, Location: 38.955231, -95.235887

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					16th St.					Mass St.					16th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2023-10-03 12:00AM	1	4	0	0	**5**	0	0	0	0	**0**	0	8	0	0	**8**	0	0	0	0	**0**	**13**
12:15AM	0	5	0	0	**5**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**9**
12:30AM	0	9	0	0	**9**	0	0	0	0	**0**	0	7	0	0	**7**	0	0	0	0	**0**	**16**
12:45AM	0	4	0	0	**4**	0	0	0	0	**0**	0	8	0	0	**8**	0	0	0	0	**0**	**12**
Hourly Total	1	22	0	0	**23**	0	0	0	0	**0**	0	27	0	0	**27**	0	0	0	0	**0**	**50**
1:00AM	0	5	0	0	**5**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**9**
1:15AM	0	3	0	0	**3**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**7**
1:30AM	0	4	0	0	**4**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**8**
1:45AM	0	6	0	0	**6**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	**9**
Hourly Total	0	18	0	0	**18**	0	0	0	0	**0**	0	15	0	0	**15**	0	0	0	0	**0**	**33**
2:00AM	0	7	0	0	**7**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**11**
2:15AM	0	3	0	0	**3**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**4**
2:30AM	0	4	0	0	**4**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**5**
2:45AM	0	3	0	0	**3**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**4**
Hourly Total	0	17	0	0	**17**	0	0	0	0	**0**	0	7	0	0	**7**	0	0	0	0	**0**	**24**
3:00AM	0	3	0	0	**3**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	**6**
3:15AM	1	2	0	0	**3**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	**5**
3:30AM	0	4	0	0	**4**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**5**
3:45AM	0	2	0	0	**2**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	**5**
Hourly Total	1	11	0	0	**12**	0	0	0	0	**0**	0	9	0	0	**9**	0	0	0	0	**0**	**21**
4:00AM	0	0	0	0	**0**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**4**
4:15AM	0	2	0	0	**2**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	**5**
4:30AM	0	4	0	0	**4**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**8**
4:45AM	0	5	0	0	**5**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	**7**
Hourly Total	0	11	0	0	**11**	0	0	0	0	**0**	0	13	0	0	**13**	0	0	0	0	**0**	**24**
5:00AM	1	3	0	0	**4**	0	0	0	0	**0**	0	7	0	0	**7**	0	0	0	0	**0**	**11**
5:15AM	0	8	0	0	**8**	0	0	0	0	**0**	0	6	0	0	**6**	0	0	0	0	**0**	**14**
5:30AM	0	12	1	0	**13**	0	0	0	0	**0**	0	12	0	0	**12**	0	0	0	0	**0**	**25**
5:45AM	0	15	0	0	**15**	1	0	0	0	**1**	0	23	0	0	**23**	1	0	0	0	**1**	**40**
Hourly Total	1	38	1	0	**40**	1	0	0	0	**1**	0	48	0	0	**48**	1	0	0	0	**1**	**90**
6:00AM	1	21	0	0	**22**	0	0	0	0	**0**	0	19	0	0	**19**	0	0	0	0	**0**	**41**
6:15AM	0	15	0	0	**15**	0	0	0	0	**0**	0	27	0	0	**27**	0	0	0	0	**0**	**42**
6:30AM	0	23	0	0	**23**	0	0	0	0	**0**	0	22	0	0	**22**	0	0	0	0	**0**	**45**
6:45AM	0	31	0	0	**31**	0	0	0	0	**0**	0	36	0	0	**36**	0	0	0	0	**0**	**67**
Hourly Total	1	90	0	0	**91**	0	0	0	0	**0**	0	104	0	0	**104**	0	0	0	0	**0**	**195**
7:00AM	0	23	0	0	**23**	0	0	0	0	**0**	0	42	0	0	**42**	0	0	0	0	**0**	**65**
7:15AM	1	34	0	0	**35**	0	1	2	0	**3**	0	50	0	0	**50**	1	0	0	0	**1**	**89**
7:30AM	0	49	0	0	**49**	2	0	0	0	**2**	1	79	0	0	**80**	1	0	0	0	**1**	**132**
7:45AM	0	57	0	0	**57**	2	1	1	0	**4**	1	126	1	0	**128**	0	0	0	0	**0**	**189**
Hourly Total	1	163	0	0	**164**	4	2	3	0	**9**	2	297	1	0	**300**	2	0	0	0	**2**	**475**
8:00AM	0	86	0	0	**86**	1	1	0	0	**2**	0	117	0	0	**117**	0	1	0	0	**1**	**206**
8:15AM	1	62	0	0	**63**	0	0	1	0	**1**	0	94	1	0	**95**	0	0	1	0	**1**	**160**
8:30AM	0	49	0	0	**49**	2	1	0	0	**3**	0	82	0	0	**82**	1	1	0	0	**2**	**136**
8:45AM	0	62	1	0	**63**	1	1	0	0	**2**	1	82	0	0	**83**	2	0	1	0	**3**	**151**
Hourly Total	1	259	1	0	**261**	4	3	1	0	**8**	1	375	1	0	**377**	3	2	2	0	**7**	**653**
9:00AM	1	52	0	0	**53**	2	0	0	0	**2**	1	101	1	0	**103**	0	0	0	0	**0**	**158**
9:15AM	0	50	0	0	**50**	0	1	0	0	**1**	0	95	0	0	**95**	0	0	0	0	**0**	**146**
9:30AM	0	65	0	0	**65**	2	0	1	0	**3**	0	104	1	0	**105**	1	1	0	0	**2**	**175**
9:45AM	0	50	2	0	**52**	0	0	0	0	**0**	0	91	0	0	**91**	3	0	0	0	**3**	**146**
Hourly Total	1	217	2	0	**220**	4	1	1	0	**6**	1	391	2	0	**394**	4	1	0	0	**5**	**625**
10:00AM	0	65	0	0	**65**	1	1	0	0	**2**	0	59	0	0	**59**	0	0	0	0	**0**	**126**
10:15AM	2	48	0	0	**50**	0	0	0	0	**0**	1	78	0	0	**79**	1	0	1	0	**2**	**131**
10:30AM	0	59	0	0	**59**	0	0	0	0	**0**	0	85	0	0	**85**	2	1	0	0	**3**	**147**
10:45AM	1	58	0	0	**59**	0	1	2	0	**3**	1	115	0	0	**116**	0	0	0	0	**0**	**178**

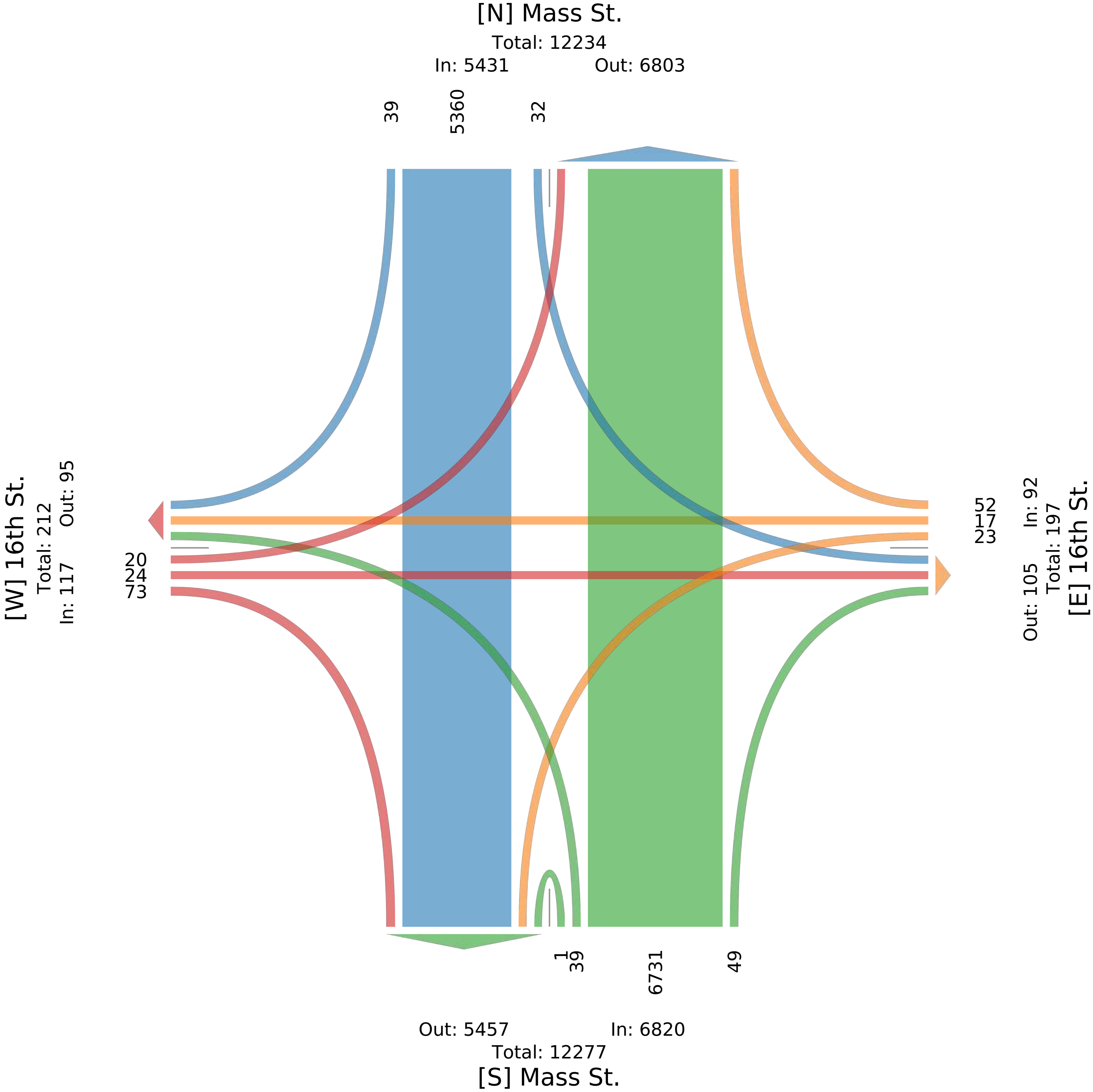
Leg	Mass St.					16th St.					Mass St.					16th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
Hourly Total	3	230	0	0	**233**	1	2	2	0	**5**	2	337	0	0	**339**	3	1	1	0	**5**	**582**
11:00AM	1	81	1	0	**83**	1	1	0	0	**2**	0	92	0	0	**92**	2	0	0	0	**2**	**179**
11:15AM	0	77	0	0	**77**	0	1	1	0	**2**	2	97	0	0	**99**	2	1	2	0	**5**	**183**
11:30AM	1	80	0	0	**81**	1	0	0	0	**1**	1	100	1	0	**102**	0	0	0	0	**0**	**184**
11:45AM	1	87	0	0	**88**	0	0	1	0	**1**	1	97	0	0	**98**	0	0	1	0	**1**	**188**
Hourly Total	3	325	1	0	**329**	2	2	2	0	**6**	4	386	1	0	**391**	4	1	3	0	**8**	**734**
12:00PM	0	106	0	0	**106**	1	0	0	0	**1**	2	101	0	0	**103**	1	0	1	0	**2**	**212**
12:15PM	0	88	2	0	**90**	1	0	0	0	**1**	0	120	1	0	**121**	0	0	0	0	**0**	**212**
12:30PM	2	104	1	0	**107**	0	0	1	0	**1**	0	130	0	0	**130**	1	2	1	0	**4**	**242**
12:45PM	0	98	2	0	**100**	1	0	1	0	**2**	1	142	3	0	**146**	3	0	0	0	**3**	**251**
Hourly Total	2	396	5	0	**403**	3	0	2	0	**5**	3	493	4	0	**500**	5	2	2	0	**9**	**917**
1:00PM	0	105	2	0	**107**	0	0	0	0	**0**	1	123	1	0	**125**	1	0	1	0	**2**	**234**
1:15PM	0	81	2	0	**83**	2	0	0	0	**2**	0	96	2	0	**98**	0	2	0	0	**2**	**185**
1:30PM	1	90	1	0	**92**	1	0	1	0	**2**	0	110	0	0	**110**	1	1	0	0	**2**	**206**
1:45PM	1	75	0	0	**76**	0	0	0	0	**0**	1	109	1	0	**111**	2	0	0	0	**2**	**189**
Hourly Total	2	351	5	0	**358**	3	0	1	0	**4**	2	438	4	0	**444**	4	3	1	0	**8**	**814**
2:00PM	0	122	0	0	**122**	0	0	0	0	**0**	0	102	0	0	**102**	4	0	0	0	**4**	**228**
2:15PM	0	79	0	0	**79**	1	0	0	0	**1**	0	104	0	0	**104**	2	0	2	0	**4**	**188**
2:30PM	0	84	0	0	**84**	0	0	0	0	**0**	4	130	1	0	**135**	0	0	1	0	**1**	**220**
2:45PM	0	86	2	0	**88**	1	1	0	0	**2**	1	117	0	0	**118**	0	1	0	0	**1**	**209**
Hourly Total	0	371	2	0	**373**	2	1	0	0	**3**	5	453	1	0	**459**	6	1	3	0	**10**	**845**
3:00PM	2	107	2	0	**111**	4	0	1	0	**5**	0	96	1	0	**97**	2	0	1	0	**3**	**216**
3:15PM	1	101	0	0	**102**	2	0	0	0	**2**	3	152	0	0	**155**	1	4	1	0	**6**	**265**
3:30PM	1	108	2	0	**111**	2	1	1	0	**4**	0	127	0	0	**127**	3	0	1	0	**4**	**246**
3:45PM	1	109	0	0	**110**	2	1	0	0	**3**	0	162	0	0	**162**	1	1	0	0	**2**	**277**
Hourly Total	5	425	4	0	**434**	10	2	2	0	**14**	3	537	1	0	**541**	7	5	3	0	**15**	**1004**
4:00PM	2	110	0	0	**112**	1	0	0	0	**1**	1	147	2	0	**150**	2	0	2	0	**4**	**267**
4:15PM	1	110	0	0	**111**	4	1	0	0	**5**	2	128	3	0	**133**	2	0	0	0	**2**	**251**
4:30PM	0	112	0	0	**112**	1	2	0	0	**3**	3	129	2	0	**134**	0	0	0	0	**0**	**249**
4:45PM	0	119	0	0	**119**	0	0	1	0	**1**	1	163	2	0	**166**	2	0	0	0	**2**	**288**
Hourly Total	3	451	0	0	**454**	6	3	1	0	**10**	7	567	9	0	**583**	6	0	2	0	**8**	**1055**
5:00PM	0	154	2	0	**156**	0	0	1	0	**1**	0	124	3	0	**127**	0	2	1	0	**3**	**287**
5:15PM	0	118	2	0	**120**	1	1	0	0	**2**	1	149	1	0	**151**	1	1	0	0	**2**	**275**
5:30PM	1	125	1	0	**127**	1	0	1	0	**2**	1	154	0	0	**155**	3	1	1	0	**5**	**289**
5:45PM	0	110	0	0	**110**	1	0	1	0	**2**	2	178	1	0	**181**	1	0	0	0	**1**	**294**
Hourly Total	1	507	5	0	**513**	3	1	3	0	**7**	4	605	5	0	**614**	5	4	2	0	**11**	**1145**
6:00PM	1	110	1	0	**112**	1	0	0	0	**1**	1	120	0	1	**122**	1	1	0	0	**2**	**237**
6:15PM	3	93	1	0	**97**	1	0	0	0	**1**	1	156	2	0	**159**	0	0	0	0	**0**	**257**
6:30PM	0	101	1	0	**102**	1	0	0	0	**1**	1	131	1	0	**133**	0	0	0	0	**0**	**236**
6:45PM	2	93	0	0	**95**	0	0	0	0	**0**	1	138	0	0	**139**	0	0	0	0	**0**	**234**
Hourly Total	6	397	3	0	**406**	3	0	0	0	**3**	4	545	3	1	**553**	1	1	0	0	**2**	**964**
7:00PM	1	87	0	0	**88**	1	0	1	0	**2**	2	116	0	0	**118**	3	0	0	0	**3**	**211**
7:15PM	1	81	0	0	**82**	1	0	2	0	**3**	1	117	0	0	**118**	1	0	1	0	**2**	**205**
7:30PM	0	97	0	0	**97**	0	0	0	0	**0**	1	86	0	0	**87**	1	1	0	0	**2**	**186**
7:45PM	1	74	0	0	**75**	0	0	0	0	**0**	0	87	0	0	**87**	4	0	0	0	**4**	**166**
Hourly Total	3	339	0	0	**342**	2	0	3	0	**5**	4	406	0	0	**410**	9	1	1	0	**11**	**768**
8:00PM	0	97	0	0	**97**	1	0	0	0	**1**	0	95	0	0	**95**	3	1	0	0	**4**	**197**
8:15PM	0	65	0	0	**65**	0	0	0	0	**0**	0	73	2	0	**75**	2	0	0	0	**2**	**142**
8:30PM	2	71	0	0	**73**	0	0	0	0	**0**	0	66	0	0	**66**	6	0	0	0	**6**	**145**
8:45PM	0	67	0	0	**67**	2	0	0	0	**2**	0	70	3	0	**73**	1	0	0	0	**1**	**143**
Hourly Total	2	300	0	0	**302**	3	0	0	0	**3**	0	304	5	0	**309**	12	1	0	0	**13**	**627**
9:00PM	0	66	2	0	**68**	0	0	0	0	**0**	0	54	0	0	**54**	1	1	0	0	**2**	**124**
9:15PM	0	42	0	0	**42**	0	0	0	0	**0**	0	61	0	0	**61**	0	0	0	0	**0**	**103**
9:30PM	0	39	0	0	**39**	0	0	0	0	**0**	3	47	0	0	**50**	0	0	0	0	**0**	**89**
9:45PM	0	37	0	0	**37**	0	0	0	0	**0**	2	41	0	0	**43**	0	0	0	0	**0**	**80**
Hourly Total	0	184	2	0	**186**	0	0	0	0	**0**	5	203	0	0	**208**	1	1	0	0	**2**	**396**
10:00PM	0	31	1	0	**32**	0	0	1	0	**1**	0	48	0	0	**48**	0	0	0	0	**0**	**81**
10:15PM	0	25	0	0	**25**	0	0	0	0	**0**	0	37	1	0	**38**	0	0	0	0	**0**	**63**
10:30PM	2	23	0	0	**25**	0	0	0	0	**0**	0	21	0	0	**21**	0	0	0	0	**0**	**46**
10:45PM	0	39	0	0	**39**	1	0	0	0	**1**	1	20	0	0	**21**	0	0	0	0	**0**	**61**

Leg	Mass St.					16th St.					Mass St.					16th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	2	118	1	0	**121**	1	0	1	0	**2**	1	126	1	0	**128**	0	0	0	0	**0**	**251**
11:00PM	0	69	0	0	**69**	0	0	1	0	**1**	1	9	0	0	**10**	0	0	0	0	**0**	**80**
11:15PM	0	21	0	0	**21**	0	0	0	0	**0**	0	16	0	0	**16**	0	0	0	0	**0**	**37**
11:30PM	0	18	0	0	**18**	0	0	0	0	**0**	0	9	1	0	**10**	0	0	0	0	**0**	**28**
11:45PM	0	12	0	0	**12**	0	0	0	0	**0**	0	11	0	0	**11**	0	0	0	0	**0**	**23**
Hourly Total	0	120	0	0	**120**	0	0	1	0	**1**	1	45	1	0	**47**	0	0	0	0	**0**	**168**
Total	39	5360	32	0	**5431**	52	17	23	0	**92**	49	6731	39	1	**6820**	73	24	20	0	**117**	**12460**
% Approach	0.7%	98.7%	0.6%	0%	-	56.5%	18.5%	25.0%	0%	-	0.7%	98.7%	0.6%	0%	-	62.4%	20.5%	17.1%	0%	-	-
% Total	0.3%	43.0%	0.3%	0%	**43.6%**	0.4%	0.1%	0.2%	0%	**0.7%**	0.4%	54.0%	0.3%	0%	**54.7%**	0.6%	0.2%	0.2%	0%	**0.9%**	-
Lights	39	5265	31	0	**5335**	52	17	22	0	**91**	48	6599	39	1	**6687**	72	24	19	0	**115**	12228
% Lights	100%	98.2%	96.9%	0%	**98.2%**	100%	100%	95.7%	0%	**98.9%**	98.0%	98.0%	100%	100%	**98.0%**	98.6%	100%	95.0%	0%	**98.3%**	98.1%
Articulated Trucks	0	11	0	0	**11**	0	0	0	0	**0**	0	20	0	0	**20**	0	0	0	0	**0**	31
% Articulated Trucks	0%	0.2%	0%	0%	**0.2%**	0%	0%	0%	0%	**0%**	0%	0.3%	0%	0%	**0.3%**	0%	0%	0%	0%	**0%**	0.2%
Buses and Single-Unit Trucks	0	84	1	0	**85**	0	0	1	0	**1**	1	112	0	0	**113**	1	0	1	0	**2**	201
% Buses and Single-Unit Trucks	0%	1.6%	3.1%	0%	**1.6%**	0%	0%	4.3%	0%	**1.1%**	2.0%	1.7%	0%	0%	**1.7%**	1.4%	0%	5.0%	0%	**1.7%**	1.6%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 16th St. - TMC
Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115727, Location: 38.955231, -95.235887

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 16th St. - TMC

Tue Oct 3, 2023
AM Peak (7:45 AM - 8:45 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115727, Location: 38.955231, -95.235887

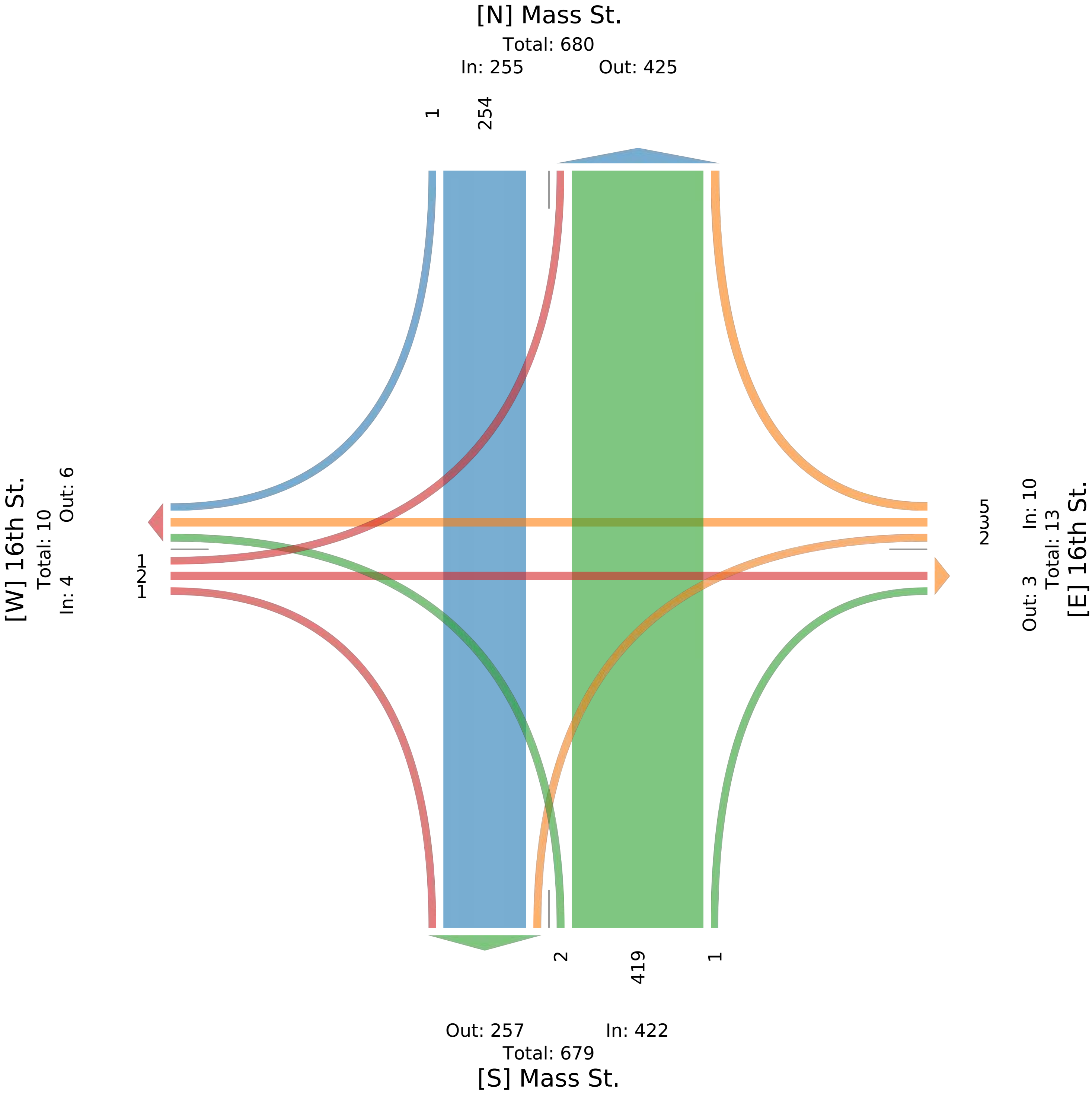
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					16th St.					Mass St.					16th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 7:45AM	0	57	0	0	**57**	2	1	1	0	**4**	1	126	1	0	**128**	0	0	0	0	**0**	**189**
8:00AM	0	86	0	0	**86**	1	1	0	0	**2**	0	117	0	0	**117**	0	1	0	0	**1**	**206**
8:15AM	1	62	0	0	**63**	0	0	1	0	**1**	0	94	1	0	**95**	0	0	1	0	**1**	**160**
8:30AM	0	49	0	0	**49**	2	1	0	0	**3**	0	82	0	0	**82**	1	1	0	0	**2**	**136**
Total	1	254	0	0	**255**	5	3	2	0	**10**	1	419	2	0	**422**	1	2	1	0	**4**	**691**
% Approach	0.4%	99.6%	0%	0%	-	50.0%	30.0%	20.0%	0%	-	0.2%	99.3%	0.5%	0%	-	25.0%	50.0%	25.0%	0%	-	-
% Total	0.1%	36.8%	0%	0%	**36.9%**	0.7%	0.4%	0.3%	0%	**1.4%**	0.1%	60.6%	0.3%	0%	**61.1%**	0.1%	0.3%	0.1%	0%	**0.6%**	-
PHF	0.250	0.738	-	-	**0.741**	0.625	0.750	0.500	-	**0.625**	0.250	0.831	0.500	-	**0.824**	0.250	0.500	0.250	-	**0.500**	0.839
Lights	1	250	0	0	**251**	5	3	2	0	**10**	1	404	2	0	**407**	1	2	1	0	**4**	672
% Lights	100%	98.4%	0%	0%	**98.4%**	100%	100%	100%	0%	**100%**	100%	96.4%	100%	0%	**96.4%**	100%	100%	100%	0%	**100%**	97.3%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	2
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0.5%	0%	0%	**0.5%**	0%	0%	0%	0%	**0%**	0.3%
Buses and Single-Unit Trucks	0	4	0	0	**4**	0	0	0	0	**0**	0	13	0	0	**13**	0	0	0	0	**0**	17
% Buses and Single-Unit Trucks	0%	1.6%	0%	0%	**1.6%**	0%	0%	0%	0%	**0%**	0%	3.1%	0%	0%	**3.1%**	0%	0%	0%	0%	**0%**	2.5%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 16th St. - TMC
Tue Oct 3, 2023
AM Peak (7:45 AM - 8:45 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115727, Location: 38.955231, -95.235887

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 16th St. - TMC

Tue Oct 3, 2023
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115727, Location: 38.955231, -95.235887

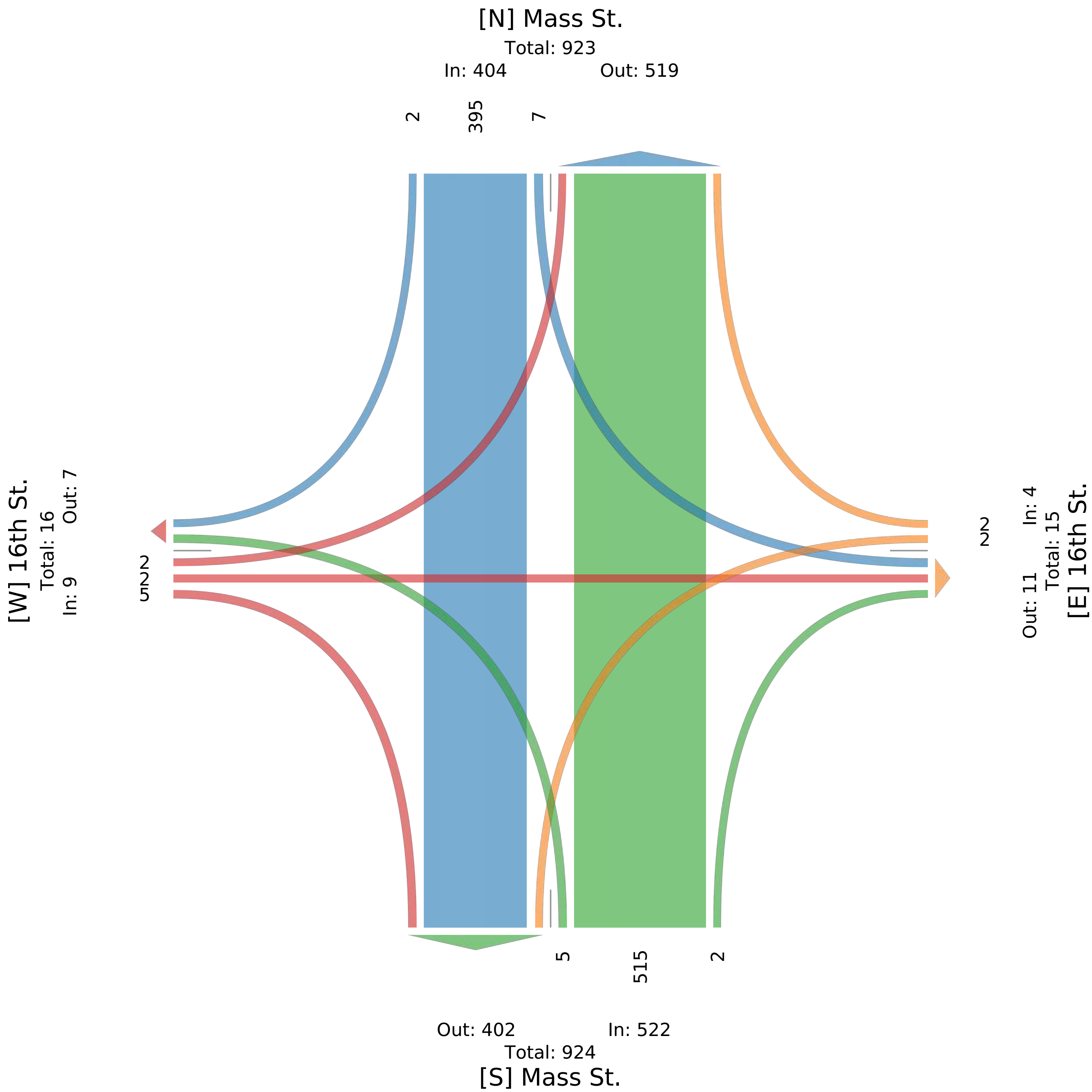
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					16th St.					Mass St.					16th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 12:15PM	0	88	2	0	**90**	1	0	0	0	**1**	0	120	1	0	**121**	0	0	0	0	**0**	**212**
12:30PM	2	104	1	0	**107**	0	0	1	0	**1**	0	130	0	0	**130**	1	2	1	0	**4**	**242**
12:45PM	0	98	2	0	**100**	1	0	1	0	**2**	1	142	3	0	**146**	3	0	0	0	**3**	**251**
1:00PM	0	105	2	0	**107**	0	0	0	0	**0**	1	123	1	0	**125**	1	0	1	0	**2**	**234**
Total	2	395	7	0	**404**	2	0	2	0	**4**	2	515	5	0	**522**	5	2	2	0	**9**	**939**
% Approach	0.5%	97.8%	1.7%	0%	-	50.0%	0%	50.0%	0%	-	0.4%	98.7%	1.0%	0%	-	55.6%	22.2%	22.2%	0%	-	-
% Total	0.2%	42.1%	0.7%	0%	**43.0%**	0.2%	0%	0.2%	0%	**0.4%**	0.2%	54.8%	0.5%	0%	**55.6%**	0.5%	0.2%	0.2%	0%	**1.0%**	-
PHF	0.250	0.940	0.875	-	**0.944**	0.500	-	0.500	-	**0.500**	0.500	0.907	0.417	-	**0.894**	0.417	0.250	0.500	-	**0.563**	0.935
Lights	2	386	7	0	**395**	2	0	2	0	**4**	2	503	5	0	**510**	5	2	2	0	**9**	918
% Lights	100%	97.7%	100%	0%	**97.8%**	100%	0%	100%	0%	**100%**	100%	97.7%	100%	0%	**97.7%**	100%	100%	100%	0%	**100%**	97.8%
Articulated Trucks	0	2	0	0	**2**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	5
% Articulated Trucks	0%	0.5%	0%	0%	**0.5%**	0%	0%	0%	0%	**0%**	0%	0.6%	0%	0%	**0.6%**	0%	0%	0%	0%	**0%**	0.5%
Buses and Single-Unit Trucks	0	7	0	0	**7**	0	0	0	0	**0**	0	9	0	0	**9**	0	0	0	0	**0**	16
% Buses and Single-Unit Trucks	0%	1.8%	0%	0%	**1.7%**	0%	0%	0%	0%	**0%**	0%	1.7%	0%	0%	**1.7%**	0%	0%	0%	0%	**0%**	1.7%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 16th St. - TMC
Tue Oct 3, 2023
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115727, Location: 38.955231, -95.235887

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 16th St. - TMC

Tue Oct 3, 2023
PM Peak (5 PM - 6 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115727, Location: 38.955231, -95.235887

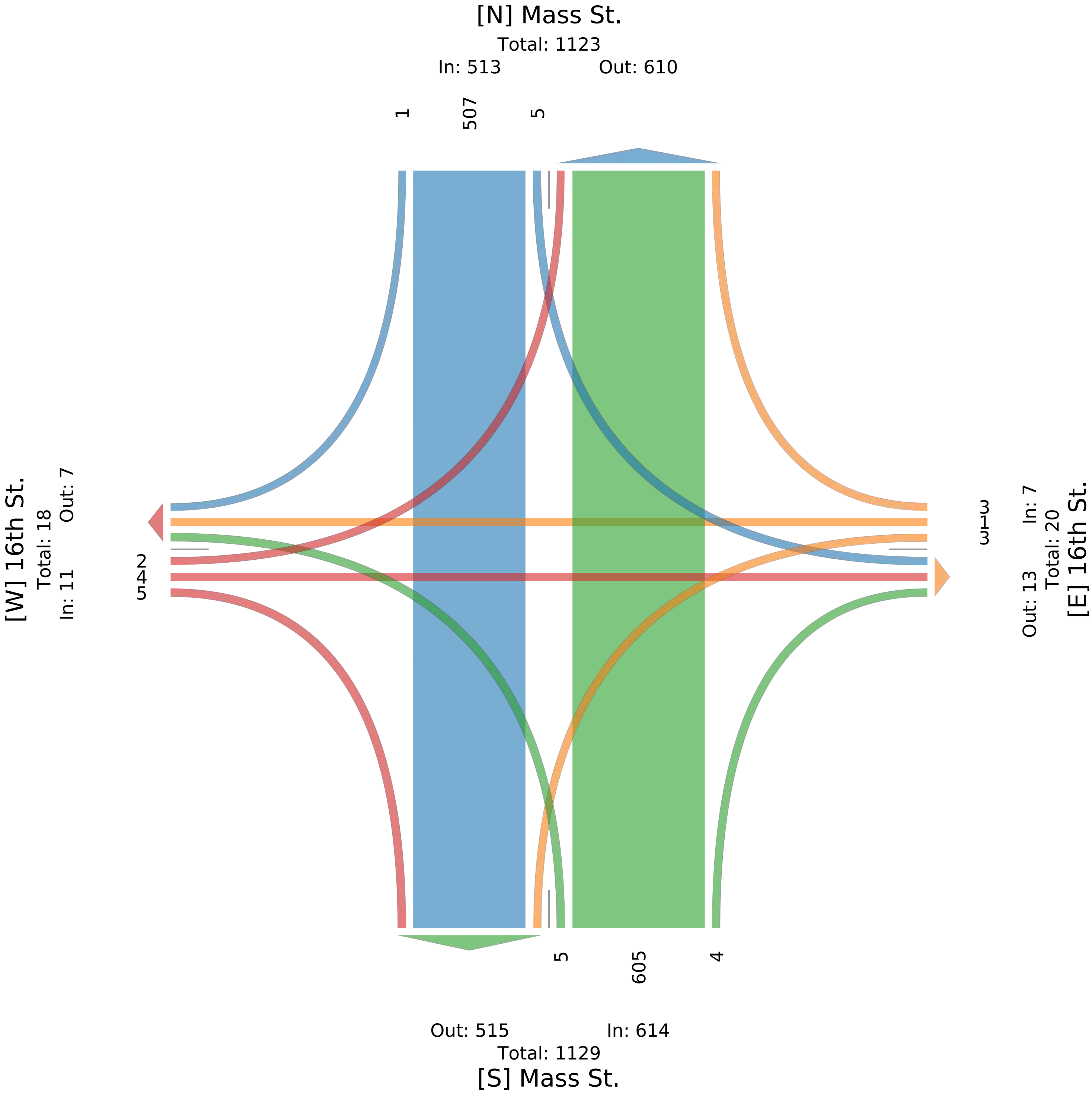
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					16th St.					Mass St.					16th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 5:00PM	0	154	2	0	**156**	0	0	1	0	**1**	0	124	3	0	**127**	0	2	1	0	**3**	**287**
5:15PM	0	118	2	0	**120**	1	1	0	0	**2**	1	149	1	0	**151**	1	1	0	0	**2**	**275**
5:30PM	1	125	1	0	**127**	1	0	1	0	**2**	1	154	0	0	**155**	3	1	1	0	**5**	**289**
5:45PM	0	110	0	0	**110**	1	0	1	0	**2**	2	178	1	0	**181**	1	0	0	0	**1**	**294**
Total	1	507	5	0	**513**	3	1	3	0	**7**	4	605	5	0	**614**	5	4	2	0	**11**	**1145**
% Approach	0.2%	98.8%	1.0%	0%	-	42.9%	14.3%	42.9%	0%	-	0.7%	98.5%	0.8%	0%	-	45.5%	36.4%	18.2%	0%	-	-
% Total	0.1%	44.3%	0.4%	0%	**44.8%**	0.3%	0.1%	0.3%	0%	**0.6%**	0.3%	52.8%	0.4%	0%	**53.6%**	0.4%	0.3%	0.2%	0%	**1.0%**	-
PHF	0.250	0.823	0.625	-	**0.822**	0.750	0.250	0.750	-	**0.875**	0.500	0.850	0.417	-	**0.848**	0.417	0.500	0.500	-	**0.550**	0.974
Lights	1	504	5	0	**510**	3	1	3	0	**7**	4	601	5	0	**610**	5	4	2	0	**11**	1138
% Lights	100%	99.4%	100%	0%	**99.4%**	100%	100%	100%	0%	**100%**	100%	99.3%	100%	0%	**99.3%**	100%	100%	100%	0%	**100%**	99.4%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%
Buses and Single-Unit Trucks	0	3	0	0	**3**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	7
% Buses and Single-Unit Trucks	0%	0.6%	0%	0%	**0.6%**	0%	0%	0%	0%	**0%**	0%	0.7%	0%	0%	**0.7%**	0%	0%	0%	0%	**0%**	0.6%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 16th St. - TMC
Tue Oct 3, 2023
PM Peak (5 PM - 6 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115727, Location: 38.955231, -95.235887

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 17th St. - TMC

Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115737, Location: 38.953647, -95.235916

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					17th St.					Mass St.					17th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 12:00AM	0	4	0	0	**4**	0	0	0	0	**0**	0	8	0	0	**8**	0	0	0	0	**0**	**12**
12:15AM	0	5	0	0	**5**	0	0	0	0	**0**	1	4	0	0	**5**	0	0	0	0	**0**	**10**
12:30AM	1	8	0	0	**9**	0	1	0	0	**1**	0	7	1	0	**8**	0	0	0	0	**0**	**18**
12:45AM	0	4	0	0	**4**	0	0	0	0	**0**	0	8	0	0	**8**	0	0	0	0	**0**	**12**
Hourly Total	1	21	0	0	**22**	0	1	0	0	**1**	1	27	1	0	**29**	0	0	0	0	**0**	**52**
1:00AM	0	4	1	0	**5**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**9**
1:15AM	0	3	0	0	**3**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**7**
1:30AM	0	4	0	0	**4**	0	0	0	0	**0**	0	4	1	0	**5**	0	0	0	0	**0**	**9**
1:45AM	0	5	0	0	**5**	0	0	0	0	**0**	0	4	0	0	**4**	1	0	0	0	**1**	**10**
Hourly Total	0	16	1	0	**17**	0	0	0	0	**0**	0	16	1	0	**17**	1	0	0	0	**1**	**35**
2:00AM	1	6	0	0	**7**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	**10**
2:15AM	1	2	0	0	**3**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**4**
2:30AM	0	4	0	0	**4**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**5**
2:45AM	0	3	0	0	**3**	0	0	0	0	**0**	0	2	1	0	**3**	1	0	0	0	**1**	**7**
Hourly Total	2	15	0	0	**17**	0	0	0	0	**0**	0	7	1	0	**8**	1	0	0	0	**1**	**26**
3:00AM	0	3	0	0	**3**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	**5**
3:15AM	0	2	0	0	**2**	0	0	0	0	**0**	0	2	0	0	**2**	1	0	0	0	**1**	**5**
3:30AM	0	2	1	0	**3**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**4**
3:45AM	0	2	0	0	**2**	1	1	0	0	**2**	0	2	0	0	**2**	1	0	0	0	**1**	**7**
Hourly Total	0	9	1	0	**10**	1	1	0	0	**2**	0	7	0	0	**7**	2	0	0	0	**2**	**21**
4:00AM	0	0	0	0	**0**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**4**
4:15AM	0	2	0	0	**2**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	**5**
4:30AM	1	3	0	0	**4**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**8**
4:45AM	0	5	0	0	**5**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	**8**
Hourly Total	1	10	0	0	**11**	0	0	0	0	**0**	0	14	0	0	**14**	0	0	0	0	**0**	**25**
5:00AM	0	3	0	0	**3**	0	0	0	0	**0**	0	7	1	0	**8**	1	0	0	0	**1**	**12**
5:15AM	0	8	0	0	**8**	0	0	0	0	**0**	0	6	0	0	**6**	1	0	0	0	**1**	**15**
5:30AM	1	11	0	0	**12**	0	0	0	0	**0**	0	12	1	0	**13**	0	0	0	0	**0**	**25**
5:45AM	0	16	0	0	**16**	1	0	0	0	**1**	0	21	0	0	**21**	0	0	1	0	**1**	**39**
Hourly Total	1	38	0	0	**39**	1	0	0	0	**1**	0	46	2	0	**48**	2	0	1	0	**3**	**91**
6:00AM	0	22	0	0	**22**	0	1	0	0	**1**	0	18	0	0	**18**	1	0	0	0	**1**	**42**
6:15AM	0	15	0	0	**15**	0	0	0	0	**0**	0	26	0	0	**26**	0	0	1	0	**1**	**42**
6:30AM	0	22	1	0	**23**	0	0	0	0	**0**	0	24	0	0	**24**	0	0	0	0	**0**	**47**
6:45AM	1	30	0	0	**31**	0	2	1	0	**3**	0	34	0	0	**34**	2	0	1	0	**3**	**71**
Hourly Total	1	89	1	0	**91**	0	3	1	0	**4**	0	102	0	0	**102**	3	0	2	0	**5**	**202**
7:00AM	2	22	0	0	**24**	1	1	1	0	**3**	0	40	2	0	**42**	2	0	1	0	**3**	**72**
7:15AM	2	35	0	0	**37**	0	2	0	0	**2**	2	51	1	0	**54**	2	1	0	0	**3**	**96**
7:30AM	3	46	0	0	**49**	1	3	1	0	**5**	2	77	3	0	**82**	1	1	0	0	**2**	**138**
7:45AM	4	51	1	0	**56**	0	12	5	0	**17**	4	125	2	0	**131**	8	4	1	0	**13**	**217**
Hourly Total	11	154	1	0	**166**	2	18	7	0	**27**	8	293	8	0	**309**	13	6	2	0	**21**	**523**
8:00AM	4	81	0	0	**85**	3	7	1	0	**11**	2	109	1	0	**112**	6	5	4	0	**15**	**223**
8:15AM	0	64	1	0	**65**	3	12	4	0	**19**	1	87	7	0	**95**	7	5	2	0	**14**	**193**
8:30AM	5	47	0	0	**52**	2	5	3	0	**10**	1	79	8	0	**88**	11	4	3	0	**18**	**168**
8:45AM	0	62	1	0	**63**	1	3	4	0	**8**	3	76	4	0	**83**	4	1	2	0	**7**	**161**
Hourly Total	9	254	2	0	**265**	9	27	12	0	**48**	7	351	20	0	**378**	28	15	11	0	**54**	**745**
9:00AM	3	50	0	0	**53**	4	1	1	0	**6**	2	97	2	0	**101**	3	2	4	0	**9**	**169**
9:15AM	1	47	2	0	**50**	0	3	0	0	**3**	2	93	3	0	**98**	1	0	2	0	**3**	**154**
9:30AM	2	64	2	0	**68**	0	0	5	0	**5**	2	103	4	0	**109**	5	1	1	0	**7**	**189**
9:45AM	2	46	1	0	**49**	0	1	2	0	**3**	2	92	4	0	**98**	3	1	1	0	**5**	**155**
Hourly Total	8	207	5	0	**220**	4	5	8	0	**17**	8	385	13	0	**406**	12	4	8	0	**24**	**667**
10:00AM	2	66	1	0	**69**	1	0	1	0	**2**	2	54	2	0	**58**	6	0	0	0	**6**	**135**
10:15AM	1	47	1	0	**49**	2	1	3	0	**6**	2	75	3	0	**80**	5	0	0	0	**5**	**140**
10:30AM	2	57	2	0	**61**	1	1	4	0	**6**	4	82	1	0	**87**	5	2	2	0	**9**	**163**
10:45AM	0	59	0	0	**59**	1	1	3	0	**5**	4	114	2	0	**120**	2	2	1	0	**5**	**189**

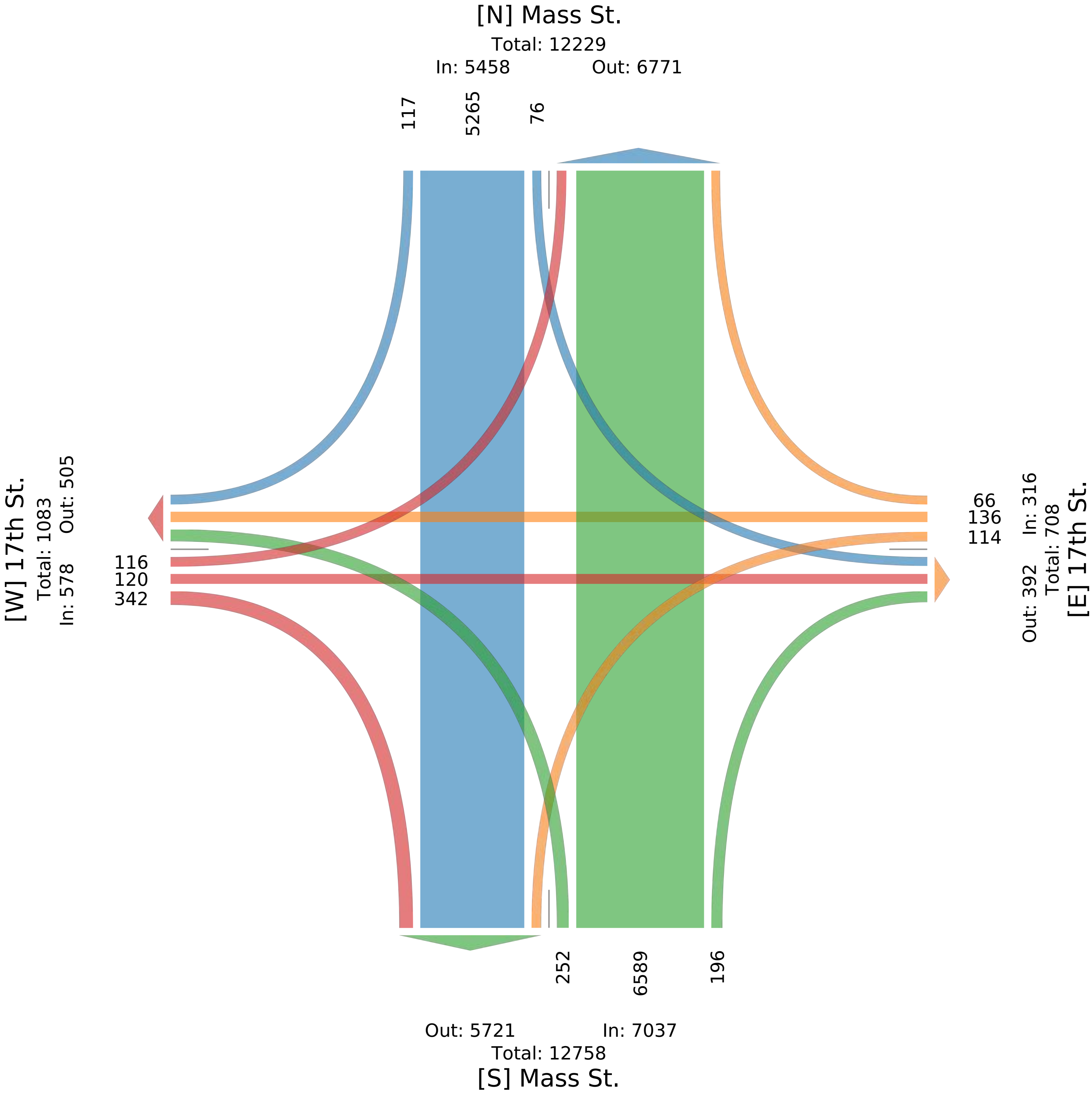
Leg	Mass St.					17th St.					Mass St.					17th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	5	229	4	0	**238**	5	3	11	0	**19**	12	325	8	0	**345**	18	4	3	0	**25**	**627**
11:00AM	2	75	6	0	**83**	1	1	2	0	**4**	4	85	5	0	**94**	6	1	2	0	**9**	**190**
11:15AM	0	79	2	0	**81**	3	1	3	0	**7**	5	96	7	0	**108**	4	0	1	0	**5**	**201**
11:30AM	0	76	3	0	**79**	1	2	2	0	**5**	2	96	1	0	**99**	0	2	1	0	**3**	**186**
11:45AM	0	88	1	0	**89**	0	0	4	0	**4**	4	101	2	0	**107**	6	2	1	0	**9**	**209**
Hourly Total	2	318	12	0	**332**	5	4	11	0	**20**	15	378	15	0	**408**	16	5	5	0	**26**	**786**
12:00PM	1	106	0	0	**107**	1	2	4	0	**7**	4	97	6	0	**107**	4	1	0	0	**5**	**226**
12:15PM	1	90	0	0	**91**	2	2	1	0	**5**	6	117	4	0	**127**	8	3	1	0	**12**	**235**
12:30PM	5	92	4	0	**101**	2	4	2	0	**8**	4	124	5	0	**133**	3	4	2	0	**9**	**251**
12:45PM	2	98	1	0	**101**	2	1	0	0	**3**	4	144	7	0	**155**	7	0	1	0	**8**	**267**
Hourly Total	9	386	5	0	**400**	7	9	7	0	**23**	18	482	22	0	**522**	22	8	4	0	**34**	**979**
1:00PM	3	104	1	0	**108**	0	3	0	0	**3**	4	124	2	0	**130**	4	3	2	0	**9**	**250**
1:15PM	2	77	0	0	**79**	4	2	2	0	**8**	4	96	1	0	**101**	5	1	1	0	**7**	**195**
1:30PM	2	90	1	0	**93**	1	3	0	0	**4**	3	103	3	0	**109**	1	1	2	0	**4**	**210**
1:45PM	1	78	2	0	**81**	2	0	5	0	**7**	2	108	2	0	**112**	5	1	2	0	**8**	**208**
Hourly Total	8	349	4	0	**361**	7	8	7	0	**22**	13	431	8	0	**452**	15	6	7	0	**28**	**863**
2:00PM	0	120	2	0	**122**	0	1	3	0	**4**	4	95	5	0	**104**	5	2	1	0	**8**	**238**
2:15PM	0	86	0	0	**86**	4	3	1	0	**8**	3	98	6	0	**107**	10	2	4	0	**16**	**217**
2:30PM	2	79	1	0	**82**	2	1	2	0	**5**	2	126	3	0	**131**	3	1	3	0	**7**	**225**
2:45PM	0	83	0	0	**83**	2	1	1	0	**4**	6	113	11	0	**130**	1	0	3	0	**4**	**221**
Hourly Total	2	368	3	0	**373**	8	6	7	0	**21**	15	432	25	0	**472**	19	5	11	0	**35**	**901**
3:00PM	5	106	2	0	**113**	1	4	3	0	**8**	3	96	8	0	**107**	3	2	4	0	**9**	**237**
3:15PM	3	99	0	0	**102**	3	2	2	0	**7**	11	143	6	0	**160**	8	5	2	0	**15**	**284**
3:30PM	3	108	1	0	**112**	0	4	4	0	**8**	4	127	7	0	**138**	7	2	3	0	**12**	**270**
3:45PM	2	101	3	0	**106**	1	6	2	0	**9**	5	161	3	0	**169**	8	5	6	0	**19**	**303**
Hourly Total	13	414	6	0	**433**	5	16	11	0	**32**	23	527	24	0	**574**	26	14	15	0	**55**	**1094**
4:00PM	3	105	5	0	**113**	2	2	1	0	**5**	3	128	5	0	**136**	10	7	10	0	**27**	**281**
4:15PM	2	106	3	0	**111**	2	1	4	0	**7**	4	132	6	0	**142**	13	2	1	0	**16**	**276**
4:30PM	3	110	2	0	**115**	2	1	4	0	**7**	4	127	3	0	**134**	9	2	1	0	**12**	**268**
4:45PM	3	112	1	0	**116**	0	1	1	0	**2**	7	164	3	0	**174**	11	3	3	0	**17**	**309**
Hourly Total	11	433	11	0	**455**	6	5	10	0	**21**	18	551	17	0	**586**	43	14	15	0	**72**	**1134**
5:00PM	5	149	5	0	**159**	0	0	0	0	**0**	5	118	2	0	**125**	12	4	2	0	**18**	**302**
5:15PM	4	113	1	0	**118**	0	5	1	0	**6**	6	147	11	0	**164**	9	8	4	0	**21**	**309**
5:30PM	1	127	2	0	**130**	1	4	4	0	**9**	6	152	4	0	**162**	9	8	0	0	**17**	**318**
5:45PM	2	108	1	0	**111**	1	2	4	0	**7**	2	179	1	0	**182**	10	1	4	0	**15**	**315**
Hourly Total	12	497	9	0	**518**	2	11	9	0	**22**	19	596	18	0	**633**	40	21	10	0	**71**	**1244**
6:00PM	2	109	2	0	**113**	0	0	2	0	**2**	6	112	4	0	**122**	4	3	6	0	**13**	**250**
6:15PM	2	91	0	0	**93**	1	2	0	0	**3**	5	155	4	0	**164**	5	2	1	0	**8**	**268**
6:30PM	1	99	1	0	**101**	0	2	0	0	**2**	3	135	7	0	**145**	13	0	0	0	**13**	**261**
6:45PM	1	84	0	0	**85**	1	1	1	0	**3**	4	130	7	0	**141**	7	1	2	0	**10**	**239**
Hourly Total	6	383	3	0	**392**	2	5	3	0	**10**	18	532	22	0	**572**	29	6	9	0	**44**	**1018**
7:00PM	0	94	3	0	**97**	0	1	0	0	**1**	4	110	5	0	**119**	7	0	4	0	**11**	**228**
7:15PM	1	81	1	0	**83**	1	2	1	0	**4**	5	117	6	0	**128**	4	1	1	0	**6**	**221**
7:30PM	5	92	1	0	**98**	1	1	0	0	**2**	2	86	4	0	**92**	8	2	0	0	**10**	**202**
7:45PM	0	77	1	0	**78**	0	1	3	0	**4**	1	89	6	0	**96**	4	1	1	0	**6**	**184**
Hourly Total	6	344	6	0	**356**	2	5	4	0	**11**	12	402	21	0	**435**	23	4	6	0	**33**	**835**
8:00PM	1	102	0	0	**103**	0	1	0	0	**1**	1	92	6	0	**99**	2	1	0	0	**3**	**206**
8:15PM	3	63	0	0	**66**	0	3	1	0	**4**	0	75	3	0	**78**	8	0	1	0	**9**	**157**
8:30PM	0	77	0	0	**77**	0	1	0	0	**1**	2	62	3	0	**67**	4	1	2	0	**7**	**152**
8:45PM	1	68	0	0	**69**	0	1	0	0	**1**	0	75	3	0	**78**	0	0	0	0	**0**	**148**
Hourly Total	5	310	0	0	**315**	0	6	1	0	**7**	3	304	15	0	**322**	14	2	3	0	**19**	**663**
9:00PM	1	66	0	0	**67**	0	0	0	0	**0**	0	52	1	0	**53**	3	0	0	0	**3**	**123**
9:15PM	0	42	0	0	**42**	0	0	1	0	**1**	0	61	3	0	**64**	4	1	1	0	**6**	**113**
9:30PM	0	40	0	0	**40**	0	2	0	0	**2**	3	48	5	0	**56**	4	1	1	0	**6**	**104**
9:45PM	0	37	0	0	**37**	0	0	0	0	**0**	0	44	1	0	**45**	1	1	0	0	**2**	**84**
Hourly Total	1	185	0	0	**186**	0	2	1	0	**3**	3	205	10	0	**218**	12	3	2	0	**17**	**424**
10:00PM	1	30	0	0	**31**	0	0	0	0	**0**	2	46	1	0	**49**	0	0	1	0	**1**	**81**
10:15PM	1	26	0	0	**27**	0	1	1	0	**2**	0	38	0	0	**38**	0	2	0	0	**2**	**69**
10:30PM	0	20	1	0	**21**	0	0	1	0	**1**	0	19	0	0	**19**	0	0	0	0	**0**	**41**
10:45PM	0	40	1	0	**41**	0	0	1	0	**1**	1	21	0	0	**22**	0	0	0	0	**0**	**64**

Leg	Mass St.					17th St.					Mass St.					17th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
Hourly Total	2	116	2	0	**120**	0	1	3	0	**4**	3	124	1	0	**128**	0	2	1	0	**3**	**255**
11:00PM	1	69	0	0	**70**	0	0	0	0	**0**	0	10	0	0	**10**	0	0	0	0	**0**	**80**
11:15PM	0	21	0	0	**21**	0	0	1	0	**1**	0	17	0	0	**17**	1	0	0	0	**1**	**40**
11:30PM	0	18	0	0	**18**	0	0	0	0	**0**	0	15	0	0	**15**	1	1	0	0	**2**	**35**
11:45PM	0	12	0	0	**12**	0	0	0	0	**0**	0	10	0	0	**10**	1	0	1	0	**2**	**24**
Hourly Total	1	120	0	0	**121**	0	0	1	0	**1**	0	52	0	0	**52**	3	1	1	0	**5**	**179**
Total	117	5265	76	0	**5458**	66	136	114	0	**316**	196	6589	252	0	**7037**	342	120	116	0	**578**	**13389**
% Approach	2.1%	96.5%	1.4%	0%	-	20.9%	43.0%	36.1%	0%	-	2.8%	93.6%	3.6%	0%	-	59.2%	20.8%	20.1%	0%	-	-
% Total	0.9%	39.3%	0.6%	0%	**40.8%**	0.5%	1.0%	0.9%	0%	**2.4%**	1.5%	49.2%	1.9%	0%	**52.6%**	2.6%	0.9%	0.9%	0%	**4.3%**	-
Lights	116	5184	69	0	**5369**	61	136	107	0	**304**	193	6470	250	0	**6913**	338	114	114	0	**566**	13152
% Lights	99.1%	98.5%	90.8%	0%	**98.4%**	92.4%	100%	93.9%	0%	**96.2%**	98.5%	98.2%	99.2%	0%	**98.2%**	98.8%	95.0%	98.3%	0%	**97.9%**	98.2%
Articulated Trucks	0	10	0	0	**10**	0	0	0	0	**0**	0	17	0	0	**17**	0	0	0	0	**0**	27
% Articulated Trucks	0%	0.2%	0%	0%	**0.2%**	0%	0%	0%	0%	**0%**	0%	0.3%	0%	0%	**0.2%**	0%	0%	0%	0%	**0%**	0.2%
Buses and Single-Unit Trucks	1	71	7	0	**79**	5	0	7	0	**12**	3	102	2	0	**107**	4	6	2	0	**12**	210
% Buses and Single-Unit Trucks	0.9%	1.3%	9.2%	0%	**1.4%**	7.6%	0%	6.1%	0%	**3.8%**	1.5%	1.5%	0.8%	0%	**1.5%**	1.2%	5.0%	1.7%	0%	**2.1%**	1.6%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 17th St. - TMC
Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115737, Location: 38.953647, -95.235916

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 17th St. - TMC

Tue Oct 3, 2023
AM Peak (7:45 AM - 8:45 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115737, Location: 38.953647, -95.235916

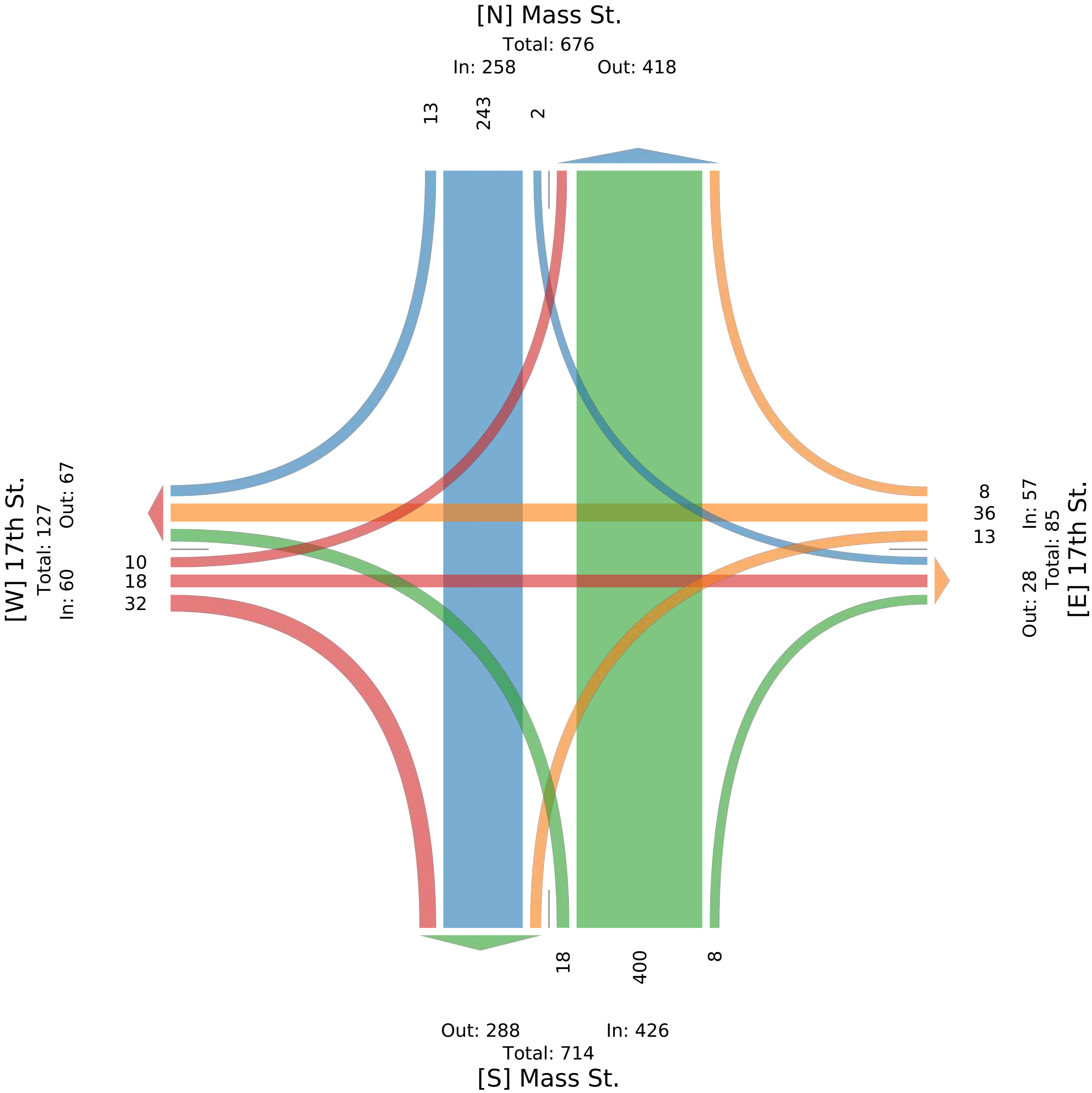
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					17th St.					Mass St.					17th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 7:45AM	4	51	1	0	**56**	0	12	5	0	**17**	4	125	2	0	**131**	8	4	1	0	**13**	**217**
8:00AM	4	81	0	0	**85**	3	7	1	0	**11**	2	109	1	0	**112**	6	5	4	0	**15**	**223**
8:15AM	0	64	1	0	**65**	3	12	4	0	**19**	1	87	7	0	**95**	7	5	2	0	**14**	**193**
8:30AM	5	47	0	0	**52**	2	5	3	0	**10**	1	79	8	0	**88**	11	4	3	0	**18**	**168**
Total	13	243	2	0	**258**	8	36	13	0	**57**	8	400	18	0	**426**	32	18	10	0	**60**	**801**
% Approach	5.0%	94.2%	0.8%	0%	-	14.0%	63.2%	22.8%	0%	-	1.9%	93.9%	4.2%	0%	-	53.3%	30.0%	16.7%	0%	-	-
% Total	1.6%	30.3%	0.2%	0%	**32.2%**	1.0%	4.5%	1.6%	0%	**7.1%**	1.0%	49.9%	2.2%	0%	**53.2%**	4.0%	2.2%	1.2%	0%	**7.5%**	-
PHF	0.650	0.750	0.500	-	**0.759**	0.667	0.750	0.650	-	**0.750**	0.500	0.800	0.563	-	**0.813**	0.727	0.900	0.625	-	**0.833**	0.898
Lights	13	239	2	0	**254**	7	36	13	0	**56**	8	388	18	0	**414**	31	16	10	0	**57**	781
% Lights	100%	98.4%	100%	0%	**98.4%**	87.5%	100%	100%	0%	**98.2%**	100%	97.0%	100%	0%	**97.2%**	96.9%	88.9%	100%	0%	**95.0%**	97.5%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	2
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0.5%	0%	0%	**0.5%**	0%	0%	0%	0%	**0%**	0.2%
Buses and Single-Unit Trucks	0	4	0	0	**4**	1	0	0	0	**1**	0	10	0	0	**10**	1	2	0	0	**3**	18
% Buses and Single-Unit Trucks	0%	1.6%	0%	0%	**1.6%**	12.5%	0%	0%	0%	**1.8%**	0%	2.5%	0%	0%	**2.3%**	3.1%	11.1%	0%	0%	**5.0%**	2.2%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 17th St. - TMC
Tue Oct 3, 2023
AM Peak (7:45 AM - 8:45 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115737, Location: 38.953647, -95.235916

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 17th St. - TMC

Tue Oct 3, 2023
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115737, Location: 38.953647, -95.235916

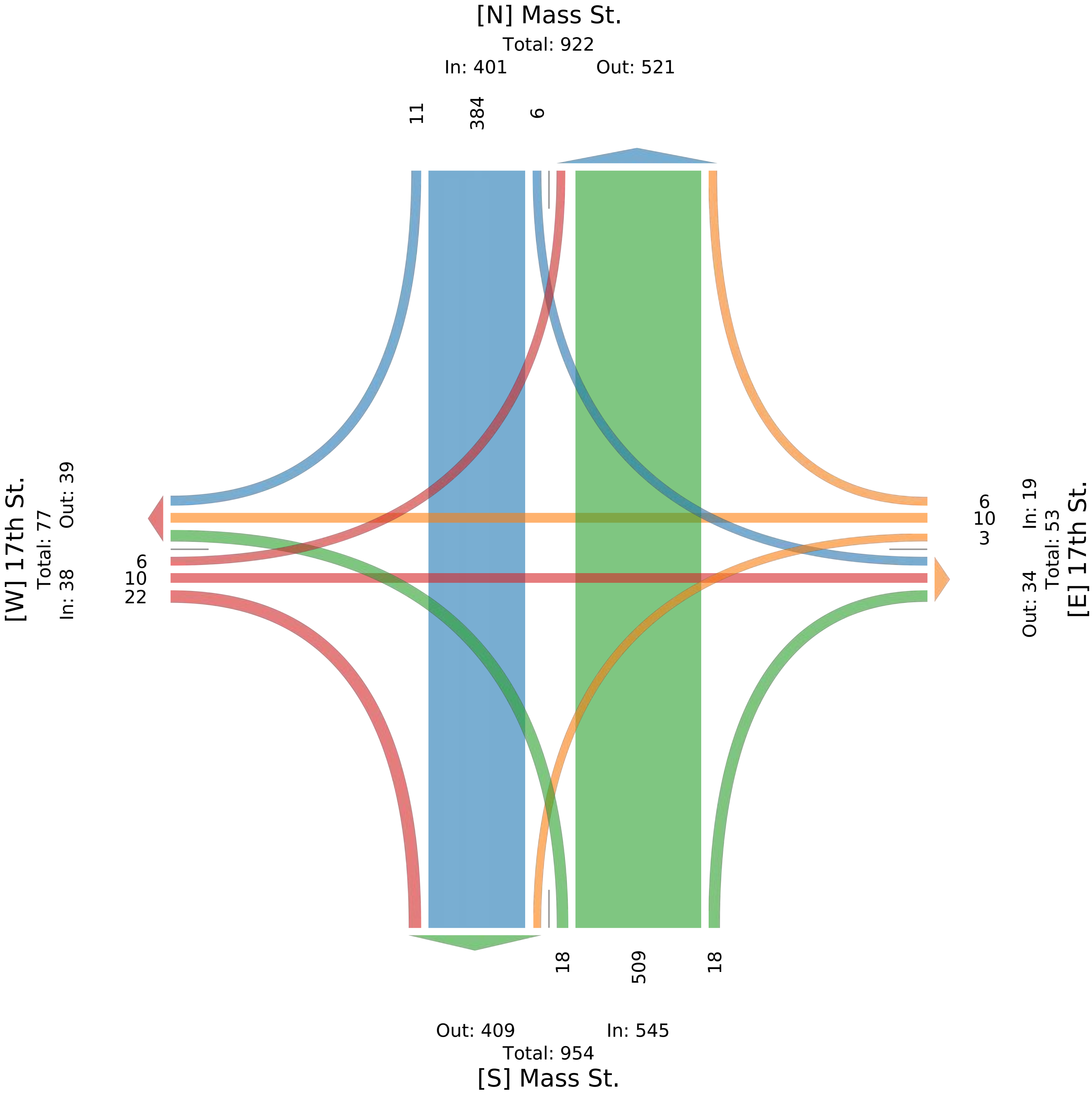
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					17th St.					Mass St.					17th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 12:15PM	1	90	0	0	**91**	2	2	1	0	**5**	6	117	4	0	**127**	8	3	1	0	**12**	**235**
12:30PM	5	92	4	0	**101**	2	4	2	0	**8**	4	124	5	0	**133**	3	4	2	0	**9**	**251**
12:45PM	2	98	1	0	**101**	2	1	0	0	**3**	4	144	7	0	**155**	7	0	1	0	**8**	**267**
1:00PM	3	104	1	0	**108**	0	3	0	0	**3**	4	124	2	0	**130**	4	3	2	0	**9**	**250**
Total	11	384	6	0	**401**	6	10	3	0	**19**	18	509	18	0	**545**	22	10	6	0	**38**	**1003**
% Approach	2.7%	95.8%	1.5%	0%	-	31.6%	52.6%	15.8%	0%	-	3.3%	93.4%	3.3%	0%	-	57.9%	26.3%	15.8%	0%	-	-
% Total	1.1%	38.3%	0.6%	0%	**40.0%**	0.6%	1.0%	0.3%	0%	**1.9%**	1.8%	50.7%	1.8%	0%	**54.3%**	2.2%	1.0%	0.6%	0%	**3.8%**	-
PHF	0.550	0.923	0.375	-	**0.928**	0.750	0.625	0.375	-	**0.594**	0.750	0.884	0.643	-	**0.879**	0.688	0.625	0.750	-	**0.792**	0.939
Lights	11	377	5	0	**393**	6	10	3	0	**19**	18	500	18	0	**536**	22	10	6	0	**38**	986
% Lights	100%	98.2%	83.3%	0%	**98.0%**	100%	100%	100%	0%	**100%**	100%	98.2%	100%	0%	**98.3%**	100%	100%	100%	0%	**100%**	98.3%
Articulated Trucks	0	1	0	0	**1**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	3
% Articulated Trucks	0%	0.3%	0%	0%	**0.2%**	0%	0%	0%	0%	**0%**	0%	0.4%	0%	0%	**0.4%**	0%	0%	0%	0%	**0%**	0.3%
Buses and Single-Unit Trucks	0	6	1	0	**7**	0	0	0	0	**0**	0	7	0	0	**7**	0	0	0	0	**0**	14
% Buses and Single-Unit Trucks	0%	1.6%	16.7%	0%	**1.7%**	0%	0%	0%	0%	**0%**	0%	1.4%	0%	0%	**1.3%**	0%	0%	0%	0%	**0%**	1.4%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 17th St. - TMC
Tue Oct 3, 2023
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115737, Location: 38.953647, -95.235916

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 17th St. - TMC

Tue Oct 3, 2023
PM Peak (5 PM - 6 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115737, Location: 38.953647, -95.235916

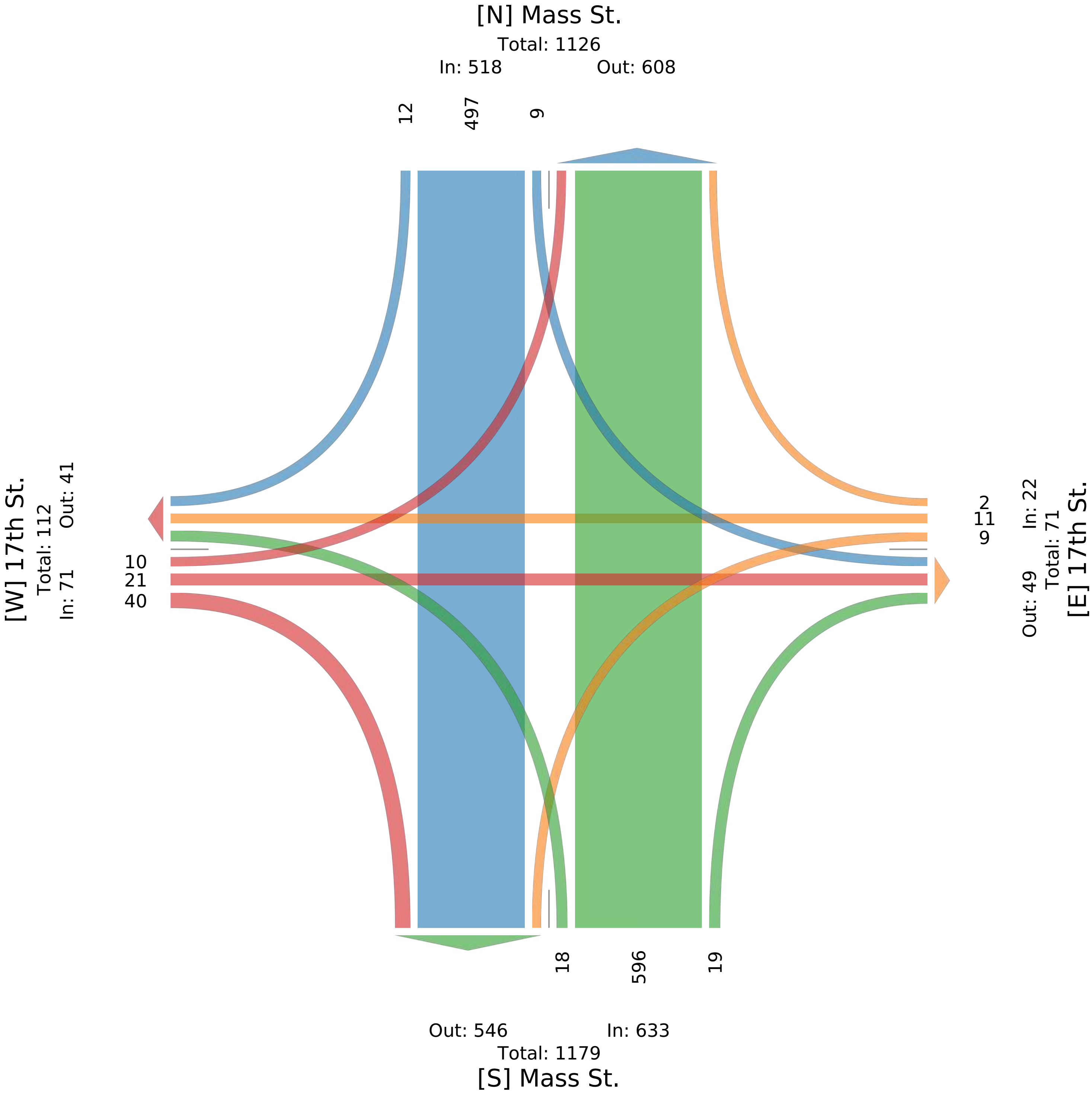
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					17th St.					Mass St.					17th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 5:00PM	5	149	5	0	**159**	0	0	0	0	**0**	5	118	2	0	**125**	12	4	2	0	**18**	**302**
5:15PM	4	113	1	0	**118**	0	5	1	0	**6**	6	147	11	0	**164**	9	8	4	0	**21**	**309**
5:30PM	1	127	2	0	**130**	1	4	4	0	**9**	6	152	4	0	**162**	9	8	0	0	**17**	**318**
5:45PM	2	108	1	0	**111**	1	2	4	0	**7**	2	179	1	0	**182**	10	1	4	0	**15**	**315**
Total	12	497	9	0	**518**	2	11	9	0	**22**	19	596	18	0	**633**	40	21	10	0	**71**	**1244**
% Approach	2.3%	95.9%	1.7%	0%	-	9.1%	50.0%	40.9%	0%	-	3.0%	94.2%	2.8%	0%	-	56.3%	29.6%	14.1%	0%	-	-
% Total	1.0%	40.0%	0.7%	0%	**41.6%**	0.2%	0.9%	0.7%	0%	**1.8%**	1.5%	47.9%	1.4%	0%	**50.9%**	3.2%	1.7%	0.8%	0%	**5.7%**	-
PHF	0.600	0.834	0.450	-	**0.814**	0.500	0.550	0.563	-	**0.611**	0.792	0.832	0.409	-	**0.870**	0.833	0.656	0.625	-	**0.845**	0.978
Lights	12	495	9	0	**516**	2	11	9	0	**22**	19	592	18	0	**629**	40	21	10	0	**71**	1238
% Lights	100%	99.6%	100%	0%	**99.6%**	100%	100%	100%	0%	**100%**	100%	99.3%	100%	0%	**99.4%**	100%	100%	100%	0%	**100%**	99.5%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%
Buses and Single-Unit Trucks	0	2	0	0	**2**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	6
% Buses and Single-Unit Trucks	0%	0.4%	0%	0%	**0.4%**	0%	0%	0%	0%	**0%**	0%	0.7%	0%	0%	**0.6%**	0%	0%	0%	0%	**0%**	0.5%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 17th St. - TMC
Tue Oct 3, 2023
PM Peak (5 PM - 6 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115737, Location: 38.953647, -95.235916

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 19th St. - TMC
Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115740, Location: 38.950073, -95.235901

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					19th St.					Mass St.					19th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 12:00AM	1	2	0	0	**3**	1	7	1	0	**9**	1	7	0	0	**8**	2	6	2	0	**10**	**30**
12:15AM	1	5	0	0	**6**	0	3	2	0	**5**	0	3	5	0	**8**	2	8	1	0	**11**	**30**
12:30AM	0	5	1	0	**6**	2	4	0	0	**6**	1	2	0	0	**3**	2	3	0	0	**5**	**20**
12:45AM	1	3	0	0	**4**	0	2	0	0	**2**	0	6	1	0	**7**	0	12	0	0	**12**	**25**
Hourly Total	3	15	1	0	**19**	3	16	3	0	**22**	2	18	6	0	**26**	6	29	3	0	**38**	**105**
1:00AM	0	2	1	0	**3**	1	5	1	0	**7**	0	2	0	0	**2**	0	4	2	0	**6**	**18**
1:15AM	1	1	0	0	**2**	0	6	0	0	**6**	0	3	1	0	**4**	1	3	1	0	**5**	**17**
1:30AM	3	1	1	0	**5**	3	4	0	0	**7**	0	0	0	0	**0**	0	0	2	0	**2**	**14**
1:45AM	4	2	0	0	**6**	0	4	1	0	**5**	1	3	0	0	**4**	0	5	0	0	**5**	**20**
Hourly Total	8	6	2	0	**16**	4	19	2	0	**25**	1	8	1	0	**10**	1	12	5	0	**18**	**69**
2:00AM	0	5	0	0	**5**	0	2	0	0	**2**	1	3	2	0	**6**	0	2	0	0	**2**	**15**
2:15AM	0	2	0	0	**2**	0	2	0	0	**2**	0	1	0	0	**1**	0	1	0	0	**1**	**6**
2:30AM	0	3	0	0	**3**	1	3	1	0	**5**	0	0	0	0	**0**	0	0	0	0	**0**	**8**
2:45AM	0	1	1	0	**2**	1	1	0	0	**2**	0	3	0	0	**3**	0	1	0	0	**1**	**8**
Hourly Total	0	11	1	0	**12**	2	8	1	0	**11**	1	7	2	0	**10**	0	4	0	0	**4**	**37**
3:00AM	0	0	0	0	**0**	0	2	1	0	**3**	0	0	0	0	**0**	0	2	1	0	**3**	**6**
3:15AM	0	2	2	0	**4**	1	2	0	0	**3**	3	2	1	0	**6**	0	1	0	0	**1**	**14**
3:30AM	1	0	1	0	**2**	0	2	1	0	**3**	0	1	0	0	**1**	1	5	0	0	**6**	**12**
3:45AM	0	2	0	0	**2**	0	4	0	0	**4**	0	1	0	0	**1**	1	0	1	0	**2**	**9**
Hourly Total	1	4	3	0	**8**	1	10	2	0	**13**	3	4	1	0	**8**	2	8	2	0	**12**	**41**
4:00AM	0	0	0	0	**0**	0	1	0	0	**1**	1	1	0	0	**2**	1	6	4	0	**11**	**14**
4:15AM	0	1	1	0	**2**	1	2	2	0	**5**	0	0	0	0	**0**	0	1	0	0	**1**	**8**
4:30AM	0	2	1	0	**3**	1	6	0	0	**7**	1	3	1	0	**5**	0	4	0	0	**4**	**19**
4:45AM	0	4	0	0	**4**	0	10	1	0	**11**	1	1	0	0	**2**	1	7	1	0	**9**	**26**
Hourly Total	0	7	2	0	**9**	2	19	3	0	**24**	3	5	1	0	**9**	2	18	5	0	**25**	**67**
5:00AM	1	1	1	0	**3**	2	7	0	0	**9**	1	5	1	0	**7**	1	4	1	0	**6**	**25**
5:15AM	1	6	2	0	**9**	1	7	1	0	**9**	0	4	1	0	**5**	3	13	2	0	**18**	**41**
5:30AM	0	6	2	0	**8**	2	16	1	0	**19**	0	8	2	0	**10**	1	19	4	0	**24**	**61**
5:45AM	2	9	3	0	**14**	3	27	3	0	**33**	4	16	2	0	**22**	1	15	1	0	**17**	**86**
Hourly Total	4	22	8	0	**34**	8	57	5	0	**70**	5	33	6	0	**44**	6	51	8	0	**65**	**213**
6:00AM	1	13	7	0	**21**	4	17	3	0	**24**	5	15	5	0	**25**	4	20	1	0	**25**	**95**
6:15AM	4	9	3	0	**16**	5	23	1	0	**29**	7	15	3	0	**25**	5	31	2	0	**38**	**108**
6:30AM	4	11	6	0	**21**	3	24	6	0	**33**	6	19	7	0	**32**	2	36	1	0	**39**	**125**
6:45AM	4	20	6	0	**30**	10	37	8	0	**55**	5	16	11	0	**32**	6	34	5	0	**45**	**162**
Hourly Total	13	53	22	0	**88**	22	101	18	0	**141**	23	65	26	0	**114**	17	121	9	0	**147**	**490**
7:00AM	6	10	8	0	**24**	8	61	7	0	**76**	9	31	8	0	**48**	6	53	8	0	**67**	**215**
7:15AM	7	18	12	0	**37**	7	71	6	0	**84**	5	38	11	0	**54**	3	47	12	0	**62**	**237**
7:30AM	15	23	7	0	**45**	9	119	7	0	**135**	5	46	16	0	**67**	8	76	17	0	**101**	**348**
7:45AM	17	33	17	0	**67**	12	116	11	0	**139**	6	102	13	0	**121**	10	106	28	0	**144**	**471**
Hourly Total	45	84	44	0	**173**	36	367	31	0	**434**	25	217	48	0	**290**	27	282	65	0	**374**	**1271**
8:00AM	20	41	19	0	**80**	9	123	14	0	**146**	11	60	17	0	**88**	10	83	20	0	**113**	**427**
8:15AM	18	41	12	0	**71**	14	79	9	0	**102**	9	63	15	0	**87**	7	55	10	0	**72**	**332**
8:30AM	9	28	26	1	**64**	17	100	12	0	**129**	6	40	16	0	**62**	10	51	15	0	**76**	**331**
8:45AM	21	39	11	0	**71**	12	92	12	0	**116**	8	57	14	0	**79**	9	84	22	0	**115**	**381**
Hourly Total	68	149	68	1	**286**	52	394	47	0	**493**	34	220	62	0	**316**	36	273	67	0	**376**	**1471**
9:00AM	21	30	13	0	**64**	14	92	7	0	**113**	3	55	6	0	**64**	13	56	14	0	**83**	**324**
9:15AM	9	26	12	0	**47**	18	83	8	0	**109**	7	47	12	0	**66**	8	59	22	0	**89**	**311**
9:30AM	12	38	11	0	**61**	11	66	12	0	**89**	11	59	7	0	**77**	6	34	13	0	**53**	**280**
9:45AM	8	24	9	0	**41**	14	68	11	0	**93**	4	61	10	0	**75**	6	58	19	0	**83**	**292**
Hourly Total	50	118	45	0	**213**	57	309	38	0	**404**	25	222	35	0	**282**	33	207	68	0	**308**	**1207**
10:00AM	20	43	13	0	**76**	12	50	10	0	**72**	7	28	8	0	**43**	11	37	8	0	**56**	**247**
10:15AM	10	27	11	0	**48**	13	70	14	0	**97**	8	46	12	0	**66**	13	44	12	0	**69**	**280**
10:30AM	16	41	9	0	**66**	14	73	16	0	**103**	6	39	6	0	**51**	11	38	16	0	**65**	**285**
10:45AM	18	30	10	0	**58**	17	69	4	0	**90**	7	66	10	0	**83**	8	44	22	0	**74**	**305**

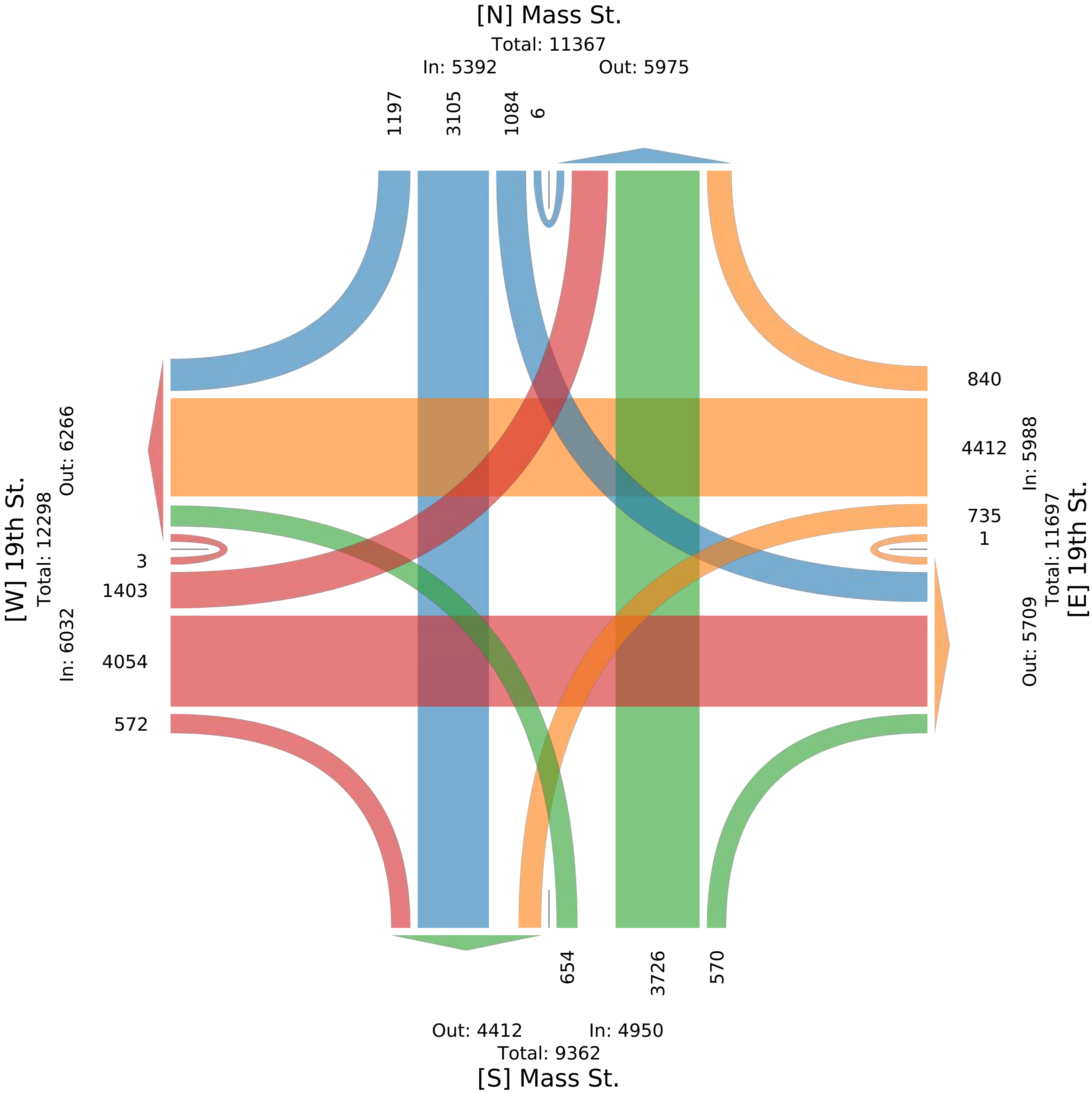
Leg	Mass St.					19th St.					Mass St.					19th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	64	141	43	0	**248**	56	262	44	0	**362**	28	179	36	0	**243**	43	163	58	0	**264**	**1117**
11:00AM	17	32	10	0	**59**	15	41	13	0	**69**	6	47	5	0	**58**	6	75	17	0	**98**	**284**
11:15AM	20	53	22	0	**95**	20	62	10	0	**92**	8	48	12	0	**68**	2	54	22	0	**78**	**333**
11:30AM	21	36	13	0	**70**	13	64	9	0	**86**	3	63	7	0	**73**	9	59	22	0	**90**	**319**
11:45AM	23	59	15	0	**97**	13	65	12	0	**90**	12	51	11	0	**74**	8	69	22	0	**99**	**360**
Hourly Total	81	180	60	0	**321**	61	232	44	0	**337**	29	209	35	0	**273**	25	257	83	0	**365**	**1296**
12:00PM	17	55	22	1	**95**	23	72	22	0	**117**	18	50	9	0	**77**	7	64	23	0	**94**	**383**
12:15PM	21	60	18	0	**99**	16	71	13	1	**101**	13	62	8	0	**83**	14	59	30	1	**104**	**387**
12:30PM	17	49	28	0	**94**	18	65	11	0	**94**	7	74	9	0	**90**	8	71	27	0	**106**	**384**
12:45PM	20	54	21	0	**95**	17	57	11	0	**85**	14	79	12	0	**105**	15	66	28	0	**109**	**394**
Hourly Total	75	218	89	1	**383**	74	265	57	1	**397**	52	265	38	0	**355**	44	260	108	1	**413**	**1548**
1:00PM	21	62	18	0	**101**	11	55	18	0	**84**	11	75	4	0	**90**	7	64	17	0	**88**	**363**
1:15PM	13	50	25	0	**88**	11	51	9	0	**71**	8	54	9	0	**71**	6	56	24	0	**86**	**316**
1:30PM	10	64	13	0	**87**	16	76	15	0	**107**	11	50	12	0	**73**	10	61	21	0	**92**	**359**
1:45PM	22	37	13	0	**72**	20	67	9	0	**96**	10	55	10	0	**75**	11	66	18	1	**96**	**339**
Hourly Total	66	213	69	0	**348**	58	249	51	0	**358**	40	234	35	0	**309**	34	247	80	1	**362**	**1377**
2:00PM	28	72	23	0	**123**	11	74	18	0	**103**	11	56	6	0	**73**	4	73	22	0	**99**	**398**
2:15PM	27	48	18	0	**93**	3	68	13	0	**84**	12	49	10	0	**71**	12	84	25	0	**121**	**369**
2:30PM	18	47	17	1	**83**	13	78	16	0	**107**	5	74	11	0	**90**	8	88	29	0	**125**	**405**
2:45PM	25	44	16	0	**85**	19	69	11	0	**99**	10	48	10	0	**68**	11	63	40	0	**114**	**366**
Hourly Total	98	211	74	1	**384**	46	289	58	0	**393**	38	227	37	0	**302**	35	308	116	0	**459**	**1538**
3:00PM	22	59	20	0	**101**	14	91	22	0	**127**	16	74	12	0	**102**	11	72	15	0	**98**	**428**
3:15PM	14	54	19	1	**88**	14	79	12	0	**105**	10	78	15	0	**103**	14	95	35	0	**144**	**440**
3:30PM	25	66	28	0	**119**	8	83	13	0	**104**	10	59	12	0	**81**	15	67	34	0	**116**	**420**
3:45PM	16	57	24	0	**97**	19	72	17	0	**108**	7	98	16	0	**121**	11	78	40	0	**129**	**455**
Hourly Total	77	236	91	1	**405**	55	325	64	0	**444**	43	309	55	0	**407**	51	312	124	0	**487**	**1743**
4:00PM	26	78	22	0	**126**	18	73	9	0	**100**	19	66	8	0	**93**	12	114	32	0	**158**	**477**
4:15PM	25	59	28	0	**112**	10	83	15	0	**108**	12	77	10	0	**99**	10	100	32	0	**142**	**461**
4:30PM	15	76	18	0	**109**	14	81	17	0	**112**	12	58	14	0	**84**	14	73	30	0	**117**	**422**
4:45PM	33	59	28	0	**120**	11	90	13	0	**114**	13	103	10	0	**126**	9	90	33	0	**132**	**492**
Hourly Total	99	272	96	0	**467**	53	327	54	0	**434**	56	304	42	0	**402**	45	377	127	0	**549**	**1852**
5:00PM	32	82	27	0	**141**	11	116	15	0	**142**	8	70	8	0	**86**	14	120	30	0	**164**	**533**
5:15PM	27	67	25	0	**119**	26	95	15	0	**136**	10	77	11	0	**98**	9	98	38	0	**145**	**498**
5:30PM	25	65	30	0	**120**	10	90	20	0	**120**	12	77	13	0	**102**	12	100	43	1	**156**	**498**
5:45PM	32	68	33	0	**133**	19	94	15	0	**128**	7	77	7	0	**91**	9	72	44	0	**125**	**477**
Hourly Total	116	282	115	0	**513**	66	395	65	0	**526**	37	301	39	0	**377**	44	390	155	1	**590**	**2006**
6:00PM	20	66	20	0	**106**	10	95	13	0	**118**	16	55	9	0	**80**	10	69	28	0	**107**	**411**
6:15PM	22	66	18	1	**107**	13	74	19	0	**106**	9	88	8	0	**105**	9	63	28	0	**100**	**418**
6:30PM	25	62	11	0	**98**	17	60	14	0	**91**	14	60	10	0	**84**	7	55	27	0	**89**	**362**
6:45PM	24	41	23	0	**88**	14	60	12	0	**86**	13	68	10	0	**91**	6	65	23	0	**94**	**359**
Hourly Total	91	235	72	1	**399**	54	289	58	0	**401**	52	271	37	0	**360**	32	252	106	0	**390**	**1550**
7:00PM	18	46	20	0	**84**	14	36	15	0	**65**	9	65	19	0	**93**	12	41	25	0	**78**	**320**
7:15PM	21	43	15	0	**79**	22	37	6	0	**65**	8	62	8	0	**78**	8	49	25	0	**82**	**304**
7:30PM	24	57	14	0	**95**	8	46	2	0	**56**	5	69	4	0	**78**	5	35	19	0	**59**	**288**
7:45PM	22	36	23	0	**81**	11	32	7	0	**50**	3	41	9	0	**53**	6	47	15	0	**68**	**252**
Hourly Total	85	182	72	0	**339**	55	151	30	0	**236**	25	237	40	0	**302**	31	172	84	0	**287**	**1164**
8:00PM	22	67	13	1	**103**	12	29	13	0	**54**	6	47	8	0	**61**	8	44	18	0	**70**	**288**
8:15PM	19	44	13	0	**76**	4	46	6	0	**56**	6	43	5	0	**54**	4	32	11	0	**47**	**233**
8:30PM	10	41	16	0	**67**	8	36	1	0	**45**	2	40	7	0	**49**	1	24	13	0	**38**	**199**
8:45PM	20	36	11	0	**67**	13	27	8	0	**48**	8	29	5	0	**42**	8	21	18	0	**47**	**204**
Hourly Total	71	188	53	1	**313**	37	138	28	0	**203**	22	159	25	0	**206**	21	121	60	0	**202**	**924**
9:00PM	16	34	10	0	**60**	7	26	5	0	**38**	6	25	7	0	**38**	2	23	9	0	**34**	**170**
9:15PM	13	25	3	0	**41**	5	23	5	0	**33**	3	41	6	0	**50**	5	27	8	0	**40**	**164**
9:30PM	9	26	7	0	**42**	4	23	1	0	**28**	3	25	6	0	**34**	5	32	17	0	**54**	**158**
9:45PM	5	22	9	0	**36**	4	20	1	0	**25**	2	28	2	0	**32**	3	15	2	0	**20**	**113**
Hourly Total	43	107	29	0	**179**	20	92	12	0	**124**	14	119	21	0	**154**	15	97	36	0	**148**	**605**
10:00PM	7	22	4	0	**33**	4	18	2	0	**24**	3	30	7	0	**40**	4	14	7	0	**25**	**122**
10:15PM	2	19	2	0	**23**	3	19	4	0	**26**	2	29	4	0	**35**	6	11	5	0	**22**	**106**
10:30PM	7	11	2	0	**20**	2	15	2	0	**19**	3	12	2	0	**17**	2	14	2	0	**18**	**74**
10:45PM	5	32	2	0	**39**	3	12	1	0	**16**	1	18	3	0	**22**	3	10	4	0	**17**	**94**

Leg	Mass St.					19th St.					Mass St.					19th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
Hourly Total	21	84	10	0	**115**	12	64	9	0	**85**	9	89	16	0	**114**	15	49	18	0	**82**	**396**
11:00PM	6	55	8	0	**69**	1	11	2	0	**14**	0	4	5	0	**9**	1	12	3	0	**16**	**108**
11:15PM	6	17	2	0	**25**	1	7	3	0	**11**	1	7	0	0	**8**	2	10	7	0	**19**	**63**
11:30PM	3	9	4	0	**16**	4	7	2	0	**13**	2	8	0	0	**10**	3	12	4	0	**19**	**58**
11:45PM	3	6	1	0	**10**	0	9	4	0	**13**	0	5	5	0	**10**	1	10	2	0	**13**	**46**
Hourly Total	18	87	15	0	**120**	6	34	11	0	**51**	3	24	10	0	**37**	7	44	16	0	**67**	**275**
Total	1197	3105	1084	6	**5392**	840	4412	735	1	**5988**	570	3726	654	0	**4950**	572	4054	1403	3	**6032**	**22362**
% Approach	22.2%	57.6%	20.1%	0.1%	-	14.0%	73.7%	12.3%	0%	-	11.5%	75.3%	13.2%	0%	-	9.5%	67.2%	23.3%	0%	-	-
% Total	5.4%	13.9%	4.8%	0%	**24.1%**	3.8%	19.7%	3.3%	0%	**26.8%**	2.5%	16.7%	2.9%	0%	**22.1%**	2.6%	18.1%	6.3%	0%	**27.0%**	-
Lights	1163	3048	1067	6	**5284**	823	4290	726	1	**5840**	553	3657	621	0	**4831**	563	3927	1361	3	**5854**	21809
% Lights	97.2%	98.2%	98.4%	100%	**98.0%**	98.0%	97.2%	98.8%	100%	**97.5%**	97.0%	98.1%	95.0%	0%	**97.6%**	98.4%	96.9%	97.0%	100%	**97.0%**	97.5%
Articulated Trucks	0	11	0	0	**11**	2	7	2	0	**11**	3	14	3	0	**20**	2	6	2	0	**10**	52
% Articulated Trucks	0%	0.4%	0%	0%	**0.2%**	0.2%	0.2%	0.3%	0%	**0.2%**	0.5%	0.4%	0.5%	0%	**0.4%**	0.3%	0.1%	0.1%	0%	**0.2%**	0.2%
Buses and Single-Unit Trucks	34	46	17	0	**97**	15	115	7	0	**137**	14	55	30	0	**99**	7	121	40	0	**168**	501
% Buses and Single-Unit Trucks	2.8%	1.5%	1.6%	0%	**1.8%**	1.8%	2.6%	1.0%	0%	**2.3%**	2.5%	1.5%	4.6%	0%	**2.0%**	1.2%	3.0%	2.9%	0%	**2.8%**	2.2%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 19th St. - TMC
Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115740, Location: 38.950073, -95.235901

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 19th St. - TMC

Tue Oct 3, 2023
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115740, Location: 38.950073, -95.235901

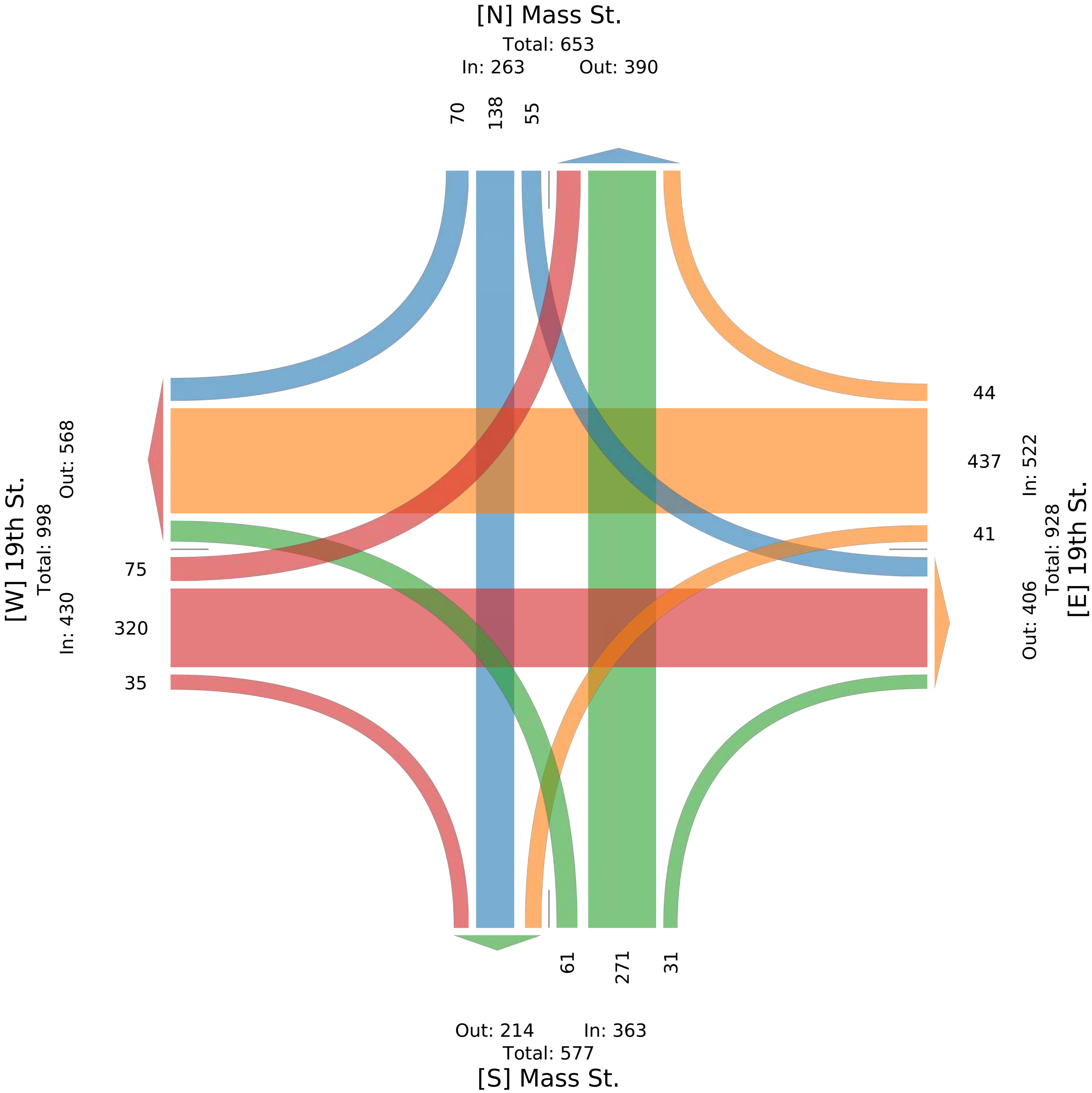
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					19th St.					Mass St.					19th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 7:30AM	15	23	7	0	**45**	9	119	7	0	**135**	5	46	16	0	**67**	8	76	17	0	**101**	**348**
7:45AM	17	33	17	0	**67**	12	116	11	0	**139**	6	102	13	0	**121**	10	106	28	0	**144**	**471**
8:00AM	20	41	19	0	**80**	9	123	14	0	**146**	11	60	17	0	**88**	10	83	20	0	**113**	**427**
8:15AM	18	41	12	0	**71**	14	79	9	0	**102**	9	63	15	0	**87**	7	55	10	0	**72**	**332**
Total	70	138	55	0	**263**	44	437	41	0	**522**	31	271	61	0	**363**	35	320	75	0	**430**	**1578**
% Approach	26.6%	52.5%	20.9%	0%	-	8.4%	83.7%	7.9%	0%	-	8.5%	74.7%	16.8%	0%	-	8.1%	74.4%	17.4%	0%	-	-
% Total	4.4%	8.7%	3.5%	0%	**16.7%**	2.8%	27.7%	2.6%	0%	**33.1%**	2.0%	17.2%	3.9%	0%	**23.0%**	2.2%	20.3%	4.8%	0%	**27.2%**	-
PHF	0.875	0.841	0.724	-	**0.822**	0.786	0.888	0.732	-	**0.894**	0.705	0.664	0.897	-	**0.750**	0.875	0.755	0.670	-	**0.747**	0.838
Lights	68	132	55	0	**255**	44	428	40	0	**512**	28	260	56	0	**344**	34	304	72	0	**410**	1521
% Lights	97.1%	95.7%	100%	0%	**97.0%**	100%	97.9%	97.6%	0%	**98.1%**	90.3%	95.9%	91.8%	0%	**94.8%**	97.1%	95.0%	96.0%	0%	**95.3%**	96.4%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	1	1	0	0	**2**	0	1	1	0	**2**	4
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	3.2%	0.4%	0%	0%	**0.6%**	0%	0.3%	1.3%	0%	**0.5%**	0.3%
Buses and Single-Unit Trucks	2	6	0	0	**8**	0	9	1	0	**10**	2	10	5	0	**17**	1	15	2	0	**18**	53
% Buses and Single-Unit Trucks	2.9%	4.3%	0%	0%	**3.0%**	0%	2.1%	2.4%	0%	**1.9%**	6.5%	3.7%	8.2%	0%	**4.7%**	2.9%	4.7%	2.7%	0%	**4.2%**	3.4%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 19th St. - TMC
Tue Oct 3, 2023
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115740, Location: 38.950073, -95.235901

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 19th St. - TMC

Tue Oct 3, 2023
Midday Peak (12 PM - 1 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115740, Location: 38.950073, -95.235901

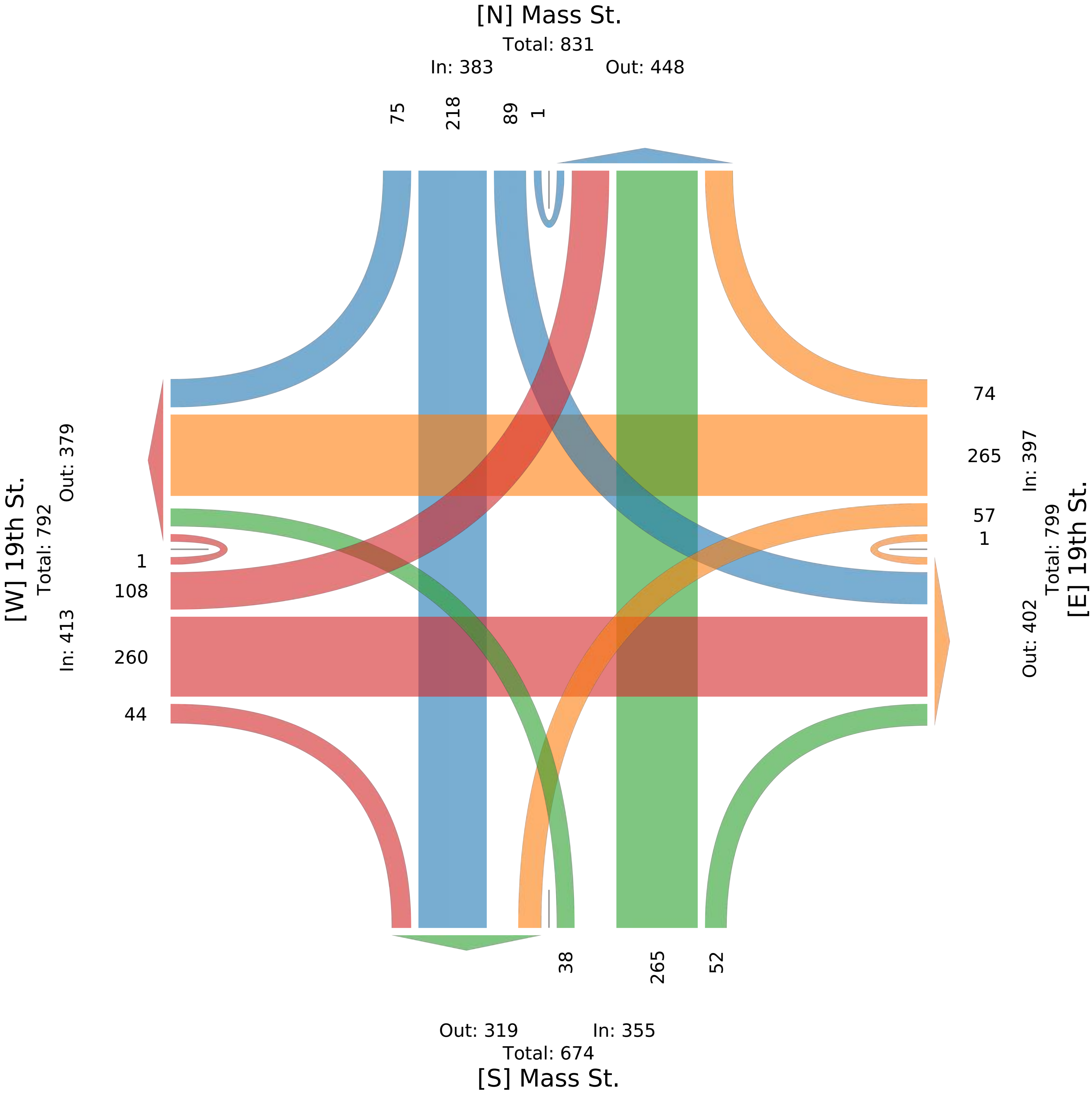
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					19th St.					Mass St.					19th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 12:00PM	17	55	22	1	**95**	23	72	22	0	**117**	18	50	9	0	**77**	7	64	23	0	**94**	**383**
12:15PM	21	60	18	0	**99**	16	71	13	1	**101**	13	62	8	0	**83**	14	59	30	1	**104**	**387**
12:30PM	17	49	28	0	**94**	18	65	11	0	**94**	7	74	9	0	**90**	8	71	27	0	**106**	**384**
12:45PM	20	54	21	0	**95**	17	57	11	0	**85**	14	79	12	0	**105**	15	66	28	0	**109**	**394**
Total	75	218	89	1	**383**	74	265	57	1	**397**	52	265	38	0	**355**	44	260	108	1	**413**	**1548**
% Approach	19.6%	56.9%	23.2%	0.3%	-	18.6%	66.8%	14.4%	0.3%	-	14.6%	74.6%	10.7%	0%	-	10.7%	63.0%	26.2%	0.2%	-	-
% Total	4.8%	14.1%	5.7%	0.1%	**24.7%**	4.8%	17.1%	3.7%	0.1%	**25.6%**	3.4%	17.1%	2.5%	0%	**22.9%**	2.8%	16.8%	7.0%	0.1%	**26.7%**	-
PHF	0.893	0.908	0.795	0.250	**0.967**	0.804	0.920	0.648	0.250	**0.848**	0.722	0.839	0.792	-	**0.845**	0.733	0.915	0.900	0.250	**0.947**	0.982
Lights	72	215	89	1	**377**	73	256	57	1	**387**	51	259	36	0	**346**	44	252	105	1	**402**	1512
% Lights	96.0%	98.6%	100%	100%	**98.4%**	98.6%	96.6%	100%	100%	**97.5%**	98.1%	97.7%	94.7%	0%	**97.5%**	100%	96.9%	97.2%	100%	**97.3%**	97.7%
Articulated Trucks	0	1	0	0	**1**	0	1	0	0	**1**	0	2	1	0	**3**	0	0	0	0	**0**	5
% Articulated Trucks	0%	0.5%	0%	0%	**0.3%**	0%	0.4%	0%	0%	**0.3%**	0%	0.8%	2.6%	0%	**0.8%**	0%	0%	0%	0%	**0%**	0.3%
Buses and Single-Unit Trucks	3	2	0	0	**5**	1	8	0	0	**9**	1	4	1	0	**6**	0	8	3	0	**11**	31
% Buses and Single-Unit Trucks	4.0%	0.9%	0%	0%	**1.3%**	1.4%	3.0%	0%	0%	**2.3%**	1.9%	1.5%	2.6%	0%	**1.7%**	0%	3.1%	2.8%	0%	**2.7%**	2.0%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 19th St. - TMC
Tue Oct 3, 2023
Midday Peak (12 PM - 1 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115740, Location: 38.950073, -95.235901

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 19th St. - TMC

Tue Oct 3, 2023
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115740, Location: 38.950073, -95.235901

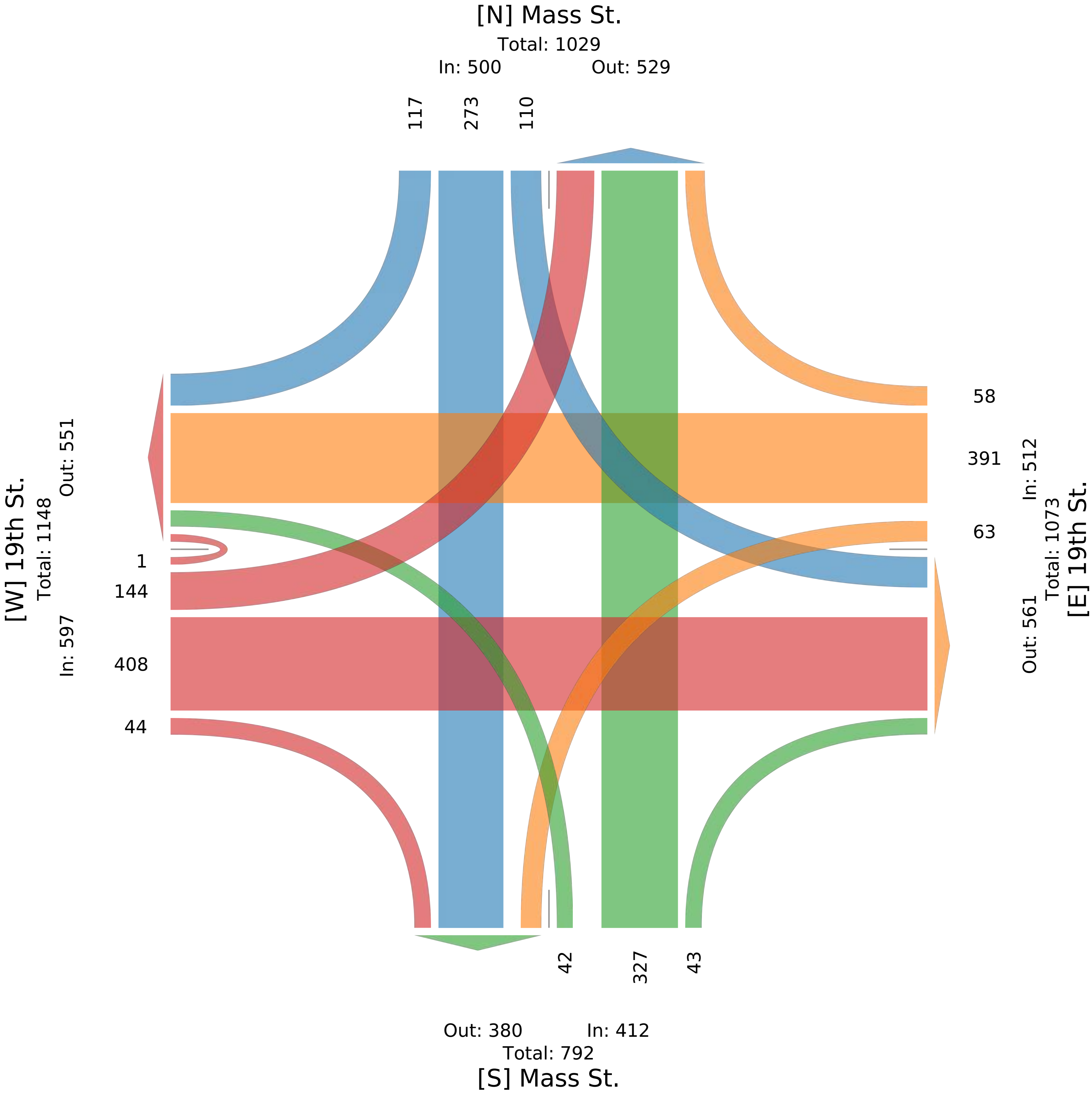
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					19th St.					Mass St.					19th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 4:45PM	33	59	28	0	**120**	11	90	13	0	**114**	13	103	10	0	**126**	9	90	33	0	**132**	**492**
5:00PM	32	82	27	0	**141**	11	116	15	0	**142**	8	70	8	0	**86**	14	120	30	0	**164**	**533**
5:15PM	27	67	25	0	**119**	26	95	15	0	**136**	10	77	11	0	**98**	9	98	38	0	**145**	**498**
5:30PM	25	65	30	0	**120**	10	90	20	0	**120**	12	77	13	0	**102**	12	100	43	1	**156**	**498**
Total	117	273	110	0	**500**	58	391	63	0	**512**	43	327	42	0	**412**	44	408	144	1	**597**	**2021**
% Approach	23.4%	54.6%	22.0%	0%	-	11.3%	76.4%	12.3%	0%	-	10.4%	79.4%	10.2%	0%	-	7.4%	68.3%	24.1%	0.2%	-	-
% Total	5.8%	13.5%	5.4%	0%	**24.7%**	2.9%	19.3%	3.1%	0%	**25.3%**	2.1%	16.2%	2.1%	0%	**20.4%**	2.2%	20.2%	7.1%	0%	**29.5%**	-
PHF	0.886	0.832	0.917	-	**0.887**	0.558	0.843	0.788	-	**0.901**	0.827	0.794	0.808	-	**0.817**	0.786	0.850	0.837	0.250	**0.910**	0.948
Lights	115	273	110	0	**498**	58	388	63	0	**509**	43	325	41	0	**409**	44	406	143	1	**594**	2010
% Lights	98.3%	100%	100%	0%	**99.6%**	100%	99.2%	100%	0%	**99.4%**	100%	99.4%	97.6%	0%	**99.3%**	100%	99.5%	99.3%	100%	**99.5%**	99.5%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%
Buses and Single-Unit Trucks	2	0	0	0	**2**	0	3	0	0	**3**	0	2	1	0	**3**	0	2	1	0	**3**	11
% Buses and Single-Unit Trucks	1.7%	0%	0%	0%	**0.4%**	0%	0.8%	0%	0%	**0.6%**	0%	0.6%	2.4%	0%	**0.7%**	0%	0.5%	0.7%	0%	**0.5%**	0.5%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 19th St. - TMC
Tue Oct 3, 2023
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115740, Location: 38.950073, -95.235901

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 20th St. - TMC

Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115744, Location: 38.948241, -95.235914

TREKK DESIGN GROUP, LLC

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					20th St.					Mass St.					20th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2023-10-03 12:00AM	0	5	0	0	**5**	0	0	0	0	**0**	0	7	0	0	**7**	0	0	0	0	**0**	**12**
12:15AM	0	8	0	0	**8**	0	0	0	0	**0**	0	6	0	0	**6**	0	0	0	0	**0**	**14**
12:30AM	0	8	0	0	**8**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	**11**
12:45AM	0	3	0	0	**3**	0	0	0	0	**0**	0	7	0	0	**7**	0	0	0	0	**0**	**10**
Hourly Total	0	24	0	0	**24**	0	0	0	0	**0**	0	23	0	0	**23**	0	0	0	0	**0**	**47**
1:00AM	0	3	0	0	**3**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	**6**
1:15AM	0	2	0	0	**2**	1	0	0	0	**1**	0	3	0	0	**3**	0	1	0	0	**1**	**7**
1:30AM	0	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**2**
1:45AM	0	3	0	0	**3**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**7**
Hourly Total	0	9	0	0	**9**	1	0	0	0	**1**	0	11	0	0	**11**	0	1	0	0	**1**	**22**
2:00AM	0	4	0	0	**4**	0	0	0	0	**0**	0	5	0	0	**5**	0	0	0	0	**0**	**9**
2:15AM	0	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**2**
2:30AM	0	4	0	0	**4**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**4**
2:45AM	0	1	0	0	**1**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	**4**
Hourly Total	0	10	0	0	**10**	0	0	0	0	**0**	0	9	0	0	**9**	0	0	0	0	**0**	**19**
3:00AM	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**1**
3:15AM	0	3	0	0	**3**	0	0	0	0	**0**	0	6	0	0	**6**	0	0	0	0	**0**	**9**
3:30AM	0	2	0	0	**2**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**3**
3:45AM	0	3	0	0	**3**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	**5**
Hourly Total	0	9	0	0	**9**	0	0	0	0	**0**	0	9	0	0	**9**	0	0	0	0	**0**	**18**
4:00AM	0	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**2**
4:15AM	0	3	0	0	**3**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**3**
4:30AM	0	2	0	0	**2**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**6**
4:45AM	0	6	0	0	**6**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	**8**
Hourly Total	0	12	0	0	**12**	0	0	0	0	**0**	0	7	0	0	**7**	0	0	0	0	**0**	**19**
5:00AM	0	2	0	0	**2**	0	0	0	0	**0**	0	7	0	0	**7**	0	0	0	0	**0**	**9**
5:15AM	0	10	0	0	**10**	0	0	0	0	**0**	0	6	1	0	**7**	0	0	0	0	**0**	**17**
5:30AM	0	8	0	0	**8**	0	0	0	0	**0**	0	10	0	0	**10**	0	0	0	0	**0**	**18**
5:45AM	0	13	0	0	**13**	0	0	0	0	**0**	0	24	0	0	**24**	0	1	0	0	**1**	**38**
Hourly Total	0	33	0	0	**33**	0	0	0	0	**0**	0	47	1	0	**48**	0	1	0	0	**1**	**82**
6:00AM	0	20	0	0	**20**	0	0	0	0	**0**	0	24	0	0	**24**	1	0	0	0	**1**	**45**
6:15AM	0	15	0	0	**15**	0	0	0	0	**0**	0	28	0	0	**28**	0	0	3	0	**3**	**46**
6:30AM	0	18	1	0	**19**	0	0	0	0	**0**	0	31	0	0	**31**	0	0	1	0	**1**	**51**
6:45AM	0	33	1	0	**34**	1	1	0	0	**2**	1	39	0	0	**40**	0	1	1	0	**2**	**78**
Hourly Total	0	86	2	0	**88**	1	1	0	0	**2**	1	122	0	0	**123**	1	1	5	0	**7**	**220**
7:00AM	0	23	0	0	**23**	0	0	1	0	**1**	0	48	0	0	**48**	1	0	0	0	**1**	**73**
7:15AM	0	28	0	0	**28**	2	0	0	0	**2**	0	54	0	0	**54**	0	1	1	0	**2**	**86**
7:30AM	0	37	0	0	**37**	4	3	0	0	**7**	1	68	1	0	**70**	0	0	0	0	**0**	**114**
7:45AM	3	44	0	0	**47**	2	3	0	0	**5**	1	115	1	0	**117**	2	1	3	0	**6**	**175**
Hourly Total	3	132	0	0	**135**	8	6	1	0	**15**	2	285	2	0	**289**	3	2	4	0	**9**	**448**
8:00AM	1	65	1	0	**67**	6	1	1	0	**8**	1	89	1	0	**91**	0	1	2	0	**3**	**169**
8:15AM	0	57	0	0	**57**	1	1	0	0	**2**	0	91	1	0	**92**	1	1	2	1	**5**	**156**
8:30AM	1	49	1	0	**51**	2	1	2	0	**5**	0	68	4	0	**72**	2	4	2	0	**8**	**136**
8:45AM	0	57	2	0	**59**	4	1	0	0	**5**	1	74	0	0	**75**	1	0	2	0	**3**	**142**
Hourly Total	2	228	4	0	**234**	13	4	3	0	**20**	2	322	6	0	**330**	4	6	8	1	**19**	**603**
9:00AM	0	46	0	0	**46**	0	0	0	0	**0**	0	71	0	0	**71**	0	0	1	0	**1**	**118**
9:15AM	0	43	0	0	**43**	3	0	1	0	**4**	0	80	0	0	**80**	0	0	0	0	**0**	**127**
9:30AM	0	54	0	0	**54**	0	0	0	0	**0**	1	87	0	0	**88**	0	1	1	0	**2**	**144**
9:45AM	0	41	0	0	**41**	2	2	1	0	**5**	0	77	0	0	**77**	0	1	0	0	**1**	**124**
Hourly Total	0	184	0	0	**184**	5	2	2	0	**9**	1	315	0	0	**316**	0	2	2	0	**4**	**513**
10:00AM	2	56	1	0	**59**	0	0	1	0	**1**	0	49	0	0	**49**	2	0	0	0	**2**	**111**
10:15AM	0	54	1	0	**55**	2	0	1	0	**3**	0	70	0	0	**70**	0	0	0	0	**0**	**128**
10:30AM	1	67	1	0	**69**	0	0	1	0	**1**	0	68	1	0	**69**	0	0	0	0	**0**	**139**
10:45AM	1	41	0	0	**42**	0	2	0	0	**2**	0	86	0	0	**86**	0	0	0	0	**0**	**130**

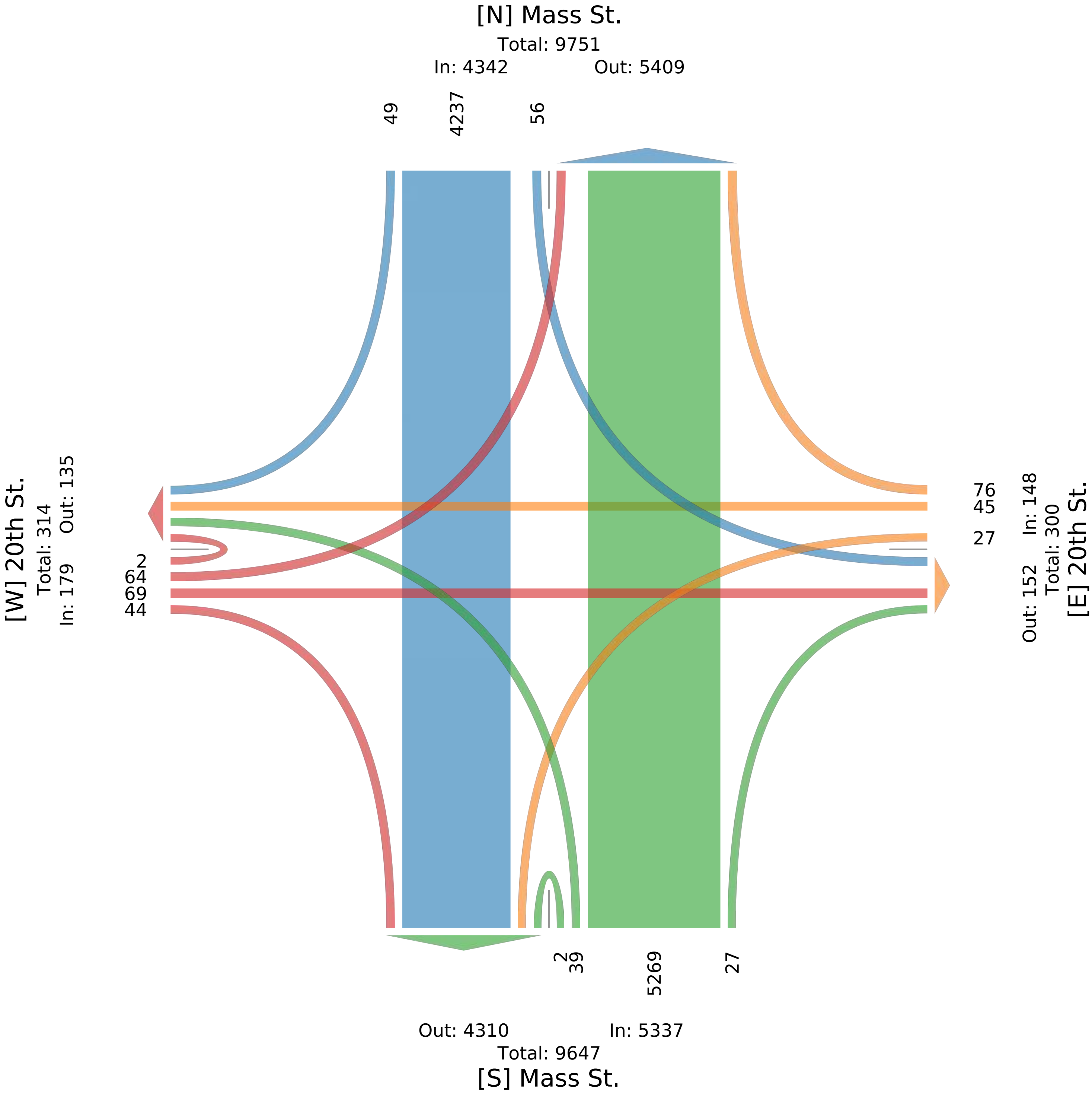
Leg	Mass St.					20th St.					Mass St.					20th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	4	218	3	0	**225**	2	2	3	0	**7**	0	273	1	0	**274**	2	0	0	0	**2**	**508**
11:00AM	1	49	2	0	**52**	0	0	0	0	**0**	0	68	0	1	**69**	0	1	0	0	**1**	**122**
11:15AM	1	59	2	0	**62**	1	2	0	0	**3**	1	84	0	0	**85**	1	2	0	0	**3**	**153**
11:30AM	0	53	3	0	**56**	0	1	1	0	**2**	1	75	0	0	**76**	1	0	0	0	**1**	**135**
11:45AM	0	75	0	0	**75**	1	0	0	0	**1**	1	86	1	0	**88**	0	1	1	0	**2**	**166**
Hourly Total	2	236	7	0	**245**	2	3	1	0	**6**	3	313	1	1	**318**	2	4	1	0	**7**	**576**
12:00PM	1	76	2	0	**79**	2	0	0	0	**2**	0	79	1	0	**80**	3	1	1	0	**5**	**166**
12:15PM	0	84	2	0	**86**	3	3	0	0	**6**	0	88	0	0	**88**	1	2	0	0	**3**	**183**
12:30PM	2	62	1	0	**65**	0	1	1	0	**2**	0	102	2	0	**104**	0	1	1	0	**2**	**173**
12:45PM	1	80	0	0	**81**	3	2	0	0	**5**	1	116	1	0	**118**	1	1	1	0	**3**	**207**
Hourly Total	4	302	5	0	**311**	8	6	1	0	**15**	1	385	4	0	**390**	5	5	3	0	**13**	**729**
1:00PM	0	83	0	0	**83**	2	0	1	0	**3**	0	93	0	0	**93**	1	2	2	1	**6**	**185**
1:15PM	1	63	0	0	**64**	1	0	0	0	**1**	0	82	0	0	**82**	0	0	0	0	**0**	**147**
1:30PM	2	85	0	0	**87**	2	0	1	0	**3**	0	72	0	0	**72**	0	1	0	0	**1**	**163**
1:45PM	1	50	2	0	**53**	1	2	1	0	**4**	0	91	2	0	**93**	0	2	0	0	**2**	**152**
Hourly Total	4	281	2	0	**287**	6	2	3	0	**11**	0	338	2	0	**340**	1	5	2	1	**9**	**647**
2:00PM	0	101	0	0	**101**	0	1	0	0	**1**	1	81	2	0	**84**	0	0	0	0	**0**	**186**
2:15PM	0	72	0	0	**72**	1	0	1	0	**2**	1	88	0	0	**89**	1	1	0	0	**2**	**165**
2:30PM	0	64	1	0	**65**	1	4	0	0	**5**	0	94	2	0	**96**	1	1	1	0	**3**	**169**
2:45PM	1	64	2	0	**67**	1	0	0	0	**1**	0	81	0	0	**81**	0	4	1	0	**5**	**154**
Hourly Total	1	301	3	0	**305**	3	5	1	0	**9**	2	344	4	0	**350**	2	6	2	0	**10**	**674**
3:00PM	3	87	1	0	**91**	2	1	0	0	**3**	1	103	2	0	**106**	0	4	4	0	**8**	**208**
3:15PM	2	79	0	0	**81**	1	0	0	0	**1**	0	101	2	0	**103**	4	1	4	0	**9**	**194**
3:30PM	1	91	0	0	**92**	1	2	0	0	**3**	0	92	0	0	**92**	1	2	0	0	**3**	**190**
3:45PM	5	79	0	0	**84**	0	1	0	0	**1**	2	114	0	0	**116**	3	1	5	0	**9**	**210**
Hourly Total	11	336	1	0	**348**	4	4	0	0	**8**	3	410	4	0	**417**	8	8	13	0	**29**	**802**
4:00PM	2	91	0	0	**93**	0	1	2	0	**3**	1	96	3	0	**100**	1	2	6	0	**9**	**205**
4:15PM	0	84	4	0	**88**	1	0	1	0	**2**	0	105	3	0	**108**	6	2	3	0	**11**	**209**
4:30PM	4	102	2	0	**108**	2	0	1	0	**3**	0	105	0	0	**105**	4	0	1	0	**5**	**221**
4:45PM	1	77	2	0	**80**	2	0	0	0	**2**	1	121	1	0	**123**	0	3	0	0	**3**	**208**
Hourly Total	7	354	8	0	**369**	5	1	4	0	**10**	2	427	7	0	**436**	11	7	10	0	**28**	**843**
5:00PM	2	105	1	0	**108**	1	2	2	0	**5**	2	100	0	1	**103**	1	3	2	0	**6**	**222**
5:15PM	2	90	0	0	**92**	3	2	0	0	**5**	0	102	1	0	**103**	0	0	3	0	**3**	**203**
5:30PM	0	93	3	0	**96**	1	1	0	0	**2**	1	114	1	0	**116**	1	3	2	0	**6**	**220**
5:45PM	2	86	1	0	**89**	1	0	0	0	**1**	0	93	0	0	**93**	0	1	0	0	**1**	**184**
Hourly Total	6	374	5	0	**385**	6	5	2	0	**13**	3	409	2	1	**415**	2	7	7	0	**16**	**829**
6:00PM	1	81	2	0	**84**	1	1	1	0	**3**	2	82	0	0	**84**	1	1	1	0	**3**	**174**
6:15PM	0	89	3	0	**92**	0	1	0	0	**1**	0	113	0	0	**113**	0	1	1	0	**2**	**208**
6:30PM	1	81	1	0	**83**	0	0	1	0	**1**	0	102	1	0	**103**	0	3	1	0	**4**	**191**
6:45PM	1	53	0	0	**54**	2	0	0	0	**2**	1	100	1	0	**102**	0	2	2	0	**4**	**162**
Hourly Total	3	304	6	0	**313**	3	2	2	0	**7**	3	397	2	0	**402**	1	7	5	0	**13**	**735**
7:00PM	0	74	2	0	**76**	2	0	0	0	**2**	0	85	1	0	**86**	0	0	0	0	**0**	**164**
7:15PM	0	55	2	0	**57**	2	0	1	0	**3**	0	85	0	0	**85**	1	1	1	0	**3**	**148**
7:30PM	0	64	0	0	**64**	0	0	0	0	**0**	0	69	0	0	**69**	0	1	0	0	**1**	**134**
7:45PM	0	47	0	0	**47**	3	1	0	0	**4**	0	54	0	0	**54**	1	0	0	0	**1**	**106**
Hourly Total	0	240	4	0	**244**	7	1	1	0	**9**	0	293	1	0	**294**	2	2	1	0	**5**	**552**
8:00PM	0	87	0	0	**87**	0	0	0	0	**0**	2	67	1	0	**70**	0	1	0	0	**1**	**158**
8:15PM	0	49	1	0	**50**	0	0	0	0	**0**	0	55	1	0	**56**	0	0	1	0	**1**	**107**
8:30PM	1	41	1	0	**43**	0	0	0	0	**0**	0	53	0	0	**53**	0	0	0	0	**0**	**96**
8:45PM	0	49	0	0	**49**	1	0	0	0	**1**	0	47	0	0	**47**	0	1	0	0	**1**	**98**
Hourly Total	1	226	2	0	**229**	1	0	0	0	**1**	2	222	2	0	**226**	0	2	1	0	**3**	**459**
9:00PM	1	38	0	0	**39**	0	1	0	0	**1**	0	36	0	0	**36**	0	0	0	0	**0**	**76**
9:15PM	0	34	1	0	**35**	0	0	1	0	**1**	0	50	0	0	**50**	0	1	0	0	**1**	**87**
9:30PM	0	33	1	0	**34**	0	0	1	0	**1**	0	34	0	0	**34**	0	1	0	0	**1**	**70**
9:45PM	0	25	0	0	**25**	0	0	0	0	**0**	1	35	0	0	**36**	0	0	0	0	**0**	**61**
Hourly Total	1	130	2	0	**133**	0	1	2	0	**3**	1	155	0	0	**156**	0	2	0	0	**2**	**294**
10:00PM	0	29	0	0	**29**	0	0	0	0	**0**	0	38	0	0	**38**	0	0	0	0	**0**	**67**
10:15PM	0	28	1	0	**29**	0	0	1	0	**1**	0	34	0	0	**34**	0	0	0	0	**0**	**64**
10:30PM	0	14	0	0	**14**	1	0	0	0	**1**	0	15	0	0	**15**	0	1	0	0	**1**	**31**
10:45PM	0	34	0	0	**34**	0	0	0	0	**0**	0	22	0	0	**22**	0	0	0	0	**0**	**56**

Leg	Mass St.					20th St.					Mass St.					20th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	0	105	1	0	**106**	1	0	1	0	**2**	0	109	0	0	**109**	0	1	0	0	**1**	**218**
11:00PM	0	59	1	0	**60**	0	0	0	0	**0**	0	12	0	0	**12**	0	0	0	0	**0**	**72**
11:15PM	0	19	0	0	**19**	0	0	0	0	**0**	0	8	0	0	**8**	0	0	0	0	**0**	**27**
11:30PM	0	13	0	0	**13**	0	0	0	0	**0**	0	11	0	0	**11**	0	0	0	0	**0**	**24**
11:45PM	0	12	0	0	**12**	0	0	0	0	**0**	1	13	0	0	**14**	0	0	0	0	**0**	**26**
Hourly Total	0	103	1	0	**104**	0	0	0	0	**0**	1	44	0	0	**45**	0	0	0	0	**0**	**149**
Total	49	4237	56	0	**4342**	76	45	27	0	**148**	27	5269	39	2	**5337**	44	69	64	2	**179**	**10006**
% Approach	1.1%	97.6%	1.3%	0%	-	51.4%	30.4%	18.2%	0%	-	0.5%	98.7%	0.7%	0%	-	24.6%	38.5%	35.8%	1.1%	-	-
% Total	0.5%	42.3%	0.6%	0%	**43.4%**	0.8%	0.4%	0.3%	0%	**1.5%**	0.3%	52.7%	0.4%	0%	**53.3%**	0.4%	0.7%	0.6%	0%	**1.8%**	-
Lights	47	4161	56	0	**4264**	74	45	27	0	**146**	26	5146	38	2	**5212**	43	69	63	2	**177**	9799
% Lights	95.9%	98.2%	100%	0%	**98.2%**	97.4%	100%	100%	0%	**98.6%**	96.3%	97.7%	97.4%	100%	**97.7%**	97.7%	100%	98.4%	100%	**98.9%**	97.9%
Articulated Trucks	0	19	0	0	**19**	0	0	0	0	**0**	0	26	0	0	**26**	0	0	0	0	**0**	45
% Articulated Trucks	0%	0.4%	0%	0%	**0.4%**	0%	0%	0%	0%	**0%**	0%	0.5%	0%	0%	**0.5%**	0%	0%	0%	0%	**0%**	0.4%
Buses and Single-Unit Trucks	2	57	0	0	**59**	2	0	0	0	**2**	1	97	1	0	**99**	1	0	1	0	**2**	162
% Buses and Single-Unit Trucks	4.1%	1.3%	0%	0%	**1.4%**	2.6%	0%	0%	0%	**1.4%**	3.7%	1.8%	2.6%	0%	**1.9%**	2.3%	0%	1.6%	0%	**1.1%**	1.6%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 20th St. - TMC
Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115744, Location: 38.948241, -95.235914

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 20th St. - TMC

Tue Oct 3, 2023
AM Peak (7:45 AM - 8:45 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115744, Location: 38.948241, -95.235914

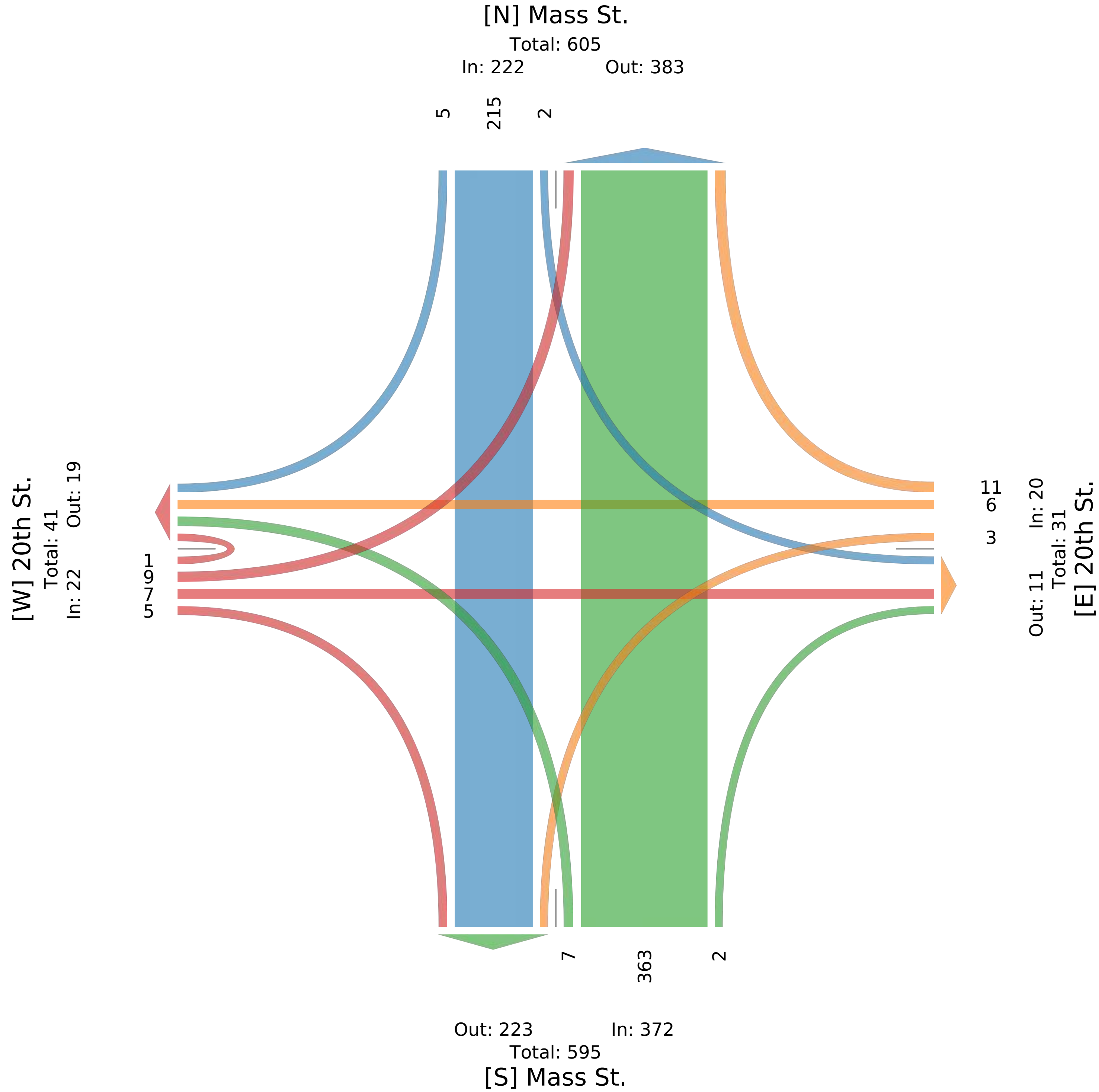
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg Direction	Mass St. Southbound					20th St. Westbound					Mass St. Northbound					20th St. Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
2023-10-03 7:45AM	3	44	0	0	**47**	2	3	0	0	**5**	1	115	1	0	**117**	2	1	3	0	**6**	**175**
8:00AM	1	65	1	0	**67**	6	1	1	0	**8**	1	89	1	0	**91**	0	1	2	0	**3**	**169**
8:15AM	0	57	0	0	**57**	1	1	0	0	**2**	0	91	1	0	**92**	1	1	2	1	**5**	**156**
8:30AM	1	49	1	0	**51**	2	1	2	0	**5**	0	68	4	0	**72**	2	4	2	0	**8**	**136**
Total	5	215	2	0	**222**	11	6	3	0	**20**	2	363	7	0	**372**	5	7	9	1	**22**	**636**
% Approach	2.3%	96.8%	0.9%	0%	-	55.0%	30.0%	15.0%	0%	-	0.5%	97.6%	1.9%	0%	-	22.7%	31.8%	40.9%	4.5%	-	-
% Total	0.8%	33.8%	0.3%	0%	**34.9%**	1.7%	0.9%	0.5%	0%	**3.1%**	0.3%	57.1%	1.1%	0%	**58.5%**	0.8%	1.1%	1.4%	0.2%	**3.5%**	-
PHF	0.417	0.827	0.500	-	**0.828**	0.458	0.500	0.375	-	**0.625**	0.500	0.789	0.438	-	**0.795**	0.625	0.438	0.750	0.250	**0.688**	0.909
Lights	5	210	2	0	**217**	11	6	3	0	**20**	2	351	7	0	**360**	5	7	8	1	**21**	618
% Lights	100%	97.7%	100%	0%	**97.7%**	100%	100%	100%	0%	**100%**	100%	96.7%	100%	0%	**96.8%**	100%	100%	88.9%	100%	**95.5%**	97.2%
Articulated Trucks	0	1	0	0	**1**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	3
% Articulated Trucks	0%	0.5%	0%	0%	**0.5%**	0%	0%	0%	0%	**0%**	0%	0.6%	0%	0%	**0.5%**	0%	0%	0%	0%	**0%**	0.5%
Buses and Single-Unit Trucks	0	4	0	0	**4**	0	0	0	0	**0**	0	10	0	0	**10**	0	0	1	0	**1**	15
% Buses and Single-Unit Trucks	0%	1.9%	0%	0%	**1.8%**	0%	0%	0%	0%	**0%**	0%	2.8%	0%	0%	**2.7%**	0%	0%	11.1%	0%	**4.5%**	2.4%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 20th St. - TMC
Tue Oct 3, 2023
AM Peak (7:45 AM - 8:45 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115744, Location: 38.948241, -95.235914

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 20th St. - TMC

Tue Oct 3, 2023
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115744, Location: 38.948241, -95.235914

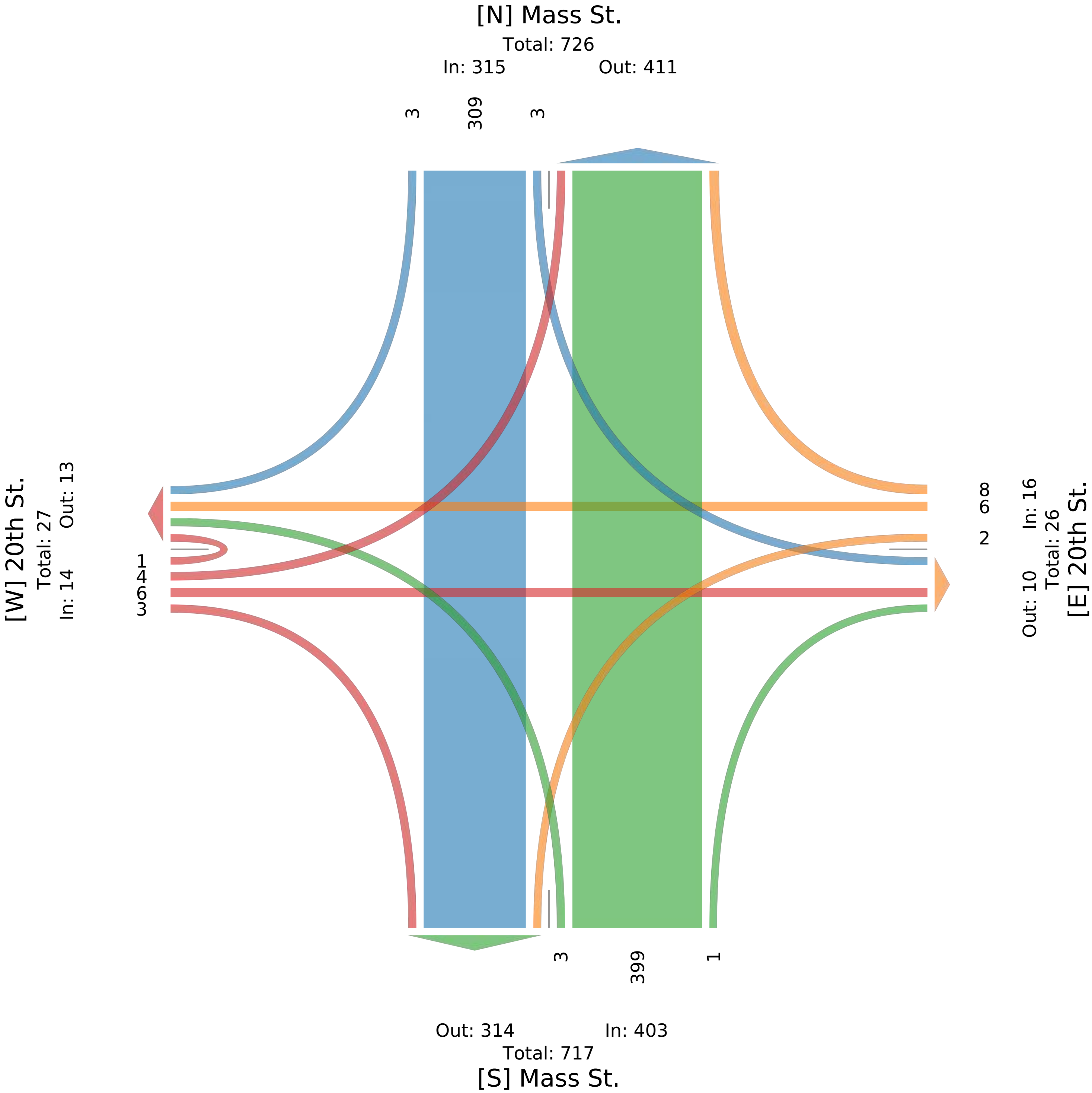
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					20th St.					Mass St.					20th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 12:15PM	0	84	2	0	**86**	3	3	0	0	**6**	0	88	0	0	**88**	1	2	0	0	**3**	**183**
12:30PM	2	62	1	0	**65**	0	1	1	0	**2**	0	102	2	0	**104**	0	1	1	0	**2**	**173**
12:45PM	1	80	0	0	**81**	3	2	0	0	**5**	1	116	1	0	**118**	1	1	1	0	**3**	**207**
1:00PM	0	83	0	0	**83**	2	0	1	0	**3**	0	93	0	0	**93**	1	2	2	1	**6**	**185**
Total	3	309	3	0	**315**	8	6	2	0	**16**	1	399	3	0	**403**	3	6	4	1	**14**	**748**
% Approach	1.0%	98.1%	1.0%	0%	-	50.0%	37.5%	12.5%	0%	-	0.2%	99.0%	0.7%	0%	-	21.4%	42.9%	28.6%	7.1%	-	-
% Total	0.4%	41.3%	0.4%	0%	**42.1%**	1.1%	0.8%	0.3%	0%	**2.1%**	0.1%	53.3%	0.4%	0%	**53.9%**	0.4%	0.8%	0.5%	0.1%	**1.9%**	-
PHF	0.375	0.920	0.375	-	**0.916**	0.667	0.500	0.500	-	**0.667**	0.250	0.860	0.375	-	**0.854**	0.750	0.750	0.500	0.250	**0.583**	0.903
Lights	3	304	3	0	**310**	7	6	2	0	**15**	1	391	3	0	**395**	3	6	4	1	**14**	734
% Lights	100%	98.4%	100%	0%	**98.4%**	87.5%	100%	100%	0%	**93.8%**	100%	98.0%	100%	0%	**98.0%**	100%	100%	100%	100%	**100%**	98.1%
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%	0.6%	0%	0%	**0.6%**	0%	0%	0%	0%	**0%**	0%	0.5%	0%	0%	**0.5%**	0%	0%	0%	0%	**0%**	0.5%
Buses and Single-Unit Trucks	0	3	0	0	**3**	1	0	0	0	**1**	0	6	0	0	**6**	0	0	0	0	**0**	10
% Buses and Single-Unit Trucks	0%	1.0%	0%	0%	**1.0%**	12.5%	0%	0%	0%	**6.3%**	0%	1.5%	0%	0%	**1.5%**	0%	0%	0%	0%	**0%**	1.3%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 20th St. - TMC
Tue Oct 3, 2023
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115744, Location: 38.948241, -95.235914

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 20th St. - TMC

Tue Oct 3, 2023
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115744, Location: 38.948241, -95.235914

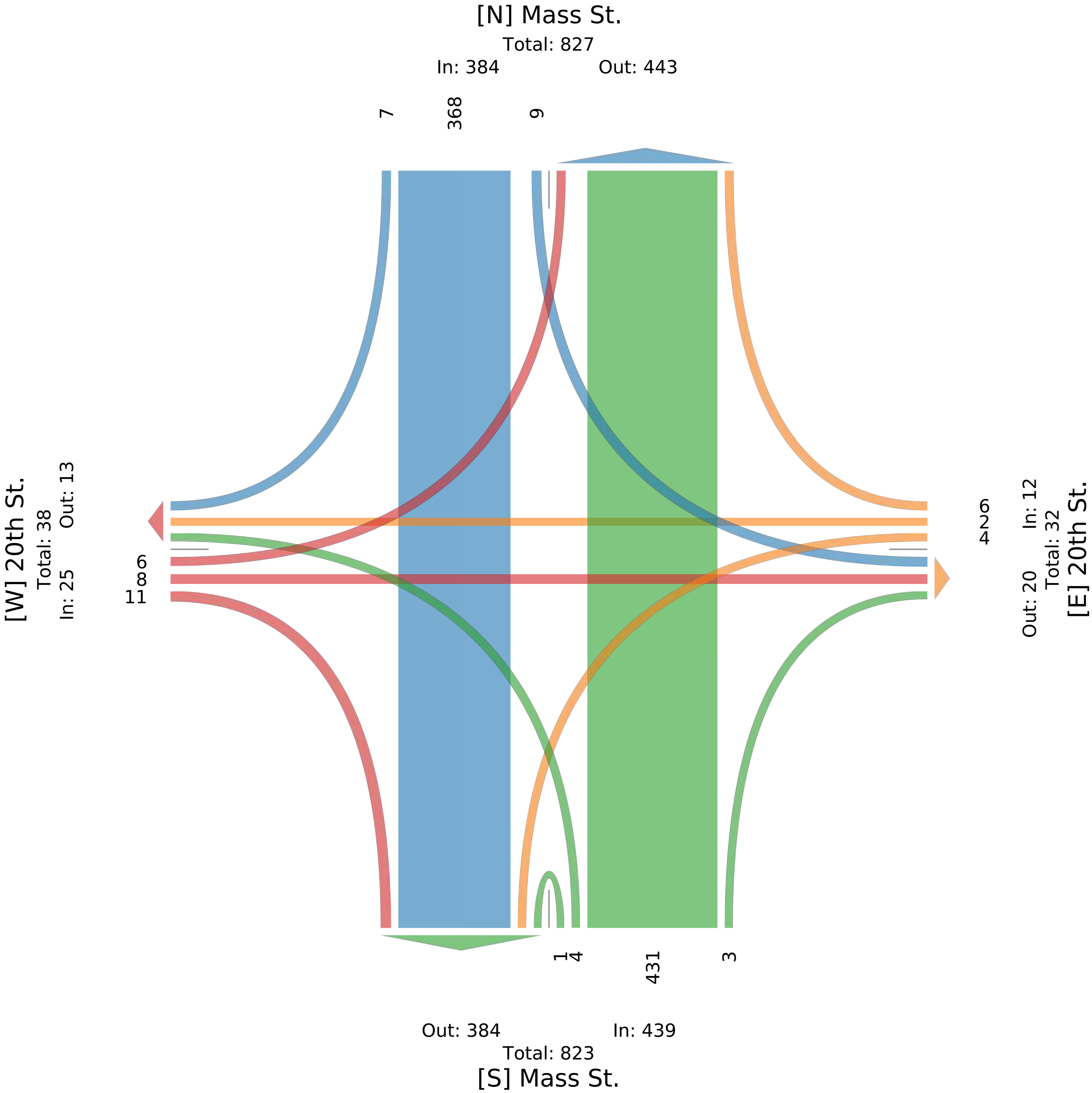
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					20th St.					Mass St.					20th St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 4:15PM	0	84	4	0	**88**	1	0	1	0	**2**	0	105	3	0	**108**	6	2	3	0	**11**	**209**
4:30PM	4	102	2	0	**108**	2	0	1	0	**3**	0	105	0	0	**105**	4	0	1	0	**5**	**221**
4:45PM	1	77	2	0	**80**	2	0	0	0	**2**	1	121	1	0	**123**	0	3	0	0	**3**	**208**
5:00PM	2	105	1	0	**108**	1	2	2	0	**5**	2	100	0	1	**103**	1	3	2	0	**6**	**222**
Total	7	368	9	0	**384**	6	2	4	0	**12**	3	431	4	1	**439**	11	8	6	0	**25**	**860**
% Approach	1.8%	95.8%	2.3%	0%	-	50.0%	16.7%	33.3%	0%	-	0.7%	98.2%	0.9%	0.2%	-	44.0%	32.0%	24.0%	0%	-	-
% Total	0.8%	42.8%	1.0%	0%	**44.7%**	0.7%	0.2%	0.5%	0%	**1.4%**	0.3%	50.1%	0.5%	0.1%	**51.0%**	1.3%	0.9%	0.7%	0%	**2.9%**	-
PHF	0.438	0.876	0.563	-	**0.889**	0.750	0.250	0.500	-	**0.600**	0.375	0.890	0.333	0.250	**0.892**	0.458	0.667	0.500	-	**0.568**	0.968
Lights	7	367	9	0	**383**	6	2	4	0	**12**	3	426	3	1	**433**	10	8	6	0	**24**	852
% Lights	100%	99.7%	100%	0%	**99.7%**	100%	100%	100%	0%	**100%**	100%	98.8%	75.0%	100%	**98.6%**	90.9%	100%	100%	0%	**96.0%**	99.1%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%
Buses and Single-Unit Trucks	0	1	0	0	**1**	0	0	0	0	**0**	0	5	1	0	**6**	1	0	0	0	**1**	8
% Buses and Single-Unit Trucks	0%	0.3%	0%	0%	**0.3%**	0%	0%	0%	0%	**0%**	0%	1.2%	25.0%	0%	**1.4%**	9.1%	0%	0%	0%	**4.0%**	0.9%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 20th St. - TMC
Tue Oct 3, 2023
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115744, Location: 38.948241, -95.235914

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 21st St. - TMC

Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115754, Location: 38.946488, -95.235893

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					21st St.					Mass St.					21st St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 12:00AM	0	5	0	0	**5**	0	0	0	0	**0**	0	7	0	0	**7**	0	0	0	0	**0**	**12**
12:15AM	0	8	0	0	**8**	0	0	0	0	**0**	0	6	0	0	**6**	0	0	0	0	**0**	**14**
12:30AM	0	8	0	0	**8**	0	0	0	0	**0**	1	3	0	0	**4**	0	0	0	0	**0**	**12**
12:45AM	0	3	0	0	**3**	0	0	0	0	**0**	0	7	0	0	**7**	0	0	0	0	**0**	**10**
Hourly Total	0	24	0	0	**24**	0	0	0	0	**0**	1	23	0	0	**24**	0	0	0	0	**0**	**48**
1:00AM	0	2	0	0	**2**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	**5**
1:15AM	0	3	0	0	**3**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	**6**
1:30AM	0	1	0	0	**1**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	**3**
1:45AM	0	3	0	0	**3**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**7**
Hourly Total	0	9	0	0	**9**	0	0	0	0	**0**	0	12	0	0	**12**	0	0	0	0	**0**	**21**
2:00AM	0	5	0	0	**5**	0	0	0	0	**0**	1	4	0	0	**5**	0	0	0	0	**0**	**10**
2:15AM	0	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**2**
2:30AM	0	4	0	0	**4**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**4**
2:45AM	0	1	0	0	**1**	0	0	0	0	**0**	0	3	0	0	**3**	0	0	0	0	**0**	**4**
Hourly Total	0	11	0	0	**11**	0	0	0	0	**0**	1	8	0	0	**9**	0	0	0	0	**0**	**20**
3:00AM	0	1	0	0	**1**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**1**
3:15AM	0	3	0	0	**3**	0	0	0	0	**0**	0	6	0	0	**6**	0	0	0	0	**0**	**9**
3:30AM	0	2	0	0	**2**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**3**
3:45AM	0	3	0	0	**3**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	**5**
Hourly Total	0	9	0	0	**9**	0	0	0	0	**0**	0	9	0	0	**9**	0	0	0	0	**0**	**18**
4:00AM	0	1	0	0	**1**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**2**
4:15AM	0	3	0	0	**3**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**3**
4:30AM	0	2	0	0	**2**	0	0	0	0	**0**	0	4	0	0	**4**	0	0	0	0	**0**	**6**
4:45AM	0	6	0	0	**6**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	**8**
Hourly Total	0	12	0	0	**12**	0	0	0	0	**0**	0	7	0	0	**7**	0	0	0	0	**0**	**19**
5:00AM	0	2	0	0	**2**	0	0	0	0	**0**	0	7	0	0	**7**	1	0	0	0	**1**	**10**
5:15AM	0	9	0	0	**9**	0	0	0	0	**0**	0	7	0	0	**7**	0	0	0	0	**0**	**16**
5:30AM	0	9	0	0	**9**	0	0	0	0	**0**	0	10	0	0	**10**	0	0	0	0	**0**	**19**
5:45AM	0	13	0	0	**13**	0	0	0	0	**0**	0	24	0	0	**24**	1	0	0	0	**1**	**38**
Hourly Total	0	33	0	0	**33**	0	0	0	0	**0**	0	48	0	0	**48**	2	0	0	0	**2**	**83**
6:00AM	1	20	0	0	**21**	0	0	0	0	**0**	0	24	1	0	**25**	2	0	0	0	**2**	**48**
6:15AM	0	15	0	0	**15**	0	0	0	0	**0**	1	28	0	0	**29**	0	0	0	0	**0**	**44**
6:30AM	0	18	0	0	**18**	0	0	0	0	**0**	0	31	0	0	**31**	0	0	0	0	**0**	**49**
6:45AM	0	33	0	0	**33**	0	0	0	0	**0**	0	39	0	0	**39**	0	0	0	0	**0**	**72**
Hourly Total	1	86	0	0	**87**	0	0	0	0	**0**	1	122	1	0	**124**	2	0	0	0	**2**	**213**
7:00AM	0	25	0	0	**25**	1	1	0	0	**2**	0	47	0	0	**47**	1	0	0	0	**1**	**75**
7:15AM	1	27	0	0	**28**	0	0	0	0	**0**	0	54	2	0	**56**	1	0	0	0	**1**	**85**
7:30AM	1	38	1	0	**40**	3	0	0	0	**3**	0	70	2	0	**72**	1	0	0	0	**1**	**116**
7:45AM	1	43	0	0	**44**	1	0	1	0	**2**	0	111	2	0	**113**	5	0	0	0	**5**	**164**
Hourly Total	3	133	1	0	**137**	5	1	1	0	**7**	0	282	6	0	**288**	8	0	0	0	**8**	**440**
8:00AM	3	64	0	0	**67**	3	0	0	0	**3**	0	89	0	0	**89**	1	0	0	0	**1**	**160**
8:15AM	0	58	0	0	**58**	4	0	0	0	**4**	0	88	0	0	**88**	0	0	0	0	**0**	**150**
8:30AM	1	52	0	0	**53**	3	0	0	0	**3**	1	67	1	0	**69**	0	0	0	0	**0**	**125**
8:45AM	3	52	0	0	**55**	1	0	0	0	**1**	0	74	0	0	**74**	0	0	0	0	**0**	**130**
Hourly Total	7	226	0	0	**233**	11	0	0	0	**11**	1	318	1	0	**320**	1	0	0	0	**1**	**565**
9:00AM	0	48	0	0	**48**	1	0	0	0	**1**	0	70	2	0	**72**	0	0	0	0	**0**	**121**
9:15AM	0	47	1	0	**48**	2	0	0	0	**2**	0	78	0	0	**78**	0	1	0	0	**1**	**129**
9:30AM	0	54	0	0	**54**	1	0	0	0	**1**	0	86	1	0	**87**	0	0	0	0	**0**	**142**
9:45AM	1	41	0	0	**42**	3	0	0	0	**3**	0	76	1	0	**77**	1	0	0	0	**1**	**123**
Hourly Total	1	190	1	0	**192**	7	0	0	0	**7**	0	310	4	0	**314**	1	1	0	0	**2**	**515**
10:00AM	1	53	0	0	**54**	0	0	0	0	**0**	2	49	1	0	**52**	0	0	0	0	**0**	**106**
10:15AM	2	51	1	0	**54**	1	0	0	0	**1**	0	68	0	0	**68**	0	0	0	0	**0**	**123**
10:30AM	1	68	0	0	**69**	1	0	0	0	**1**	0	64	0	0	**64**	0	0	0	0	**0**	**134**
10:45AM	1	41	0	0	**42**	1	0	1	0	**2**	1	85	1	0	**87**	1	0	1	0	**2**	**133**

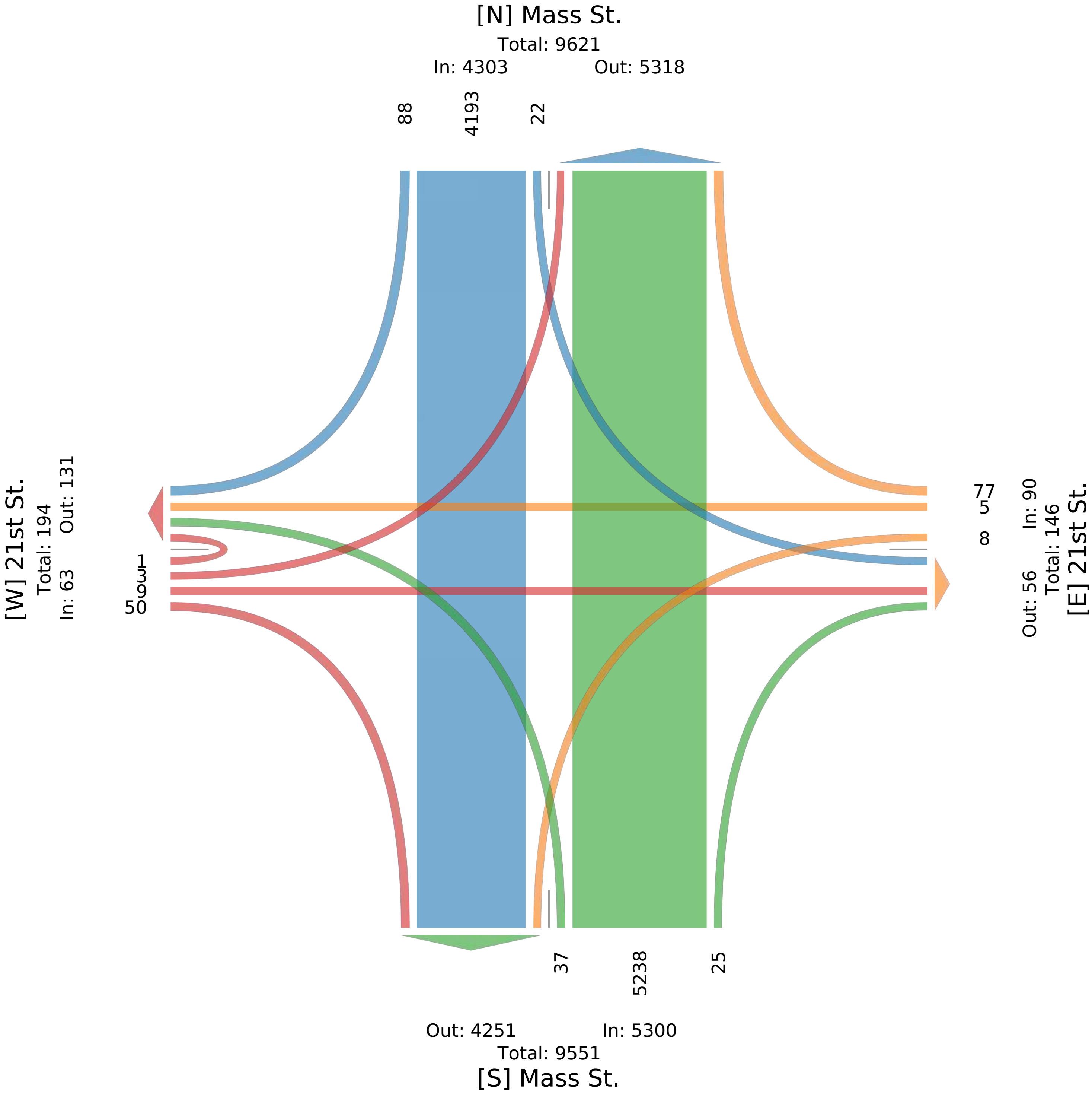
Leg Direction	Mass St. Southbound					21st St. Westbound					Mass St. Northbound					21st St. Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	5	213	1	0	**219**	3	0	1	0	**4**	3	266	2	0	**271**	1	0	1	0	**2**	**496**
11:00AM	1	47	0	0	**48**	0	0	0	0	**0**	0	69	0	0	**69**	1	0	0	0	**1**	**118**
11:15AM	1	58	1	0	**60**	5	1	1	0	**7**	0	81	1	0	**82**	0	0	0	0	**0**	**149**
11:30AM	1	56	0	0	**57**	0	0	0	0	**0**	0	78	0	0	**78**	1	0	0	0	**1**	**136**
11:45AM	1	70	1	0	**72**	1	0	0	0	**1**	0	87	0	0	**87**	0	0	0	0	**0**	**160**
Hourly Total	4	231	2	0	**237**	6	1	1	0	**8**	0	315	1	0	**316**	2	0	0	0	**2**	**563**
12:00PM	2	75	0	0	**77**	1	1	0	0	**2**	0	78	0	0	**78**	1	0	0	0	**1**	**158**
12:15PM	2	82	1	0	**85**	3	0	0	0	**3**	0	84	0	0	**84**	0	0	1	0	**1**	**173**
12:30PM	0	64	0	0	**64**	2	0	0	0	**2**	0	102	0	0	**102**	1	0	0	0	**1**	**169**
12:45PM	1	77	0	0	**78**	3	0	0	0	**3**	0	114	1	0	**115**	0	0	0	0	**0**	**196**
Hourly Total	5	298	1	0	**304**	9	1	0	0	**10**	0	378	1	0	**379**	2	0	1	0	**3**	**696**
1:00PM	0	84	0	0	**84**	1	0	0	0	**1**	0	91	2	0	**93**	3	0	0	0	**3**	**181**
1:15PM	0	62	1	0	**63**	1	0	1	0	**2**	1	79	0	0	**80**	0	0	0	0	**0**	**145**
1:30PM	0	86	1	0	**87**	1	0	0	0	**1**	1	71	1	0	**73**	1	1	0	0	**2**	**163**
1:45PM	1	49	0	0	**50**	2	0	1	0	**3**	1	90	0	0	**91**	0	0	0	0	**0**	**144**
Hourly Total	1	281	2	0	**284**	5	0	2	0	**7**	3	331	3	0	**337**	4	1	0	0	**5**	**633**
2:00PM	2	98	2	0	**102**	2	0	0	0	**2**	2	81	0	0	**83**	0	0	0	0	**0**	**187**
2:15PM	1	72	1	0	**74**	2	0	0	0	**2**	0	88	0	0	**88**	1	0	0	0	**1**	**165**
2:30PM	2	59	0	0	**61**	1	0	0	0	**1**	1	94	0	0	**95**	1	0	0	0	**1**	**158**
2:45PM	3	63	0	0	**66**	1	0	0	0	**1**	1	80	0	0	**81**	0	0	0	1	**1**	**149**
Hourly Total	8	292	3	0	**303**	6	0	0	0	**6**	4	343	0	0	**347**	2	0	0	1	**3**	**659**
3:00PM	1	86	0	0	**87**	1	0	0	0	**1**	0	102	0	0	**102**	2	1	0	0	**3**	**193**
3:15PM	2	80	0	0	**82**	1	0	0	0	**1**	0	101	0	0	**101**	1	1	0	0	**2**	**186**
3:30PM	2	91	1	0	**94**	0	0	0	0	**0**	0	92	0	0	**92**	0	0	0	0	**0**	**186**
3:45PM	1	68	1	0	**70**	1	0	0	0	**1**	1	117	4	0	**122**	1	0	0	0	**1**	**194**
Hourly Total	6	325	2	0	**333**	3	0	0	0	**3**	1	412	4	0	**417**	4	2	0	0	**6**	**759**
4:00PM	5	100	0	0	**105**	1	1	1	0	**3**	0	96	1	0	**97**	2	0	0	0	**2**	**207**
4:15PM	1	88	1	0	**90**	2	0	0	0	**2**	0	107	2	0	**109**	1	0	0	0	**1**	**202**
4:30PM	4	102	0	0	**106**	4	0	0	0	**4**	1	100	0	0	**101**	0	0	0	0	**0**	**211**
4:45PM	0	77	0	0	**77**	2	0	0	0	**2**	2	122	1	0	**125**	1	0	0	0	**1**	**205**
Hourly Total	10	367	1	0	**378**	9	1	1	0	**11**	3	425	4	0	**432**	4	0	0	0	**4**	**825**
5:00PM	2	104	2	0	**108**	0	0	0	0	**0**	1	104	0	0	**105**	0	0	0	0	**0**	**213**
5:15PM	2	85	0	0	**87**	1	0	0	0	**1**	0	103	0	0	**103**	1	1	0	0	**2**	**193**
5:30PM	2	97	1	0	**100**	0	0	0	0	**0**	0	116	0	0	**116**	3	0	1	0	**4**	**220**
5:45PM	1	85	0	0	**86**	0	0	0	0	**0**	0	93	2	0	**95**	2	0	0	0	**2**	**183**
Hourly Total	7	371	3	0	**381**	1	0	0	0	**1**	1	416	2	0	**419**	6	1	1	0	**8**	**809**
6:00PM	1	82	1	0	**84**	1	0	1	0	**2**	0	83	1	0	**84**	1	0	0	0	**1**	**171**
6:15PM	4	85	0	0	**89**	2	0	0	0	**2**	0	111	0	0	**111**	0	0	0	0	**0**	**202**
6:30PM	2	72	0	0	**74**	4	0	0	0	**4**	2	98	1	0	**101**	3	0	0	0	**3**	**182**
6:45PM	0	61	0	0	**61**	0	0	0	0	**0**	0	102	0	0	**102**	1	0	0	0	**1**	**164**
Hourly Total	7	300	1	0	**308**	7	0	1	0	**8**	2	394	2	0	**398**	5	0	0	0	**5**	**719**
7:00PM	3	68	1	0	**72**	0	0	0	0	**0**	1	83	0	0	**84**	0	1	0	0	**1**	**157**
7:15PM	1	57	0	0	**58**	0	0	0	0	**0**	0	82	1	0	**83**	1	0	0	0	**1**	**142**
7:30PM	2	60	0	0	**62**	0	0	0	0	**0**	0	68	1	0	**69**	0	0	0	0	**0**	**131**
7:45PM	2	46	2	0	**50**	2	0	0	0	**2**	0	53	1	0	**54**	0	0	0	0	**0**	**106**
Hourly Total	8	231	3	0	**242**	2	0	0	0	**2**	1	286	3	0	**290**	1	1	0	0	**2**	**536**
8:00PM	3	84	0	0	**87**	1	0	0	0	**1**	0	69	1	0	**70**	0	0	0	0	**0**	**158**
8:15PM	1	49	0	0	**50**	0	0	0	0	**0**	0	56	1	0	**57**	2	0	0	0	**2**	**109**
8:30PM	0	39	0	0	**39**	1	0	0	0	**1**	1	52	0	0	**53**	0	0	0	0	**0**	**93**
8:45PM	4	46	0	0	**50**	0	1	0	0	**1**	1	47	0	0	**48**	0	0	0	0	**0**	**99**
Hourly Total	8	218	0	0	**226**	2	1	0	0	**3**	2	224	2	0	**228**	2	0	0	0	**2**	**459**
9:00PM	1	36	1	0	**38**	0	0	0	0	**0**	0	35	1	0	**36**	2	0	0	0	**2**	**76**
9:15PM	2	32	0	0	**34**	0	0	1	0	**1**	0	50	0	0	**50**	0	0	0	0	**0**	**85**
9:30PM	0	34	0	0	**34**	0	0	0	0	**0**	0	34	0	0	**34**	0	0	0	0	**0**	**68**
9:45PM	0	25	0	0	**25**	0	0	0	0	**0**	0	34	0	0	**34**	1	0	0	0	**1**	**60**
Hourly Total	3	127	1	0	**131**	0	0	1	0	**1**	0	153	1	0	**154**	3	0	0	0	**3**	**289**
10:00PM	0	27	0	0	**27**	0	0	0	0	**0**	0	41	0	0	**41**	0	1	0	0	**1**	**69**
10:15PM	0	30	0	0	**30**	0	0	0	0	**0**	0	35	0	0	**35**	0	0	0	0	**0**	**65**
10:30PM	1	16	0	0	**17**	0	0	0	0	**0**	0	15	0	0	**15**	0	1	0	0	**1**	**33**
10:45PM	0	33	0	0	**33**	0	0	0	0	**0**	0	22	0	0	**22**	0	0	0	0	**0**	**55**

Leg Direction	Mass St. Southbound					21st St. Westbound					Mass St. Northbound					21st St. Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	1	106	0	0	**107**	0	0	0	0	**0**	0	113	0	0	**113**	0	2	0	0	**2**	**222**
11:00PM	1	58	0	0	**59**	0	0	0	0	**0**	0	11	0	0	**11**	0	1	0	0	**1**	**71**
11:15PM	0	18	0	0	**18**	0	0	0	0	**0**	1	9	0	0	**10**	0	0	0	0	**0**	**28**
11:30PM	0	13	0	0	**13**	0	0	0	0	**0**	0	10	0	0	**10**	0	0	0	0	**0**	**23**
11:45PM	2	11	0	0	**13**	1	0	0	0	**1**	0	13	0	0	**13**	0	0	0	0	**0**	**27**
Hourly Total	3	100	0	0	**103**	1	0	0	0	**1**	1	43	0	0	**44**	0	1	0	0	**1**	**149**
Total	88	4193	22	0	**4303**	77	5	8	0	**90**	25	5238	37	0	**5300**	50	9	3	1	**63**	**9756**
% Approach	2.0%	97.4%	0.5%	0%	-	85.6%	5.6%	8.9%	0%	-	0.5%	98.8%	0.7%	0%	-	79.4%	14.3%	4.8%	1.6%	-	-
% Total	0.9%	43.0%	0.2%	0%	**44.1%**	0.8%	0.1%	0.1%	0%	**0.9%**	0.3%	53.7%	0.4%	0%	**54.3%**	0.5%	0.1%	0%	0%	**0.6%**	-
Lights	88	4117	20	0	**4225**	75	5	7	0	**87**	25	5121	36	0	**5182**	49	9	3	1	**62**	9556
% Lights	100%	98.2%	90.9%	0%	**98.2%**	97.4%	100%	87.5%	0%	**96.7%**	100%	97.8%	97.3%	0%	**97.8%**	98.0%	100%	100%	100%	**98.4%**	97.9%
Articulated Trucks	0	17	0	0	**17**	0	0	0	0	**0**	0	23	0	0	**23**	0	0	0	0	**0**	40
% Articulated Trucks	0%	0.4%	0%	0%	**0.4%**	0%	0%	0%	0%	**0%**	0%	0.4%	0%	0%	**0.4%**	0%	0%	0%	0%	**0%**	0.4%
Buses and Single-Unit Trucks	0	59	2	0	**61**	2	0	1	0	**3**	0	94	1	0	**95**	1	0	0	0	**1**	160
% Buses and Single-Unit Trucks	0%	1.4%	9.1%	0%	**1.4%**	2.6%	0%	12.5%	0%	**3.3%**	0%	1.8%	2.7%	0%	**1.8%**	2.0%	0%	0%	0%	**1.6%**	1.6%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 21st St. - TMC
Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115754, Location: 38.946488, -95.235893

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 21st St. - TMC

Tue Oct 3, 2023
AM Peak (7:45 AM - 8:45 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115754, Location: 38.946488, -95.235893

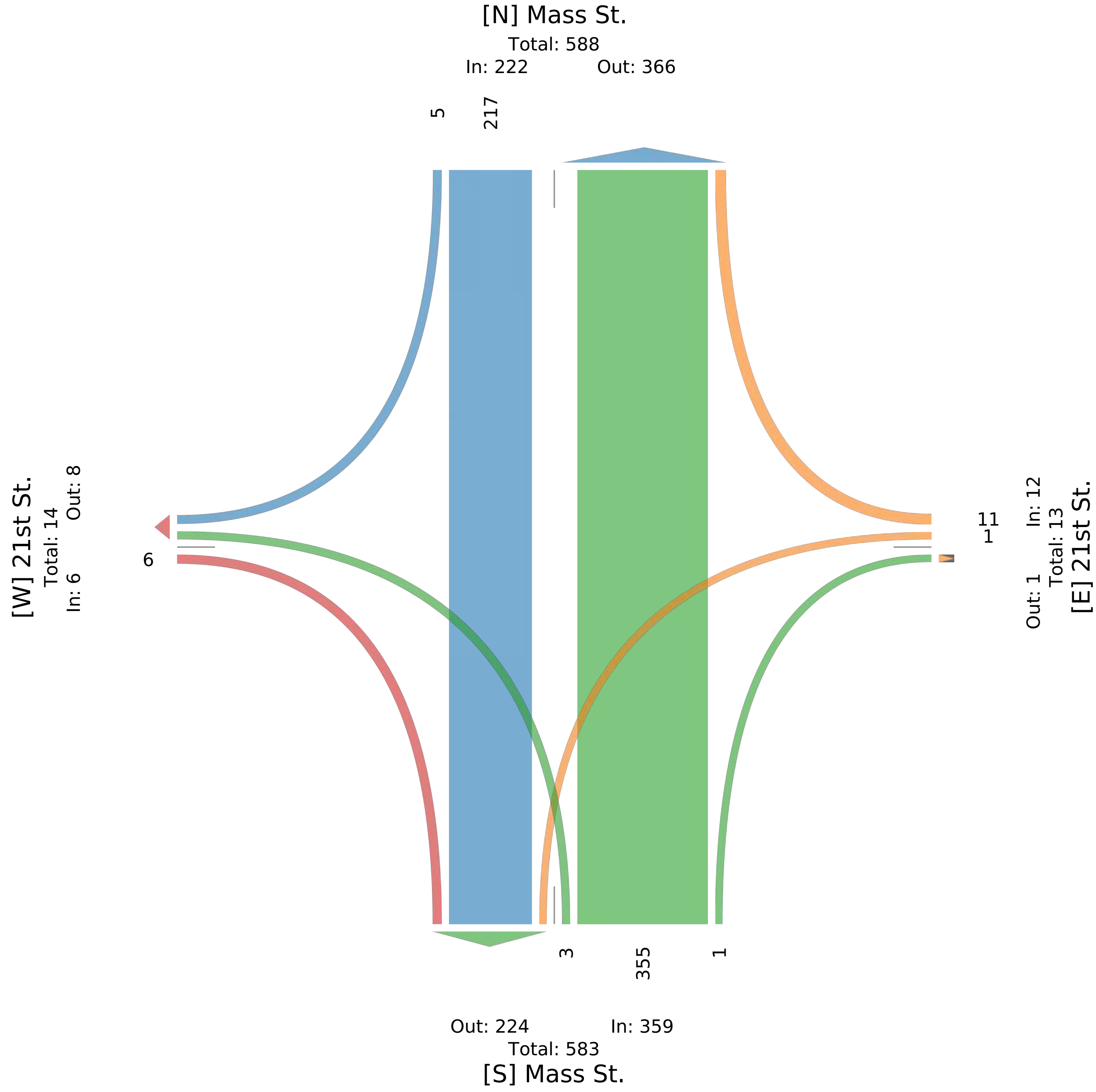
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg / Direction	Mass St. Southbound					21st St. Westbound					Mass St. Northbound					21st St. Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 7:45AM	1	43	0	0	**44**	1	0	1	0	**2**	0	111	2	0	**113**	5	0	0	0	**5**	**164**
8:00AM	3	64	0	0	**67**	3	0	0	0	**3**	0	89	0	0	**89**	1	0	0	0	**1**	**160**
8:15AM	0	58	0	0	**58**	4	0	0	0	**4**	0	88	0	0	**88**	0	0	0	0	**0**	**150**
8:30AM	1	52	0	0	**53**	3	0	0	0	**3**	1	67	1	0	**69**	0	0	0	0	**0**	**125**
Total	5	217	0	0	**222**	11	0	1	0	**12**	1	355	3	0	**359**	6	0	0	0	**6**	**599**
% Approach	2.3%	97.7%	0%	0%	-	91.7%	0%	8.3%	0%	-	0.3%	98.9%	0.8%	0%	-	100%	0%	0%	0%	-	-
% Total	0.8%	36.2%	0%	0%	**37.1%**	1.8%	0%	0.2%	0%	**2.0%**	0.2%	59.3%	0.5%	0%	**59.9%**	1.0%	0%	0%	0%	**1.0%**	-
PHF	0.417	0.848	-	-	**0.828**	0.688	-	0.250	-	**0.750**	0.250	0.800	0.375	-	**0.794**	0.300	-	-	-	**0.300**	0.913
Lights	5	212	0	0	**217**	11	0	1	0	**12**	1	343	3	0	**347**	6	0	0	0	**6**	582
% Lights	100%	97.7%	0%	0%	**97.7%**	100%	0%	100%	0%	**100%**	100%	96.6%	100%	0%	**96.7%**	100%	0%	0%	0%	**100%**	97.2%
Articulated Trucks	0	1	0	0	**1**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	3
% Articulated Trucks	0%	0.5%	0%	0%	**0.5%**	0%	0%	0%	0%	**0%**	0%	0.6%	0%	0%	**0.6%**	0%	0%	0%	0%	**0%**	0.5%
Buses and Single-Unit Trucks	0	4	0	0	**4**	0	0	0	0	**0**	0	10	0	0	**10**	0	0	0	0	**0**	14
% Buses and Single-Unit Trucks	0%	1.8%	0%	0%	**1.8%**	0%	0%	0%	0%	**0%**	0%	2.8%	0%	0%	**2.8%**	0%	0%	0%	0%	**0%**	2.3%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 21st St. - TMC
Tue Oct 3, 2023
AM Peak (7:45 AM - 8:45 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115754, Location: 38.946488, -95.235893

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 21st St. - TMC

Tue Oct 3, 2023
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115754, Location: 38.946488, -95.235893

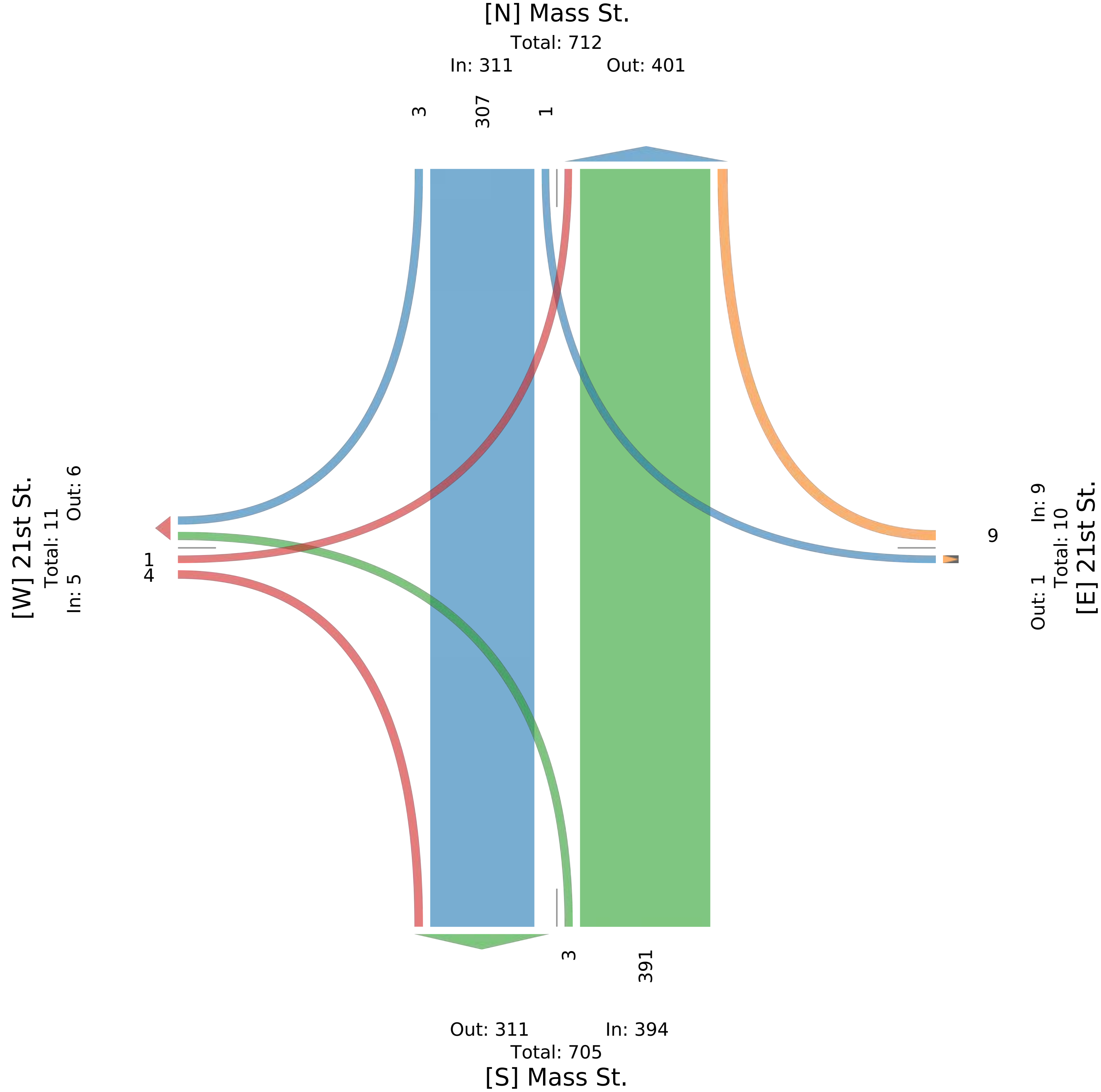
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg Direction	Mass St. Southbound					21st St. Westbound					Mass St. Northbound					21st St. Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 12:15PM	2	82	1	0	**85**	3	0	0	0	**3**	0	84	0	0	**84**	0	0	1	0	**1**	**173**
12:30PM	0	64	0	0	**64**	2	0	0	0	**2**	0	102	0	0	**102**	1	0	0	0	**1**	**169**
12:45PM	1	77	0	0	**78**	3	0	0	0	**3**	0	114	1	0	**115**	0	0	0	0	**0**	**196**
1:00PM	0	84	0	0	**84**	1	0	0	0	**1**	0	91	2	0	**93**	3	0	0	0	**3**	**181**
Total	3	307	1	0	**311**	9	0	0	0	**9**	0	391	3	0	**394**	4	0	1	0	**5**	**719**
% Approach	1.0%	98.7%	0.3%	0%	-	100%	0%	0%	0%	-	0%	99.2%	0.8%	0%	-	80.0%	0%	20.0%	0%	-	-
% Total	0.4%	42.7%	0.1%	0%	**43.3%**	1.3%	0%	0%	0%	**1.3%**	0%	54.4%	0.4%	0%	**54.8%**	0.6%	0%	0.1%	0%	**0.7%**	-
PHF	0.375	0.914	0.250	-	**0.915**	0.750	-	-	-	**0.750**	-	0.857	0.375	-	**0.857**	0.333	-	0.250	-	**0.417**	0.917
Lights	3	303	1	0	**307**	9	0	0	0	**9**	0	388	2	0	**390**	4	0	1	0	**5**	711
% Lights	100%	98.7%	100%	0%	**98.7%**	100%	0%	0%	0%	**100%**	0%	99.2%	66.7%	0%	**99.0%**	100%	0%	100%	0%	**100%**	98.9%
Articulated Trucks	0	1	0	0	**1**	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	3
% Articulated Trucks	0%	0.3%	0%	0%	**0.3%**	0%	0%	0%	0%	**0%**	0%	0.5%	0%	0%	**0.5%**	0%	0%	0%	0%	**0%**	0.4%
Buses and Single-Unit Trucks	0	3	0	0	**3**	0	0	0	0	**0**	0	1	1	0	**2**	0	0	0	0	**0**	5
% Buses and Single-Unit Trucks	0%	1.0%	0%	0%	**1.0%**	0%	0%	0%	0%	**0%**	0%	0.3%	33.3%	0%	**0.5%**	0%	0%	0%	0%	**0%**	0.7%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 21st St. - TMC
Tue Oct 3, 2023
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115754, Location: 38.946488, -95.235893

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 21st St. - TMC

Tue Oct 3, 2023
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115754, Location: 38.946488, -95.235893

TREKK DESIGN GROUP, LLC

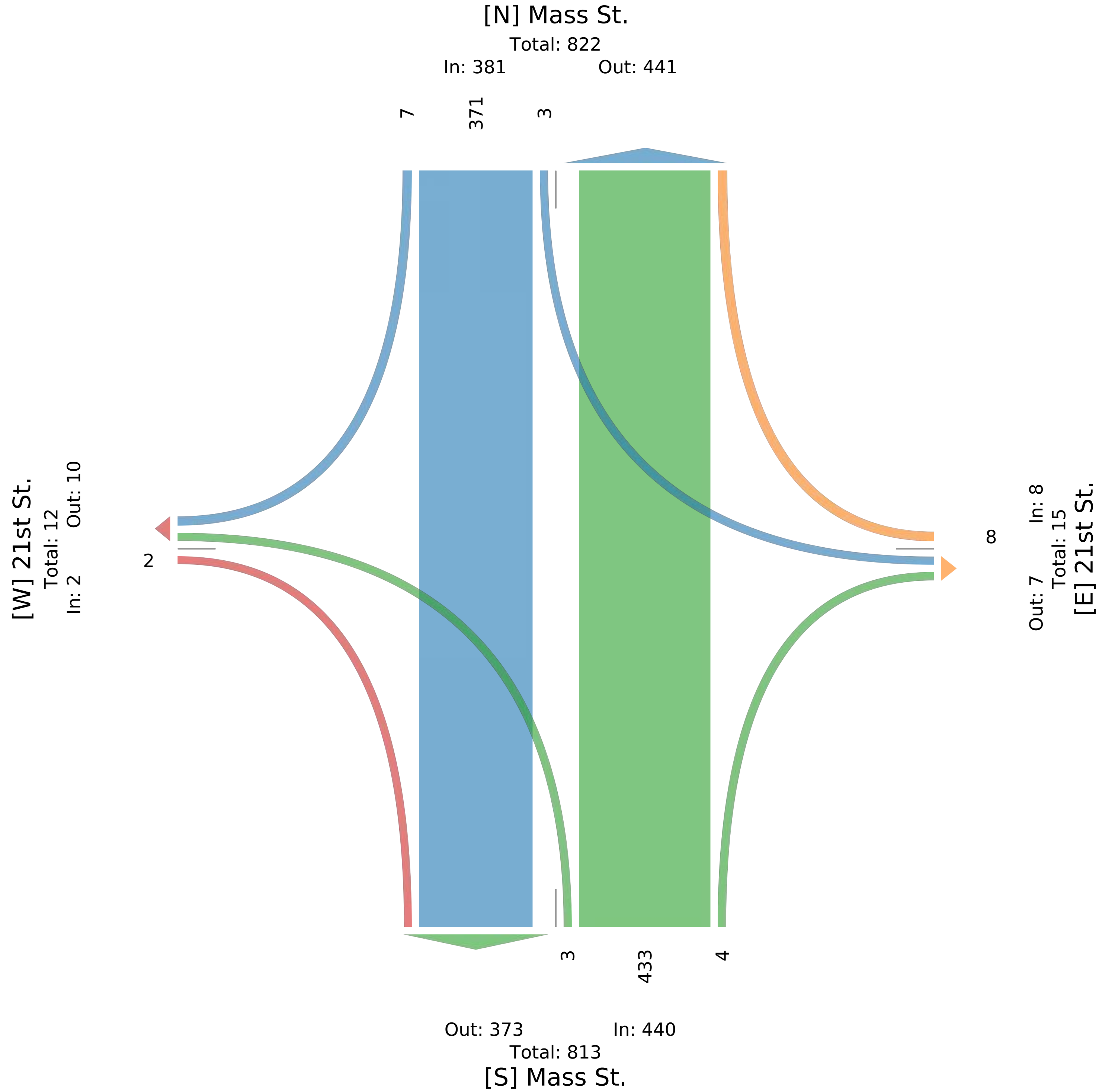
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					21st St.					Mass St.					21st St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 4:15PM	1	88	1	0	**90**	2	0	0	0	**2**	0	107	2	0	**109**	1	0	0	0	**1**	**202**
4:30PM	4	102	0	0	**106**	4	0	0	0	**4**	1	100	0	0	**101**	0	0	0	0	**0**	**211**
4:45PM	0	77	0	0	**77**	2	0	0	0	**2**	2	122	1	0	**125**	1	0	0	0	**1**	**205**
5:00PM	2	104	2	0	**108**	0	0	0	0	**0**	1	104	0	0	**105**	0	0	0	0	**0**	**213**
Total	7	371	3	0	**381**	8	0	0	0	**8**	4	433	3	0	**440**	2	0	0	0	**2**	**831**
% Approach	1.8%	97.4%	0.8%	0%	-	100%	0%	0%	0%	-	0.9%	98.4%	0.7%	0%	-	100%	0%	0%	0%	-	-
% Total	0.8%	44.6%	0.4%	0%	**45.8%**	1.0%	0%	0%	0%	**1.0%**	0.5%	52.1%	0.4%	0%	**52.9%**	0.2%	0%	0%	0%	**0.2%**	-
PHF	0.438	0.892	0.375	-	**0.882**	0.500	-	-	-	**0.500**	0.500	0.887	0.375	-	**0.880**	0.500	-	-	-	**0.500**	0.975
Lights	7	369	3	0	**379**	8	0	0	0	**8**	4	427	3	0	**434**	2	0	0	0	**2**	823
% Lights	100%	99.5%	100%	0%	**99.5%**	100%	0%	0%	0%	**100%**	100%	98.6%	100%	0%	**98.6%**	100%	0%	0%	0%	**100%**	99.0%
Articulated Trucks	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%	0%	0%	0%	**0%**	0%
Buses and Single-Unit Trucks	0	2	0	0	**2**	0	0	0	0	**0**	0	6	0	0	**6**	0	0	0	0	**0**	8
% Buses and Single-Unit Trucks	0%	0.5%	0%	0%	**0.5%**	0%	0%	0%	0%	**0%**	0%	1.4%	0%	0%	**1.4%**	0%	0%	0%	0%	**0%**	1.0%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 21st St. - TMC
Tue Oct 3, 2023
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115754, Location: 38.946488, -95.235893

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 23rd St. - TMC
Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115775, Location: 38.942827, -95.235922

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					23rd St.					Mass St.					23rd St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 12:00AM	4	0	2	0	**6**	0	16	0	0	**16**	0	1	3	0	**4**	1	15	6	0	**22**	**48**
12:15AM	4	0	3	0	**7**	4	5	0	0	**9**	0	1	1	0	**2**	4	9	1	0	**14**	**32**
12:30AM	2	2	4	0	**8**	1	11	0	0	**12**	1	0	2	0	**3**	1	10	3	0	**14**	**37**
12:45AM	1	1	1	0	**3**	4	5	0	0	**9**	1	1	2	0	**4**	1	5	2	0	**8**	**24**
Hourly Total	11	3	10	0	**24**	9	37	0	0	**46**	2	3	8	0	**13**	7	39	12	0	**58**	**141**
1:00AM	1	0	1	0	**2**	1	9	0	0	**10**	1	0	3	0	**4**	3	3	2	0	**8**	**24**
1:15AM	2	1	0	0	**3**	1	7	1	0	**9**	0	1	0	0	**1**	1	8	1	0	**10**	**23**
1:30AM	1	0	0	0	**1**	0	8	0	0	**8**	0	0	0	0	**0**	1	6	2	0	**9**	**18**
1:45AM	3	0	0	0	**3**	0	3	0	0	**3**	0	0	0	0	**0**	1	3	4	0	**8**	**14**
Hourly Total	7	1	1	0	**9**	2	27	1	0	**30**	1	1	3	0	**5**	6	20	9	0	**35**	**79**
2:00AM	2	0	3	0	**5**	2	5	0	0	**7**	0	0	0	0	**0**	0	5	2	0	**7**	**19**
2:15AM	0	1	0	0	**1**	1	7	0	0	**8**	0	0	2	0	**2**	0	6	0	0	**6**	**17**
2:30AM	3	0	1	0	**4**	0	3	0	0	**3**	0	0	0	0	**0**	0	4	0	0	**4**	**11**
2:45AM	1	0	0	0	**1**	0	3	0	0	**3**	0	0	0	0	**0**	0	4	3	0	**7**	**11**
Hourly Total	6	1	4	0	**11**	3	18	0	0	**21**	0	0	2	0	**2**	0	19	5	0	**24**	**58**
3:00AM	1	0	0	0	**1**	0	2	0	0	**2**	0	0	0	0	**0**	0	4	0	0	**4**	**7**
3:15AM	3	0	0	0	**3**	2	4	0	0	**6**	0	0	0	0	**0**	2	1	4	0	**7**	**16**
3:30AM	0	1	1	0	**2**	0	7	0	0	**7**	0	0	0	0	**0**	0	3	1	0	**4**	**13**
3:45AM	2	0	1	0	**3**	1	7	0	0	**8**	0	0	0	0	**0**	0	2	1	0	**3**	**14**
Hourly Total	6	1	2	0	**9**	3	20	0	0	**23**	0	0	0	0	**0**	2	10	6	0	**18**	**50**
4:00AM	0	0	1	0	**1**	0	2	0	0	**2**	0	0	0	0	**0**	0	5	1	0	**6**	**9**
4:15AM	3	0	0	0	**3**	0	10	0	0	**10**	0	0	0	0	**0**	0	8	0	0	**8**	**21**
4:30AM	2	0	0	0	**2**	2	8	0	0	**10**	0	0	1	0	**1**	0	12	2	0	**14**	**27**
4:45AM	3	0	3	0	**6**	0	7	0	0	**7**	0	0	0	0	**0**	1	9	2	0	**12**	**25**
Hourly Total	8	0	4	0	**12**	2	27	0	0	**29**	0	0	1	0	**1**	1	34	5	0	**40**	**82**
5:00AM	1	0	2	0	**3**	2	10	0	0	**12**	0	1	0	0	**1**	0	19	4	0	**23**	**39**
5:15AM	2	0	6	0	**8**	4	12	0	0	**16**	0	1	1	0	**2**	1	22	2	0	**25**	**51**
5:30AM	5	0	4	0	**9**	5	16	0	0	**21**	0	0	0	0	**0**	2	39	6	0	**47**	**77**
5:45AM	10	1	3	0	**14**	5	27	0	0	**32**	0	1	2	0	**3**	5	40	17	0	**62**	**111**
Hourly Total	18	1	15	0	**34**	16	65	0	0	**81**	0	3	3	0	**6**	8	120	29	0	**157**	**278**
6:00AM	12	0	9	0	**21**	10	21	1	0	**32**	0	1	0	0	**1**	3	34	13	0	**50**	**104**
6:15AM	4	2	9	0	**15**	8	26	0	0	**34**	0	0	2	0	**2**	6	39	19	0	**64**	**115**
6:30AM	13	1	4	0	**18**	14	54	1	0	**69**	0	0	2	0	**2**	9	56	17	0	**82**	**171**
6:45AM	21	4	9	0	**34**	15	41	5	0	**61**	1	0	1	0	**2**	28	53	26	0	**107**	**204**
Hourly Total	50	7	31	0	**88**	47	142	7	0	**196**	1	1	5	0	**7**	46	182	75	0	**303**	**594**
7:00AM	16	1	9	0	**26**	14	47	0	0	**61**	1	2	8	0	**11**	10	55	30	0	**95**	**193**
7:15AM	18	0	7	0	**25**	21	57	0	0	**78**	1	1	4	0	**6**	4	79	35	0	**118**	**227**
7:30AM	24	5	9	0	**38**	21	97	0	0	**118**	0	6	6	0	**12**	9	88	44	0	**141**	**309**
7:45AM	34	5	12	0	**51**	24	120	1	0	**145**	3	3	9	0	**15**	16	135	81	0	**232**	**443**
Hourly Total	92	11	37	0	**140**	80	321	1	0	**402**	5	12	27	0	**44**	39	357	190	0	**586**	**1172**
8:00AM	40	6	14	0	**60**	19	92	1	0	**112**	1	2	6	0	**9**	10	101	60	0	**171**	**352**
8:15AM	38	5	16	0	**59**	28	90	3	0	**121**	0	1	7	0	**8**	11	68	56	0	**135**	**323**
8:30AM	38	4	10	0	**52**	19	72	0	0	**91**	0	3	8	0	**11**	6	72	46	0	**124**	**278**
8:45AM	30	4	13	0	**47**	29	81	1	0	**111**	2	1	10	0	**13**	10	85	48	0	**143**	**314**
Hourly Total	146	19	53	0	**218**	95	335	5	0	**435**	3	7	31	0	**41**	37	326	210	0	**573**	**1267**
9:00AM	29	5	11	0	**45**	20	70	1	0	**91**	1	1	10	0	**12**	14	79	53	0	**146**	**294**
9:15AM	32	1	19	0	**52**	24	80	0	0	**104**	1	2	10	0	**13**	12	69	52	0	**133**	**302**
9:30AM	38	2	16	0	**56**	23	75	1	0	**99**	1	1	7	0	**9**	27	78	63	0	**168**	**332**
9:45AM	25	5	13	0	**43**	18	62	1	0	**81**	2	2	12	0	**16**	18	68	54	0	**140**	**280**
Hourly Total	124	13	59	0	**196**	85	287	3	0	**375**	5	6	39	0	**50**	71	294	222	0	**587**	**1208**
10:00AM	29	5	21	0	**55**	18	52	2	0	**72**	0	1	11	0	**12**	16	60	33	0	**109**	**248**
10:15AM	31	3	16	0	**50**	25	66	2	0	**93**	1	4	6	0	**11**	12	70	39	0	**121**	**275**
10:30AM	47	3	21	0	**71**	26	90	0	0	**116**	1	4	6	0	**11**	9	70	36	0	**115**	**313**
10:45AM	28	4	12	0	**44**	19	70	1	0	**90**	3	11	14	0	**28**	12	74	55	0	**141**	**303**

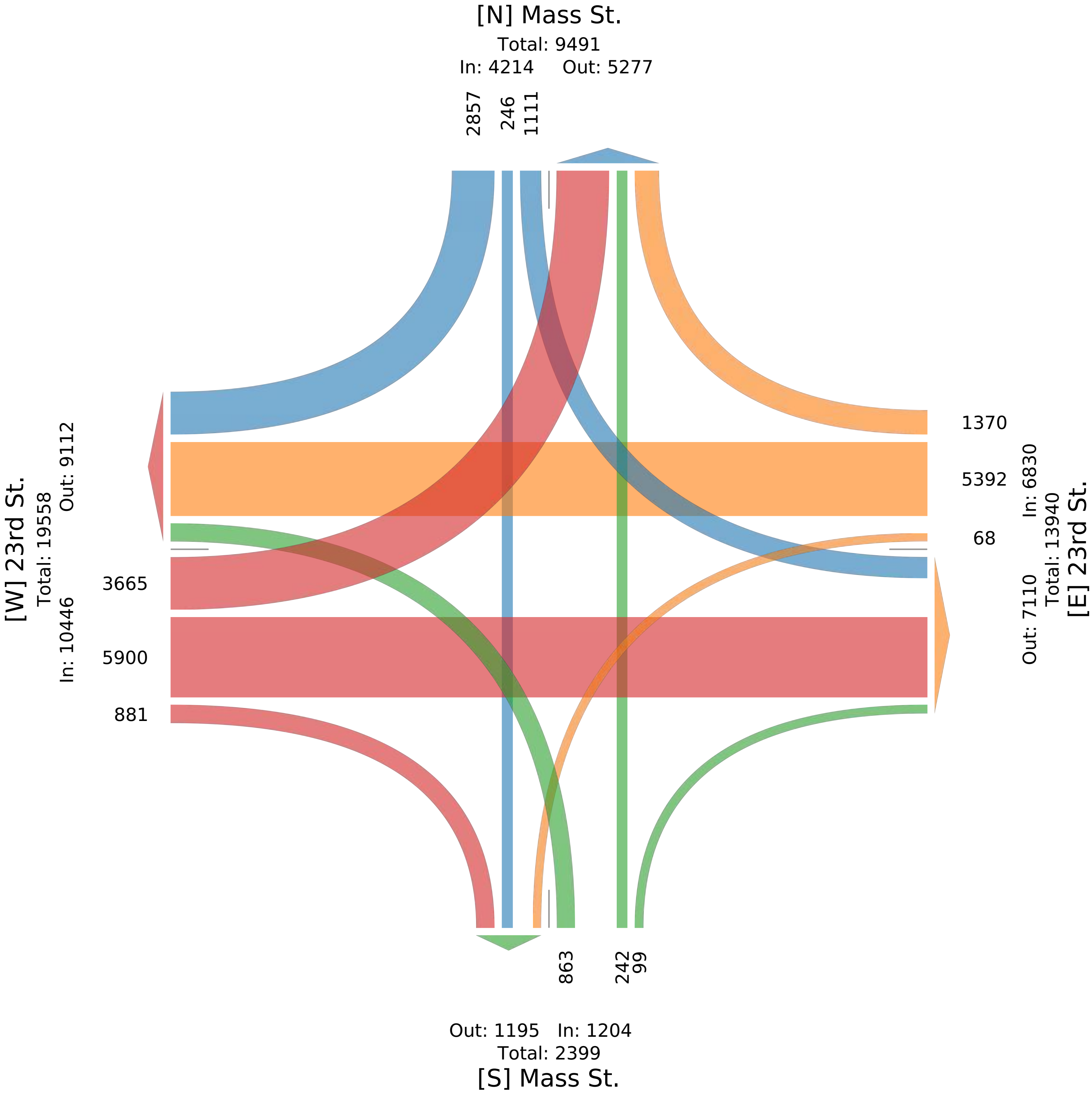
Leg	Mass St.					23rd St.					Mass St.					23rd St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	135	15	70	0	**220**	88	278	5	0	**371**	5	20	37	0	**62**	49	274	163	0	**486**	**1139**
11:00AM	25	5	17	0	**47**	18	88	0	0	**106**	4	5	19	0	**28**	14	72	48	0	**134**	**315**
11:15AM	47	0	12	0	**59**	26	84	2	0	**112**	1	5	13	0	**19**	19	98	50	0	**167**	**357**
11:30AM	42	2	10	0	**54**	12	83	0	0	**95**	1	6	16	0	**23**	14	93	56	0	**163**	**335**
11:45AM	61	3	13	0	**77**	27	77	0	0	**104**	2	5	23	0	**30**	7	101	45	0	**153**	**364**
Hourly Total	175	10	52	0	**237**	83	332	2	0	**417**	8	21	71	0	**100**	54	364	199	0	**617**	**1371**
12:00PM	49	6	19	0	**74**	16	100	0	0	**116**	2	8	23	0	**33**	6	102	54	0	**162**	**385**
12:15PM	57	10	16	0	**83**	21	81	1	0	**103**	2	7	21	0	**30**	34	101	61	0	**196**	**412**
12:30PM	46	4	12	0	**62**	28	90	0	0	**118**	0	8	23	0	**31**	24	126	72	0	**222**	**433**
12:45PM	41	15	22	0	**78**	24	82	0	0	**106**	0	5	15	0	**20**	24	105	80	0	**209**	**413**
Hourly Total	193	35	69	0	**297**	89	353	1	0	**443**	4	28	82	0	**114**	88	434	267	0	**789**	**1643**
1:00PM	60	8	16	0	**84**	17	86	0	0	**103**	4	3	10	0	**17**	16	104	76	0	**196**	**400**
1:15PM	45	2	18	0	**65**	24	69	3	0	**96**	1	3	14	0	**18**	20	93	61	0	**174**	**353**
1:30PM	60	3	23	0	**86**	11	74	0	0	**85**	1	2	14	0	**17**	14	95	55	0	**164**	**352**
1:45PM	42	4	10	0	**56**	19	72	1	0	**92**	0	10	18	0	**28**	11	93	61	0	**165**	**341**
Hourly Total	207	17	67	0	**291**	71	301	4	0	**376**	6	18	56	0	**80**	61	385	253	0	**699**	**1446**
2:00PM	67	6	22	0	**95**	12	90	6	0	**108**	1	7	16	0	**24**	22	104	69	0	**195**	**422**
2:15PM	44	3	26	0	**73**	16	91	1	0	**108**	2	6	14	0	**22**	25	102	57	0	**184**	**387**
2:30PM	43	4	12	0	**59**	24	100	1	0	**125**	3	5	20	0	**28**	16	93	69	0	**178**	**390**
2:45PM	43	4	17	0	**64**	12	90	1	0	**103**	1	3	11	0	**15**	7	98	62	0	**167**	**349**
Hourly Total	197	17	77	0	**291**	64	371	9	0	**444**	7	21	61	0	**89**	70	397	257	0	**724**	**1548**
3:00PM	62	3	18	0	**83**	17	78	1	0	**96**	1	5	17	0	**23**	12	85	82	0	**179**	**381**
3:15PM	48	4	33	0	**85**	18	99	1	0	**118**	2	9	15	0	**26**	8	130	71	0	**209**	**438**
3:30PM	60	2	24	0	**86**	21	106	0	0	**127**	2	6	23	0	**31**	8	100	65	0	**173**	**417**
3:45PM	48	6	20	0	**74**	29	113	0	0	**142**	4	6	23	0	**33**	12	98	87	0	**197**	**446**
Hourly Total	218	15	95	0	**328**	85	396	2	0	**483**	9	26	78	0	**113**	40	413	305	0	**758**	**1682**
4:00PM	66	4	28	0	**98**	26	112	1	0	**139**	2	10	14	0	**26**	9	114	64	0	**187**	**450**
4:15PM	58	1	22	0	**81**	25	108	0	0	**133**	3	5	15	0	**23**	22	115	82	0	**219**	**456**
4:30PM	74	6	27	0	**107**	19	99	1	0	**119**	8	12	30	0	**50**	9	113	64	0	**186**	**462**
4:45PM	55	2	12	0	**69**	33	124	1	0	**158**	2	6	18	0	**26**	9	124	96	0	**229**	**482**
Hourly Total	253	13	89	0	**355**	103	443	3	0	**549**	15	33	77	0	**125**	49	466	306	0	**821**	**1850**
5:00PM	85	3	20	0	**108**	27	129	0	0	**156**	1	1	27	0	**29**	8	111	65	0	**184**	**477**
5:15PM	58	2	19	0	**79**	26	120	2	0	**148**	0	1	14	0	**15**	7	115	82	0	**204**	**446**
5:30PM	81	4	17	0	**102**	20	101	3	0	**124**	1	2	17	0	**20**	13	85	82	0	**180**	**426**
5:45PM	57	5	22	0	**84**	15	89	1	0	**105**	2	3	10	0	**15**	13	112	81	0	**206**	**410**
Hourly Total	281	14	78	0	**373**	88	439	6	0	**533**	4	7	68	0	**79**	41	423	310	0	**774**	**1759**
6:00PM	63	5	18	0	**86**	18	93	0	0	**111**	1	3	15	0	**19**	9	102	73	0	**184**	**400**
6:15PM	64	5	16	0	**85**	27	102	1	0	**130**	0	3	10	0	**13**	12	109	74	0	**195**	**423**
6:30PM	61	2	15	0	**78**	25	112	1	0	**138**	3	3	16	0	**22**	11	111	78	0	**200**	**438**
6:45PM	48	2	12	0	**62**	29	70	0	0	**99**	0	1	9	0	**10**	11	93	70	0	**174**	**345**
Hourly Total	236	14	61	0	**311**	99	377	2	0	**478**	4	10	50	0	**64**	43	415	295	0	**753**	**1606**
7:00PM	47	4	18	0	**69**	23	75	1	0	**99**	0	3	17	0	**20**	4	79	62	0	**145**	**333**
7:15PM	45	3	7	0	**55**	19	68	0	0	**87**	0	3	18	0	**21**	8	83	63	0	**154**	**317**
7:30PM	38	3	18	0	**59**	24	70	1	0	**95**	3	1	6	0	**10**	12	80	49	0	**141**	**305**
7:45PM	30	3	11	0	**44**	10	58	1	0	**69**	2	6	13	0	**21**	12	65	34	0	**111**	**245**
Hourly Total	160	13	54	0	**227**	76	271	3	0	**350**	5	13	54	0	**72**	36	307	208	0	**551**	**1200**
8:00PM	58	5	19	0	**82**	24	59	0	0	**83**	0	3	12	0	**15**	13	72	45	0	**130**	**310**
8:15PM	29	5	13	0	**47**	18	60	0	0	**78**	1	0	12	0	**13**	5	75	39	0	**119**	**257**
8:30PM	28	1	12	0	**41**	19	38	2	0	**59**	1	0	7	0	**8**	9	58	39	0	**106**	**214**
8:45PM	26	1	16	0	**43**	15	54	0	0	**69**	0	1	2	0	**3**	9	51	31	0	**91**	**206**
Hourly Total	141	12	60	0	**213**	76	211	2	0	**289**	2	4	33	0	**39**	36	256	154	0	**446**	**987**
9:00PM	21	2	14	0	**37**	13	51	0	0	**64**	2	0	11	0	**13**	10	44	25	0	**79**	**193**
9:15PM	25	0	7	0	**32**	14	44	1	0	**59**	3	0	11	0	**14**	8	51	32	0	**91**	**196**
9:30PM	23	3	6	0	**32**	11	32	1	0	**44**	0	0	7	0	**7**	5	53	22	0	**80**	**163**
9:45PM	14	2	11	0	**27**	11	40	1	0	**52**	1	0	4	0	**5**	6	44	24	0	**74**	**158**
Hourly Total	83	7	38	0	**128**	49	167	3	0	**219**	6	0	33	0	**39**	29	192	103	0	**324**	**710**
10:00PM	15	1	10	0	**26**	14	29	0	0	**43**	1	2	9	0	**12**	9	27	22	0	**58**	**139**
10:15PM	19	3	7	0	**29**	14	29	0	0	**43**	1	1	2	0	**4**	11	23	16	0	**50**	**126**
10:30PM	10	0	6	0	**16**	8	28	1	0	**37**	1	0	6	0	**7**	5	31	9	0	**45**	**105**
10:45PM	17	0	16	0	**33**	6	21	1	0	**28**	1	1	7	0	**9**	13	17	11	0	**41**	**111**

Leg Direction	Mass St. Southbound					23rd St. Westbound					Mass St. Northbound					23rd St. Eastbound					
Time	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	R	T	L	U	**App**	**Int**
Hourly Total	61	4	39	0	**104**	42	107	2	0	**151**	4	4	24	0	**32**	38	98	58	0	**194**	**481**
11:00PM	23	1	33	0	**57**	3	18	2	0	**23**	2	2	6	0	**10**	12	28	5	0	**45**	**135**
11:15PM	12	0	7	0	**19**	3	22	3	0	**28**	0	0	6	0	**6**	9	18	6	0	**33**	**86**
11:30PM	5	2	5	0	**12**	4	13	1	0	**18**	1	0	3	0	**4**	5	10	7	0	**22**	**56**
11:45PM	9	0	1	0	**10**	5	14	1	0	**20**	0	2	5	0	**7**	4	19	6	0	**29**	**66**
Hourly Total	49	3	46	0	**98**	15	67	7	0	**89**	3	4	20	0	**27**	30	75	24	0	**129**	**343**
Total	2857	246	1111	0	**4214**	1370	5392	68	0	**6830**	99	242	863	0	**1204**	881	5900	3665	0	**10446**	**22694**
% Approach	67.8%	5.8%	26.4%	0%	-	20.1%	78.9%	1.0%	0%	-	8.2%	20.1%	71.7%	0%	-	8.4%	56.5%	35.1%	0%	-	-
% Total	12.6%	1.1%	4.9%	0%	**18.6%**	6.0%	23.8%	0.3%	0%	**30.1%**	0.4%	1.1%	3.8%	0%	**5.3%**	3.9%	26.0%	16.1%	0%	**46.0%**	-
Lights	2814	243	1079	0	**4136**	1301	5158	65	0	**6524**	98	240	832	0	**1170**	834	5758	3611	0	**10203**	22033
% Lights	98.5%	98.8%	97.1%	0%	**98.1%**	95.0%	95.7%	95.6%	0%	**95.5%**	99.0%	99.2%	96.4%	0%	**97.2%**	94.7%	97.6%	98.5%	0%	**97.7%**	97.1%
Articulated Trucks	9	1	9	0	**19**	11	34	0	0	**45**	0	0	0	0	**0**	0	25	12	0	**37**	101
% Articulated Trucks	0.3%	0.4%	0.8%	0%	**0.5%**	0.8%	0.6%	0%	0%	**0.7%**	0%	0%	0%	0%	**0%**	0%	0.4%	0.3%	0%	**0.4%**	0.4%
Buses and Single-Unit Trucks	34	2	23	0	**59**	58	200	3	0	**261**	1	2	31	0	**34**	47	117	42	0	**206**	560
% Buses and Single-Unit Trucks	1.2%	0.8%	2.1%	0%	**1.4%**	4.2%	3.7%	4.4%	0%	**3.8%**	1.0%	0.8%	3.6%	0%	**2.8%**	5.3%	2.0%	1.1%	0%	**2.0%**	2.5%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 23rd St. - TMC
Tue Oct 3, 2023
Full Length (12 AM-12 AM (+1))
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115775, Location: 38.942827, -95.235922

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 23rd St. - TMC

Tue Oct 3, 2023
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115775, Location: 38.942827, -95.235922

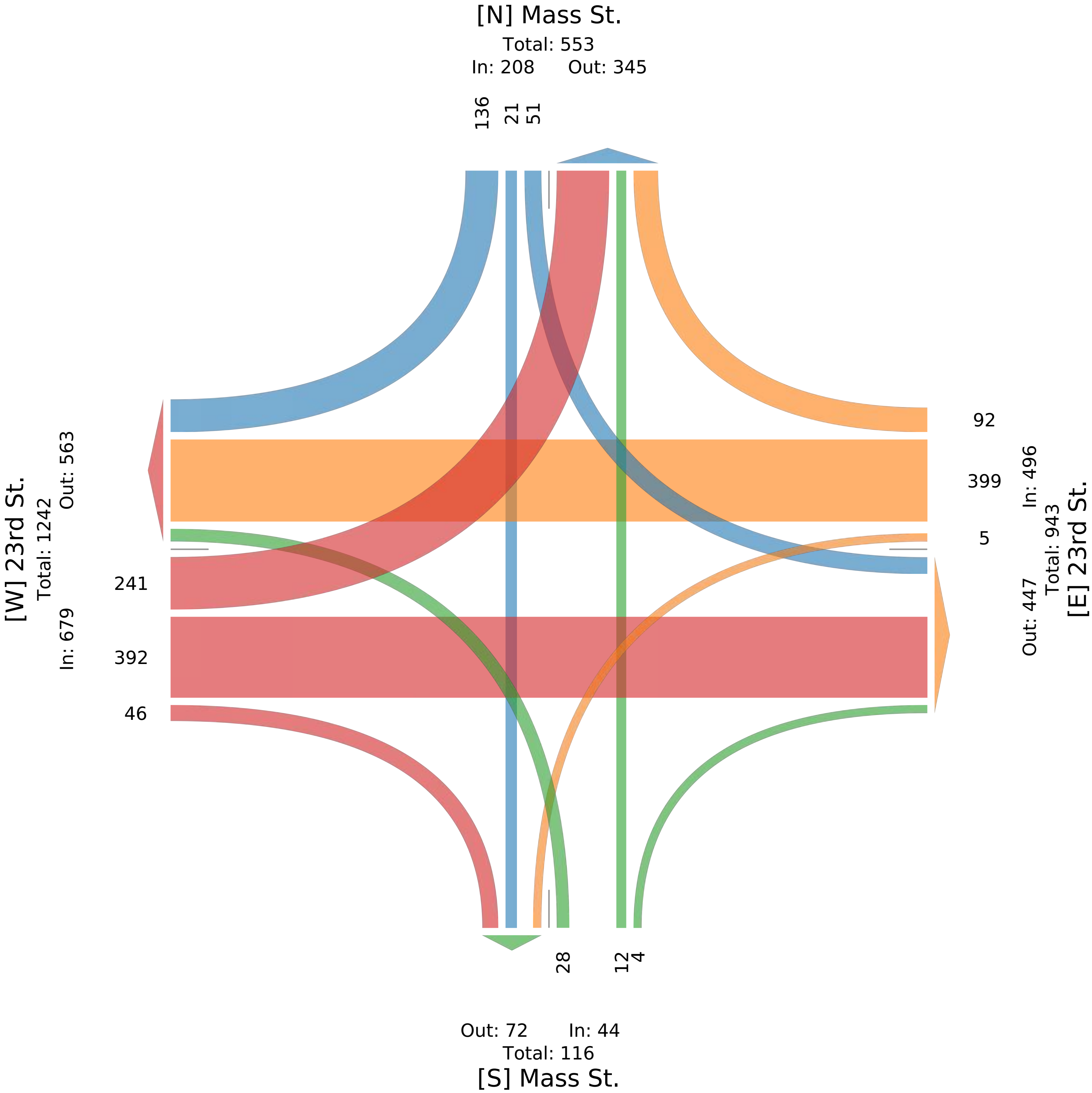
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					23rd St.					Mass St.					23rd St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 7:30AM	24	5	9	0	**38**	21	97	0	0	**118**	0	6	6	0	**12**	9	88	44	0	**141**	**309**
7:45AM	34	5	12	0	**51**	24	120	1	0	**145**	3	3	9	0	**15**	16	135	81	0	**232**	**443**
8:00AM	40	6	14	0	**60**	19	92	1	0	**112**	1	2	6	0	**9**	10	101	60	0	**171**	**352**
8:15AM	38	5	16	0	**59**	28	90	3	0	**121**	0	1	7	0	**8**	11	68	56	0	**135**	**323**
Total	136	21	51	0	**208**	92	399	5	0	**496**	4	12	28	0	**44**	46	392	241	0	**679**	**1427**
% Approach	65.4%	10.1%	24.5%	0%	-	18.5%	80.4%	1.0%	0%	-	9.1%	27.3%	63.6%	0%	-	6.8%	57.7%	35.5%	0%	-	-
% Total	9.5%	1.5%	3.6%	0%	**14.6%**	6.4%	28.0%	0.4%	0%	**34.8%**	0.3%	0.8%	2.0%	0%	**3.1%**	3.2%	27.5%	16.9%	0%	**47.6%**	-
PHF	0.850	0.875	0.797	-	**0.867**	0.821	0.831	0.417	-	**0.855**	0.333	0.500	0.778	-	**0.733**	0.719	0.726	0.744	-	**0.732**	0.805
Lights	132	21	50	0	**203**	84	382	4	0	**470**	4	11	26	0	**41**	43	385	235	0	**663**	1377
% Lights	97.1%	100%	98.0%	0%	**97.6%**	91.3%	95.7%	80.0%	0%	**94.8%**	100%	91.7%	92.9%	0%	**93.2%**	93.5%	98.2%	97.5%	0%	**97.6%**	96.5%
Articulated Trucks	0	0	0	0	**0**	0	2	0	0	**2**	0	0	0	0	**0**	0	1	2	0	**3**	5
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0.5%	0%	0%	**0.4%**	0%	0%	0%	0%	**0%**	0%	0.3%	0.8%	0%	**0.4%**	0.4%
Buses and Single-Unit Trucks	4	0	1	0	**5**	8	15	1	0	**24**	0	1	2	0	**3**	3	6	4	0	**13**	45
% Buses and Single-Unit Trucks	2.9%	0%	2.0%	0%	**2.4%**	8.7%	3.8%	20.0%	0%	**4.8%**	0%	8.3%	7.1%	0%	**6.8%**	6.5%	1.5%	1.7%	0%	**1.9%**	3.2%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 23rd St. - TMC
Tue Oct 3, 2023
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115775, Location: 38.942827, -95.235922

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 23rd St. - TMC

Tue Oct 3, 2023
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115775, Location: 38.942827, -95.235922

TREKK DESIGN GROUP, LLC

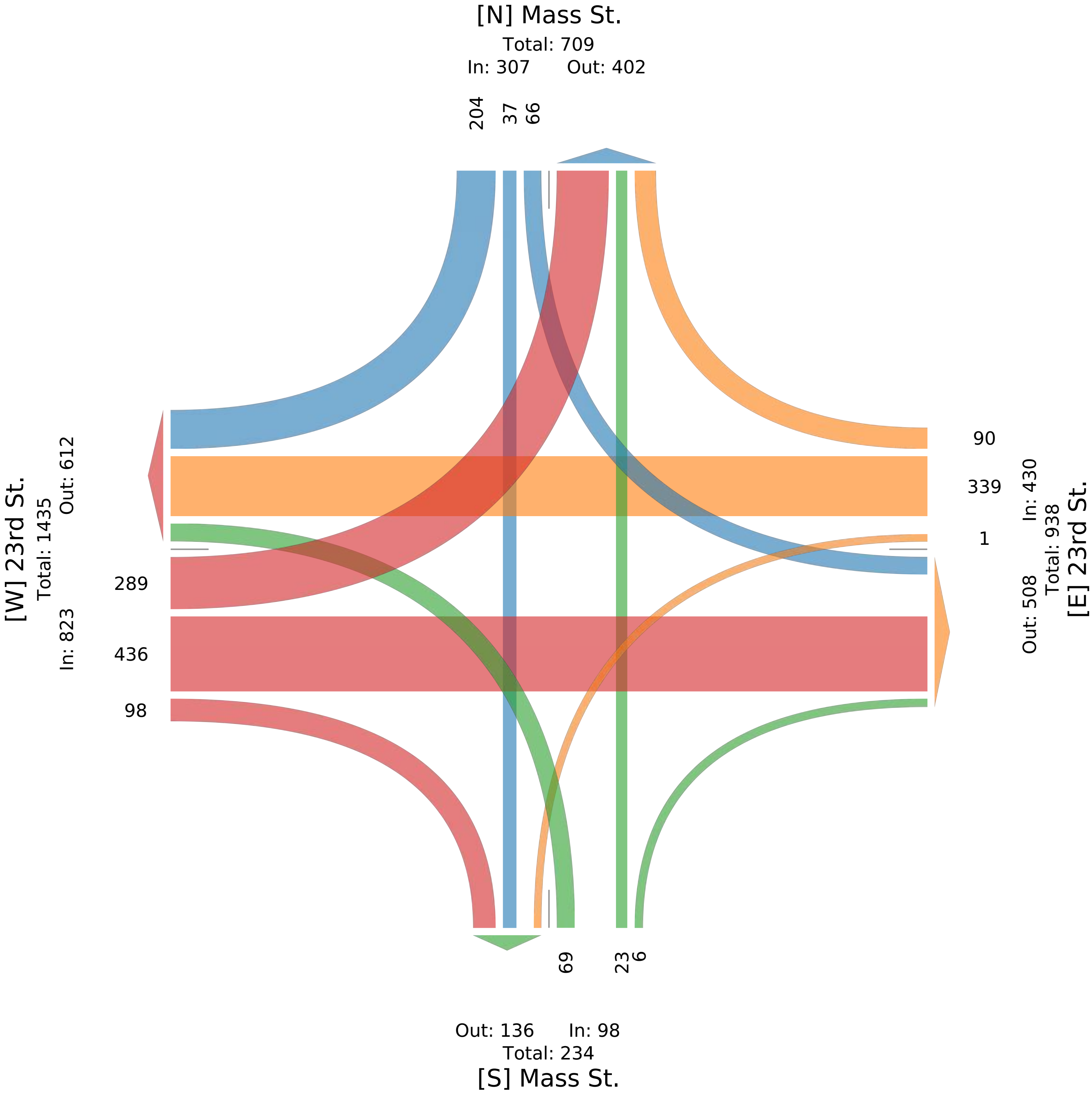
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					23rd St.					Mass St.					23rd St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 12:15PM	57	10	16	0	**83**	21	81	1	0	**103**	2	7	21	0	**30**	34	101	61	0	**196**	**412**
12:30PM	46	4	12	0	**62**	28	90	0	0	**118**	0	8	23	0	**31**	24	126	72	0	**222**	**433**
12:45PM	41	15	22	0	**78**	24	82	0	0	**106**	0	5	15	0	**20**	24	105	80	0	**209**	**413**
1:00PM	60	8	16	0	**84**	17	86	0	0	**103**	4	3	10	0	**17**	16	104	76	0	**196**	**400**
Total	204	37	66	0	**307**	90	339	1	0	**430**	6	23	69	0	**98**	98	436	289	0	**823**	**1658**
% Approach	66.4%	12.1%	21.5%	0%	-	20.9%	78.8%	0.2%	0%	-	6.1%	23.5%	70.4%	0%	-	11.9%	53.0%	35.1%	0%	-	-
% Total	12.3%	2.2%	4.0%	0%	**18.5%**	5.4%	20.4%	0.1%	0%	**25.9%**	0.4%	1.4%	4.2%	0%	**5.9%**	5.9%	26.3%	17.4%	0%	**49.6%**	-
PHF	0.850	0.617	0.750	-	**0.914**	0.804	0.942	0.250	-	**0.911**	0.375	0.719	0.750	-	**0.790**	0.721	0.865	0.903	-	**0.927**	0.957
Lights	204	37	62	0	**303**	83	321	1	0	**405**	5	23	66	0	**94**	93	431	286	0	**810**	1612
% Lights	100%	100%	93.9%	0%	**98.7%**	92.2%	94.7%	100%	0%	**94.2%**	83.3%	100%	95.7%	0%	**95.9%**	94.9%	98.9%	99.0%	0%	**98.4%**	97.2%
Articulated Trucks	0	0	1	0	**1**	0	5	0	0	**5**	0	0	0	0	**0**	0	1	1	0	**2**	8
% Articulated Trucks	0%	0%	1.5%	0%	**0.3%**	0%	1.5%	0%	0%	**1.2%**	0%	0%	0%	0%	**0%**	0%	0.2%	0.3%	0%	**0.2%**	0.5%
Buses and Single-Unit Trucks	0	0	3	0	**3**	7	13	0	0	**20**	1	0	3	0	**4**	5	4	2	0	**11**	38
% Buses and Single-Unit Trucks	0%	0%	4.5%	0%	**1.0%**	7.8%	3.8%	0%	0%	**4.7%**	16.7%	0%	4.3%	0%	**4.1%**	5.1%	0.9%	0.7%	0%	**1.3%**	2.3%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 23rd St. - TMC
Tue Oct 3, 2023
Midday Peak (12:15 PM - 1:15 PM)
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115775, Location: 38.942827, -95.235922

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Mass St. & 23rd St. - TMC

Tue Oct 3, 2023
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115775, Location: 38.942827, -95.235922

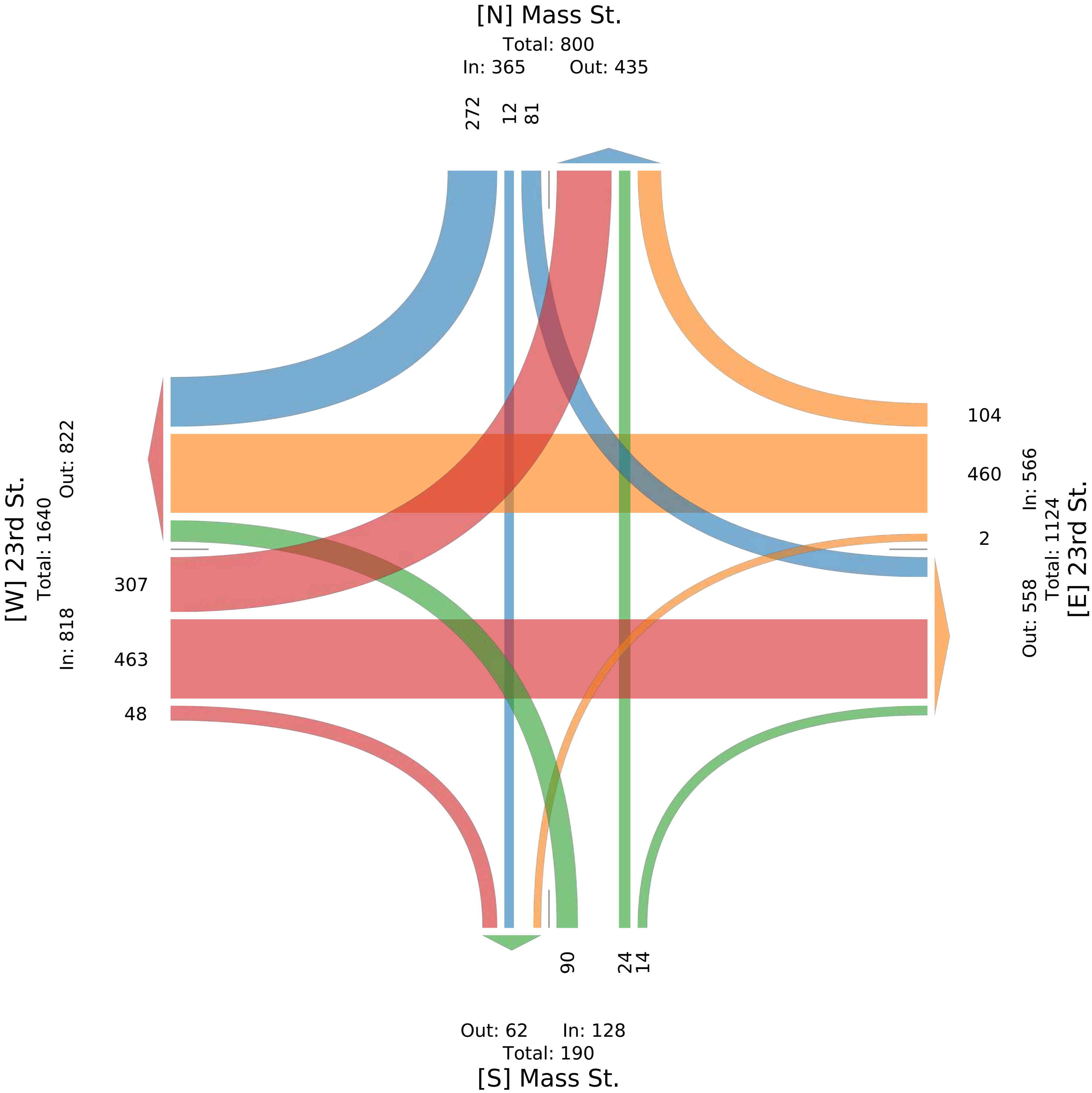
Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US

Leg	Mass St.					23rd St.					Mass St.					23rd St.					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2023-10-03 4:15PM	58	1	22	0	**81**	25	108	0	0	**133**	3	5	15	0	**23**	22	115	82	0	**219**	**456**
4:30PM	74	6	27	0	**107**	19	99	1	0	**119**	8	12	30	0	**50**	9	113	64	0	**186**	**462**
4:45PM	55	2	12	0	**69**	33	124	1	0	**158**	2	6	18	0	**26**	9	124	96	0	**229**	**482**
5:00PM	85	3	20	0	**108**	27	129	0	0	**156**	1	1	27	0	**29**	8	111	65	0	**184**	**477**
Total	272	12	81	0	**365**	104	460	2	0	**566**	14	24	90	0	**128**	48	463	307	0	**818**	**1877**
% Approach	74.5%	3.3%	22.2%	0%	-	18.4%	81.3%	0.4%	0%	-	10.9%	18.8%	70.3%	0%	-	5.9%	56.6%	37.5%	0%	-	-
% Total	14.5%	0.6%	4.3%	0%	**19.4%**	5.5%	24.5%	0.1%	0%	**30.2%**	0.7%	1.3%	4.8%	0%	**6.8%**	2.6%	24.7%	16.4%	0%	**43.6%**	-
PHF	0.800	0.500	0.750	-	**0.845**	0.788	0.891	0.500	-	**0.896**	0.438	0.500	0.750	-	**0.640**	0.545	0.933	0.799	-	**0.893**	0.974
Lights	271	12	80	0	**363**	102	451	2	0	**555**	14	24	88	0	**126**	44	454	303	0	**801**	1845
% Lights	99.6%	100%	98.8%	0%	**99.5%**	98.1%	98.0%	100%	0%	**98.1%**	100%	100%	97.8%	0%	**98.4%**	91.7%	98.1%	98.7%	0%	**97.9%**	98.3%
Articulated Trucks	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	0	3	0	0	**3**	4
% Articulated Trucks	0%	0%	0%	0%	**0%**	0%	0.2%	0%	0%	**0.2%**	0%	0%	0%	0%	**0%**	0%	0.6%	0%	0%	**0.4%**	0.2%
Buses and Single-Unit Trucks	1	0	1	0	**2**	2	8	0	0	**10**	0	0	2	0	**2**	4	6	4	0	**14**	28
% Buses and Single-Unit Trucks	0.4%	0%	1.2%	0%	**0.5%**	1.9%	1.7%	0%	0%	**1.8%**	0%	0%	2.2%	0%	**1.6%**	8.3%	1.3%	1.3%	0%	**1.7%**	1.5%

*L: Left, R: Right, T: Thru, U: U-Turn

Mass St. & 23rd St. - TMC
Tue Oct 3, 2023
PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks)
All Movements
ID: 1115775, Location: 38.942827, -95.235922

Provided by: TREKK Design Group
1411 East 104th Street, Kansas City, MO, 64131, US



Appendix B
HCS Warrants

HCS Warrants Report

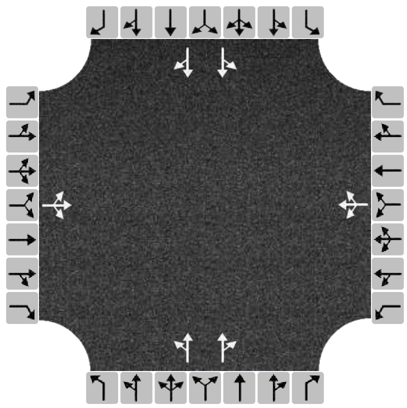
Project Information

Analyst	Ethan Frostestad	Date	1/22/2024
Agency	TREKK Design Group	Analysis Year	2024
Jurisdiction		Time Period Analyzed	7am-7pm
Project Description	City of Lawrence, KS - Bike and Pedestrian Corridor Study		

General

Major Street Direction	North-South	Population < 10,000	No
Starting Time Interval	8	Coordinated Signal System	No
Median Type	Undivided	Crashes (crashes/year)	7
Major Street Speed (mi/h)	30	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	1300		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	1	0	0	1	0	0	2	0	0	2	0
Lane Usage		LTR			LTR			LTR			LTR	
Vehicle Volumes Averages (veh/h)	10	10	26	10	10	7	19	452	16	7	342	10
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	4
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)	-	Tractor-Trailer Trucks (%)	10

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (80%)	4A (100%)	4B (80%)
07 - 08	655	60	770	0	0	No	No	No	No	No	No	No	No	No
08 - 09	635	30	685	0	0	No	No	No	No	No	No	No	No	No
09 - 10	590	30	645	0	0	No	No	No	No	No	No	No	No	No
10 - 11	650	30	705	0	0	No	No	No	No	No	No	No	No	No
11 - 12	935	40	1005	0	0	No	No	No	No	No	No	No	No	No
12 - 13	825	35	890	0	0	No	No	No	No	No	No	No	No	No
13 - 14	855	40	925	0	0	No	No	No	No	No	No	No	No	No
14 - 15	1020	60	1120	0	0	No	No	No	Yes	No	No	No	No	No
15 - 16	1060	75	1160	0	0	No	No	Yes	Yes	No	No	No	No	No
16 - 17	1165	75	1270	0	0	No	No	Yes	Yes	No	No	No	No	No
17 - 18	980	50	1045	0	0	No	No	No	No	No	No	No	No	No
18 - 19	810	40	865	0	0	No	No	No	No	No	No	No	No	No
Total	10180	565	11085	0	0	0	0	2	3	0	0	0	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	
Warrant 2: Four-Hour Vehicular Volume	
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	
Warrant 3: Peak Hour	
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--	
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	
Warrant 4: Pedestrian Volume	
A. Four Hour Volumes --or--	
B. One-Hour Volumes	
Warrant 5: School Crossing	
Gaps Same Period --and--	
Student Volumes	
Nearest Traffic Control Signal (optional)	✓
Warrant 6: Coordinated Signal System	
Degree of Platooning (Predominant direction or both directions)	
Warrant 7: Crash Experience	
A. Adequate trials of alternatives, observance and enforcement failed --and--	
B. Reported crashes susceptible to correction by signal (12-month period) --and--	✓
C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	
Warrant 8: Roadway Network	
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--	
B. Weekend Volume (Five hours total)	
Warrant 9: Grade Crossing	
A. Grade Crossing within 140 ft --and--	
B. Peak-Hour Vehicular Volumes	

Appendix C

Potential Proposed Roundabout Concept – Mass Street & 19th Street

Appendix D

Synchro Reports

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	30	45	25	40	20	70	345	55	40	200	10
Future Volume (veh/h)	5	30	45	25	40	20	70	345	55	40	200	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	6	37	56	31	49	25	86	426	68	49	247	12
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	119	172	238	206	245	100	732	1132	180	657	596	29
Arrive On Green	0.20	0.25	0.20	0.20	0.25	0.20	0.15	0.37	0.31	0.12	0.34	0.28
Sat Flow, veh/h	42	682	944	292	971	395	1767	3048	483	1767	1755	85
Grp Volume(v), veh/h	99	0	0	105	0	0	86	245	249	49	0	259
Grp Sat Flow(s),veh/h/ln	1668	0	0	1658	0	0	1767	1763	1769	1767	0	1840
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.9	3.6	3.7	0.5	0.0	3.8
Cycle Q Clear(g_c), s	1.7	0.0	0.0	1.7	0.0	0.0	0.9	3.6	3.7	0.5	0.0	3.8
Prop In Lane	0.06		0.57	0.30		0.24	1.00		0.27	1.00		0.05
Lane Grp Cap(c), veh/h	435	0	0	457	0	0	732	655	657	657	0	625
V/C Ratio(X)	0.23	0.00	0.00	0.23	0.00	0.00	0.12	0.37	0.38	0.07	0.00	0.41
Avail Cap(c_a), veh/h	1417	0	0	1402	0	0	1011	2145	2152	993	0	2239
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.0	0.0	0.0	10.9	0.0	0.0	4.9	8.1	8.3	5.4	0.0	9.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.3	0.0	0.0	0.1	0.4	0.4	0.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	0.6	0.0	0.0	0.2	1.0	1.1	0.1	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.3	0.0	0.0	11.2	0.0	0.0	5.0	8.5	8.7	5.4	0.0	9.5
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		99			105			580			308	
Approach Delay, s/veh		11.3			11.2			8.1			8.8	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		11.9	8.4	15.0		11.9	7.3	16.1				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		28.0	9.0	41.0		28.0	9.0	41.0				
Max Q Clear Time (g_c+I1), s		3.7	2.9	5.8		3.7	2.5	5.7				
Green Ext Time (p_c), s		0.5	0.1	1.6		0.5	0.0	3.3				
Intersection Summary												
HCM 6th Ctrl Delay			8.9									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	5	35	25	110	5	390	40	40	225	5
Future Vol, veh/h	5	5	5	35	25	110	5	390	40	40	225	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	6	6	42	30	133	6	470	48	48	271	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	632	900	274	882	879	259	277	0	0	518	0	0
Stage 1	370	370	-	506	506	-	-	-	-	-	-	-
Stage 2	262	530	-	376	373	-	-	-	-	-	-	-
Critical Hdwy	7.345	6.545	6.245	7.345	6.545	6.945	4.145	-	-	4.145	-	-
Critical Hdwy Stg 1	6.145	5.545	-	6.545	5.545	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.545	5.545	-	6.145	5.545	-	-	-	-	-	-	-
Follow-up Hdwy	3.5285	4.0285	3.3285	3.5285	4.0285	3.3285	2.2285	-	-	2.2285	-	-
Pot Cap-1 Maneuver	377	276	761	252	284	738	1278	-	-	1040	-	-
Stage 1	647	617	-	516	537	-	-	-	-	-	-	-
Stage 2	718	524	-	642	615	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	271	261	761	236	269	738	1278	-	-	1040	-	-
Mov Cap-2 Maneuver	271	261	-	236	269	-	-	-	-	-	-	-
Stage 1	642	589	-	512	533	-	-	-	-	-	-	-
Stage 2	552	520	-	601	587	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.2	20.4	0.1	1.3
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1278	-	-	340	436	1040	-	-
HCM Lane V/C Ratio	0.005	-	-	0.053	0.47	0.046	-	-
HCM Control Delay (s)	7.8	0	-	16.2	20.4	8.6	-	-
HCM Lane LOS	A	A	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	2.5	0.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	5	5	5	5	5	420	5	5	255	5
Future Vol, veh/h	5	5	5	5	5	5	5	420	5	5	255	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	6	6	6	6	6	6	500	6	6	304	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	584	837	155	682	837	253	310	0	0	506	0	0
Stage 1	319	319	-	515	515	-	-	-	-	-	-	-
Stage 2	265	518	-	167	322	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	393	299	860	334	299	743	1240	-	-	1048	-	-
Stage 1	664	649	-	508	531	-	-	-	-	-	-	-
Stage 2	715	529	-	816	647	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	380	295	860	323	295	743	1240	-	-	1048	-	-
Mov Cap-2 Maneuver	380	295	-	323	295	-	-	-	-	-	-	-
Stage 1	659	644	-	504	527	-	-	-	-	-	-	-
Stage 2	696	525	-	797	642	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14	14.9	0.1	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1240	-	-	418	383	1048	-	-
HCM Lane V/C Ratio	0.005	-	-	0.043	0.047	0.006	-	-
HCM Control Delay (s)	7.9	0	-	14	14.9	8.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	20	35	15	40	10	20	400	10	5	245	15
Future Volume (veh/h)	10	20	35	15	40	10	20	400	10	5	245	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	22	39	17	44	11	22	444	11	6	272	17
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	94	139	141	186	41	141	2380	58	96	2344	144
Arrive On Green	0.11	0.16	0.11	0.11	0.16	0.11	0.67	0.71	0.67	0.67	0.71	0.67
Sat Flow, veh/h	153	604	894	268	1192	263	75	3347	81	18	3297	202
Grp Volume(v), veh/h	72	0	0	72	0	0	249	0	228	155	0	140
Grp Sat Flow(s),veh/h/ln	1650	0	0	1723	0	0	1816	0	1687	1852	0	1666
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	1.2
Cycle Q Clear(g_c), s	1.7	0.0	0.0	1.6	0.0	0.0	2.0	0.0	2.1	1.2	0.0	1.2
Prop In Lane	0.15		0.54	0.24		0.15	0.09		0.05	0.04		0.12
Lane Grp Cap(c), veh/h	276	0	0	291	0	0	1298	0	1200	1318	0	1184
V/C Ratio(X)	0.26	0.00	0.00	0.25	0.00	0.00	0.19	0.00	0.19	0.12	0.00	0.12
Avail Cap(c_a), veh/h	1246	0	0	1292	0	0	1298	0	1200	1318	0	1184
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.4	0.0	0.0	17.1	0.0	0.0	2.2	0.0	2.2	2.1	0.0	2.1
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.4	0.0	0.0	0.3	0.0	0.4	0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.7	0.0	0.0	0.5	0.0	0.3	0.3	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.9	0.0	0.0	17.5	0.0	0.0	2.5	0.0	2.5	2.2	0.0	2.3
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		72			72			477			295	
Approach Delay, s/veh		17.9			17.5			2.5			2.3	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		35.0		10.0		35.0		10.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		30.0		32.0		30.0		32.0				
Max Q Clear Time (g_c+I1), s		0.0		3.7		0.0		3.6				
Green Ext Time (p_c), s		0.0		0.4		0.0		0.3				
Intersection Summary												
HCM 6th Ctrl Delay			4.8									
HCM 6th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	320	35	45	440	45	65	275	35	55	140	70
Future Volume (veh/h)	75	320	35	45	440	45	65	275	35	55	140	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	89	381	42	54	524	54	77	327	42	65	167	83
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	512	909	100	619	897	92	317	468	60	276	336	160
Arrive On Green	0.09	0.56	0.54	0.08	0.55	0.53	0.09	0.15	0.13	0.09	0.15	0.13
Sat Flow, veh/h	1753	1629	180	1753	1641	169	1753	3120	397	1753	2301	1092
Grp Volume(v), veh/h	89	0	423	54	0	578	77	182	187	65	125	125
Grp Sat Flow(s),veh/h/ln	1753	0	1808	1753	0	1810	1753	1749	1769	1753	1749	1644
Q Serve(g_s), s	1.9	0.0	13.4	1.2	0.0	21.1	3.5	9.8	9.9	2.9	6.5	7.0
Cycle Q Clear(g_c), s	1.9	0.0	13.4	1.2	0.0	21.1	3.5	9.8	9.9	2.9	6.5	7.0
Prop In Lane	1.00		0.10	1.00		0.09	1.00		0.22	1.00		0.66
Lane Grp Cap(c), veh/h	512	0	1009	619	0	990	317	262	265	276	256	240
V/C Ratio(X)	0.17	0.00	0.42	0.09	0.00	0.58	0.24	0.69	0.70	0.24	0.49	0.52
Avail Cap(c_a), veh/h	613	0	1009	740	0	990	423	443	448	371	425	400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.2	0.0	12.7	7.8	0.0	15.0	30.3	39.8	40.1	30.6	38.8	39.6
Incr Delay (d2), s/veh	0.2	0.0	1.3	0.1	0.0	2.5	0.4	3.3	3.4	0.4	1.5	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	5.5	0.4	0.0	8.8	1.5	4.4	4.5	1.3	2.9	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.4	0.0	13.9	7.9	0.0	17.5	30.7	43.1	43.5	31.0	40.2	41.3
LnGrp LOS	A	A	B	A	A	B	C	D	D	C	D	D
Approach Vol, veh/h		512			632			446			315	
Approach Delay, s/veh		13.1			16.7			41.1			38.8	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.2	58.1	12.0	17.4	12.3	57.0	11.7	17.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	52.0	13.0	22.0	13.0	52.0	12.0	23.0
Max Q Clear Time (g_c+I1), s	3.2	15.4	5.5	9.0	3.9	23.1	4.9	11.9
Green Ext Time (p_c), s	0.1	1.4	0.1	0.6	0.1	2.1	0.1	0.9

Intersection Summary	
HCM 6th Ctrl Delay	25.1
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	5	5	10	15	10	365	5	5	215	5
Future Vol, veh/h	10	10	5	5	10	15	10	365	5	5	215	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	11	5	5	11	16	11	401	5	5	236	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	477	677	121	560	677	203	241	0	0	406	0	0
Stage 1	249	249	-	426	426	-	-	-	-	-	-	-
Stage 2	228	428	-	134	251	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	469	371	904	409	371	801	1315	-	-	1142	-	-
Stage 1	730	697	-	574	582	-	-	-	-	-	-	-
Stage 2	751	581	-	853	695	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	443	365	904	392	365	801	1315	-	-	1142	-	-
Mov Cap-2 Maneuver	443	365	-	392	365	-	-	-	-	-	-	-
Stage 1	722	694	-	568	576	-	-	-	-	-	-	-
Stage 2	714	575	-	830	692	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.5	12.5	0.2	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1315	-	-	450	510	1142	-	-
HCM Lane V/C Ratio	0.008	-	-	0.061	0.065	0.005	-	-
HCM Control Delay (s)	7.8	0	-	13.5	12.5	8.2	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	0	0	15	5	355	5	5	220	5
Future Vol, veh/h	0	0	10	0	0	15	5	355	5	5	220	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	11	0	0	16	5	390	5	5	242	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	124	-	-	198	247	0	0	395	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.96	-	-	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.33	-	-	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	0	0	900	0	0	807	1309	-	-	1153	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	900	-	-	807	1309	-	-	1153	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	9.6	0.1	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1309	-	-	900	807	1153	-	-
HCM Lane V/C Ratio	0.004	-	-	0.012	0.02	0.005	-	-
HCM Control Delay (s)	7.8	0	-	9	9.6	8.1	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	395	50	5	400	95	30	15	5	55	25	140
Future Volume (veh/h)	245	395	50	5	400	95	30	15	5	55	25	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	302	488	62	6	494	0	37	19	6	68	31	173
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	691	1881	238	587	1756		366	195	62	405	295	250
Arrive On Green	0.13	0.60	0.58	0.03	0.50	0.00	0.06	0.15	0.12	0.08	0.16	0.16
Sat Flow, veh/h	1753	3123	395	1753	3589	0	1753	1341	423	1753	1841	1560
Grp Volume(v), veh/h	302	272	278	6	494	0	37	0	25	68	31	173
Grp Sat Flow(s),veh/h/ln	1753	1749	1770	1753	1749	0	1753	0	1764	1753	1841	1560
Q Serve(g_s), s	6.5	6.3	6.4	0.1	7.0	0.0	1.4	0.0	1.1	2.7	1.2	9.0
Cycle Q Clear(g_c), s	6.5	6.3	6.4	0.1	7.0	0.0	1.4	0.0	1.1	2.7	1.2	9.0
Prop In Lane	1.00		0.22	1.00		0.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	691	1053	1066	587	1756		366	0	256	405	295	250
V/C Ratio(X)	0.44	0.26	0.26	0.01	0.28		0.10	0.00	0.10	0.17	0.10	0.69
Avail Cap(c_a), veh/h	887	1053	1066	795	1756		479	0	618	552	709	601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.3	8.0	8.2	6.0	12.4	0.0	26.3	0.0	31.9	26.8	30.7	33.9
Incr Delay (d2), s/veh	0.4	0.6	0.6	0.0	0.4	0.0	0.1	0.0	0.2	0.2	0.2	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.3	2.4	0.0	2.7	0.0	0.6	0.0	0.5	1.1	0.6	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.8	8.6	8.7	6.0	12.8	0.0	26.4	0.0	32.1	27.0	30.9	37.3
LnGrp LOS	A	A	A	A	B		C	A	C	C	C	D
Approach Vol, veh/h		852			500			62			272	
Approach Delay, s/veh		8.4			12.7			28.7			34.0	
Approach LOS		A			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	54.6	8.5	16.7	14.4	46.0	9.8	15.4
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	11.0	49.0	9.0	31.0	19.0	41.0	12.0	28.0
Max Q Clear Time (g_c+I1), s	2.1	8.4	3.4	11.0	8.5	9.0	4.7	3.1
Green Ext Time (p_c), s	0.0	2.4	0.0	0.8	0.9	2.4	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	14.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	25	70	20	20	5	75	470	35	15	450	20
Future Volume (veh/h)	15	25	70	20	20	5	75	470	35	15	450	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	27	76	22	22	5	82	511	38	16	489	22
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	129	104	230	236	219	37	600	1609	119	644	736	33
Arrive On Green	0.17	0.22	0.17	0.17	0.22	0.17	0.14	0.48	0.43	0.07	0.41	0.36
Sat Flow, veh/h	118	474	1047	479	998	168	1781	3354	249	1781	1776	80
Grp Volume(v), veh/h	119	0	0	49	0	0	82	270	279	16	0	511
Grp Sat Flow(s),veh/h/ln	1640	0	0	1646	0	0	1781	1777	1826	1781	0	1856
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.8	3.7	3.8	0.2	0.0	8.9
Cycle Q Clear(g_c), s	2.5	0.0	0.0	0.9	0.0	0.0	0.8	3.7	3.8	0.2	0.0	8.9
Prop In Lane	0.13		0.64	0.45		0.10	1.00		0.14	1.00		0.04
Lane Grp Cap(c), veh/h	381	0	0	410	0	0	600	852	876	644	0	769
V/C Ratio(X)	0.31	0.00	0.00	0.12	0.00	0.00	0.14	0.32	0.32	0.02	0.00	0.66
Avail Cap(c_a), veh/h	1239	0	0	1228	0	0	843	1918	1970	1003	0	2003
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.8	0.0	0.0	12.9	0.0	0.0	5.0	6.4	6.5	5.3	0.0	9.5
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.0	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.3	0.0	0.0	0.1	1.0	1.0	0.0	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.2	0.0	0.0	13.0	0.0	0.0	5.1	6.6	6.7	5.3	0.0	10.5
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	B
Approach Vol, veh/h		119			49			631			527	
Approach Delay, s/veh		14.2			13.0			6.4			10.3	
Approach LOS		B			B			A			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		11.8	8.6	19.5		11.8	6.0	22.1				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		28.0	9.0	41.0		28.0	9.0	41.0				
Max Q Clear Time (g_c+I1), s		4.5	2.8	10.9		2.9	2.2	5.8				
Green Ext Time (p_c), s		0.6	0.1	3.6		0.2	0.0	3.7				

Intersection Summary			
HCM 6th Ctrl Delay			8.9
HCM 6th LOS			A

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	5	30	20	70	5	535	75	50	490	10
Future Vol, veh/h	5	5	5	30	20	70	5	535	75	50	490	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	5	5	5	33	22	76	5	582	82	54	533	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	959	1321	539	1285	1285	332	544	0	0	664	0	0
Stage 1	647	647	-	633	633	-	-	-	-	-	-	-
Stage 2	312	674	-	652	652	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	224	156	542	131	164	665	1023	-	-	923	-	-
Stage 1	459	466	-	435	472	-	-	-	-	-	-	-
Stage 2	674	453	-	456	463	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	168	146	542	120	153	665	1023	-	-	923	-	-
Mov Cap-2 Maneuver	168	146	-	120	153	-	-	-	-	-	-	-
Stage 1	455	439	-	432	468	-	-	-	-	-	-	-
Stage 2	565	449	-	420	436	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.1	34.8	0.1	0.8
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1023	-	-	205	247	923	-	-
HCM Lane V/C Ratio	0.005	-	-	0.08	0.528	0.059	-	-
HCM Control Delay (s)	8.5	0	-	24.1	34.8	9.1	-	-
HCM Lane LOS	A	A	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	2.8	0.2	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	5	5	5	5	5	605	5	5	510	5
Future Vol, veh/h	5	5	5	5	5	5	5	605	5	5	510	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	5	5	5	5	5	5	5	658	5	5	554	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	909	1240	280	961	1240	332	559	0	0	663	0	0
Stage 1	567	567	-	671	671	-	-	-	-	-	-	-
Stage 2	342	673	-	290	569	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	230	174	717	211	174	664	1008	-	-	922	-	-
Stage 1	476	505	-	412	453	-	-	-	-	-	-	-
Stage 2	646	452	-	694	504	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	220	171	717	202	171	664	1008	-	-	922	-	-
Mov Cap-2 Maneuver	220	171	-	202	171	-	-	-	-	-	-	-
Stage 1	472	501	-	409	449	-	-	-	-	-	-	-
Stage 2	628	448	-	676	500	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.1	20.8	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1008	-	-	254	244	922	-	-
HCM Lane V/C Ratio	0.005	-	-	0.064	0.067	0.006	-	-
HCM Control Delay (s)	8.6	0	-	20.1	20.8	8.9	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	25	40	10	15	5	20	600	20	10	500	15
Future Volume (veh/h)	10	25	40	10	15	5	20	600	20	10	500	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	11	27	43	11	16	5	22	652	22	11	543	16
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	113	93	129	163	156	39	114	2412	80	96	2454	71
Arrive On Green	0.10	0.15	0.10	0.10	0.15	0.10	0.67	0.72	0.67	0.67	0.72	0.67
Sat Flow, veh/h	147	632	882	372	1062	266	39	3355	111	17	3414	99
Grp Volume(v), veh/h	81	0	0	32	0	0	363	0	333	298	0	272
Grp Sat Flow(s),veh/h/ln	1661	0	0	1700	0	0	1823	0	1682	1846	0	1684
Q Serve(g_s), s	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0	2.4
Cycle Q Clear(g_c), s	2.0	0.0	0.0	0.7	0.0	0.0	3.1	0.0	3.1	2.4	0.0	2.4
Prop In Lane	0.14		0.53	0.34		0.16	0.06		0.07	0.04		0.06
Lane Grp Cap(c), veh/h	260	0	0	281	0	0	1315	0	1209	1328	0	1211
V/C Ratio(X)	0.31	0.00	0.00	0.11	0.00	0.00	0.28	0.00	0.28	0.22	0.00	0.22
Avail Cap(c_a), veh/h	1271	0	0	1270	0	0	1315	0	1209	1328	0	1211
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.7	0.0	0.0	17.0	0.0	0.0	2.2	0.0	2.2	2.1	0.0	2.1
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.2	0.0	0.0	0.5	0.0	0.6	0.4	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	0.3	0.0	0.0	0.7	0.0	0.4	0.6	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.3	0.0	0.0	17.1	0.0	0.0	2.7	0.0	2.8	2.5	0.0	2.5
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		81			32			696			570	
Approach Delay, s/veh		18.3			17.1			2.8			2.5	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		35.0		9.5		35.0		9.5				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		30.0		32.0		30.0		32.0				
Max Q Clear Time (g_c+I1), s		0.0		4.0		0.0		2.7				
Green Ext Time (p_c), s		0.0		0.4		0.0		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			3.9									
HCM 6th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↱		↰	↑↱	
Traffic Volume (veh/h)	145	410	45	65	395	60	45	330	45	110	275	120
Future Volume (veh/h)	145	410	45	65	395	60	45	330	45	110	275	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	158	446	49	71	429	65	49	359	49	120	299	130
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	451	751	82	447	706	107	363	803	109	387	659	280
Arrive On Green	0.09	0.45	0.43	0.09	0.44	0.43	0.08	0.26	0.24	0.09	0.27	0.25
Sat Flow, veh/h	1781	1656	182	1781	1587	240	1781	3145	426	1781	2429	1032
Grp Volume(v), veh/h	158	0	495	71	0	494	49	202	206	120	217	212
Grp Sat Flow(s),veh/h/ln	1781	0	1838	1781	0	1827	1781	1777	1794	1781	1777	1685
Q Serve(g_s), s	4.7	0.0	21.3	2.1	0.0	21.8	2.0	10.1	10.3	4.9	10.7	11.2
Cycle Q Clear(g_c), s	4.7	0.0	21.3	2.1	0.0	21.8	2.0	10.1	10.3	4.9	10.7	11.2
Prop In Lane	1.00		0.10	1.00		0.13	1.00		0.24	1.00		0.61
Lane Grp Cap(c), veh/h	451	0	833	447	0	813	363	454	458	387	482	457
V/C Ratio(X)	0.35	0.00	0.59	0.16	0.00	0.61	0.13	0.44	0.45	0.31	0.45	0.46
Avail Cap(c_a), veh/h	570	0	833	582	0	813	513	454	458	509	482	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.1	0.0	21.7	14.3	0.0	22.4	24.7	33.0	33.3	24.3	32.0	32.7
Incr Delay (d2), s/veh	0.5	0.0	3.1	0.2	0.0	3.4	0.2	3.1	3.2	0.4	3.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	9.7	0.8	0.0	9.9	0.9	4.7	4.9	2.1	5.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.5	0.0	24.8	14.5	0.0	25.8	24.9	36.2	36.5	24.7	35.0	36.0
LnGrp LOS	B	A	C	B	A	C	C	D	D	C	C	D
Approach Vol, veh/h		653			565			457			549	
Approach Delay, s/veh		22.6			24.4			35.1			33.1	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	50.9	11.1	31.7	12.9	50.0	12.8	30.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	15.0	45.0	15.0	25.0	15.0	45.0	15.0	25.0
Max Q Clear Time (g_c+I1), s	4.1	23.3	4.0	13.2	6.7	23.8	6.9	12.3
Green Ext Time (p_c), s	0.1	1.6	0.1	1.1	0.3	1.6	0.2	1.0

Intersection Summary	
HCM 6th Ctrl Delay	28.2
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	15	5	5	10	5	435	5	10	370	10
Future Vol, veh/h	10	10	15	5	5	10	5	435	5	10	370	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	11	16	5	5	11	5	473	5	11	402	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	679	918	207	715	921	239	413	0	0	478	0	0
Stage 1	430	430	-	486	486	-	-	-	-	-	-	-
Stage 2	249	488	-	229	435	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	338	270	799	318	269	762	1142	-	-	1081	-	-
Stage 1	574	582	-	531	549	-	-	-	-	-	-	-
Stage 2	733	548	-	753	579	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	323	265	799	297	264	762	1142	-	-	1081	-	-
Mov Cap-2 Maneuver	323	265	-	297	264	-	-	-	-	-	-	-
Stage 1	571	574	-	528	546	-	-	-	-	-	-	-
Stage 2	711	545	-	714	571	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	14.3	0.1	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1142	-	-	400	409	1081	-	-
HCM Lane V/C Ratio	0.005	-	-	0.095	0.053	0.01	-	-
HCM Control Delay (s)	8.2	0	-	14.9	14.3	8.4	0.1	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.2	0	-	-

Intersection												
Int Delay, s/veh	0.3											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	5	0	0	10	5	435	5	5	375	10
Future Vol, veh/h	0	0	5	0	0	10	5	435	5	5	375	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	0	0	5	0	0	11	5	473	5	5	408	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	210	-	-	239	419	0	0	478	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	796	0	0	762	1137	-	-	1081	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	796	-	-	762	1137	-	-	1081	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	9.8	0.1	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1137	-	-	796	762	1081	-	-
HCM Lane V/C Ratio	0.005	-	-	0.007	0.014	0.005	-	-
HCM Control Delay (s)	8.2	0	-	9.6	9.8	8.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	465	50	5	460	105	90	25	15	85	15	275
Future Volume (veh/h)	310	465	50	5	460	105	90	25	15	85	15	275
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	337	505	54	5	500	0	98	27	16	92	16	299
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	638	1800	192	526	1586		434	252	150	481	425	360
Arrive On Green	0.14	0.56	0.54	0.03	0.45	0.00	0.07	0.23	0.21	0.07	0.23	0.23
Sat Flow, veh/h	1781	3240	345	1781	3647	0	1781	1101	652	1781	1870	1585
Grp Volume(v), veh/h	337	276	283	5	500	0	98	0	43	92	16	299
Grp Sat Flow(s),veh/h/ln	1781	1777	1808	1781	1777	0	1781	0	1753	1781	1870	1585
Q Serve(g_s), s	10.5	9.0	9.1	0.0	10.0	0.0	4.5	0.0	2.1	4.2	0.7	19.7
Cycle Q Clear(g_c), s	10.5	9.0	9.1	0.0	10.0	0.0	4.5	0.0	2.1	4.2	0.7	19.7
Prop In Lane	1.00		0.19	1.00		0.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	638	987	1004	526	1586		434	0	402	481	425	360
V/C Ratio(X)	0.53	0.28	0.28	0.01	0.32		0.23	0.00	0.11	0.19	0.04	0.83
Avail Cap(c_a), veh/h	823	987	1004	711	1586		511	0	479	709	664	563
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.2	12.8	13.0	13.5	19.6	0.0	28.3	0.0	33.7	28.2	33.1	40.4
Incr Delay (d2), s/veh	0.7	0.7	0.7	0.0	0.5	0.0	0.3	0.0	0.1	0.2	0.0	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	3.6	3.7	0.1	4.2	0.0	1.9	0.0	0.9	1.8	0.3	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.9	13.6	13.7	13.5	20.1	0.0	28.6	0.0	33.8	28.4	33.1	46.4
LnGrp LOS	B	B	B	B	C		C	A	C	C	C	D
Approach Vol, veh/h		896			505			141			407	
Approach Delay, s/veh		13.3			20.1			30.2			41.8	
Approach LOS		B			C			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.6	64.0	11.2	28.0	18.6	52.0	11.0	28.2				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	13.0	59.0	11.0	37.0	25.0	47.0	20.0	28.0				
Max Q Clear Time (g_c+I1), s	2.0	11.1	6.5	21.7	12.5	12.0	6.2	4.1				
Green Ext Time (p_c), s	0.0	2.3	0.1	1.2	1.1	2.4	0.2	0.1				

Intersection Summary			
HCM 6th Ctrl Delay			22.2
HCM 6th LOS			C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	30	45	25	40	20	70	345	55	40	200	10
Future Volume (veh/h)	5	30	45	25	40	20	70	345	55	40	200	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	6	37	56	31	49	25	86	426	68	49	247	12
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	109	161	223	190	228	93	760	649	104	565	677	33
Arrive On Green	0.18	0.24	0.18	0.18	0.24	0.18	0.15	0.42	0.36	0.12	0.39	0.33
Sat Flow, veh/h	42	682	944	295	967	394	1767	1561	249	1767	1755	85
Grp Volume(v), veh/h	99	0	0	105	0	0	86	0	494	49	0	259
Grp Sat Flow(s),veh/h/ln	1668	0	0	1656	0	0	1767	0	1811	1767	0	1840
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	8.5	0.5	0.0	3.9
Cycle Q Clear(g_c), s	1.9	0.0	0.0	1.9	0.0	0.0	0.9	0.0	8.5	0.5	0.0	3.9
Prop In Lane	0.06		0.57	0.30		0.24	1.00		0.14	1.00		0.05
Lane Grp Cap(c), veh/h	406	0	0	426	0	0	760	0	753	565	0	709
V/C Ratio(X)	0.24	0.00	0.00	0.25	0.00	0.00	0.11	0.00	0.66	0.09	0.00	0.37
Avail Cap(c_a), veh/h	1298	0	0	1283	0	0	1007	0	2017	865	0	2050
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	0.0	12.4	0.0	0.0	4.6	0.0	9.2	5.7	0.0	8.5
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.3	0.0	0.0	0.1	0.0	1.0	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.7	0.0	0.0	0.2	0.0	2.5	0.1	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.8	0.0	0.0	12.7	0.0	0.0	4.7	0.0	10.2	5.8	0.0	8.8
LnGrp LOS	B	A	A	B	A	A	A	A	B	A	A	A
Approach Vol, veh/h		99			105			580			308	
Approach Delay, s/veh		12.8			12.7			9.4			8.3	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		12.1	8.6	17.9		12.1	7.5	19.0				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		28.0	9.0	41.0		28.0	9.0	41.0				
Max Q Clear Time (g_c+I1), s		3.9	2.9	5.9		3.9	2.5	10.5				
Green Ext Time (p_c), s		0.5	0.1	1.6		0.5	0.0	3.5				
Intersection Summary												
HCM 6th Ctrl Delay			9.7									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	5	35	25	110	5	390	40	40	225	5
Future Vol, veh/h	5	5	5	35	25	110	5	390	40	40	225	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	6	6	42	30	133	6	470	48	48	271	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	958	900	274	882	879	494	277	0	0	518	0	0
Stage 1	370	370	-	506	506	-	-	-	-	-	-	-
Stage 2	588	530	-	376	373	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	236	277	762	266	285	573	1280	-	-	1043	-	-
Stage 1	648	618	-	547	538	-	-	-	-	-	-	-
Stage 2	493	525	-	643	617	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	160	263	762	249	270	573	1280	-	-	1043	-	-
Mov Cap-2 Maneuver	160	263	-	249	270	-	-	-	-	-	-	-
Stage 1	645	590	-	544	535	-	-	-	-	-	-	-
Stage 2	356	522	-	602	589	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.6	23.1	0.1	1.3
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1280	-	-	264	400	1043	-	-
HCM Lane V/C Ratio	0.005	-	-	0.068	0.512	0.046	-	-
HCM Control Delay (s)	7.8	-	-	19.6	23.1	8.6	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	2.8	0.1	-	-

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	5	5	5	5	5	5	5	420	5	5	255	5
Future Vol, veh/h	5	5	5	5	5	5	5	420	5	5	255	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	6	6	6	6	6	6	500	6	6	304	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	840	837	307	840	837	503	310	0	0	506	0	0
Stage 1	319	319	-	515	515	-	-	-	-	-	-	-
Stage 2	521	518	-	325	322	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	284	302	731	284	302	567	1245	-	-	1054	-	-
Stage 1	690	651	-	541	533	-	-	-	-	-	-	-
Stage 2	537	532	-	685	649	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	275	299	731	275	299	567	1245	-	-	1054	-	-
Mov Cap-2 Maneuver	275	299	-	275	299	-	-	-	-	-	-	-
Stage 1	687	647	-	538	530	-	-	-	-	-	-	-
Stage 2	523	529	-	669	645	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	16.1	0.1	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1245	-	-	359	343	1054	-	-
HCM Lane V/C Ratio	0.005	-	-	0.05	0.052	0.006	-	-
HCM Control Delay (s)	7.9	-	-	15.6	16.1	8.4	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	20	35	15	40	10	20	400	10	5	245	15
Future Vol, veh/h	10	20	35	15	40	10	20	400	10	5	245	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	22	39	17	44	11	22	444	11	6	272	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	814	792	281	817	795	450	289	0	0	455	0	0
Stage 1	293	293	-	494	494	-	-	-	-	-	-	-
Stage 2	521	499	-	323	301	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	297	322	758	295	320	609	1273	-	-	1106	-	-
Stage 1	715	670	-	557	546	-	-	-	-	-	-	-
Stage 2	539	544	-	689	665	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	255	315	758	260	313	609	1273	-	-	1106	-	-
Mov Cap-2 Maneuver	255	315	-	260	313	-	-	-	-	-	-	-
Stage 1	703	667	-	548	537	-	-	-	-	-	-	-
Stage 2	477	535	-	628	662	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	19.4	0.4	0.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1273	-	-	437	322	1106	-	-
HCM Lane V/C Ratio	0.017	-	-	0.165	0.224	0.005	-	-
HCM Control Delay (s)	7.9	-	-	14.9	19.4	8.3	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.8	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	320	35	45	440	45	65	275	35	55	140	70
Future Volume (veh/h)	75	320	35	45	440	45	65	275	35	55	140	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	89	381	42	54	524	54	77	327	42	65	167	83
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	428	819	90	534	810	84	319	365	47	238	262	130
Arrive On Green	0.09	0.50	0.48	0.08	0.49	0.48	0.08	0.23	0.21	0.08	0.23	0.21
Sat Flow, veh/h	1753	1629	180	1753	1641	169	1753	1598	205	1753	1160	577
Grp Volume(v), veh/h	89	0	423	54	0	578	77	0	369	65	0	250
Grp Sat Flow(s),veh/h/ln	1753	0	1808	1753	0	1810	1753	0	1804	1753	0	1737
Q Serve(g_s), s	2.5	0.0	16.6	1.5	0.0	26.0	3.5	0.0	21.7	2.9	0.0	14.3
Cycle Q Clear(g_c), s	2.5	0.0	16.6	1.5	0.0	26.0	3.5	0.0	21.7	2.9	0.0	14.3
Prop In Lane	1.00		0.10	1.00		0.09	1.00		0.11	1.00		0.33
Lane Grp Cap(c), veh/h	428	0	910	534	0	894	319	0	412	238	0	392
V/C Ratio(X)	0.21	0.00	0.46	0.10	0.00	0.65	0.24	0.00	0.89	0.27	0.00	0.64
Avail Cap(c_a), veh/h	517	0	910	639	0	894	412	0	412	320	0	392
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	0.0	17.7	11.6	0.0	20.7	28.2	0.0	41.0	29.5	0.0	38.6
Incr Delay (d2), s/veh	0.2	0.0	1.7	0.1	0.0	3.6	0.4	0.0	24.5	0.6	0.0	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	7.2	0.6	0.0	11.5	1.5	0.0	12.4	1.3	0.0	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.8	0.0	19.4	11.6	0.0	24.3	28.6	0.0	65.5	30.1	0.0	46.4
LnGrp LOS	B	A	B	B	A	C	C	A	E	C	A	D
Approach Vol, veh/h		512			632			446			315	
Approach Delay, s/veh		18.4			23.2			59.1			43.0	
Approach LOS		B			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	58.0	12.2	27.7	12.5	57.0	11.9	28.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	52.0	13.0	22.0	13.0	52.0	12.0	23.0
Max Q Clear Time (g_c+I1), s	13.5	18.6	5.5	16.3	4.5	28.0	4.9	23.7
Green Ext Time (p_c), s	0.1	1.4	0.1	0.4	0.1	2.0	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	33.6
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	320	35	45	440	45	65	275	35	55	140	70
Future Volume (vph)	75	320	35	45	440	45	65	275	35	55	140	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	70		0	125		0	125		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.986			0.983			0.950	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1800	0	1736	1801	0	1736	1796	0	1736	1736	0
Flt Permitted	0.258			0.390			0.340			0.161		
Satd. Flow (perm)	471	1800	0	712	1801	0	621	1796	0	294	1736	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			6			5			19	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		291			301			672			1304	
Travel Time (s)		6.6			6.8			15.3			29.6	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	89	381	42	54	524	54	77	327	42	65	167	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	423	0	54	578	0	77	369	0	65	250	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	25	25		25	25		25	25		25	25	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	25	25		25	25		25	25		25	25	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0		8.0	12.0		8.0	12.0	
Minimum Split (s)	13.2	31.6		13.1	32.6		13.1	24.1		13.1	24.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	18.0	57.0		18.0	57.0		18.0	28.0		17.0	27.0	
Total Split (%)	15.0%	47.5%		15.0%	47.5%		15.0%	23.3%		14.2%	22.5%	
Maximum Green (s)	13.0	52.0		13.0	52.0		13.0	23.0		12.0	22.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	63.4	55.2		62.4	54.7		34.2	25.3		33.5	24.9	
Actuated g/C Ratio	0.59	0.51		0.58	0.51		0.32	0.24		0.31	0.23	
v/c Ratio	0.22	0.46		0.11	0.63		0.24	0.86		0.27	0.60	
Control Delay	11.0	20.2		10.1	24.9		27.5	61.9		28.3	43.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.0	20.2		10.1	24.9		27.5	61.9		28.3	43.1	
LOS	B	C		B	C		C	E		C	D	
Approach Delay		18.6			23.6			55.9			40.1	
Approach LOS		B			C			E			D	
Queue Length 50th (ft)	25	194		15	300		37	255		32	150	
Queue Length 95th (ft)	46	268		31	413		69	#409		60	231	
Internal Link Dist (ft)		211			221			592			1224	
Turn Bay Length (ft)	140			70			125			125		
Base Capacity (vph)	465	928		577	920		365	427		287	417	
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	0.19	0.46		0.09	0.63		0.21	0.86		0.23	0.60	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 107.4

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 32.6 Intersection LOS: C

Intersection Capacity Utilization 69.2% ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 15: Mass St. & 19th St.

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	5	5	10	15	10	365	5	5	215	5
Future Vol, veh/h	10	10	5	5	10	15	10	365	5	5	215	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	11	5	5	11	16	11	401	5	5	236	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	688	677	239	683	677	404	241	0	0	406	0	0
Stage 1	249	249	-	426	426	-	-	-	-	-	-	-
Stage 2	439	428	-	257	251	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	359	373	797	362	373	644	1320	-	-	1147	-	-
Stage 1	753	699	-	604	584	-	-	-	-	-	-	-
Stage 2	595	583	-	745	697	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	339	369	797	348	369	644	1320	-	-	1147	-	-
Mov Cap-2 Maneuver	339	369	-	348	369	-	-	-	-	-	-	-
Stage 1	747	696	-	599	579	-	-	-	-	-	-	-
Stage 2	564	578	-	725	694	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.7	13.4	0.2	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1320	-	-	398	463	1147	-	-
HCM Lane V/C Ratio	0.008	-	-	0.069	0.071	0.005	-	-
HCM Control Delay (s)	7.8	-	-	14.7	13.4	8.2	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection												
Int Delay, s/veh	0.5											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	0	0	15	5	355	5	5	220	5
Future Vol, veh/h	0	0	10	0	0	15	5	355	5	5	220	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	11	0	0	16	5	390	5	5	242	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	245	-	-	393	247	0	0	395	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.327	-	-	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	0	0	791	0	0	654	1313	-	-	1158	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	791	-	-	654	1313	-	-	1158	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.6			10.6			0.1			0.2		
HCM LOS	A			B								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1313	-	-	791	654	1158	-	-
HCM Lane V/C Ratio	0.004	-	-	0.014	0.025	0.005	-	-
HCM Control Delay (s)	7.8	-	-	9.6	10.6	8.1	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	395	50	5	400	95	30	15	5	55	25	140
Future Volume (veh/h)	245	395	50	5	400	95	30	15	5	55	25	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	302	488	62	6	494	117	37	19	6	68	31	173
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	705	1772	224	646	1673	712	344	179	56	379	272	230
Arrive On Green	0.18	0.57	0.55	0.09	0.48	0.46	0.06	0.13	0.11	0.08	0.15	0.15
Sat Flow, veh/h	1753	3123	395	1753	3497	1560	1753	1341	423	1753	1841	1560
Grp Volume(v), veh/h	302	272	278	6	494	117	37	0	25	68	31	173
Grp Sat Flow(s),veh/h/ln	1753	1749	1770	1753	1749	1560	1753	0	1764	1753	1841	1560
Q Serve(g_s), s	0.0	7.2	7.3	0.1	7.7	4.0	1.5	0.0	1.1	0.0	1.3	6.3
Cycle Q Clear(g_c), s	0.0	7.2	7.3	0.1	7.7	4.0	1.5	0.0	1.1	0.0	1.3	6.3
Prop In Lane	1.00		0.22	1.00		1.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	705	992	1004	646	1673	712	344	0	235	379	272	230
V/C Ratio(X)	0.43	0.27	0.28	0.01	0.30	0.16	0.11	0.00	0.11	0.18	0.11	0.75
Avail Cap(c_a), veh/h	803	992	1004	744	1673	712	449	0	589	518	676	573
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.3	10.0	10.1	5.6	14.2	14.4	28.7	0.0	34.5	30.5	33.2	16.0
Incr Delay (d2), s/veh	0.4	0.7	0.7	0.0	0.5	0.5	0.1	0.0	0.2	0.2	0.2	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	2.7	2.8	0.0	3.0	1.5	0.6	0.0	0.5	1.3	0.6	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.8	10.6	10.8	5.6	14.7	14.9	28.8	0.0	34.7	30.7	33.4	20.9
LnGrp LOS	B	B	B	A	B	B	C	A	C	C	C	C
Approach Vol, veh/h		852			617			62			272	
Approach Delay, s/veh		11.8			14.6			31.2			24.8	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	54.0	8.6	16.3	19.0	46.0	9.9	15.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	11.0	49.0	9.0	31.0	19.0	41.0	12.0	28.0
Max Q Clear Time (g_c+I1), s	2.1	9.3	3.5	8.3	2.0	9.7	2.0	3.1
Green Ext Time (p_c), s	0.0	2.4	0.0	0.8	1.1	2.8	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	15.4
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	25	70	20	20	5	75	470	35	30	450	15
Future Volume (veh/h)	15	25	70	20	20	5	75	470	35	30	450	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	27	76	22	22	5	82	511	38	33	489	16
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	129	105	231	237	221	37	603	782	58	546	740	24
Arrive On Green	0.17	0.22	0.17	0.17	0.22	0.17	0.14	0.46	0.40	0.10	0.41	0.36
Sat Flow, veh/h	118	474	1047	478	999	168	1781	1719	128	1781	1801	59
Grp Volume(v), veh/h	119	0	0	49	0	0	82	0	549	33	0	505
Grp Sat Flow(s),veh/h/ln	1640	0	0	1645	0	0	1781	0	1847	1781	0	1860
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	9.1	0.4	0.0	8.7
Cycle Q Clear(g_c), s	2.5	0.0	0.0	0.9	0.0	0.0	0.8	0.0	9.1	0.4	0.0	8.7
Prop In Lane	0.13		0.64	0.45		0.10	1.00		0.07	1.00		0.03
Lane Grp Cap(c), veh/h	382	0	0	412	0	0	603	0	841	546	0	765
V/C Ratio(X)	0.31	0.00	0.00	0.12	0.00	0.00	0.14	0.00	0.65	0.06	0.00	0.66
Avail Cap(c_a), veh/h	1247	0	0	1236	0	0	848	0	2008	869	0	2021
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	0.0	0.0	12.8	0.0	0.0	5.1	0.0	8.4	5.6	0.0	9.4
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.9	0.0	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.3	0.0	0.0	0.2	0.0	2.6	0.1	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.1	0.0	0.0	12.9	0.0	0.0	5.2	0.0	9.3	5.7	0.0	10.4
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	B
Approach Vol, veh/h		119			49			631			538	
Approach Delay, s/veh		14.1			12.9			8.8			10.1	
Approach LOS		B			B			A			B	

Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		11.7	8.6	19.3		11.7	6.8	21.0
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		28.0	9.0	41.0		28.0	9.0	41.0
Max Q Clear Time (g_c+I1), s		4.5	2.8	10.7		2.9	2.4	11.1
Green Ext Time (p_c), s		0.6	0.1	3.6		0.2	0.0	4.0

Intersection Summary		
HCM 6th Ctrl Delay		9.9
HCM 6th LOS		A

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	5	30	20	70	5	535	75	50	490	10
Future Vol, veh/h	5	5	5	30	20	70	5	535	75	50	490	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	5	5	5	33	22	76	5	582	82	54	533	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1329	1321	539	1285	1285	623	544	0	0	664	0	0
Stage 1	647	647	-	633	633	-	-	-	-	-	-	-
Stage 2	682	674	-	652	652	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	132	157	542	142	165	486	1025	-	-	925	-	-
Stage 1	460	467	-	468	473	-	-	-	-	-	-	-
Stage 2	440	454	-	457	464	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	95	147	542	130	155	486	1025	-	-	925	-	-
Mov Cap-2 Maneuver	95	147	-	130	155	-	-	-	-	-	-	-
Stage 1	458	440	-	466	471	-	-	-	-	-	-	-
Stage 2	352	452	-	421	437	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	30.8	37.1	0.1	0.8
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1025	-	-	156	238	925	-	-
HCM Lane V/C Ratio	0.005	-	-	0.105	0.548	0.059	-	-
HCM Control Delay (s)	8.5	-	-	30.8	37.1	9.1	-	-
HCM Lane LOS	A	-	-	D	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	3	0.2	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	5	5	5	5	5	605	5	5	510	5
Future Vol, veh/h	5	5	5	5	5	5	5	605	5	5	510	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	5	5	5	5	5	5	5	658	5	5	554	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1243	1240	557	1243	1240	661	559	0	0	663	0	0
Stage 1	567	567	-	671	671	-	-	-	-	-	-	-
Stage 2	676	673	-	572	569	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	151	175	530	151	175	462	1012	-	-	926	-	-
Stage 1	508	507	-	446	455	-	-	-	-	-	-	-
Stage 2	443	454	-	505	506	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	145	173	530	145	173	462	1012	-	-	926	-	-
Mov Cap-2 Maneuver	145	173	-	145	173	-	-	-	-	-	-	-
Stage 1	505	504	-	444	453	-	-	-	-	-	-	-
Stage 2	430	452	-	492	503	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24	24.4	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1012	-	-	206	202	926	-	-
HCM Lane V/C Ratio	0.005	-	-	0.079	0.081	0.006	-	-
HCM Control Delay (s)	8.6	-	-	24	24.4	8.9	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Intersection												
Int Delay, s/veh	2.7											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	25	40	10	15	5	20	600	20	10	500	15
Future Vol, veh/h	10	25	40	10	15	5	20	600	20	10	500	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	27	43	11	16	5	22	652	22	11	543	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1291	1291	551	1315	1288	663	559	0	0	674	0	0
Stage 1	573	573	-	707	707	-	-	-	-	-	-	-
Stage 2	718	718	-	608	581	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	140	163	534	135	164	461	1012	-	-	917	-	-
Stage 1	505	504	-	426	438	-	-	-	-	-	-	-
Stage 2	420	433	-	483	500	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	124	157	534	105	158	461	1012	-	-	917	-	-
Mov Cap-2 Maneuver	124	157	-	105	158	-	-	-	-	-	-	-
Stage 1	494	498	-	417	428	-	-	-	-	-	-	-
Stage 2	391	423	-	414	494	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.8	35.8	0.3	0.2
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1012	-	-	238	149	917	-	-
HCM Lane V/C Ratio	0.021	-	-	0.343	0.219	0.012	-	-
HCM Control Delay (s)	8.6	-	-	27.8	35.8	9	-	-
HCM Lane LOS	A	-	-	D	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.5	0.8	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	410	45	65	395	60	45	330	45	110	275	120
Future Volume (veh/h)	145	410	45	65	395	60	45	330	45	110	275	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	158	446	49	71	429	65	49	359	49	120	299	130
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	451	751	82	447	706	107	242	412	56	274	335	146
Arrive On Green	0.09	0.45	0.43	0.09	0.44	0.43	0.08	0.26	0.24	0.09	0.27	0.25
Sat Flow, veh/h	1781	1656	182	1781	1587	240	1781	1611	220	1781	1236	537
Grp Volume(v), veh/h	158	0	495	71	0	494	49	0	408	120	0	429
Grp Sat Flow(s),veh/h/ln	1781	0	1838	1781	0	1827	1781	0	1831	1781	0	1774
Q Serve(g_s), s	4.7	0.0	21.3	2.1	0.0	21.8	2.0	0.0	22.6	4.9	0.0	24.6
Cycle Q Clear(g_c), s	4.7	0.0	21.3	2.1	0.0	21.8	2.0	0.0	22.6	4.9	0.0	24.6
Prop In Lane	1.00		0.10	1.00		0.13	1.00		0.12	1.00		0.30
Lane Grp Cap(c), veh/h	451	0	833	447	0	813	242	0	468	274	0	481
V/C Ratio(X)	0.35	0.00	0.59	0.16	0.00	0.61	0.20	0.00	0.87	0.44	0.00	0.89
Avail Cap(c_a), veh/h	570	0	833	582	0	813	391	0	468	396	0	481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.1	0.0	21.7	14.3	0.0	22.4	26.9	0.0	37.8	26.5	0.0	37.3
Incr Delay (d2), s/veh	0.5	0.0	3.1	0.2	0.0	3.4	0.4	0.0	19.6	1.1	0.0	21.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	9.7	0.8	0.0	9.9	0.9	0.0	12.5	2.1	0.0	13.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.5	0.0	24.8	14.5	0.0	25.8	27.3	0.0	57.4	27.7	0.0	58.8
LnGrp LOS	B	A	C	B	A	C	C	A	E	C	A	E
Approach Vol, veh/h		653			565			457			549	
Approach Delay, s/veh		22.6			24.4			54.2			52.0	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	50.9	11.1	31.7	12.9	50.0	12.8	30.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	15.0	45.0	15.0	25.0	15.0	45.0	15.0	25.0
Max Q Clear Time (g_c+I1), s	4.1	23.3	4.0	26.6	6.7	23.8	6.9	24.6
Green Ext Time (p_c), s	0.1	1.6	0.1	0.0	0.3	1.6	0.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	36.8
HCM 6th LOS	D

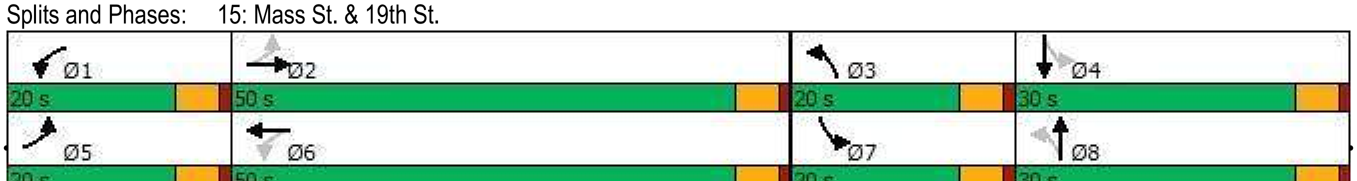
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	410	45	65	395	60	45	330	45	110	275	120
Future Volume (vph)	145	410	45	65	395	60	45	330	45	110	275	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	70		0	125		0	125		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.980			0.982			0.955	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1835	0	1770	1825	0	1770	1829	0	1770	1779	0
Flt Permitted	0.248			0.318			0.178			0.129		
Satd. Flow (perm)	462	1835	0	592	1825	0	332	1829	0	240	1779	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			7			5			17	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		291			301			672			1304	
Travel Time (s)		6.6			6.8			15.3			29.6	
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)	158	446	49	71	429	65	49	359	49	120	299	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	495	0	71	494	0	49	408	0	120	429	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	25	25		25	25		25	25		25	25	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	25	25		25	25		25	25		25	25	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0		8.0	12.0		8.0	12.0	
Minimum Split (s)	13.2	31.6		13.1	32.6		13.1	24.1		13.1	24.1	
Total Split (s)	20.0	50.0		20.0	50.0		20.0	30.0		20.0	30.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	16.7%	41.7%		16.7%	41.7%		16.7%	25.0%		16.7%	25.0%	
Maximum Green (s)	15.0	45.0		15.0	45.0		15.0	25.0		15.0	25.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Max		None	Max		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	62.3	52.2		57.5	47.1		37.4	27.0		42.5	32.3	
Actuated g/C Ratio	0.56	0.47		0.51	0.42		0.33	0.24		0.38	0.29	
v/c Ratio	0.39	0.58		0.17	0.64		0.20	0.91		0.45	0.82	
Control Delay	15.1	26.2		12.9	30.8		24.6	68.2		28.7	50.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	15.1	26.2		12.9	30.8		24.6	68.2		28.7	50.8	
LOS	B	C		B	C		C	E		C	D	
Approach Delay		23.5			28.5			63.5			46.0	
Approach LOS		C			C			E			D	
Queue Length 50th (ft)	51	259		22	269		22	281		56	283	
Queue Length 95th (ft)	92	403		47	435		49	#518		103	#485	
Internal Link Dist (ft)		211			221			592			1224	
Turn Bay Length (ft)	140			70			125			125		
Base Capacity (vph)	459	859		509	772		344	446		325	526	
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	0.34	0.58		0.14	0.64		0.14	0.91		0.37	0.82	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 111.8
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 38.6 Intersection LOS: D
Intersection Capacity Utilization 74.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 15: Mass St. & 19th St.



Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	15	5	5	10	5	435	5	10	370	10
Future Vol, veh/h	10	10	15	5	5	10	5	435	5	10	370	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	11	16	5	5	11	5	473	5	11	402	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	924	918	408	929	921	476	413	0	0	478	0	0
Stage 1	430	430	-	486	486	-	-	-	-	-	-	-
Stage 2	494	488	-	443	435	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	250	272	643	248	270	589	1146	-	-	1084	-	-
Stage 1	603	583	-	563	551	-	-	-	-	-	-	-
Stage 2	557	550	-	594	580	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	239	268	643	232	266	589	1146	-	-	1084	-	-
Mov Cap-2 Maneuver	239	268	-	232	266	-	-	-	-	-	-	-
Stage 1	601	577	-	561	549	-	-	-	-	-	-	-
Stage 2	539	548	-	562	574	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.8	16	0.1	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1146	-	-	342	349	1084	-	-
HCM Lane V/C Ratio	0.005	-	-	0.111	0.062	0.01	-	-
HCM Control Delay (s)	8.2	-	-	16.8	16	8.4	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	5	0	0	10	5	435	5	5	375	10
Future Vol, veh/h	0	0	5	0	0	10	5	435	5	5	375	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	0	0	5	0	0	11	5	473	5	5	408	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	414	-	-	476	419	0	0	478	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	638	0	0	589	1140	-	-	1084	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	638	-	-	589	1140	-	-	1084	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	11.2	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1140	-	-	638	589	1084	-	-
HCM Lane V/C Ratio	0.005	-	-	0.009	0.018	0.005	-	-
HCM Control Delay (s)	8.2	-	-	10.7	11.2	8.3	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	465	50	5	460	105	90	25	15	85	15	275
Future Volume (veh/h)	310	465	50	5	460	105	90	25	15	85	15	275
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	337	505	54	5	500	114	98	27	16	92	16	299
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	607	1799	192	527	1585	678	434	252	150	481	425	360
Arrive On Green	0.14	0.56	0.54	0.03	0.45	0.43	0.07	0.23	0.21	0.07	0.23	0.23
Sat Flow, veh/h	1781	3240	345	1781	3554	1585	1781	1101	652	1781	1870	1585
Grp Volume(v), veh/h	337	276	283	5	500	114	98	0	43	92	16	299
Grp Sat Flow(s),veh/h/ln	1781	1777	1808	1781	1777	1585	1781	0	1753	1781	1870	1585
Q Serve(g_s), s	10.5	9.0	9.1	0.0	10.0	4.9	4.5	0.0	2.1	4.2	0.7	19.7
Cycle Q Clear(g_c), s	10.5	9.0	9.1	0.0	10.0	4.9	4.5	0.0	2.1	4.2	0.7	19.7
Prop In Lane	1.00		0.19	1.00		1.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	607	987	1004	527	1585	678	434	0	402	481	425	360
V/C Ratio(X)	0.56	0.28	0.28	0.01	0.32	0.17	0.23	0.00	0.11	0.19	0.04	0.83
Avail Cap(c_a), veh/h	790	987	1004	710	1585	678	511	0	479	708	664	563
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.2	12.9	13.0	13.5	19.6	19.4	28.3	0.0	33.7	28.2	33.1	40.4
Incr Delay (d2), s/veh	0.8	0.7	0.7	0.0	0.5	0.5	0.3	0.0	0.1	0.2	0.0	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	3.7	3.8	0.1	4.2	1.9	1.9	0.0	0.9	1.8	0.3	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.0	13.6	13.7	13.5	20.1	19.9	28.6	0.0	33.9	28.4	33.1	46.4
LnGrp LOS	B	B	B	B	C	B	C	A	C	C	C	D
Approach Vol, veh/h		896			619			141			407	
Approach Delay, s/veh		13.4			20.0			30.2			41.8	
Approach LOS		B			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	64.0	11.2	28.0	18.7	52.0	11.0	28.2
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	59.0	11.0	37.0	25.0	47.0	20.0	28.0
Max Q Clear Time (g_c+I1), s	12.0	11.1	6.5	21.7	12.5	12.0	6.2	4.1
Green Ext Time (p_c), s	0.0	2.4	0.1	1.2	1.1	2.9	0.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	22.2
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	30	45	25	40	20	70	345	55	40	200	10
Future Volume (veh/h)	5	30	45	25	40	20	70	345	55	40	200	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	6	37	56	31	49	25	86	426	68	49	247	12
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	124	123	174	209	164	74	808	682	109	613	719	35
Arrive On Green	0.13	0.18	0.13	0.13	0.18	0.13	0.14	0.44	0.38	0.11	0.41	0.35
Sat Flow, veh/h	60	664	942	388	890	400	1767	1561	249	1767	1755	85
Grp Volume(v), veh/h	99	0	0	105	0	0	86	0	494	49	0	259
Grp Sat Flow(s),veh/h/ln	1666	0	0	1678	0	0	1767	0	1811	1767	0	1840
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	7.2	0.5	0.0	3.3
Cycle Q Clear(g_c), s	1.8	0.0	0.0	1.8	0.0	0.0	0.8	0.0	7.2	0.5	0.0	3.3
Prop In Lane	0.06		0.57	0.30		0.24	1.00		0.14	1.00		0.05
Lane Grp Cap(c), veh/h	322	0	0	348	0	0	808	0	791	613	0	754
V/C Ratio(X)	0.31	0.00	0.00	0.30	0.00	0.00	0.11	0.00	0.62	0.08	0.00	0.34
Avail Cap(c_a), veh/h	1327	0	0	1315	0	0	1028	0	2506	777	0	2439
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.6	0.0	0.0	12.5	0.0	0.0	3.8	0.0	7.5	4.6	0.0	6.9
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.5	0.0	0.0	0.1	0.0	0.8	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	0.7	0.0	0.0	0.1	0.0	1.9	0.1	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	0.0	0.0	13.0	0.0	0.0	3.8	0.0	8.3	4.6	0.0	7.2
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		99			105			580			308	
Approach Delay, s/veh		13.1			13.0			7.7			6.8	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		9.3	7.8	16.9		9.3	6.9	17.8				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		25.0	7.0	43.0		25.0	5.0	45.0				
Max Q Clear Time (g_c+I1), s		3.8	2.8	5.3		3.8	2.5	9.2				
Green Ext Time (p_c), s		0.5	0.1	1.6		0.5	0.0	3.6				
Intersection Summary												
HCM 6th Ctrl Delay			8.4									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	5	35	25	110	5	390	40	40	225	5
Future Vol, veh/h	5	5	5	35	25	110	5	390	40	40	225	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	6	6	42	30	133	6	470	48	48	271	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	958	900	274	882	879	494	277	0	0	518	0	0
Stage 1	370	370	-	506	506	-	-	-	-	-	-	-
Stage 2	588	530	-	376	373	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	236	277	762	266	285	573	1280	-	-	1043	-	-
Stage 1	648	618	-	547	538	-	-	-	-	-	-	-
Stage 2	493	525	-	643	617	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	160	263	762	249	270	573	1280	-	-	1043	-	-
Mov Cap-2 Maneuver	160	263	-	249	270	-	-	-	-	-	-	-
Stage 1	645	590	-	544	535	-	-	-	-	-	-	-
Stage 2	356	522	-	602	589	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.6	23.1	0.1	1.3
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1280	-	-	264	400	1043	-	-
HCM Lane V/C Ratio	0.005	-	-	0.068	0.512	0.046	-	-
HCM Control Delay (s)	7.8	-	-	19.6	23.1	8.6	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	2.8	0.1	-	-

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	5	5	5	5	5	5	5	420	5	5	255	5
Future Vol, veh/h	5	5	5	5	5	5	5	420	5	5	255	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	6	6	6	6	6	6	500	6	6	304	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	840	837	307	840	837	503	310	0	0	506	0	0
Stage 1	319	319	-	515	515	-	-	-	-	-	-	-
Stage 2	521	518	-	325	322	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	284	302	731	284	302	567	1245	-	-	1054	-	-
Stage 1	690	651	-	541	533	-	-	-	-	-	-	-
Stage 2	537	532	-	685	649	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	275	299	731	275	299	567	1245	-	-	1054	-	-
Mov Cap-2 Maneuver	275	299	-	275	299	-	-	-	-	-	-	-
Stage 1	687	647	-	538	530	-	-	-	-	-	-	-
Stage 2	523	529	-	669	645	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	16.1	0.1	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1245	-	-	359	343	1054	-	-
HCM Lane V/C Ratio	0.005	-	-	0.05	0.052	0.006	-	-
HCM Control Delay (s)	7.9	-	-	15.6	16.1	8.4	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	20	35	15	40	10	20	400	10	5	245	15
Future Vol, veh/h	10	20	35	15	40	10	20	400	10	5	245	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	22	39	17	44	11	22	444	11	6	272	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	814	792	281	817	795	450	289	0	0	455	0	0
Stage 1	293	293	-	494	494	-	-	-	-	-	-	-
Stage 2	521	499	-	323	301	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	297	322	758	295	320	609	1273	-	-	1106	-	-
Stage 1	715	670	-	557	546	-	-	-	-	-	-	-
Stage 2	539	544	-	689	665	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	255	315	758	260	313	609	1273	-	-	1106	-	-
Mov Cap-2 Maneuver	255	315	-	260	313	-	-	-	-	-	-	-
Stage 1	703	667	-	548	537	-	-	-	-	-	-	-
Stage 2	477	535	-	628	662	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	19.4	0.4	0.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1273	-	-	437	322	1106	-	-
HCM Lane V/C Ratio	0.017	-	-	0.165	0.224	0.005	-	-
HCM Control Delay (s)	7.9	-	-	14.9	19.4	8.3	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.8	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	320	35	45	440	45	65	275	35	55	140	70
Future Volume (veh/h)	75	320	35	45	440	45	65	275	35	55	140	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	89	381	42	54	524	54	77	327	42	65	167	83
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	238	587	65	339	572	59	381	463	59	297	331	165
Arrive On Green	0.06	0.36	0.36	0.05	0.35	0.35	0.05	0.29	0.29	0.05	0.29	0.29
Sat Flow, veh/h	1753	1629	180	1753	1641	169	1753	1598	205	1753	1160	577
Grp Volume(v), veh/h	89	0	423	54	0	578	77	0	369	65	0	250
Grp Sat Flow(s),veh/h/ln	1753	0	1808	1753	0	1810	1753	0	1804	1753	0	1737
Q Serve(g_s), s	2.3	0.0	13.9	1.4	0.0	21.7	2.2	0.0	13.0	1.8	0.0	8.5
Cycle Q Clear(g_c), s	2.3	0.0	13.9	1.4	0.0	21.7	2.2	0.0	13.0	1.8	0.0	8.5
Prop In Lane	1.00		0.10	1.00		0.09	1.00		0.11	1.00		0.33
Lane Grp Cap(c), veh/h	238	0	652	339	0	630	381	0	522	297	0	496
V/C Ratio(X)	0.37	0.00	0.65	0.16	0.00	0.92	0.20	0.00	0.71	0.22	0.00	0.50
Avail Cap(c_a), veh/h	262	0	674	384	0	675	411	0	522	334	0	496
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.9	0.0	19.0	14.7	0.0	22.2	16.7	0.0	22.6	17.5	0.0	21.2
Incr Delay (d2), s/veh	1.0	0.0	2.1	0.2	0.0	16.8	0.3	0.0	7.8	0.4	0.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	5.8	0.5	0.0	11.4	0.8	0.0	6.3	0.7	0.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.9	0.0	21.1	14.9	0.0	39.0	17.0	0.0	30.4	17.8	0.0	24.8
LnGrp LOS	B	A	C	B	A	D	B	A	C	B	A	C
Approach Vol, veh/h		512			632			446			315	
Approach Delay, s/veh		20.5			37.0			28.1			23.4	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	25.1	7.8	30.1	8.4	24.8	8.6	29.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	20.3	5.1	26.5	5.1	20.3	5.1	26.5
Max Q Clear Time (g_c+I1), s	3.8	15.0	3.4	15.9	4.2	10.5	4.3	23.7
Green Ext Time (p_c), s	0.0	1.0	0.0	1.9	0.0	1.0	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	28.2
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	320	35	45	440	45	65	275	35	55	140	70
Future Volume (vph)	75	320	35	45	440	45	65	275	35	55	140	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	70		0	125		0	125		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.986			0.983			0.950	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1800	0	1736	1801	0	1736	1796	0	1736	1736	0
Flt Permitted	0.152			0.342			0.498			0.320		
Satd. Flow (perm)	278	1800	0	625	1801	0	910	1796	0	585	1736	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			8			8			33	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		291			301			672			1304	
Travel Time (s)		6.6			6.8			15.3			29.6	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	89	381	42	54	524	54	77	327	42	65	167	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	423	0	54	578	0	77	369	0	65	250	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	9.6	31.0		9.6	31.0		9.6	24.8		9.6	24.8	
Total Split (%)	12.8%	41.3%		12.8%	41.3%		12.8%	33.1%		12.8%	33.1%	
Maximum Green (s)	5.1	26.5		5.1	26.5		5.1	20.3		5.1	20.3	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
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		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	29.1	26.3		28.3	24.5		24.9	21.1		24.9	21.1	
Actuated g/C Ratio	0.42	0.38		0.41	0.35		0.36	0.31		0.36	0.31	
v/c Ratio	0.39	0.61		0.16	0.90		0.20	0.67		0.22	0.45	
Control Delay	16.1	23.1		11.8	41.9		15.8	31.0		16.2	22.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	16.1	23.1		11.8	41.9		15.8	31.0		16.2	22.7	
LOS	B	C		B	D		B	C		B	C	
Approach Delay		21.8			39.3			28.4			21.4	
Approach LOS		C			D			C			C	
Queue Length 50th (ft)	22	160		13	248		22	153		18	84	
Queue Length 95th (ft)	42	231		28	#389		44	#228		39	138	
Internal Link Dist (ft)		211			221			592			1224	
Turn Bay Length (ft)	140			70			125			125		
Base Capacity (vph)	228	768		340	722		390	553		298	552	
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	0.39	0.55		0.16	0.80		0.20	0.67		0.22	0.45	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 69.1

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 29.1 Intersection LOS: C

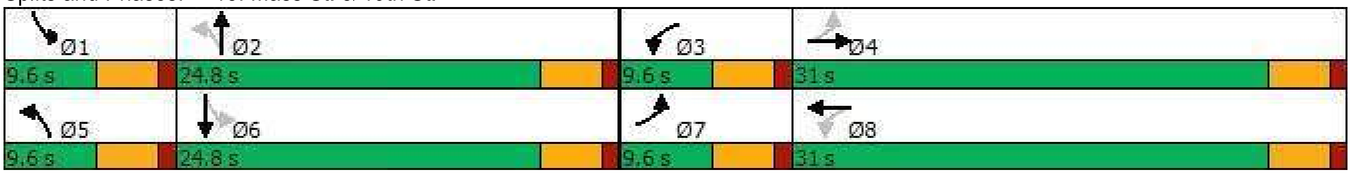
Intersection Capacity Utilization 65.8% ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 15: Mass St. & 19th St.



Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	5	5	10	15	10	365	5	5	215	5
Future Vol, veh/h	10	10	5	5	10	15	10	365	5	5	215	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	11	5	5	11	16	11	401	5	5	236	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	688	677	239	683	677	404	241	0	0	406	0	0
Stage 1	249	249	-	426	426	-	-	-	-	-	-	-
Stage 2	439	428	-	257	251	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	359	373	797	362	373	644	1320	-	-	1147	-	-
Stage 1	753	699	-	604	584	-	-	-	-	-	-	-
Stage 2	595	583	-	745	697	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	339	369	797	348	369	644	1320	-	-	1147	-	-
Mov Cap-2 Maneuver	339	369	-	348	369	-	-	-	-	-	-	-
Stage 1	747	696	-	599	579	-	-	-	-	-	-	-
Stage 2	564	578	-	725	694	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.7	13.4	0.2	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1320	-	-	398	463	1147	-	-
HCM Lane V/C Ratio	0.008	-	-	0.069	0.071	0.005	-	-
HCM Control Delay (s)	7.8	-	-	14.7	13.4	8.2	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	0	0	15	5	355	5	5	220	5
Future Vol, veh/h	0	0	10	0	0	15	5	355	5	5	220	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	11	0	0	16	5	390	5	5	242	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	245	-	-	393	247	0	0	395	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.327	-	-	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	0	0	791	0	0	654	1313	-	-	1158	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	791	-	-	654	1313	-	-	1158	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	10.6	0.1	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1313	-	-	791	654	1158	-	-
HCM Lane V/C Ratio	0.004	-	-	0.014	0.025	0.005	-	-
HCM Control Delay (s)	7.8	-	-	9.6	10.6	8.1	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	395	50	5	400	95	30	15	5	55	25	140
Future Volume (veh/h)	245	395	50	5	400	95	30	15	5	55	25	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	302	488	62	6	494	117	37	19	6	68	31	173
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	504	896	113	442	761	339	535	472	149	608	647	549
Arrive On Green	0.17	0.29	0.29	0.10	0.22	0.22	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1753	3123	395	1753	3497	1560	1159	1341	423	1364	1841	1560
Grp Volume(v), veh/h	302	272	278	6	494	117	37	0	25	68	31	173
Grp Sat Flow(s),veh/h/ln	1753	1749	1770	1753	1749	1560	1159	0	1764	1364	1841	1560
Q Serve(g_s), s	6.3	6.7	6.8	0.1	6.6	3.2	1.1	0.0	0.5	1.8	0.6	4.1
Cycle Q Clear(g_c), s	6.3	6.7	6.8	0.1	6.6	3.2	1.7	0.0	0.5	2.2	0.6	4.1
Prop In Lane	1.00		0.22	1.00		1.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	504	502	508	442	761	339	535	0	620	608	647	549
V/C Ratio(X)	0.60	0.54	0.55	0.01	0.65	0.34	0.07	0.00	0.04	0.11	0.05	0.32
Avail Cap(c_a), veh/h	571	803	812	442	1230	549	535	0	620	608	647	549
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.9	15.4	15.4	12.1	18.2	16.9	11.5	0.0	10.9	11.7	10.9	12.1
Incr Delay (d2), s/veh	1.4	0.9	0.9	0.0	0.9	0.6	0.2	0.0	0.1	0.4	0.1	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.5	2.5	0.0	2.5	1.1	0.3	0.0	0.2	0.5	0.2	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	16.3	16.4	12.2	19.2	17.5	11.7	0.0	11.0	12.0	11.1	13.6
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	B	B
Approach Vol, veh/h		852			617			62			272	
Approach Delay, s/veh		15.2			18.8			11.5			12.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		22.5	9.5	19.2		22.5	13.1	15.6
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.0	5.0	23.5		18.0	10.5	18.0
Max Q Clear Time (g_c+I1), s		3.7	2.1	8.8		6.1	8.3	8.6
Green Ext Time (p_c), s		0.1	0.0	2.9		0.7	0.2	2.6

Intersection Summary	
HCM 6th Ctrl Delay	16.0
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	25	70	20	20	5	75	470	35	30	450	15
Future Volume (veh/h)	15	25	70	20	20	5	75	470	35	30	450	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	27	76	22	22	5	82	511	38	33	489	16
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	48	113	176	109	19	591	951	71	540	935	31
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.07	0.55	0.55	0.04	0.52	0.52
Sat Flow, veh/h	147	443	1042	548	1000	176	1781	1719	128	1781	1801	59
Grp Volume(v), veh/h	119	0	0	49	0	0	82	0	549	33	0	505
Grp Sat Flow(s),veh/h/ln	1631	0	0	1724	0	0	1781	0	1847	1781	0	1860
Q Serve(g_s), s	1.5	0.0	0.0	0.0	0.0	0.0	0.9	0.0	8.5	0.4	0.0	8.0
Cycle Q Clear(g_c), s	3.1	0.0	0.0	1.1	0.0	0.0	0.9	0.0	8.5	0.4	0.0	8.0
Prop In Lane	0.13		0.64	0.45		0.10	1.00		0.07	1.00		0.03
Lane Grp Cap(c), veh/h	269	0	0	304	0	0	591	0	1021	540	0	965
V/C Ratio(X)	0.44	0.00	0.00	0.16	0.00	0.00	0.14	0.00	0.54	0.06	0.00	0.52
Avail Cap(c_a), veh/h	742	0	0	755	0	0	667	0	1021	675	0	965
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.2	0.0	0.0	18.3	0.0	0.0	4.7	0.0	6.4	5.1	0.0	7.1
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.2	0.0	0.0	0.1	0.0	2.0	0.0	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	0.4	0.0	0.0	0.2	0.0	2.7	0.1	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	0.0	0.0	18.6	0.0	0.0	4.8	0.0	8.4	5.1	0.0	9.2
LnGrp LOS	C	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		119			49			631			538	
Approach Delay, s/veh		20.3			18.6			8.0			8.9	
Approach LOS		C			B			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	29.3		9.4	7.7	27.8		9.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	23.3		18.1	5.1	23.3		18.1				
Max Q Clear Time (g_c+I1), s	2.4	10.5		5.1	2.9	10.0		3.1				
Green Ext Time (p_c), s	0.0	3.0		0.5	0.0	2.7		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			9.8									
HCM 6th LOS			A									

Intersection												
Int Delay, s/veh	4.2											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	5	30	20	70	5	535	75	50	490	10
Future Vol, veh/h	5	5	5	30	20	70	5	535	75	50	490	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	5	5	5	33	22	76	5	582	82	54	533	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1329	1321	539	1285	1285	623	544	0	0	664	0	0
Stage 1	647	647	-	633	633	-	-	-	-	-	-	-
Stage 2	682	674	-	652	652	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	132	157	542	142	165	486	1025	-	-	925	-	-
Stage 1	460	467	-	468	473	-	-	-	-	-	-	-
Stage 2	440	454	-	457	464	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	95	147	542	130	155	486	1025	-	-	925	-	-
Mov Cap-2 Maneuver	95	147	-	130	155	-	-	-	-	-	-	-
Stage 1	458	440	-	466	471	-	-	-	-	-	-	-
Stage 2	352	452	-	421	437	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	30.8	37.1	0.1	0.8
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1025	-	-	156	238	925	-	-
HCM Lane V/C Ratio	0.005	-	-	0.105	0.548	0.059	-	-
HCM Control Delay (s)	8.5	-	-	30.8	37.1	9.1	-	-
HCM Lane LOS	A	-	-	D	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	3	0.2	-	-

Intersection												
Int Delay, s/veh	0.7											
Movement	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
Lane Configurations												
Traffic Vol, veh/h	5	5	5	5	5	5	5	605	5	5	510	5
Future Vol, veh/h	5	5	5	5	5	5	5	605	5	5	510	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	5	5	5	5	5	5	5	658	5	5	554	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1243	1240	557	1243	1240	661	559	0	0	663	0	0
Stage 1	567	567	-	671	671	-	-	-	-	-	-	-
Stage 2	676	673	-	572	569	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	151	175	530	151	175	462	1012	-	-	926	-	-
Stage 1	508	507	-	446	455	-	-	-	-	-	-	-
Stage 2	443	454	-	505	506	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	145	173	530	145	173	462	1012	-	-	926	-	-
Mov Cap-2 Maneuver	145	173	-	145	173	-	-	-	-	-	-	-
Stage 1	505	504	-	444	453	-	-	-	-	-	-	-
Stage 2	430	452	-	492	503	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24	24.4	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1012	-	-	206	202	926	-	-
HCM Lane V/C Ratio	0.005	-	-	0.079	0.081	0.006	-	-
HCM Control Delay (s)	8.6	-	-	24	24.4	8.9	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	25	40	10	15	5	20	600	20	10	500	15
Future Vol, veh/h	10	25	40	10	15	5	20	600	20	10	500	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	27	43	11	16	5	22	652	22	11	543	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1291	1291	551	1315	1288	663	559	0	0	674	0	0
Stage 1	573	573	-	707	707	-	-	-	-	-	-	-
Stage 2	718	718	-	608	581	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	140	163	534	135	164	461	1012	-	-	917	-	-
Stage 1	505	504	-	426	438	-	-	-	-	-	-	-
Stage 2	420	433	-	483	500	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	124	157	534	105	158	461	1012	-	-	917	-	-
Mov Cap-2 Maneuver	124	157	-	105	158	-	-	-	-	-	-	-
Stage 1	494	498	-	417	428	-	-	-	-	-	-	-
Stage 2	391	423	-	414	494	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.8	35.8	0.3	0.2
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1012	-	-	238	149	917	-	-
HCM Lane V/C Ratio	0.021	-	-	0.343	0.219	0.012	-	-
HCM Control Delay (s)	8.6	-	-	27.8	35.8	9	-	-
HCM Lane LOS	A	-	-	D	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.5	0.8	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	410	45	65	395	60	45	330	45	110	275	120
Future Volume (veh/h)	145	410	45	65	395	60	45	330	45	110	275	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	158	446	49	71	429	65	49	359	49	120	299	130
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	267	532	58	256	473	72	295	506	69	330	416	181
Arrive On Green	0.08	0.32	0.32	0.05	0.30	0.30	0.04	0.31	0.31	0.07	0.34	0.34
Sat Flow, veh/h	1781	1656	182	1781	1587	240	1781	1611	220	1781	1236	537
Grp Volume(v), veh/h	158	0	495	71	0	494	49	0	408	120	0	429
Grp Sat Flow(s),veh/h/ln	1781	0	1838	1781	0	1827	1781	0	1831	1781	0	1774
Q Serve(g_s), s	4.4	0.0	18.3	2.0	0.0	19.0	1.3	0.0	14.4	3.3	0.0	15.4
Cycle Q Clear(g_c), s	4.4	0.0	18.3	2.0	0.0	19.0	1.3	0.0	14.4	3.3	0.0	15.4
Prop In Lane	1.00		0.10	1.00		0.13	1.00		0.12	1.00		0.30
Lane Grp Cap(c), veh/h	267	0	591	256	0	545	295	0	575	330	0	597
V/C Ratio(X)	0.59	0.00	0.84	0.28	0.00	0.91	0.17	0.00	0.71	0.36	0.00	0.72
Avail Cap(c_a), veh/h	267	0	602	287	0	588	343	0	575	338	0	597
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.6	0.0	23.0	18.1	0.0	24.6	16.9	0.0	22.1	16.7	0.0	21.2
Incr Delay (d2), s/veh	3.4	0.0	10.0	0.6	0.0	17.1	0.3	0.0	7.3	0.7	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	9.0	0.8	0.0	10.3	0.5	0.0	6.9	1.3	0.0	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.1	0.0	33.0	18.7	0.0	41.7	17.1	0.0	29.4	17.3	0.0	28.5
LnGrp LOS	C	A	C	B	A	D	B	A	C	B	A	C
Approach Vol, veh/h		653			565			457			549	
Approach Delay, s/veh		30.4			38.8			28.1			26.0	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	27.4	8.3	28.0	7.6	29.1	10.0	26.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	22.9	5.1	23.9	5.1	22.9	5.5	23.5
Max Q Clear Time (g_c+I1), s	5.3	16.4	4.0	20.3	3.3	17.4	6.4	21.0
Green Ext Time (p_c), s	0.0	1.4	0.0	1.1	0.0	1.3	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	31.0
HCM 6th LOS	C

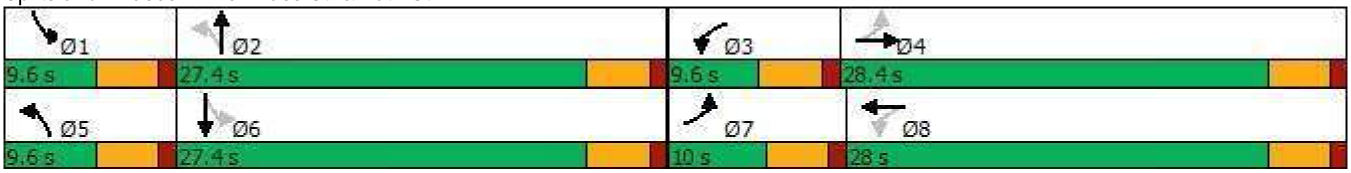
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	410	45	65	395	60	45	330	45	110	275	120
Future Volume (vph)	145	410	45	65	395	60	45	330	45	110	275	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	70		0	125		0	125		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.980			0.982			0.955	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1835	0	1770	1825	0	1770	1829	0	1770	1779	0
Flt Permitted	0.164			0.213			0.301			0.288		
Satd. Flow (perm)	305	1835	0	397	1825	0	561	1829	0	536	1779	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			11			9			30	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		291			301			672			1304	
Travel Time (s)		6.6			6.8			15.3			29.6	
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)	158	446	49	71	429	65	49	359	49	120	299	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	495	0	71	494	0	49	408	0	120	429	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
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		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	10.0	28.4		9.6	28.0		9.6	27.4		9.6	27.4	
Total Split (%)	13.3%	37.9%		12.8%	37.3%		12.8%	36.5%		12.8%	36.5%	
Maximum Green (s)	5.5	23.9		5.1	23.5		5.1	22.9		5.1	22.9	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
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		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Max		None	Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	28.6	24.4		26.8	21.6		27.0	23.2		27.9	25.0	
Actuated g/C Ratio	0.40	0.34		0.38	0.30		0.38	0.33		0.39	0.35	
v/c Ratio	0.67	0.78		0.29	0.88		0.16	0.68		0.40	0.67	
Control Delay	30.2	33.3		15.3	43.0		13.9	28.9		17.6	26.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.2	33.3		15.3	43.0		13.9	28.9		17.6	26.5	
LOS	C	C		B	D		B	C		B	C	
Approach Delay		32.6			39.5			27.3			24.6	
Approach LOS		C			D			C			C	
Queue Length 50th (ft)	43	208		18	209		13	164		33	167	
Queue Length 95th (ft)	#104	#373		41	#376		32	#270		64	#303	
Internal Link Dist (ft)		211			221			592			1224	
Turn Bay Length (ft)	140			70			125			125		
Base Capacity (vph)	236	637		248	615		300	599		299	643	
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	0.67	0.78		0.29	0.80		0.16	0.68		0.40	0.67	

Intersection Summary	
Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 71.3	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 31.3	Intersection LOS: C
Intersection Capacity Utilization 73.7%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 15: Mass St. & 19th St.



Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	15	5	5	10	5	435	5	10	370	10
Future Vol, veh/h	10	10	15	5	5	10	5	435	5	10	370	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	11	16	5	5	11	5	473	5	11	402	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	924	918	408	929	921	476	413	0	0	478	0	0
Stage 1	430	430	-	486	486	-	-	-	-	-	-	-
Stage 2	494	488	-	443	435	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	250	272	643	248	270	589	1146	-	-	1084	-	-
Stage 1	603	583	-	563	551	-	-	-	-	-	-	-
Stage 2	557	550	-	594	580	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	239	268	643	232	266	589	1146	-	-	1084	-	-
Mov Cap-2 Maneuver	239	268	-	232	266	-	-	-	-	-	-	-
Stage 1	601	577	-	561	549	-	-	-	-	-	-	-
Stage 2	539	548	-	562	574	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.8	16	0.1	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1146	-	-	342	349	1084	-	-
HCM Lane V/C Ratio	0.005	-	-	0.111	0.062	0.01	-	-
HCM Control Delay (s)	8.2	-	-	16.8	16	8.4	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0	-	-

Intersection												
Int Delay, s/veh	0.3											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	5	0	0	10	5	435	5	5	375	10
Future Vol, veh/h	0	0	5	0	0	10	5	435	5	5	375	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	0	0	5	0	0	11	5	473	5	5	408	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	414	-	-	476	419	0	0	478	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	638	0	0	589	1140	-	-	1084	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	638	-	-	589	1140	-	-	1084	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	11.2	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1140	-	-	638	589	1084	-	-
HCM Lane V/C Ratio	0.005	-	-	0.009	0.018	0.005	-	-
HCM Control Delay (s)	8.2	-	-	10.7	11.2	8.3	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	465	50	5	460	105	90	25	15	85	15	275
Future Volume (veh/h)	310	465	50	5	460	105	90	25	15	85	15	275
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	337	505	54	5	500	114	98	27	16	92	16	299
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	521	1244	133	335	769	343	504	383	227	592	651	552
Arrive On Green	0.17	0.38	0.38	0.01	0.22	0.22	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1781	3240	345	1781	3554	1585	1065	1101	652	1364	1870	1585
Grp Volume(v), veh/h	337	276	283	5	500	114	98	0	43	92	16	299
Grp Sat Flow(s),veh/h/ln	1781	1777	1808	1781	1777	1585	1065	0	1753	1364	1870	1585
Q Serve(g_s), s	6.9	5.9	5.9	0.1	6.6	3.1	3.4	0.0	0.8	2.5	0.3	7.8
Cycle Q Clear(g_c), s	6.9	5.9	5.9	0.1	6.6	3.1	3.7	0.0	0.8	3.3	0.3	7.8
Prop In Lane	1.00		0.19	1.00		1.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	521	682	694	335	769	343	504	0	610	592	651	552
V/C Ratio(X)	0.65	0.40	0.41	0.01	0.65	0.33	0.19	0.00	0.07	0.16	0.02	0.54
Avail Cap(c_a), veh/h	572	808	822	496	1237	552	504	0	610	592	651	552
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.6	11.6	11.6	15.6	18.5	17.1	12.3	0.0	11.3	12.4	11.1	13.5
Incr Delay (d2), s/veh	2.2	0.4	0.4	0.0	0.9	0.6	0.9	0.0	0.2	0.6	0.1	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	2.0	2.1	0.0	2.5	1.1	0.8	0.0	0.3	0.8	0.1	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.8	12.0	12.0	15.7	19.4	17.7	13.2	0.0	11.5	12.9	11.1	17.3
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	B	B
Approach Vol, veh/h		896			619			141			407	
Approach Delay, s/veh		12.7			19.0			12.7			16.1	
Approach LOS		B			B			B			B	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		22.5	4.8	24.3		22.5	13.5	15.7				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		18.0	5.0	23.5		18.0	10.5	18.0				
Max Q Clear Time (g_c+I1), s		5.7	2.1	7.9		9.8	8.9	8.6				
Green Ext Time (p_c), s		0.4	0.0	3.0		0.9	0.2	2.6				

Intersection Summary		
HCM 6th Ctrl Delay		15.3
HCM 6th LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	35	50	25	45	25	75	390	65	45	225	10
Future Volume (veh/h)	5	35	50	25	45	25	75	390	65	45	225	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	6	43	62	31	56	31	93	481	80	56	278	12
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	129	135	185	209	178	87	764	740	627	601	657	28
Arrive On Green	0.14	0.20	0.14	0.14	0.20	0.14	0.15	0.40	0.40	0.12	0.37	0.31
Sat Flow, veh/h	53	685	933	339	903	442	1767	1856	1572	1767	1766	76
Grp Volume(v), veh/h	111	0	0	118	0	0	93	481	80	56	0	290
Grp Sat Flow(s),veh/h/ln	1671	0	0	1684	0	0	1767	1856	1572	1767	0	1842
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.9	6.8	1.0	0.5	0.0	3.8
Cycle Q Clear(g_c), s	1.9	0.0	0.0	1.9	0.0	0.0	0.9	6.8	1.0	0.5	0.0	3.8
Prop In Lane	0.05		0.56	0.26		0.26	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	344	0	0	370	0	0	764	740	627	601	0	685
V/C Ratio(X)	0.32	0.00	0.00	0.32	0.00	0.00	0.12	0.65	0.13	0.09	0.00	0.42
Avail Cap(c_a), veh/h	1046	0	0	1046	0	0	884	1386	1175	768	0	1376
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.6	0.0	0.0	11.6	0.0	0.0	4.1	7.8	6.1	4.8	0.0	7.6
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.5	0.0	0.0	0.1	1.0	0.1	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.7	0.0	0.0	0.1	1.8	0.2	0.1	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	0.0	0.0	12.1	0.0	0.0	4.2	8.8	6.2	4.9	0.0	8.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		111			118			654			346	
Approach Delay, s/veh		12.2			12.1			7.8			7.5	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		9.4	7.8	15.0		9.4	7.0	15.8				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		18.0	5.0	22.0		18.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s		3.9	2.9	5.8		3.9	2.5	8.8				
Green Ext Time (p_c), s		0.3	0.0	1.0		0.3	0.0	2.1				
Intersection Summary												
HCM 6th Ctrl Delay			8.5									
HCM 6th LOS			A									

Intersection												
Int Delay, s/veh	5.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	5	35	30	125	5	440	45	45	250	5
Future Vol, veh/h	5	5	5	35	30	125	5	440	45	45	250	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	6	6	42	36	151	6	530	54	54	301	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	707	1008	304	987	984	292	307	0	0	584	0	0
Stage 1	412	412	-	569	569	-	-	-	-	-	-	-
Stage 2	295	596	-	418	415	-	-	-	-	-	-	-
Critical Hdwy	7.345	6.545	6.245	7.345	6.545	6.945	4.145	-	-	4.145	-	-
Critical Hdwy Stg 1	6.145	5.545	-	6.545	5.545	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.545	5.545	-	6.145	5.545	-	-	-	-	-	-	-
Follow-up Hdwy	3.5285	4.0285	3.3285	3.5285	4.0285	3.3285	2.2285	-	-	2.2285	-	-
Pot Cap-1 Maneuver	334	238	732	213	246	703	1246	-	-	983	-	-
Stage 1	614	591	-	473	503	-	-	-	-	-	-	-
Stage 2	687	489	-	609	590	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	220	223	732	197	231	703	1246	-	-	983	-	-
Mov Cap-2 Maneuver	220	223	-	197	231	-	-	-	-	-	-	-
Stage 1	610	558	-	470	499	-	-	-	-	-	-	-
Stage 2	497	486	-	565	558	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.3	26.4	0.1	1.3
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1246	-	-	289	391	983	-	-
HCM Lane V/C Ratio	0.005	-	-	0.063	0.585	0.055	-	-
HCM Control Delay (s)	7.9	0	-	18.3	26.4	8.9	-	-
HCM Lane LOS	A	A	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	3.6	0.2	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	5	5	5	10	5	475	5	5	290	5
Future Vol, veh/h	5	5	5	5	5	10	5	475	5	5	290	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	6	6	6	6	12	6	565	6	6	345	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	658	943	176	768	943	286	351	0	0	571	0	0
Stage 1	360	360	-	580	580	-	-	-	-	-	-	-
Stage 2	298	583	-	188	363	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	348	259	834	289	259	708	1197	-	-	991	-	-
Stage 1	628	622	-	465	496	-	-	-	-	-	-	-
Stage 2	683	494	-	793	621	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	332	255	834	279	255	708	1197	-	-	991	-	-
Mov Cap-2 Maneuver	332	255	-	279	255	-	-	-	-	-	-	-
Stage 1	624	617	-	462	493	-	-	-	-	-	-	-
Stage 2	659	491	-	774	616	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.3	14.9	0.1	0.1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1197	-	-	369	387	991	-	-
HCM Lane V/C Ratio	0.005	-	-	0.048	0.062	0.006	-	-
HCM Control Delay (s)	8	0	-	15.3	14.9	8.7	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	20	40	15	45	10	20	455	10	5	275	15
Future Volume (veh/h)	15	20	40	15	45	10	20	455	10	5	275	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	22	44	17	50	11	22	506	11	6	306	17
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	162	87	145	168	203	41	141	2265	48	112	2221	121
Arrive On Green	0.11	0.17	0.11	0.11	0.17	0.11	0.61	0.67	0.61	0.61	0.67	0.61
Sat Flow, veh/h	248	525	872	279	1218	246	50	3398	72	13	3331	182
Grp Volume(v), veh/h	83	0	0	78	0	0	282	0	257	173	0	156
Grp Sat Flow(s),veh/h/ln	1644	0	0	1742	0	0	1832	0	1689	1856	0	1669
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	1.3
Cycle Q Clear(g_c), s	1.6	0.0	0.0	1.4	0.0	0.0	2.2	0.0	2.2	1.2	0.0	1.3
Prop In Lane	0.20		0.53	0.22		0.14	0.08		0.04	0.03		0.11
Lane Grp Cap(c), veh/h	303	0	0	315	0	0	1227	0	1126	1238	0	1113
V/C Ratio(X)	0.27	0.00	0.00	0.25	0.00	0.00	0.23	0.00	0.23	0.14	0.00	0.14
Avail Cap(c_a), veh/h	922	0	0	969	0	0	1227	0	1126	1238	0	1113
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.8	0.0	0.0	13.4	0.0	0.0	2.4	0.0	2.4	2.2	0.0	2.3
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.4	0.0	0.0	0.4	0.0	0.5	0.2	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.3	0.3	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.3	0.0	0.0	13.8	0.0	0.0	2.8	0.0	2.9	2.5	0.0	2.5
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		83			78			539			329	
Approach Delay, s/veh		14.3			13.8			2.8			2.5	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		27.0		9.0		27.0		9.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		22.0		18.0		22.0		18.0				
Max Q Clear Time (g_c+I1), s		4.2		3.6		3.3		3.4				
Green Ext Time (p_c), s		2.1		0.2		1.2		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			4.5									
HCM 6th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	365	40	50	495	50	70	305	35	65	160	80
Future Volume (veh/h)	85	365	40	50	495	50	70	305	35	65	160	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	101	435	48	60	589	60	83	363	42	77	190	95
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	386	752	83	492	736	75	380	577	66	340	414	199
Arrive On Green	0.10	0.46	0.43	0.08	0.45	0.42	0.09	0.18	0.15	0.09	0.18	0.15
Sat Flow, veh/h	1753	1629	180	1753	1643	167	1753	3161	363	1753	2292	1099
Grp Volume(v), veh/h	101	0	483	60	0	649	83	200	205	77	143	142
Grp Sat Flow(s),veh/h/ln	1753	0	1808	1753	0	1811	1753	1749	1775	1753	1749	1643
Q Serve(g_s), s	1.8	0.0	12.8	1.1	0.0	20.0	2.3	6.8	6.9	2.2	4.7	5.1
Cycle Q Clear(g_c), s	1.8	0.0	12.8	1.1	0.0	20.0	2.3	6.8	6.9	2.2	4.7	5.1
Prop In Lane	1.00		0.10	1.00		0.09	1.00		0.20	1.00		0.67
Lane Grp Cap(c), veh/h	386	0	835	492	0	811	380	319	324	340	316	297
V/C Ratio(X)	0.26	0.00	0.58	0.12	0.00	0.80	0.22	0.63	0.63	0.23	0.45	0.48
Avail Cap(c_a), veh/h	408	0	835	538	0	811	410	540	548	373	540	507
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.7	0.0	12.9	8.6	0.0	15.5	18.3	24.4	24.7	18.5	23.7	24.4
Incr Delay (d2), s/veh	0.4	0.0	2.9	0.1	0.0	8.2	0.3	2.0	2.0	0.3	1.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	5.2	0.4	0.0	9.0	0.9	2.8	3.0	0.9	1.9	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.1	0.0	15.8	8.7	0.0	23.6	18.5	26.4	26.7	18.8	24.7	25.6
LnGrp LOS	B	A	B	A	A	C	B	C	C	B	C	C
Approach Vol, veh/h		584			709			488			362	
Approach Delay, s/veh		15.0			22.4			25.2			23.8	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	32.9	8.9	14.7	9.2	32.0	8.7	14.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	27.0	5.0	18.0	5.0	27.0	5.0	18.0
Max Q Clear Time (g_c+I1), s	3.1	14.8	4.3	7.1	3.8	22.0	4.2	8.9
Green Ext Time (p_c), s	0.0	1.3	0.0	0.7	0.0	1.2	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	21.3
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	10	5	10	15	10	410	5	5	245	10
Future Vol, veh/h	10	10	10	5	10	15	10	410	5	5	245	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	11	11	5	11	16	11	451	5	5	269	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	538	763	140	626	766	228	280	0	0	456	0	0
Stage 1	285	285	-	476	476	-	-	-	-	-	-	-
Stage 2	253	478	-	150	290	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	424	331	879	367	329	772	1272	-	-	1094	-	-
Stage 1	695	672	-	536	552	-	-	-	-	-	-	-
Stage 2	726	551	-	834	668	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	399	325	879	349	323	772	1272	-	-	1094	-	-
Mov Cap-2 Maneuver	399	325	-	349	323	-	-	-	-	-	-	-
Stage 1	687	669	-	530	545	-	-	-	-	-	-	-
Stage 2	688	544	-	806	665	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.7	13.4	0.2	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1272	-	-	446	464	1094	-	-
HCM Lane V/C Ratio	0.009	-	-	0.074	0.071	0.005	-	-
HCM Control Delay (s)	7.9	0	-	13.7	13.4	8.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	0	0	15	5	400	5	5	245	10
Future Vol, veh/h	0	0	10	0	0	15	5	400	5	5	245	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	11	0	0	16	5	440	5	5	269	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	140	-	-	223	280	0	0	445	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.96	-	-	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.33	-	-	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	0	0	879	0	0	777	1272	-	-	1104	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	879	-	-	777	1272	-	-	1104	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	9.7	0.1	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1272	-	-	879	777	1104	-	-
HCM Lane V/C Ratio	0.004	-	-	0.013	0.021	0.005	-	-
HCM Control Delay (s)	7.8	0	-	9.1	9.7	8.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	445	55	10	450	105	35	15	5	60	25	155
Future Volume (veh/h)	275	445	55	10	450	105	35	15	5	60	25	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	340	549	68	12	556	0	43	19	6	74	31	191
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	605	1468	181	515	1356		453	180	57	499	297	251
Arrive On Green	0.13	0.47	0.43	0.05	0.39	0.00	0.08	0.13	0.10	0.11	0.16	0.16
Sat Flow, veh/h	1753	3133	387	1753	3589	0	1753	1341	423	1753	1841	1560
Grp Volume(v), veh/h	340	306	311	12	556	0	43	0	25	74	31	191
Grp Sat Flow(s),veh/h/ln	1753	1749	1771	1753	1749	0	1753	0	1764	1753	1841	1560
Q Serve(g_s), s	0.0	5.8	5.9	0.2	6.0	0.0	1.0	0.0	0.6	0.0	0.7	3.7
Cycle Q Clear(g_c), s	0.0	5.8	5.9	0.2	6.0	0.0	1.0	0.0	0.6	0.0	0.7	3.7
Prop In Lane	1.00		0.22	1.00		0.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	605	820	830	515	1356		453	0	237	499	297	251
V/C Ratio(X)	0.56	0.37	0.37	0.02	0.41		0.09	0.00	0.11	0.15	0.10	0.76
Avail Cap(c_a), veh/h	742	820	830	658	1356		545	0	684	543	714	605
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.6	8.8	9.0	6.3	11.5	0.0	15.1	0.0	19.8	16.1	18.5	7.6
Incr Delay (d2), s/veh	0.8	1.3	1.3	0.0	0.9	0.0	0.1	0.0	0.2	0.1	0.2	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	2.0	2.1	0.0	2.1	0.0	0.4	0.0	0.3	0.7	0.3	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.4	10.1	10.3	6.3	12.4	0.0	15.2	0.0	20.0	16.2	18.6	12.3
LnGrp LOS	B	B	B	A	B		B	A	C	B	B	B
Approach Vol, veh/h		957			568			68			296	
Approach Delay, s/veh		12.1			12.3			17.0			14.0	
Approach LOS		B			B			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.8	27.2	7.3	11.3	10.0	23.0	8.7	9.9				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	5.0	22.0	5.0	18.0	9.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	2.2	7.9	3.0	5.7	2.0	8.0	2.0	2.6				
Green Ext Time (p_c), s	0.0	2.2	0.0	0.7	0.8	1.9	0.0	0.0				

Intersection Summary		
HCM 6th Ctrl Delay		12.6
HCM 6th LOS		B

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	30	75	20	20	5	85	530	35	15	510	20
Future Volume (veh/h)	15	30	75	20	20	5	85	530	35	15	510	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	33	82	22	22	5	92	576	38	16	554	22
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	82	179	249	170	31	599	920	779	557	765	30
Arrive On Green	0.12	0.18	0.12	0.12	0.18	0.12	0.14	0.49	0.49	0.08	0.43	0.37
Sat Flow, veh/h	141	471	1024	575	971	176	1781	1870	1585	1781	1787	71
Grp Volume(v), veh/h	131	0	0	49	0	0	92	576	38	16	0	576
Grp Sat Flow(s),veh/h/ln	1636	0	0	1722	0	0	1781	1870	1585	1781	0	1858
Q Serve(g_s), s	1.5	0.0	0.0	0.0	0.0	0.0	0.8	8.0	0.4	0.2	0.0	9.1
Cycle Q Clear(g_c), s	2.7	0.0	0.0	0.8	0.0	0.0	0.8	8.0	0.4	0.2	0.0	9.1
Prop In Lane	0.12		0.63	0.45		0.10	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	308	0	0	352	0	0	599	920	779	557	0	795
V/C Ratio(X)	0.42	0.00	0.00	0.14	0.00	0.00	0.15	0.63	0.05	0.03	0.00	0.72
Avail Cap(c_a), veh/h	945	0	0	951	0	0	702	1276	1081	774	0	1267
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.7	0.0	0.0	12.8	0.0	0.0	4.6	6.6	4.7	4.8	0.0	8.4
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.2	0.0	0.0	0.1	0.7	0.0	0.0	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.3	0.0	0.0	0.1	1.9	0.1	0.0	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.7	0.0	0.0	13.0	0.0	0.0	4.7	7.3	4.7	4.8	0.0	9.7
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		131			49			706			592	
Approach Delay, s/veh		14.7			13.0			6.8			9.5	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		9.2	8.0	18.1		9.2	5.7	20.3				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		18.0	5.0	22.0		18.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s		4.7	2.8	11.1		2.8	2.2	10.0				
Green Ext Time (p_c), s		0.4	0.0	2.0		0.1	0.0	2.2				
Intersection Summary												
HCM 6th Ctrl Delay			8.8									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	10	35	25	80	5	605	85	55	550	10
Future Vol, veh/h	5	5	10	35	25	80	5	605	85	55	550	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	5	5	11	38	27	87	5	658	92	60	598	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1077	1484	604	1446	1443	375	609	0	0	750	0	0
Stage 1	724	724	-	714	714	-	-	-	-	-	-	-
Stage 2	353	760	-	732	729	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.23	7.33	6.53	6.93	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	185	124	497	101	132	623	968	-	-	857	-	-
Stage 1	416	429	-	389	434	-	-	-	-	-	-	-
Stage 2	638	413	-	412	427	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	124	114	497	89	122	623	968	-	-	857	-	-
Mov Cap-2 Maneuver	124	114	-	89	122	-	-	-	-	-	-	-
Stage 1	412	399	-	385	430	-	-	-	-	-	-	-
Stage 2	510	409	-	370	397	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.1	70.3	0.1	0.9
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	968	-	-	192	193	857	-	-
HCM Lane V/C Ratio	0.006	-	-	0.113	0.788	0.07	-	-
HCM Control Delay (s)	8.7	0	-	26.1	70.3	9.5	-	-
HCM Lane LOS	A	A	-	D	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	5.4	0.2	-	-

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	5	5	10	5	5	5	10	685	5	10	575	5
Future Vol, veh/h	5	5	10	5	5	5	10	685	5	10	575	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	5	5	11	5	5	5	11	745	5	11	625	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1047	1422	315	1107	1422	375	630	0	0	750	0	0
Stage 1	650	650	-	770	770	-	-	-	-	-	-	-
Stage 2	397	772	-	337	652	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	182	135	681	165	135	623	948	-	-	855	-	-
Stage 1	424	463	-	359	408	-	-	-	-	-	-	-
Stage 2	600	407	-	651	462	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	169	130	681	152	130	623	948	-	-	855	-	-
Mov Cap-2 Maneuver	169	130	-	152	130	-	-	-	-	-	-	-
Stage 1	416	454	-	352	400	-	-	-	-	-	-	-
Stage 2	575	399	-	620	453	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.3	25.8	0.2	0.3
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	948	-	-	242	189	855	-	-
HCM Lane V/C Ratio	0.011	-	-	0.09	0.086	0.013	-	-
HCM Control Delay (s)	8.8	0.1	-	21.3	25.8	9.3	0.1	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	25	45	10	15	5	20	675	25	10	560	15
Future Volume (veh/h)	15	25	45	10	15	5	20	675	25	10	560	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	27	49	11	16	5	22	734	27	11	609	16
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	154	84	136	205	157	42	129	2265	82	115	2315	60
Arrive On Green	0.10	0.16	0.10	0.10	0.16	0.10	0.62	0.68	0.62	0.62	0.68	0.62
Sat Flow, veh/h	226	539	871	441	1012	269	33	3353	121	15	3428	89
Grp Volume(v), veh/h	92	0	0	32	0	0	409	0	374	333	0	303
Grp Sat Flow(s),veh/h/ln	1636	0	0	1721	0	0	1827	0	1680	1846	0	1686
Q Serve(g_s), s	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	2.5
Cycle Q Clear(g_c), s	1.9	0.0	0.0	0.6	0.0	0.0	3.3	0.0	3.3	2.6	0.0	2.5
Prop In Lane	0.17		0.53	0.34		0.16	0.05		0.07	0.03		0.05
Lane Grp Cap(c), veh/h	281	0	0	307	0	0	1238	0	1135	1247	0	1139
V/C Ratio(X)	0.33	0.00	0.00	0.10	0.00	0.00	0.33	0.00	0.33	0.27	0.00	0.27
Avail Cap(c_a), veh/h	941	0	0	958	0	0	1238	0	1135	1247	0	1139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.1	0.0	0.0	13.3	0.0	0.0	2.4	0.0	2.4	2.3	0.0	2.3
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.1	0.0	0.0	0.7	0.0	0.8	0.5	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.2	0.0	0.0	0.7	0.0	0.4	0.5	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.7	0.0	0.0	13.5	0.0	0.0	3.2	0.0	3.2	2.8	0.0	2.9
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		92			32			783			636	
Approach Delay, s/veh		14.7			13.5			3.2			2.8	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		27.0		8.5		27.0		8.5				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		22.0		18.0		22.0		18.0				
Max Q Clear Time (g_c+I1), s		5.3		3.9		4.6		2.6				
Green Ext Time (p_c), s		3.2		0.2		2.5		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			3.9									
HCM 6th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	460	50	75	445	65	50	370	50	125	310	135
Future Volume (veh/h)	165	460	50	75	445	65	50	370	50	125	310	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	179	500	54	82	484	71	54	402	54	136	337	147
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	415	671	72	407	614	90	351	626	84	389	556	238
Arrive On Green	0.11	0.40	0.37	0.09	0.39	0.35	0.08	0.20	0.17	0.11	0.23	0.20
Sat Flow, veh/h	1781	1659	179	1781	1594	234	1781	3151	421	1781	2423	1037
Grp Volume(v), veh/h	179	0	554	82	0	555	54	226	230	136	245	239
Grp Sat Flow(s),veh/h/ln	1781	0	1838	1781	0	1828	1781	1777	1795	1781	1777	1684
Q Serve(g_s), s	3.5	0.0	16.0	1.6	0.0	16.7	1.4	7.3	7.4	3.5	7.7	8.0
Cycle Q Clear(g_c), s	3.5	0.0	16.0	1.6	0.0	16.7	1.4	7.3	7.4	3.5	7.7	8.0
Prop In Lane	1.00		0.10	1.00		0.13	1.00		0.23	1.00		0.62
Lane Grp Cap(c), veh/h	415	0	743	407	0	704	351	353	356	389	408	386
V/C Ratio(X)	0.43	0.00	0.75	0.20	0.00	0.79	0.15	0.64	0.65	0.35	0.60	0.62
Avail Cap(c_a), veh/h	415	0	743	441	0	704	407	570	576	390	570	540
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.6	0.0	15.9	10.9	0.0	17.1	17.0	22.9	23.2	16.0	21.5	22.2
Incr Delay (d2), s/veh	0.7	0.0	6.7	0.2	0.0	8.7	0.2	1.9	2.0	0.5	1.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	7.3	0.6	0.0	8.0	0.6	3.0	3.1	1.3	3.1	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.3	0.0	22.6	11.1	0.0	25.8	17.2	24.9	25.2	16.6	22.9	23.8
LnGrp LOS	B	A	C	B	A	C	B	C	C	B	C	C
Approach Vol, veh/h		733			637			510			620	
Approach Delay, s/veh		20.1			23.9			24.2			21.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	28.2	8.0	17.3	10.0	27.0	10.0	15.4
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	22.0	5.0	18.0	5.0	22.0	5.0	18.0
Max Q Clear Time (g_c+I1), s	3.6	18.0	3.4	10.0	5.5	18.7	5.5	9.4
Green Ext Time (p_c), s	0.0	0.8	0.0	1.1	0.0	0.7	0.0	1.0

Intersection Summary		
HCM 6th Ctrl Delay		22.3
HCM 6th LOS		C

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	15	5	5	10	5	490	5	10	415	10
Future Vol, veh/h	10	10	15	5	5	10	5	490	5	10	415	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	11	16	5	5	11	5	533	5	11	451	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	758	1027	231	799	1030	269	462	0	0	538	0	0
Stage 1	479	479	-	546	546	-	-	-	-	-	-	-
Stage 2	279	548	-	253	484	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	296	233	771	276	232	729	1095	-	-	1026	-	-
Stage 1	537	553	-	490	516	-	-	-	-	-	-	-
Stage 2	704	515	-	729	550	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	282	228	771	256	227	729	1095	-	-	1026	-	-
Mov Cap-2 Maneuver	282	228	-	256	227	-	-	-	-	-	-	-
Stage 1	533	545	-	487	512	-	-	-	-	-	-	-
Stage 2	681	511	-	690	542	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.4	15.6	0.1	0.3
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1095	-	-	354	362	1026	-	-
HCM Lane V/C Ratio	0.005	-	-	0.107	0.06	0.011	-	-
HCM Control Delay (s)	8.3	0	-	16.4	15.6	8.5	0.1	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	5	0	0	10	5	490	5	5	420	10
Future Vol, veh/h	0	0	5	0	0	10	5	490	5	5	420	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	0	0	5	0	0	11	5	533	5	5	457	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	234	-	-	269	468	0	0	538	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	768	0	0	729	1090	-	-	1026	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	768	-	-	729	1090	-	-	1026	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	10	0.1	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1090	-	-	768	729	1026	-	-
HCM Lane V/C Ratio	0.005	-	-	0.007	0.015	0.005	-	-
HCM Control Delay (s)	8.3	0	-	9.7	10	8.5	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	525	55	5	520	120	105	30	20	95	15	310
Future Volume (veh/h)	350	525	55	5	520	120	105	30	20	95	15	310
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	380	571	60	5	565	0	114	33	22	103	16	337
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	538	1160	122	467	1058		542	279	186	600	495	419
Arrive On Green	0.16	0.36	0.33	0.10	0.30	0.00	0.10	0.27	0.24	0.09	0.26	0.26
Sat Flow, veh/h	1781	3246	340	1781	3647	0	1781	1047	698	1781	1870	1585
Grp Volume(v), veh/h	380	312	319	5	565	0	114	0	55	103	16	337
Grp Sat Flow(s),veh/h/ln	1781	1777	1809	1781	1777	0	1781	0	1745	1781	1870	1585
Q Serve(g_s), s	9.8	9.2	9.3	0.0	8.9	0.0	2.9	0.0	1.6	2.6	0.4	13.3
Cycle Q Clear(g_c), s	9.8	9.2	9.3	0.0	8.9	0.0	2.9	0.0	1.6	2.6	0.4	13.3
Prop In Lane	1.00		0.19	1.00		0.00	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	538	635	646	467	1058		542	0	465	600	495	419
V/C Ratio(X)	0.71	0.49	0.49	0.01	0.53		0.21	0.00	0.12	0.17	0.03	0.80
Avail Cap(c_a), veh/h	538	635	646	467	1058		558	0	519	620	557	472
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.5	16.8	17.0	15.5	19.7	0.0	14.7	0.0	19.0	14.6	18.3	23.1
Incr Delay (d2), s/veh	4.2	2.7	2.7	0.0	1.9	0.0	0.2	0.0	0.1	0.1	0.0	8.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	3.9	4.0	0.1	3.7	0.0	1.1	0.0	0.6	1.0	0.2	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.6	19.5	19.7	15.5	21.6	0.0	14.9	0.0	19.1	14.8	18.3	31.9
LnGrp LOS	B	B	B	B	C		B	A	B	B	B	C
Approach Vol, veh/h		1011			570			169			456	
Approach Delay, s/veh		18.9			21.6			16.3			27.5	
Approach LOS		B			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	27.0	9.4	20.8	14.0	23.0	9.3	20.9				
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0				
Max Green Setting (Gmax), s	5.0	22.0	5.0	18.0	9.0	18.0	5.0	18.0				
Max Q Clear Time (g_c+I1), s	2.0	11.3	4.9	15.3	11.8	10.9	4.6	3.6				
Green Ext Time (p_c), s	0.0	2.0	0.0	0.4	0.0	1.6	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			21.2									
HCM 6th LOS			C									

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	35	50	25	45	25	75	390	65	45	225	10
Future Volume (veh/h)	5	35	50	25	45	25	75	390	65	45	225	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	6	43	62	31	56	31	93	481	80	56	278	12
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	118	127	172	193	167	82	789	687	114	572	737	32
Arrive On Green	0.13	0.18	0.13	0.13	0.18	0.13	0.14	0.44	0.39	0.12	0.42	0.36
Sat Flow, veh/h	53	688	937	343	905	444	1767	1551	258	1767	1766	76
Grp Volume(v), veh/h	111	0	0	118	0	0	93	0	561	56	0	290
Grp Sat Flow(s),veh/h/ln	1677	0	0	1692	0	0	1767	0	1809	1767	0	1842
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	8.9	0.5	0.0	3.8
Cycle Q Clear(g_c), s	2.1	0.0	0.0	2.1	0.0	0.0	0.9	0.0	8.9	0.5	0.0	3.8
Prop In Lane	0.05		0.56	0.26		0.26	1.00		0.14	1.00		0.04
Lane Grp Cap(c), veh/h	321	0	0	345	0	0	789	0	801	572	0	769
V/C Ratio(X)	0.35	0.00	0.00	0.34	0.00	0.00	0.12	0.00	0.70	0.10	0.00	0.38
Avail Cap(c_a), veh/h	1240	0	0	1230	0	0	891	0	2473	718	0	2518
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.1	0.0	0.0	13.0	0.0	0.0	3.8	0.0	8.0	4.9	0.0	7.1
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.6	0.0	0.0	0.1	0.0	1.1	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	0.8	0.0	0.0	0.1	0.0	2.4	0.1	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.7	0.0	0.0	13.6	0.0	0.0	3.9	0.0	9.2	5.0	0.0	7.4
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		111			118			654			346	
Approach Delay, s/veh		13.7			13.6			8.4			7.0	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		9.5	8.0	17.7		9.5	7.1	18.5				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		24.0	5.0	46.0		24.0	5.0	46.0				
Max Q Clear Time (g_c+I1), s		4.1	2.9	5.8		4.1	2.5	10.9				
Green Ext Time (p_c), s		0.4	0.0	1.2		0.4	0.0	2.7				
Intersection Summary												
HCM 6th Ctrl Delay			9.0									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	5	35	30	125	5	440	45	45	250	5
Future Vol, veh/h	5	5	5	35	30	125	5	440	45	45	250	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	6	6	42	36	151	6	530	54	54	301	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1075	1008	304	987	984	557	307	0	0	584	0	0
Stage 1	412	412	-	569	569	-	-	-	-	-	-	-
Stage 2	663	596	-	418	415	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	196	240	733	225	247	528	1248	-	-	986	-	-
Stage 1	615	593	-	505	504	-	-	-	-	-	-	-
Stage 2	449	490	-	610	591	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	118	226	733	209	232	528	1248	-	-	986	-	-
Mov Cap-2 Maneuver	118	226	-	209	232	-	-	-	-	-	-	-
Stage 1	612	560	-	502	501	-	-	-	-	-	-	-
Stage 2	296	488	-	566	558	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.8	31.6	0.1	1.3
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1248	-	-	210	356	986	-	-
HCM Lane V/C Ratio	0.005	-	-	0.086	0.643	0.055	-	-
HCM Control Delay (s)	7.9	-	-	23.8	31.6	8.9	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	4.3	0.2	-	-

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	5	5	5	5	5	10	5	475	5	5	290	5
Future Vol, veh/h	5	5	5	5	5	10	5	475	5	5	290	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	6	6	6	6	12	6	565	6	6	345	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	949	943	348	946	943	568	351	0	0	571	0	0
Stage 1	360	360	-	580	580	-	-	-	-	-	-	-
Stage 2	589	583	-	366	363	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	239	262	693	240	262	520	1202	-	-	997	-	-
Stage 1	656	625	-	498	499	-	-	-	-	-	-	-
Stage 2	493	497	-	651	623	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	228	259	693	232	259	520	1202	-	-	997	-	-
Mov Cap-2 Maneuver	228	259	-	232	259	-	-	-	-	-	-	-
Stage 1	653	621	-	496	497	-	-	-	-	-	-	-
Stage 2	474	495	-	635	619	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.3	16.6	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1202	-	-	310	333	997	-	-
HCM Lane V/C Ratio	0.005	-	-	0.058	0.072	0.006	-	-
HCM Control Delay (s)	8	-	-	17.3	16.6	8.6	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection												
Int Delay, s/veh	3.3											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	20	40	15	45	10	20	455	10	5	275	15
Future Vol, veh/h	15	20	40	15	45	10	20	455	10	5	275	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	125	125	-	125
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	22	44	17	50	11	22	506	11	6	306	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	904	879	306	910	885	506	323	0	0	517	0	0
Stage 1	318	318	-	550	550	-	-	-	-	-	-	-
Stage 2	586	561	-	360	335	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	258	286	734	255	284	566	1237	-	-	1049	-	-
Stage 1	693	654	-	519	516	-	-	-	-	-	-	-
Stage 2	496	510	-	658	643	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	214	279	734	221	277	566	1237	-	-	1049	-	-
Mov Cap-2 Maneuver	214	279	-	221	277	-	-	-	-	-	-	-
Stage 1	681	650	-	510	507	-	-	-	-	-	-	-
Stage 2	431	501	-	594	639	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17	22.6	0.3	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1237	-	-	382	282	1049	-	-
HCM Lane V/C Ratio	0.018	-	-	0.218	0.276	0.005	-	-
HCM Control Delay (s)	8	-	-	17	22.6	8.4	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	1.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	365	40	50	495	50	70	305	35	65	160	80
Future Volume (veh/h)	85	365	40	50	495	50	70	305	35	65	160	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	101	435	48	60	589	60	83	363	42	77	190	95
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	341	743	82	450	732	75	394	443	375	280	440	373
Arrive On Green	0.08	0.46	0.43	0.07	0.45	0.42	0.08	0.24	0.24	0.08	0.24	0.24
Sat Flow, veh/h	1753	1629	180	1753	1643	167	1753	1841	1560	1753	1841	1560
Grp Volume(v), veh/h	101	0	483	60	0	649	83	363	42	77	190	95
Grp Sat Flow(s),veh/h/ln	1753	0	1808	1753	0	1811	1753	1841	1560	1753	1841	1560
Q Serve(g_s), s	2.3	0.0	15.5	1.3	0.0	24.2	2.6	14.6	1.6	2.5	6.8	3.9
Cycle Q Clear(g_c), s	2.3	0.0	15.5	1.3	0.0	24.2	2.6	14.6	1.6	2.5	6.8	3.9
Prop In Lane	1.00		0.10	1.00		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	341	0	824	450	0	807	394	443	375	280	440	373
V/C Ratio(X)	0.30	0.00	0.59	0.13	0.00	0.80	0.21	0.82	0.11	0.27	0.43	0.25
Avail Cap(c_a), veh/h	354	0	824	480	0	807	413	471	400	302	471	400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.5	0.0	15.9	10.9	0.0	18.8	19.4	28.0	23.1	20.5	25.2	24.1
Incr Delay (d2), s/veh	0.5	0.0	3.0	0.1	0.0	8.4	0.3	10.5	0.1	0.5	0.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	6.6	0.5	0.0	11.2	1.1	7.4	0.6	1.0	3.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.0	0.0	18.9	11.0	0.0	27.2	19.6	38.5	23.3	21.0	25.9	24.4
LnGrp LOS	B	A	B	B	A	C	B	D	C	C	C	C
Approach Vol, veh/h		584			709			488			362	
Approach Delay, s/veh		18.1			25.8			34.0			24.5	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	38.6	9.2	21.7	9.4	37.8	9.1	21.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	5.0	32.8	5.0	18.0	5.0	32.8	5.0	18.0
Max Q Clear Time (g_c+I1), s	3.3	17.5	4.6	8.8	4.3	26.2	4.5	16.6
Green Ext Time (p_c), s	0.0	1.5	0.0	0.6	0.0	1.4	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	25.3
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	365	40	50	495	50	70	305	35	65	160	80
Future Volume (vph)	85	365	40	50	495	50	70	305	35	65	160	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	70		0	150		150	150		150
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.986				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1800	0	1736	1801	0	1736	1827	1553	1736	1827	1553
Flt Permitted	0.174			0.317			0.503			0.213		
Satd. Flow (perm)	318	1800	0	579	1801	0	919	1827	1553	389	1827	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			8				162			162
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		291			301			672			1304	
Travel Time (s)		6.6			6.8			15.3			29.6	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	101	435	48	60	589	60	83	363	42	77	190	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	483	0	60	649	0	83	363	42	77	190	95
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	25	25		25	25		25	25	25	25	25	25
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	25	25		25	25		25	25	25	25	25	25
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0		10.0	23.0		10.0	23.0	23.0	10.0	23.0	23.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	10.0	37.8		10.0	37.8		10.0	23.0	23.0	10.0	23.0	23.0
Total Split (%)	12.4%	46.8%		12.4%	46.8%		12.4%	28.5%	28.5%	12.4%	28.5%	28.5%
Maximum Green (s)	5.0	32.8		5.0	32.8		5.0	18.0	18.0	5.0	18.0	18.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	40.9	35.7		40.9	35.7		24.1	18.8	18.8	24.1	18.8	18.8
Actuated g/C Ratio	0.54	0.47		0.54	0.47		0.32	0.25	0.25	0.32	0.25	0.25
v/c Ratio	0.33	0.57		0.14	0.76		0.22	0.80	0.08	0.31	0.42	0.19
Control Delay	11.7	19.7		9.2	26.4		18.6	43.0	0.3	20.3	28.6	1.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.7	19.7		9.2	26.4		18.6	43.0	0.3	20.3	28.6	1.6
LOS	B	B		A	C		B	D	A	C	C	A
Approach Delay		18.3			25.0			35.2			19.7	
Approach LOS		B			C			D			B	
Queue Length 50th (ft)	22	179		13	278		27	172	0	25	81	0
Queue Length 95th (ft)	41	251		27	378		53	#271	0	49	129	3
Internal Link Dist (ft)		211			221			592			1224	
Turn Bay Length (ft)	140			70			150		150	150		150
Base Capacity (vph)	306	854		422	854		369	495	539	251	495	539
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.57		0.14	0.76		0.22	0.73	0.08	0.31	0.38	0.18

Intersection Summary

Area Type: Other

Cycle Length: 80.8

Actuated Cycle Length: 75.6

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

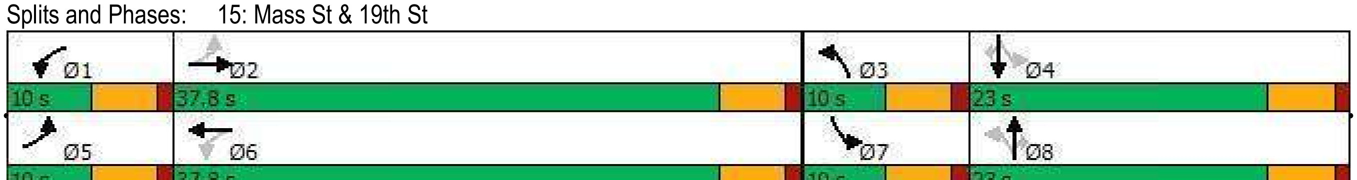
Intersection Signal Delay: 24.6 Intersection LOS: C

Intersection Capacity Utilization 67.3% ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 15: Mass St & 19th St



Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	10	5	10	15	10	410	5	5	245	10
Future Vol, veh/h	10	10	10	5	10	15	10	410	5	5	245	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	11	11	5	11	16	11	451	5	5	269	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	774	763	275	772	766	454	280	0	0	456	0	0
Stage 1	285	285	-	476	476	-	-	-	-	-	-	-
Stage 2	489	478	-	296	290	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	314	333	761	315	332	604	1277	-	-	1100	-	-
Stage 1	720	674	-	568	555	-	-	-	-	-	-	-
Stage 2	559	554	-	710	670	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	295	328	761	300	327	604	1277	-	-	1100	-	-
Mov Cap-2 Maneuver	295	328	-	300	327	-	-	-	-	-	-	-
Stage 1	714	671	-	563	550	-	-	-	-	-	-	-
Stage 2	528	549	-	685	667	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.2	14.4	0.2	0.2
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1277	-	-	387	416	1100	-	-
HCM Lane V/C Ratio	0.009	-	-	0.085	0.079	0.005	-	-
HCM Control Delay (s)	7.8	-	-	15.2	14.4	8.3	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	0	0	15	5	400	5	5	245	10
Future Vol, veh/h	0	0	10	0	0	15	5	400	5	5	245	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	11	0	0	16	5	440	5	5	269	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	275	-	-	443	280	0	0	445	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.327	-	-	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	0	0	761	0	0	613	1277	-	-	1110	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	761	-	-	613	1277	-	-	1110	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	11	0.1	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1277	-	-	761	613	1110	-	-
HCM Lane V/C Ratio	0.004	-	-	0.014	0.027	0.005	-	-
HCM Control Delay (s)	7.8	-	-	9.8	11	8.3	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	445	55	10	450	105	35	15	5	60	25	155
Future Volume (veh/h)	275	445	55	10	450	105	35	15	5	60	25	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	340	549	68	12	556	130	43	19	6	74	31	191
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	569	1256	155	431	894	340	553	505	160	637	693	588
Arrive On Green	0.20	0.40	0.36	0.05	0.26	0.22	0.38	0.38	0.34	0.38	0.38	0.38
Sat Flow, veh/h	1753	3133	387	1753	3497	1560	1141	1341	423	1364	1841	1560
Grp Volume(v), veh/h	340	306	311	12	556	130	43	0	25	74	31	191
Grp Sat Flow(s),veh/h/ln	1753	1749	1771	1753	1749	1560	1141	0	1764	1364	1841	1560
Q Serve(g_s), s	6.5	6.7	6.8	0.3	7.5	3.8	1.3	0.0	0.5	1.9	0.6	4.6
Cycle Q Clear(g_c), s	6.5	6.7	6.8	0.3	7.5	3.8	1.9	0.0	0.5	2.4	0.6	4.6
Prop In Lane	1.00		0.22	1.00		1.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	569	701	710	431	894	340	553	0	665	637	693	588
V/C Ratio(X)	0.60	0.44	0.44	0.03	0.62	0.38	0.08	0.00	0.04	0.12	0.04	0.33
Avail Cap(c_a), veh/h	584	790	801	570	1317	529	553	0	665	637	693	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.0	11.5	11.7	12.8	17.5	17.7	11.1	0.0	10.6	11.2	10.5	11.8
Incr Delay (d2), s/veh	1.6	0.4	0.4	0.0	0.7	0.7	0.3	0.0	0.1	0.4	0.1	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.3	2.4	0.1	2.8	1.3	0.3	0.0	0.2	0.6	0.2	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.6	12.0	12.2	12.8	18.2	18.4	11.4	0.0	10.7	11.6	10.6	13.2
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	B	B
Approach Vol, veh/h		957			698			68			296	
Approach Delay, s/veh		11.9			18.1			11.1			12.5	
Approach LOS		B			B			B			B	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	5.8	24.3		23.0	13.5	16.6				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		18.0	5.0	22.0		18.0	9.0	18.0				
Max Q Clear Time (g_c+I1), s		3.9	2.3	8.8		6.6	8.5	9.5				
Green Ext Time (p_c), s		0.2	0.0	2.2		0.9	0.1	2.1				
Intersection Summary												
HCM 6th Ctrl Delay			14.1									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	30	75	20	20	5	85	530	35	15	510	20
Future Volume (veh/h)	15	30	75	20	20	5	85	530	35	15	510	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	33	82	22	22	5	92	576	38	16	554	22
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	82	179	242	171	31	601	870	57	538	784	31
Arrive On Green	0.12	0.17	0.12	0.12	0.17	0.12	0.14	0.50	0.45	0.08	0.44	0.38
Sat Flow, veh/h	139	473	1025	564	981	176	1781	1735	114	1781	1787	71
Grp Volume(v), veh/h	131	0	0	49	0	0	92	0	614	16	0	576
Grp Sat Flow(s),veh/h/ln	1637	0	0	1720	0	0	1781	0	1850	1781	0	1858
Q Serve(g_s), s	1.5	0.0	0.0	0.0	0.0	0.0	0.8	0.0	9.0	0.2	0.0	9.2
Cycle Q Clear(g_c), s	2.7	0.0	0.0	0.9	0.0	0.0	0.8	0.0	9.0	0.2	0.0	9.2
Prop In Lane	0.12		0.63	0.45		0.10	1.00		0.06	1.00		0.04
Lane Grp Cap(c), veh/h	306	0	0	349	0	0	601	0	928	538	0	815
V/C Ratio(X)	0.43	0.00	0.00	0.14	0.00	0.00	0.15	0.00	0.66	0.03	0.00	0.71
Avail Cap(c_a), veh/h	1097	0	0	1093	0	0	699	0	2554	748	0	2565
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.1	0.0	0.0	13.2	0.0	0.0	4.6	0.0	6.8	4.9	0.0	8.3
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.8	0.0	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	0.3	0.0	0.0	0.1	0.0	2.2	0.0	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.1	0.0	0.0	13.4	0.0	0.0	4.7	0.0	7.6	5.0	0.0	9.4
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		131			49			706			592	
Approach Delay, s/veh		15.1			13.4			7.2			9.3	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		9.3	8.0	18.9		9.3	5.7	21.2				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		22.0	5.0	48.0		22.0	5.0	48.0				
Max Q Clear Time (g_c+I1), s		4.7	2.8	11.2		2.9	2.2	11.0				
Green Ext Time (p_c), s		0.4	0.0	2.7		0.1	0.0	3.0				

Intersection Summary			
HCM 6th Ctrl Delay			9.0
HCM 6th LOS			A

Intersection	
Int Delay, s/veh	8.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	10	35	25	80	5	605	85	55	550	10
Future Vol, veh/h	5	5	10	35	25	80	5	605	85	55	550	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	5	5	11	38	27	87	5	658	92	60	598	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1495	1484	604	1446	1443	704	609	0	0	750	0	0
Stage 1	724	724	-	714	714	-	-	-	-	-	-	-
Stage 2	771	760	-	732	729	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	101	125	498	109	132	437	970	-	-	859	-	-
Stage 1	417	430	-	422	435	-	-	-	-	-	-	-
Stage 2	393	414	-	413	428	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	63	116	498	97	122	437	970	-	-	859	-	-
Mov Cap-2 Maneuver	63	116	-	97	122	-	-	-	-	-	-	-
Stage 1	415	400	-	420	433	-	-	-	-	-	-	-
Stage 2	294	412	-	371	398	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	35.4	76.2	0.1	0.8
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	970	-	-	140	187	859	-	-
HCM Lane V/C Ratio	0.006	-	-	0.155	0.814	0.07	-	-
HCM Control Delay (s)	8.7	-	-	35.4	76.2	9.5	-	-
HCM Lane LOS	A	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	5.7	0.2	-	-

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	5	5	10	5	5	5	10	685	5	10	575	5
Future Vol, veh/h	5	5	10	5	5	5	10	685	5	10	575	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	5	5	11	5	5	5	11	745	5	11	625	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1425	1422	628	1428	1422	748	630	0	0	750	0	0
Stage 1	650	650	-	770	770	-	-	-	-	-	-	-
Stage 2	775	772	-	658	652	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	113	136	483	113	136	412	952	-	-	859	-	-
Stage 1	458	465	-	393	410	-	-	-	-	-	-	-
Stage 2	391	409	-	453	464	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	106	133	483	105	133	412	952	-	-	859	-	-
Mov Cap-2 Maneuver	106	133	-	105	133	-	-	-	-	-	-	-
Stage 1	453	459	-	388	405	-	-	-	-	-	-	-
Stage 2	376	404	-	432	458	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.4	31.1	0.1	0.2
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	952	-	-	190	154	859	-	-
HCM Lane V/C Ratio	0.011	-	-	0.114	0.106	0.013	-	-
HCM Control Delay (s)	8.8	-	-	26.4	31.1	9.2	-	-
HCM Lane LOS	A	-	-	D	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.3	0	-	-

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	25	45	10	15	5	20	675	25	10	560	15
Future Vol, veh/h	15	25	45	10	15	5	20	675	25	10	560	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	125	125	-	125
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	16	27	49	11	16	5	22	734	27	11	609	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1433	1436	609	1455	1425	734	625	0	0	761	0	0
Stage 1	631	631	-	778	778	-	-	-	-	-	-	-
Stage 2	802	805	-	677	647	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	112	133	495	108	136	420	956	-	-	851	-	-
Stage 1	469	474	-	389	407	-	-	-	-	-	-	-
Stage 2	378	395	-	443	467	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	97	128	495	79	131	420	956	-	-	851	-	-
Mov Cap-2 Maneuver	97	128	-	79	131	-	-	-	-	-	-	-
Stage 1	458	468	-	380	398	-	-	-	-	-	-	-
Stage 2	350	386	-	371	461	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	39.7	46.3	0.2	0.2
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	956	-	-	193	119	851	-	-
HCM Lane V/C Ratio	0.023	-	-	0.479	0.274	0.013	-	-
HCM Control Delay (s)	8.9	-	-	39.7	46.3	9.3	-	-
HCM Lane LOS	A	-	-	E	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.3	1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	460	50	75	445	65	50	370	50	125	310	135
Future Volume (veh/h)	165	460	50	75	445	65	50	370	50	125	310	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	179	500	54	82	484	71	54	402	54	136	337	147
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	331	674	73	316	599	88	266	447	379	247	496	420
Arrive On Green	0.08	0.41	0.41	0.05	0.38	0.38	0.04	0.24	0.24	0.07	0.27	0.27
Sat Flow, veh/h	1781	1659	179	1781	1594	234	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	179	0	554	82	0	555	54	402	54	136	337	147
Grp Sat Flow(s),veh/h/ln	1781	0	1838	1781	0	1828	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.7	0.0	20.0	2.2	0.0	21.2	1.7	16.3	2.1	4.5	12.6	5.9
Cycle Q Clear(g_c), s	4.7	0.0	20.0	2.2	0.0	21.2	1.7	16.3	2.1	4.5	12.6	5.9
Prop In Lane	1.00		0.10	1.00		0.13	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	331	0	747	316	0	687	266	447	379	247	496	420
V/C Ratio(X)	0.54	0.00	0.74	0.26	0.00	0.81	0.20	0.90	0.14	0.55	0.68	0.35
Avail Cap(c_a), veh/h	334	0	747	337	0	687	303	491	417	247	501	425
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.3	0.0	19.7	15.5	0.0	21.8	21.4	28.8	23.4	22.1	25.7	23.2
Incr Delay (d2), s/veh	1.7	0.0	6.5	0.4	0.0	9.9	0.4	18.3	0.2	2.6	3.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	9.3	0.8	0.0	10.4	0.7	9.2	0.8	2.0	5.9	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.1	0.0	26.2	16.0	0.0	31.7	21.8	47.1	23.6	24.7	29.3	23.7
LnGrp LOS	B	A	C	B	A	C	C	D	C	C	C	C
Approach Vol, veh/h		733			637			510			620	
Approach Delay, s/veh		24.2			29.7			41.9			27.0	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	36.2	7.9	25.2	11.1	33.8	10.0	23.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	30.9	5.1	20.9	6.7	29.3	5.5	20.5
Max Q Clear Time (g_c+I1), s	4.2	22.0	3.7	14.6	6.7	23.2	6.5	18.3
Green Ext Time (p_c), s	0.0	1.4	0.0	0.9	0.0	1.1	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	29.9
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	460	50	75	445	65	50	370	50	125	310	135
Future Volume (vph)	165	460	50	75	445	65	50	370	50	125	310	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	70		0	150		150	150		150
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.981				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1835	0	1770	1827	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.163			0.238			0.392			0.186		
Satd. Flow (perm)	304	1835	0	443	1827	0	730	1863	1583	346	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			10				143			147
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		291			301			672			1304	
Travel Time (s)		6.6			6.8			15.3			29.6	
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)	179	500	54	82	484	71	54	402	54	136	337	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	554	0	82	555	0	54	402	54	136	337	147
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	25	25		25	25		25	25	25	25	25	25
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	25	25		25	25		25	25	25	25	25	25
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5	22.5	9.5	22.5	22.5
Total Split (s)	11.2	35.4		9.6	33.8		9.6	25.0	25.0	10.0	25.4	25.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	14.0%	44.3%		12.0%	42.3%		12.0%	31.3%	31.3%	12.5%	31.8%	31.8%
Maximum Green (s)	6.7	30.9		5.1	29.3		5.1	20.5	20.5	5.5	20.9	20.9
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		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		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	38.2	32.9		34.4	29.3		24.6	19.5	19.5	27.1	23.8	23.8
Actuated g/C Ratio	0.48	0.42		0.44	0.37		0.31	0.25	0.25	0.34	0.30	0.30
v/c Ratio	0.66	0.72		0.29	0.81		0.18	0.88	0.11	0.63	0.60	0.25
Control Delay	24.9	27.0		13.4	33.8		17.6	50.3	0.4	32.1	30.3	5.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.9	27.0		13.4	33.8		17.6	50.3	0.4	32.1	30.3	5.7
LOS	C	C		B	C		B	D	A	C	C	A
Approach Delay		26.5			31.2			41.6			24.9	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	46	234		20	243		17	191	0	45	152	0
Queue Length 95th (ft)	#104	#395		42	#417		40	#340	0	#91	242	42
Internal Link Dist (ft)		211			221			592			1224	
Turn Bay Length (ft)	140			70			150		150	150		150
Base Capacity (vph)	271	769		278	683		294	483	517	217	561	579
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.72		0.29	0.81		0.18	0.83	0.10	0.63	0.60	0.25

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 79

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 30.4 Intersection LOS: C

Intersection Capacity Utilization 77.9% ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 15: Mass St & 19th St

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	15	5	5	10	5	490	5	10	415	10
Future Vol, veh/h	10	10	15	5	5	10	5	490	5	10	415	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	11	16	5	5	11	5	533	5	11	451	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1033	1027	457	1038	1030	536	462	0	0	538	0	0
Stage 1	479	479	-	546	546	-	-	-	-	-	-	-
Stage 2	554	548	-	492	484	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	211	234	604	209	233	545	1099	-	-	1030	-	-
Stage 1	568	555	-	522	518	-	-	-	-	-	-	-
Stage 2	517	517	-	558	552	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	201	230	604	194	229	545	1099	-	-	1030	-	-
Mov Cap-2 Maneuver	201	230	-	194	229	-	-	-	-	-	-	-
Stage 1	565	549	-	519	515	-	-	-	-	-	-	-
Stage 2	499	514	-	527	546	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.9	17.8	0.1	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1099	-	-	296	303	1030	-	-
HCM Lane V/C Ratio	0.005	-	-	0.129	0.072	0.011	-	-
HCM Control Delay (s)	8.3	-	-	18.9	17.8	8.5	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	5	0	0	10	5	490	5	5	420	10
Future Vol, veh/h	0	0	5	0	0	10	5	490	5	5	420	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	0	0	5	0	0	11	5	533	5	5	457	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	463	-	-	536	468	0	0	538	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	599	0	0	545	1094	-	-	1030	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	599	-	-	545	1094	-	-	1030	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.1	11.7	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1094	-	-	599	545	1030	-	-
HCM Lane V/C Ratio	0.005	-	-	0.009	0.02	0.005	-	-
HCM Control Delay (s)	8.3	-	-	11.1	11.7	8.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	525	55	5	520	120	105	30	20	95	15	310
Future Volume (veh/h)	350	525	55	5	520	120	105	30	20	95	15	310
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	380	571	60	5	565	130	114	33	22	103	16	337
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	535	1346	141	310	784	350	475	365	243	564	652	553
Arrive On Green	0.20	0.41	0.41	0.01	0.22	0.22	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1781	3246	340	1781	3554	1585	1028	1047	698	1349	1870	1585
Grp Volume(v), veh/h	380	312	319	5	565	130	114	0	55	103	16	337
Grp Sat Flow(s),veh/h/ln	1781	1777	1809	1781	1777	1585	1028	0	1745	1349	1870	1585
Q Serve(g_s), s	8.7	7.3	7.4	0.1	8.7	4.1	4.8	0.0	1.2	3.3	0.3	10.3
Cycle Q Clear(g_c), s	8.7	7.3	7.4	0.1	8.7	4.1	5.1	0.0	1.2	4.5	0.3	10.3
Prop In Lane	1.00		0.19	1.00		1.00	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	535	737	750	310	784	350	475	0	609	564	652	553
V/C Ratio(X)	0.71	0.42	0.43	0.02	0.72	0.37	0.24	0.00	0.09	0.18	0.02	0.61
Avail Cap(c_a), veh/h	799	1085	1105	453	1240	553	475	0	609	564	652	553
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.7	12.2	12.2	17.6	21.2	19.4	14.3	0.0	12.9	14.4	12.6	15.8
Incr Delay (d2), s/veh	1.8	0.4	0.4	0.0	1.3	0.7	1.2	0.0	0.3	0.7	0.1	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	2.6	2.7	0.1	3.4	1.5	1.2	0.0	0.5	1.0	0.1	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.4	12.6	12.6	17.6	22.5	20.1	15.4	0.0	13.2	15.1	12.6	20.8
LnGrp LOS	B	B	B	B	C	C	B	A	B	B	B	C
Approach Vol, veh/h		1011			700			169			456	
Approach Delay, s/veh		13.3			22.0			14.7			19.2	
Approach LOS		B			C			B			B	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		25.0	4.9	28.9		25.0	16.3	17.5				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		20.5	5.1	35.9		20.5	20.5	20.5				
Max Q Clear Time (g_c+I1), s		7.1	2.1	9.4		12.3	10.7	10.7				
Green Ext Time (p_c), s		0.6	0.0	2.7		1.3	1.2	2.3				
Intersection Summary												
HCM 6th Ctrl Delay			17.2									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	35	50	25	45	25	75	390	65	45	225	10
Future Volume (veh/h)	5	35	50	25	45	25	75	390	65	45	225	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	6	43	62	31	56	31	93	481	80	56	278	12
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	103	163	217	174	224	102	744	659	110	528	702	30
Arrive On Green	0.18	0.23	0.18	0.18	0.23	0.18	0.15	0.42	0.37	0.12	0.40	0.35
Sat Flow, veh/h	37	701	934	263	960	436	1767	1551	258	1767	1766	76
Grp Volume(v), veh/h	111	0	0	118	0	0	93	0	561	56	0	290
Grp Sat Flow(s),veh/h/ln	1672	0	0	1659	0	0	1767	0	1809	1767	0	1842
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	10.5	0.6	0.0	4.5
Cycle Q Clear(g_c), s	2.3	0.0	0.0	2.3	0.0	0.0	1.0	0.0	10.5	0.6	0.0	4.5
Prop In Lane	0.05		0.56	0.26		0.26	1.00		0.14	1.00		0.04
Lane Grp Cap(c), veh/h	401	0	0	417	0	0	744	0	768	528	0	732
V/C Ratio(X)	0.28	0.00	0.00	0.28	0.00	0.00	0.12	0.00	0.73	0.11	0.00	0.40
Avail Cap(c_a), veh/h	1246	0	0	1232	0	0	969	0	1931	800	0	1966
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.2	0.0	0.0	13.2	0.0	0.0	4.7	0.0	9.8	6.0	0.0	8.7
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.4	0.0	0.0	0.1	0.0	1.4	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	0.9	0.0	0.0	0.2	0.0	3.2	0.2	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.6	0.0	0.0	13.5	0.0	0.0	4.8	0.0	11.2	6.1	0.0	9.1
LnGrp LOS	B	A	A	B	A	A	A	A	B	A	A	A
Approach Vol, veh/h		111			118			654			346	
Approach Delay, s/veh		13.6			13.5			10.2			8.6	
Approach LOS		B			B			B			A	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		12.4	8.9	19.0		12.4	7.8	20.1				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		28.0	9.0	41.0		28.0	9.0	41.0				
Max Q Clear Time (g_c+I1), s		4.3	3.0	6.5		4.3	2.6	12.5				
Green Ext Time (p_c), s		0.4	0.1	1.2		0.4	0.1	2.6				

Intersection Summary			
HCM 6th Ctrl Delay			10.4
HCM 6th LOS			B

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	5	35	30	125	5	440	45	45	250	5
Future Vol, veh/h	5	5	5	35	30	125	5	440	45	45	250	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	6	6	42	36	151	6	530	54	54	301	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1075	1008	304	987	984	557	307	0	0	584	0	0
Stage 1	412	412	-	569	569	-	-	-	-	-	-	-
Stage 2	663	596	-	418	415	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	196	240	733	225	247	528	1248	-	-	986	-	-
Stage 1	615	593	-	505	504	-	-	-	-	-	-	-
Stage 2	449	490	-	610	591	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	118	226	733	209	232	528	1248	-	-	986	-	-
Mov Cap-2 Maneuver	118	226	-	209	232	-	-	-	-	-	-	-
Stage 1	612	560	-	502	501	-	-	-	-	-	-	-
Stage 2	296	488	-	566	558	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.8	31.6	0.1	1.3
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1248	-	-	210	356	986	-	-
HCM Lane V/C Ratio	0.005	-	-	0.086	0.643	0.055	-	-
HCM Control Delay (s)	7.9	-	-	23.8	31.6	8.9	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	4.3	0.2	-	-

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	5	5	5	5	5	10	5	475	5	5	290	5
Future Vol, veh/h	5	5	5	5	5	10	5	475	5	5	290	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	6	6	6	6	12	6	565	6	6	345	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	949	943	348	946	943	568	351	0	0	571	0	0
Stage 1	360	360	-	580	580	-	-	-	-	-	-	-
Stage 2	589	583	-	366	363	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	239	262	693	240	262	520	1202	-	-	997	-	-
Stage 1	656	625	-	498	499	-	-	-	-	-	-	-
Stage 2	493	497	-	651	623	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	228	259	693	232	259	520	1202	-	-	997	-	-
Mov Cap-2 Maneuver	228	259	-	232	259	-	-	-	-	-	-	-
Stage 1	653	621	-	496	497	-	-	-	-	-	-	-
Stage 2	474	495	-	635	619	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.3	16.6	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1202	-	-	310	333	997	-	-
HCM Lane V/C Ratio	0.005	-	-	0.058	0.072	0.006	-	-
HCM Control Delay (s)	8	-	-	17.3	16.6	8.6	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	20	40	15	45	10	20	455	10	5	275	15
Future Vol, veh/h	15	20	40	15	45	10	20	455	10	5	275	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	125	125	-	125
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	22	44	17	50	11	22	506	11	6	306	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	904	879	306	910	885	506	323	0	0	517	0	0
Stage 1	318	318	-	550	550	-	-	-	-	-	-	-
Stage 2	586	561	-	360	335	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	258	286	734	255	284	566	1237	-	-	1049	-	-
Stage 1	693	654	-	519	516	-	-	-	-	-	-	-
Stage 2	496	510	-	658	643	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	214	279	734	221	277	566	1237	-	-	1049	-	-
Mov Cap-2 Maneuver	214	279	-	221	277	-	-	-	-	-	-	-
Stage 1	681	650	-	510	507	-	-	-	-	-	-	-
Stage 2	431	501	-	594	639	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17	22.6	0.3	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1237	-	-	382	282	1049	-	-
HCM Lane V/C Ratio	0.018	-	-	0.218	0.276	0.005	-	-
HCM Control Delay (s)	8	-	-	17	22.6	8.4	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	1.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	365	40	50	495	50	70	305	35	65	160	80
Future Volume (veh/h)	85	365	40	50	495	50	70	305	35	65	160	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	101	435	48	60	589	60	83	363	42	77	190	95
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	380	815	90	490	809	82	362	417	354	249	415	352
Arrive On Green	0.09	0.50	0.48	0.08	0.49	0.47	0.09	0.23	0.23	0.08	0.23	0.23
Sat Flow, veh/h	1753	1629	180	1753	1643	167	1753	1841	1560	1753	1841	1560
Grp Volume(v), veh/h	101	0	483	60	0	649	83	363	42	77	190	95
Grp Sat Flow(s),veh/h/ln	1753	0	1808	1753	0	1811	1753	1841	1560	1753	1841	1560
Q Serve(g_s), s	2.8	0.0	20.0	1.7	0.0	31.2	3.8	20.8	2.3	3.5	9.8	5.5
Cycle Q Clear(g_c), s	2.8	0.0	20.0	1.7	0.0	31.2	3.8	20.8	2.3	3.5	9.8	5.5
Prop In Lane	1.00		0.10	1.00		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	380	0	905	490	0	891	362	417	354	249	415	352
V/C Ratio(X)	0.27	0.00	0.53	0.12	0.00	0.73	0.23	0.87	0.12	0.31	0.46	0.27
Avail Cap(c_a), veh/h	465	0	905	591	0	891	452	419	355	325	415	352
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	0.0	18.8	12.2	0.0	22.1	27.8	40.9	33.7	29.5	36.7	35.0
Incr Delay (d2), s/veh	0.4	0.0	2.3	0.1	0.0	5.2	0.3	17.5	0.1	0.7	0.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	8.7	0.6	0.0	14.1	1.6	11.4	0.9	1.5	4.5	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.8	0.0	21.0	12.3	0.0	27.3	28.1	58.4	33.9	30.2	37.5	35.5
LnGrp LOS	B	A	C	B	A	C	C	E	C	C	D	D
Approach Vol, veh/h		584			709			488			362	
Approach Delay, s/veh		20.1			26.1			51.2			35.4	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.7	57.9	12.4	27.7	12.6	57.0	12.2	27.9
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	52.0	13.0	22.0	13.0	52.0	12.0	23.0
Max Q Clear Time (g_c+I1), s	3.7	22.0	5.8	11.8	4.8	33.2	5.5	22.8
Green Ext Time (p_c), s	0.1	1.6	0.1	0.6	0.1	2.3	0.1	0.0

Intersection Summary		
HCM 6th Ctrl Delay		31.7
HCM 6th LOS		C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	365	40	50	495	50	70	305	35	65	160	80
Future Volume (vph)	85	365	40	50	495	50	70	305	35	65	160	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	70		0	150		150	150		150
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.986				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	1800	0	1736	1801	0	1736	1827	1553	1736	1827	1553
Flt Permitted	0.188			0.359			0.445			0.162		
Satd. Flow (perm)	343	1800	0	656	1801	0	813	1827	1553	296	1827	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			6				109			109
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		291			301			672			1304	
Travel Time (s)		6.6			6.8			15.3			29.6	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	101	435	48	60	589	60	83	363	42	77	190	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	483	0	60	649	0	83	363	42	77	190	95
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	25	25		25	25		25	25	25	25	25	25
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	25	25		25	25		25	25	25	25	25	25
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0		8.0	12.0	12.0	8.0	12.0	12.0
Minimum Split (s)	13.2	31.6		13.1	32.6		13.1	24.1	24.1	13.1	24.1	24.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	18.0	57.0		18.0	57.0		18.0	28.0	28.0	17.0	27.0	27.0
Total Split (%)	15.0%	47.5%		15.0%	47.5%		15.0%	23.3%	23.3%	14.2%	22.5%	22.5%
Maximum Green (s)	13.0	52.0		13.0	52.0		13.0	23.0	23.0	12.0	22.0	22.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	66.5	57.9		64.4	54.2		34.1	24.8	24.8	33.9	24.7	24.7
Actuated g/C Ratio	0.60	0.52		0.58	0.49		0.31	0.22	0.22	0.31	0.22	0.22
v/c Ratio	0.29	0.51		0.12	0.73		0.24	0.89	0.10	0.32	0.47	0.22
Control Delay	12.1	21.6		10.5	29.6		27.5	66.7	0.5	29.3	43.0	6.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	21.6		10.5	29.6		27.5	66.7	0.5	29.3	43.0	6.8
LOS	B	C		B	C		C	E	A	C	D	A
Approach Delay		19.9			28.0			54.4			30.6	
Approach LOS		B			C			D			C	
Queue Length 50th (ft)	29	236		17	365		41	256	0	38	120	0
Queue Length 95th (ft)	52	323		34	501		73	#406	0	69	188	29
Internal Link Dist (ft)		211			221			592			1224	
Turn Bay Length (ft)	140			70			150		150	150		150
Base Capacity (vph)	401	945		550	887		390	415	437	278	409	433
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.51		0.11	0.73		0.21	0.87	0.10	0.28	0.46	0.22

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 110.5	
Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 32.2	Intersection LOS: C
Intersection Capacity Utilization 71.8%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 15: Mass St & 19th St

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	10	5	10	15	10	410	5	5	245	10
Future Vol, veh/h	10	10	10	5	10	15	10	410	5	5	245	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	11	11	5	11	16	11	451	5	5	269	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	774	763	275	772	766	454	280	0	0	456	0	0
Stage 1	285	285	-	476	476	-	-	-	-	-	-	-
Stage 2	489	478	-	296	290	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	314	333	761	315	332	604	1277	-	-	1100	-	-
Stage 1	720	674	-	568	555	-	-	-	-	-	-	-
Stage 2	559	554	-	710	670	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	295	328	761	300	327	604	1277	-	-	1100	-	-
Mov Cap-2 Maneuver	295	328	-	300	327	-	-	-	-	-	-	-
Stage 1	714	671	-	563	550	-	-	-	-	-	-	-
Stage 2	528	549	-	685	667	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.2	14.4	0.2	0.2
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1277	-	-	387	416	1100	-	-
HCM Lane V/C Ratio	0.009	-	-	0.085	0.079	0.005	-	-
HCM Control Delay (s)	7.8	-	-	15.2	14.4	8.3	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	0	0	15	5	400	5	5	245	10
Future Vol, veh/h	0	0	10	0	0	15	5	400	5	5	245	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	11	0	0	16	5	440	5	5	269	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	275	-	-	443	280	0	0	445	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.23	-	-	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.327	-	-	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	0	0	761	0	0	613	1277	-	-	1110	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	761	-	-	613	1277	-	-	1110	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	11	0.1	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1277	-	-	761	613	1110	-	-
HCM Lane V/C Ratio	0.004	-	-	0.014	0.027	0.005	-	-
HCM Control Delay (s)	7.8	-	-	9.8	11	8.3	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	445	55	10	450	105	35	15	5	60	25	155
Future Volume (veh/h)	275	445	55	10	450	105	35	15	5	60	25	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	340	549	68	12	556	0	43	19	6	74	31	191
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	554	1572	194	433	1356		492	387	122	561	548	464
Arrive On Green	0.15	0.50	0.48	0.03	0.39	0.00	0.06	0.29	0.27	0.07	0.30	0.30
Sat Flow, veh/h	1753	3133	387	1753	3589	0	1753	1341	423	1753	1841	1560
Grp Volume(v), veh/h	340	306	311	12	556	0	43	0	25	74	31	191
Grp Sat Flow(s),veh/h/ln	1753	1749	1771	1753	1749	0	1753	0	1764	1753	1841	1560
Q Serve(g_s), s	11.9	11.7	11.9	0.4	12.8	0.0	1.8	0.0	1.1	3.2	1.3	10.9
Cycle Q Clear(g_c), s	11.9	11.7	11.9	0.4	12.8	0.0	1.8	0.0	1.1	3.2	1.3	10.9
Prop In Lane	1.00		0.22	1.00		0.00	1.00		0.24	1.00		1.00
Lane Grp Cap(c), veh/h	554	878	889	433	1356		492	0	509	561	548	464
V/C Ratio(X)	0.61	0.35	0.35	0.03	0.41		0.09	0.00	0.05	0.13	0.06	0.41
Avail Cap(c_a), veh/h	625	878	889	578	1356		564	0	509	666	548	464
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.3	16.7	16.8	18.6	24.7	0.0	24.3	0.0	28.7	24.1	27.8	31.2
Incr Delay (d2), s/veh	1.5	1.1	1.1	0.0	0.9	0.0	0.1	0.0	0.2	0.1	0.2	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	4.9	5.0	0.2	5.5	0.0	0.8	0.0	0.5	1.3	0.6	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.8	17.8	17.9	18.7	25.7	0.0	24.4	0.0	28.8	24.2	28.0	33.9
LnGrp LOS	B	B	B	B	C		C	A	C	C	C	C
Approach Vol, veh/h		957			568			68			296	
Approach Delay, s/veh		17.5			25.5			26.0			30.9	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	58.7	9.4	36.0	19.5	46.0	10.4	35.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	11.0	49.0	9.0	31.0	19.0	41.0	12.0	28.0
Max Q Clear Time (g_c+I1), s	2.4	13.9	3.8	12.9	13.9	14.8	5.2	3.1
Green Ext Time (p_c), s	0.0	2.7	0.0	0.8	0.7	2.7	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	22.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	30	75	20	20	5	85	530	35	15	510	20
Future Volume (veh/h)	15	30	75	20	20	5	85	530	35	15	510	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	33	82	22	22	5	92	576	38	16	554	22
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	121	111	224	232	216	37	564	854	56	497	753	30
Arrive On Green	0.17	0.22	0.17	0.17	0.22	0.17	0.14	0.49	0.44	0.07	0.42	0.37
Sat Flow, veh/h	107	509	1031	488	995	169	1781	1735	114	1781	1787	71
Grp Volume(v), veh/h	131	0	0	49	0	0	92	0	614	16	0	576
Grp Sat Flow(s),veh/h/ln	1647	0	0	1652	0	0	1781	0	1850	1781	0	1858
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	10.5	0.2	0.0	10.8
Cycle Q Clear(g_c), s	2.9	0.0	0.0	0.9	0.0	0.0	0.9	0.0	10.5	0.2	0.0	10.8
Prop In Lane	0.12		0.63	0.45		0.10	1.00		0.06	1.00		0.04
Lane Grp Cap(c), veh/h	376	0	0	406	0	0	564	0	910	497	0	783
V/C Ratio(X)	0.35	0.00	0.00	0.12	0.00	0.00	0.16	0.00	0.67	0.03	0.00	0.74
Avail Cap(c_a), veh/h	1199	0	0	1181	0	0	784	0	1925	841	0	1933
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.4	0.0	0.0	13.5	0.0	0.0	5.5	0.0	8.0	6.0	0.0	10.1
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.9	0.0	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	0.4	0.0	0.0	0.2	0.0	3.0	0.0	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.0	0.0	0.0	13.6	0.0	0.0	5.6	0.0	8.9	6.1	0.0	11.4
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	B
Approach Vol, veh/h		131			49			706			592	
Approach Delay, s/veh		15.0			13.6			8.5			11.3	
Approach LOS		B			B			A			B	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		12.0	8.9	20.4		12.0	6.0	23.3				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0				
Max Green Setting (Gmax), s		28.0	9.0	41.0		28.0	9.0	41.0				
Max Q Clear Time (g_c+I1), s		4.9	2.9	12.8		2.9	2.2	12.5				
Green Ext Time (p_c), s		0.5	0.1	2.7		0.1	0.0	2.9				
Intersection Summary												
HCM 6th Ctrl Delay			10.3									
HCM 6th LOS			B									

Intersection												
Int Delay, s/veh	8.1											
Movement	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
Lane Configurations												
Traffic Vol, veh/h	5	5	10	35	25	80	5	605	85	55	550	10
Future Vol, veh/h	5	5	10	35	25	80	5	605	85	55	550	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	5	5	11	38	27	87	5	658	92	60	598	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1495	1484	604	1446	1443	704	609	0	0	750	0	0
Stage 1	724	724	-	714	714	-	-	-	-	-	-	-
Stage 2	771	760	-	732	729	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	101	125	498	109	132	437	970	-	-	859	-	-
Stage 1	417	430	-	422	435	-	-	-	-	-	-	-
Stage 2	393	414	-	413	428	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	63	116	498	97	122	437	970	-	-	859	-	-
Mov Cap-2 Maneuver	63	116	-	97	122	-	-	-	-	-	-	-
Stage 1	415	400	-	420	433	-	-	-	-	-	-	-
Stage 2	294	412	-	371	398	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	35.4	76.2	0.1	0.8
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	970	-	-	140	187	859	-	-
HCM Lane V/C Ratio	0.006	-	-	0.155	0.814	0.07	-	-
HCM Control Delay (s)	8.7	-	-	35.4	76.2	9.5	-	-
HCM Lane LOS	A	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	5.7	0.2	-	-

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	5	5	10	5	5	5	10	685	5	10	575	5
Future Vol, veh/h	5	5	10	5	5	5	10	685	5	10	575	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	5	5	11	5	5	5	11	745	5	11	625	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1425	1422	628	1428	1422	748	630	0	0	750	0	0
Stage 1	650	650	-	770	770	-	-	-	-	-	-	-
Stage 2	775	772	-	658	652	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	113	136	483	113	136	412	952	-	-	859	-	-
Stage 1	458	465	-	393	410	-	-	-	-	-	-	-
Stage 2	391	409	-	453	464	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	106	133	483	105	133	412	952	-	-	859	-	-
Mov Cap-2 Maneuver	106	133	-	105	133	-	-	-	-	-	-	-
Stage 1	453	459	-	388	405	-	-	-	-	-	-	-
Stage 2	376	404	-	432	458	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.4	31.1	0.1	0.2
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	952	-	-	190	154	859	-	-
HCM Lane V/C Ratio	0.011	-	-	0.114	0.106	0.013	-	-
HCM Control Delay (s)	8.8	-	-	26.4	31.1	9.2	-	-
HCM Lane LOS	A	-	-	D	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.3	0	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	25	45	10	15	5	20	675	25	10	560	15
Future Vol, veh/h	15	25	45	10	15	5	20	675	25	10	560	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	125	-	125	125	-	125
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	16	27	49	11	16	5	22	734	27	11	609	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1433	1436	609	1455	1425	734	625	0	0	761	0	0
Stage 1	631	631	-	778	778	-	-	-	-	-	-	-
Stage 2	802	805	-	677	647	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	112	133	495	108	136	420	956	-	-	851	-	-
Stage 1	469	474	-	389	407	-	-	-	-	-	-	-
Stage 2	378	395	-	443	467	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	97	128	495	79	131	420	956	-	-	851	-	-
Mov Cap-2 Maneuver	97	128	-	79	131	-	-	-	-	-	-	-
Stage 1	458	468	-	380	398	-	-	-	-	-	-	-
Stage 2	350	386	-	371	461	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	39.7	46.3	0.2	0.2
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	956	-	-	193	119	851	-	-
HCM Lane V/C Ratio	0.023	-	-	0.479	0.274	0.013	-	-
HCM Control Delay (s)	8.9	-	-	39.7	46.3	9.3	-	-
HCM Lane LOS	A	-	-	E	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.3	1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	460	50	75	445	65	50	370	50	125	310	135
Future Volume (veh/h)	165	460	50	75	445	65	50	370	50	125	310	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	179	500	54	82	484	71	54	402	54	136	337	147
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	355	720	78	353	680	100	250	432	366	224	462	392
Arrive On Green	0.08	0.43	0.43	0.07	0.43	0.43	0.06	0.23	0.23	0.08	0.25	0.25
Sat Flow, veh/h	1781	1659	179	1781	1594	234	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	179	0	554	82	0	555	54	402	54	136	337	147
Grp Sat Flow(s),veh/h/ln	1781	0	1838	1781	0	1828	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	5.9	0.0	25.8	2.6	0.0	26.4	2.3	22.2	2.9	6.0	17.5	8.1
Cycle Q Clear(g_c), s	5.9	0.0	25.8	2.6	0.0	26.4	2.3	22.2	2.9	6.0	17.5	8.1
Prop In Lane	1.00		0.10	1.00		0.13	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	355	0	798	353	0	780	250	432	366	224	462	392
V/C Ratio(X)	0.50	0.00	0.69	0.23	0.00	0.71	0.22	0.93	0.15	0.61	0.73	0.38
Avail Cap(c_a), veh/h	472	0	798	484	0	780	396	443	375	340	462	392
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.7	0.0	24.2	17.3	0.0	24.9	28.6	39.8	32.3	30.1	36.5	33.0
Incr Delay (d2), s/veh	1.1	0.0	4.9	0.3	0.0	5.5	0.4	26.1	0.2	2.7	5.8	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	12.0	1.1	0.0	12.3	1.0	13.2	1.1	2.7	8.6	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.8	0.0	29.1	17.7	0.0	30.4	29.0	65.8	32.5	32.7	42.2	33.6
LnGrp LOS	B	A	C	B	A	C	C	E	C	C	D	C
Approach Vol, veh/h		733			637			510			620	
Approach Delay, s/veh		26.8			28.8			58.4			38.1	
Approach LOS		C			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.3	50.8	11.4	31.1	13.1	50.0	13.1	29.4
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	15.0	45.0	15.0	25.0	15.0	45.0	15.0	25.0
Max Q Clear Time (g_c+I1), s	4.6	27.8	4.3	19.5	7.9	28.4	8.0	24.2
Green Ext Time (p_c), s	0.1	1.8	0.1	0.8	0.3	1.8	0.2	0.1

Intersection Summary			
HCM 6th Ctrl Delay			36.6
HCM 6th LOS			D

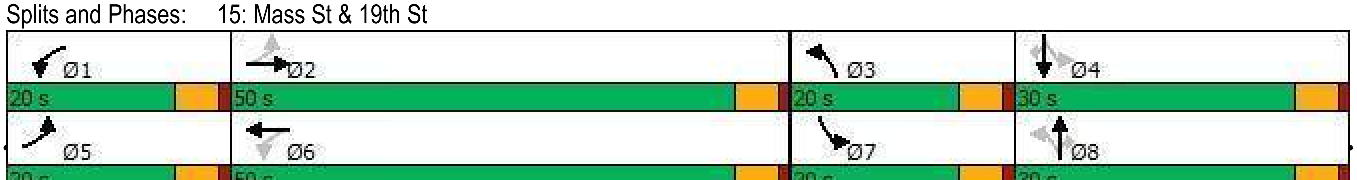
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	460	50	75	445	65	50	370	50	125	310	135
Future Volume (vph)	165	460	50	75	445	65	50	370	50	125	310	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	70		0	150		150	150		150
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.981				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1835	0	1770	1827	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.181			0.268			0.351			0.129		
Satd. Flow (perm)	337	1835	0	499	1827	0	654	1863	1583	240	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			7				109			116
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		291			301			672			1304	
Travel Time (s)		6.6			6.8			15.3			29.6	
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)	179	500	54	82	484	71	54	402	54	136	337	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	554	0	82	555	0	54	402	54	136	337	147
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1	1	1	1	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	25	25		25	25		25	25	25	25	25	25
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	25	25		25	25		25	25	25	25	25	25
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8		8	4		4
Detector Phase	5	2		1	6		3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	8.0	10.0		8.0	10.0		8.0	12.0	12.0	8.0	12.0	12.0
Minimum Split (s)	13.2	31.6		13.1	32.6		13.1	24.1	24.1	13.1	24.1	24.1
Total Split (s)	20.0	50.0		20.0	50.0		20.0	30.0	30.0	20.0	30.0	30.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (%)	16.7%	41.7%		16.7%	41.7%		16.7%	25.0%	25.0%	16.7%	25.0%	25.0%
Maximum Green (s)	15.0	45.0		15.0	45.0		15.0	25.0	25.0	15.0	25.0	25.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		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		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Max		None	Max		None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		11.0			11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	60.6	50.8		53.7	45.1		33.6	25.0	25.0	40.8	30.9	30.9
Actuated g/C Ratio	0.53	0.45		0.47	0.40		0.30	0.22	0.22	0.36	0.27	0.27
v/c Ratio	0.55	0.67		0.25	0.76		0.19	0.98	0.12	0.56	0.66	0.29
Control Delay	20.1	31.0		15.1	38.1		26.1	84.4	0.6	34.2	45.8	11.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.1	31.0		15.1	38.1		26.1	84.4	0.6	34.2	45.8	11.7
LOS	C	C		B	D		C	F	A	C	D	B
Approach Delay		28.4			35.2			69.3			35.1	
Approach LOS		C			D			E			D	
Queue Length 50th (ft)	63	320		27	340		25	293	0	67	225	17
Queue Length 95th (ft)	108	490		55	#526		55	#533	0	119	349	72
Internal Link Dist (ft)		211			221			592			1224	
Turn Bay Length (ft)	140			70			150		150	150		150
Base Capacity (vph)	372	824		431	730		376	411	434	290	507	515
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.67		0.19	0.76		0.14	0.98	0.12	0.47	0.66	0.29

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 113.4
Natural Cycle: 85
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 40.1 Intersection LOS: D
Intersection Capacity Utilization 79.6% ICU Level of Service D
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 15: Mass St & 19th St



Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	10	15	5	5	10	5	490	5	10	415	10
Future Vol, veh/h	10	10	15	5	5	10	5	490	5	10	415	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	11	16	5	5	11	5	533	5	11	451	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1033	1027	457	1038	1030	536	462	0	0	538	0	0
Stage 1	479	479	-	546	546	-	-	-	-	-	-	-
Stage 2	554	548	-	492	484	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	211	234	604	209	233	545	1099	-	-	1030	-	-
Stage 1	568	555	-	522	518	-	-	-	-	-	-	-
Stage 2	517	517	-	558	552	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	201	230	604	194	229	545	1099	-	-	1030	-	-
Mov Cap-2 Maneuver	201	230	-	194	229	-	-	-	-	-	-	-
Stage 1	565	549	-	519	515	-	-	-	-	-	-	-
Stage 2	499	514	-	527	546	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.9	17.8	0.1	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1099	-	-	296	303	1030	-	-
HCM Lane V/C Ratio	0.005	-	-	0.129	0.072	0.011	-	-
HCM Control Delay (s)	8.3	-	-	18.9	17.8	8.5	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	5	0	0	10	5	490	5	5	420	10
Future Vol, veh/h	0	0	5	0	0	10	5	490	5	5	420	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
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	0	0	5	0	0	11	5	533	5	5	457	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	463	-	-	536	468	0	0	538	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	599	0	0	545	1094	-	-	1030	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	599	-	-	545	1094	-	-	1030	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.1	11.7	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1094	-	-	599	545	1030	-	-
HCM Lane V/C Ratio	0.005	-	-	0.009	0.02	0.005	-	-
HCM Control Delay (s)	8.3	-	-	11.1	11.7	8.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	525	55	5	520	120	105	30	20	95	15	310
Future Volume (veh/h)	350	525	55	5	520	120	105	30	20	95	15	310
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	380	571	60	5	565	0	114	33	22	103	16	337
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	557	1721	180	415	1378		406	248	166	452	436	369
Arrive On Green	0.15	0.53	0.53	0.01	0.39	0.00	0.06	0.24	0.24	0.06	0.23	0.23
Sat Flow, veh/h	1781	3246	340	1781	3647	0	1781	1047	698	1781	1870	1585
Grp Volume(v), veh/h	380	312	319	5	565	0	114	0	55	103	16	337
Grp Sat Flow(s),veh/h/ln	1781	1777	1809	1781	1777	0	1781	0	1745	1781	1870	1585
Q Serve(g_s), s	15.2	12.1	12.2	0.2	14.0	0.0	5.8	0.0	3.0	5.2	0.8	25.1
Cycle Q Clear(g_c), s	15.2	12.1	12.2	0.2	14.0	0.0	5.8	0.0	3.0	5.2	0.8	25.1
Prop In Lane	1.00		0.19	1.00		0.00	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	557	942	959	415	1378		406	0	414	452	436	369
V/C Ratio(X)	0.68	0.33	0.33	0.01	0.41		0.28	0.00	0.13	0.23	0.04	0.91
Avail Cap(c_a), veh/h	657	942	959	592	1378		454	0	414	640	571	484
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	16.2	16.2	13.6	27.0	0.0	32.0	0.0	36.4	31.8	35.9	45.3
Incr Delay (d2), s/veh	2.3	0.9	0.9	0.0	0.9	0.0	0.4	0.0	0.1	0.3	0.0	18.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	5.1	5.3	0.1	6.1	0.0	2.6	0.0	1.3	2.3	0.4	11.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	17.2	17.2	13.6	27.9	0.0	32.4	0.0	36.5	32.1	36.0	63.4
LnGrp LOS	C	B	B	B	C		C	A	D	C	D	E
Approach Vol, veh/h		1011			570			169			456	
Approach Delay, s/veh		18.3			27.8			33.7			55.4	
Approach LOS		B			C			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	69.3	12.7	33.2	23.2	52.0	12.2	33.8
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	13.0	59.0	11.0	37.0	25.0	47.0	20.0	28.0
Max Q Clear Time (g_c+I1), s	2.2	14.2	7.8	27.1	17.2	16.0	7.2	5.0
Green Ext Time (p_c), s	0.0	2.8	0.1	1.2	1.0	2.8	0.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	29.6
HCM 6th LOS	C

Notes

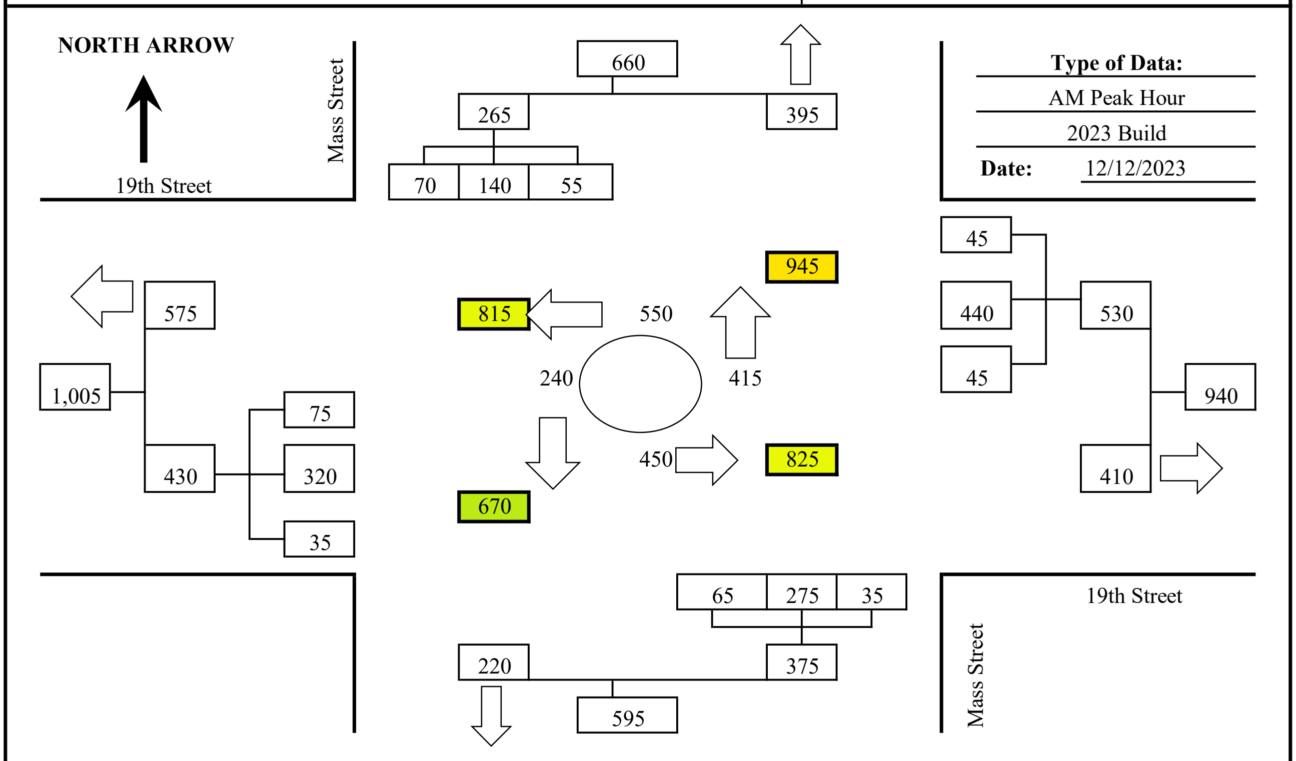
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

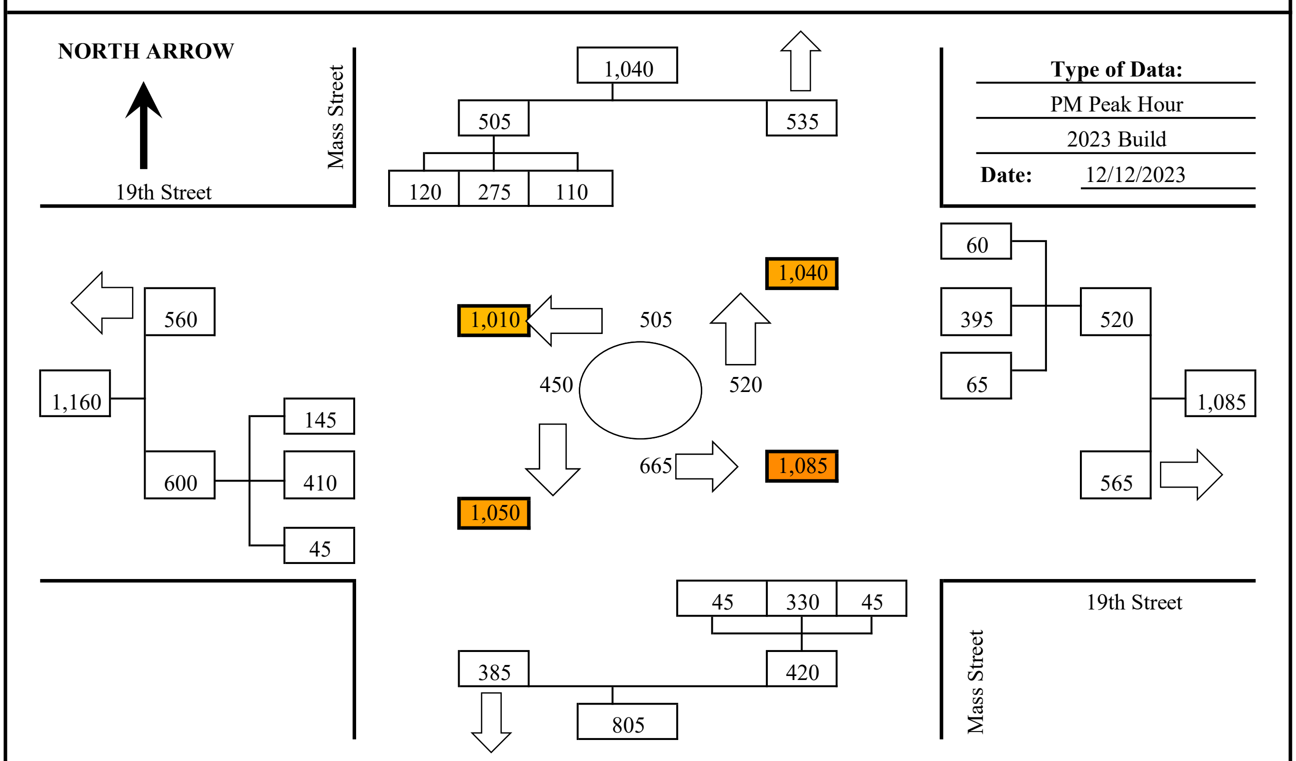
Appendix E

Roundabout Peak Hour Turning Movement (Entry Volumes vs. Conflicting Circulating Volumes) – Mass Street & 19th Street

VEHICULAR TURNING MOVEMENTS

LOCATION: Mass Street & 19th Street	**CITY: Lawrence, KS**

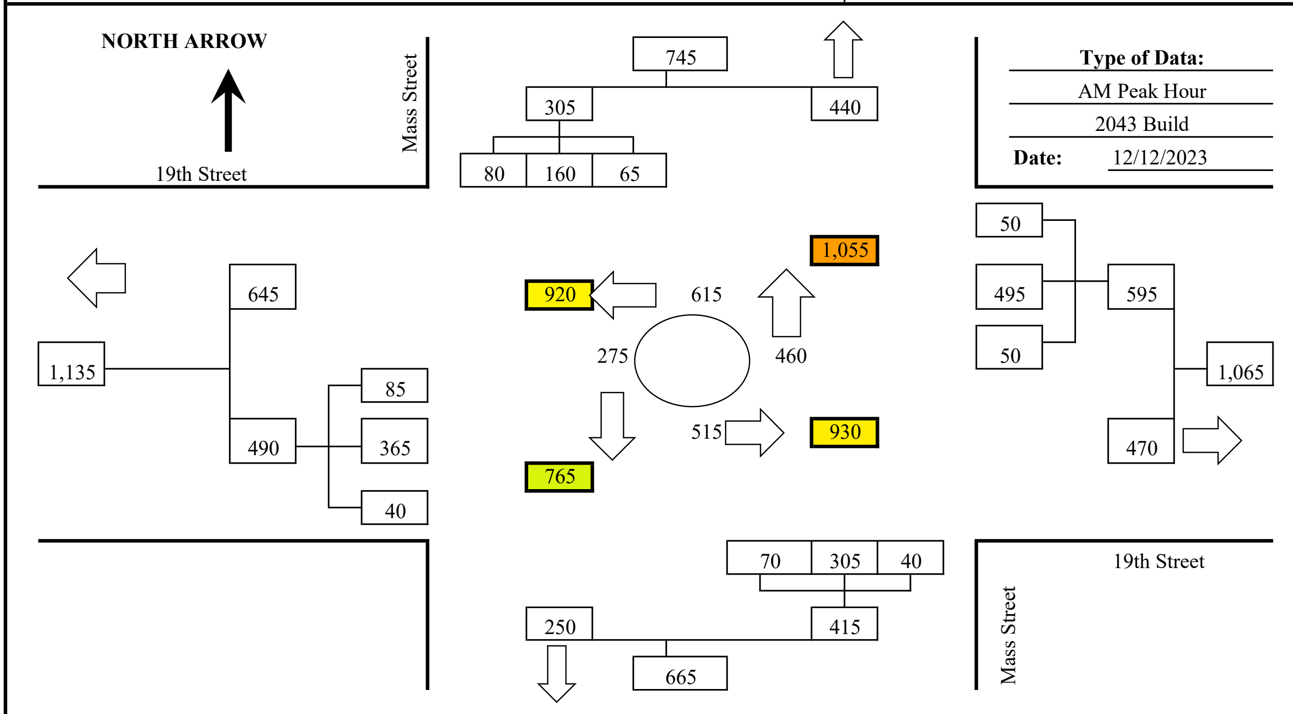


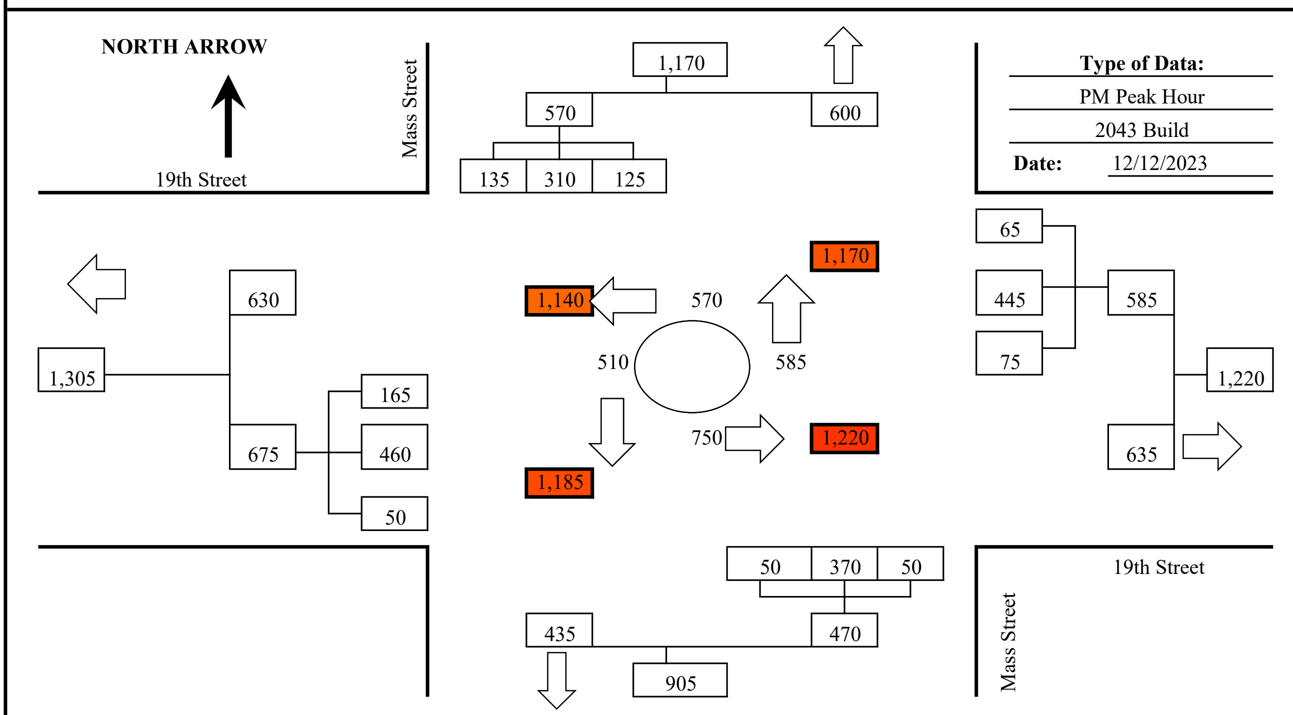


PROJECT NUMBER:	**MS1-00005**	**DATE PREPARED:**	**12/12/2023**	**PREPARED BY:**	**SLO**

VEHICULAR TURNING MOVEMENTS

LOCATION:	Mass Street & 19th Street	CITY: Lawrence, KS





PROJECT NUMBER:	MS1-00005	DATE PREPARED:	12/12/2023	PREPARED BY:	SLO

Appendix F
SIDRA Reports

MOVEMENT SUMMARY

Site: 101 [Mass St. & 19th St. 2023 AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

Mass St. & 19th St.
Site Category: Proposed Design 1
Roundabout

Vehicle Movement Performance																
Mov ID	Turn	Mov Class	Demand Flows [Total	HV]	Arrival Flows [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh.	Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	ft				mph
South: Massachusetts St.															
3	L2	All MCs	77	4.0	77	4.0	0.606	15.0	LOS B	5.0	129.0	0.80	0.83	1.26	28.3
8	T1	All MCs	327	4.0	327	4.0	0.606	15.0	LOS B	5.0	129.0	0.80	0.83	1.26	28.8
18	R2	All MCs	42	4.0	42	4.0	0.606	15.0	LOS B	5.0	129.0	0.80	0.83	1.26	28.6
Approach			446	4.0	446	4.0	0.606	15.0	LOS B	5.0	129.0	0.80	0.83	1.26	28.7
East: 19th St.															
1	L2	All MCs	54	4.0	54	4.0	0.818	25.4	LOS D	12.5	321.3	0.98	1.20	2.08	25.2
6	T1	All MCs	524	4.0	524	4.0	0.818	25.4	LOS D	12.5	321.3	0.98	1.20	2.08	25.5
16	R2	All MCs	54	4.0	54	4.0	0.818	25.4	LOS D	12.5	321.3	0.98	1.20	2.08	25.4
Approach			631	4.0	631	4.0	0.818	25.4	LOS D	12.5	321.3	0.98	1.20	2.08	25.5
North: Massachusetts St.															
7	L2	All MCs	65	4.0	65	4.0	0.489	13.1	LOS B	2.8	73.2	0.75	0.75	1.02	28.9
4	T1	All MCs	167	4.0	167	4.0	0.489	13.1	LOS B	2.8	73.2	0.75	0.75	1.02	29.4
14	R2	All MCs	83	4.0	83	4.0	0.489	13.1	LOS B	2.8	73.2	0.75	0.75	1.02	29.2
Approach			315	4.0	315	4.0	0.489	13.1	LOS B	2.8	73.2	0.75	0.75	1.02	29.3
West: 19th St.															
5	L2	All MCs	89	4.0	89	4.0	0.527	10.2	LOS B	4.0	103.8	0.64	0.48	0.75	30.1
2	T1	All MCs	381	4.0	381	4.0	0.527	10.2	LOS B	4.0	103.8	0.64	0.48	0.75	30.7
12	R2	All MCs	42	4.0	42	4.0	0.527	10.2	LOS B	4.0	103.8	0.64	0.48	0.75	30.4
Approach			512	4.0	512	4.0	0.527	10.2	LOS B	4.0	103.8	0.64	0.48	0.75	30.5
All Vehicles			1905	4.0	1905	4.0	0.818	16.9	LOS C	12.5	321.3	0.81	0.85	1.36	28.1

MOVEMENT SUMMARY

Site: 101 [Mass St. & 19th St. 2023 PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

Mass St. & 19th St.
Site Category: Proposed Design 1
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total	HV]	Arrival Flows [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh.	Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	ft				mph
South: Massachusetts St.															
3	L2	All MCs	49	2.0	49	2.0	0.727	22.7	LOS C	6.4	163.0	0.89	1.04	1.61	26.0
8	T1	All MCs	359	2.0	359	2.0	0.727	22.7	LOS C	6.4	163.0	0.89	1.04	1.61	26.3
18	R2	All MCs	49	2.0	49	2.0	0.727	22.7	LOS C	6.4	163.0	0.89	1.04	1.61	26.2
Approach			457	2.0	457	2.0	0.727	22.7	LOS C	6.4	163.0	0.89	1.04	1.61	26.3
East: 19th St.															
1	L2	All MCs	71	2.0	71	2.0	0.761	21.8	LOS C	9.1	231.6	0.92	1.08	1.78	26.2
6	T1	All MCs	429	2.0	429	2.0	0.761	21.8	LOS C	9.1	231.6	0.92	1.08	1.78	26.6
16	R2	All MCs	65	2.0	65	2.0	0.761	21.8	LOS C	9.1	231.6	0.92	1.08	1.78	26.4
Approach			565	2.0	565	2.0	0.761	21.8	LOS C	9.1	231.6	0.92	1.08	1.78	26.5
North: Massachusetts St.															
7	L2	All MCs	120	2.0	120	2.0	0.726	19.6	LOS C	8.0	203.2	0.89	0.99	1.60	26.8
4	T1	All MCs	299	2.0	299	2.0	0.726	19.6	LOS C	8.0	203.2	0.89	0.99	1.60	27.2
14	R2	All MCs	130	2.0	130	2.0	0.726	19.6	LOS C	8.0	203.2	0.89	0.99	1.60	27.0
Approach			549	2.0	549	2.0	0.726	19.6	LOS C	8.0	203.2	0.89	0.99	1.60	27.0
West: 19th St.															
5	L2	All MCs	158	2.0	158	2.0	0.809	23.9	LOS C	12.5	317.7	0.97	1.16	2.00	25.5
2	T1	All MCs	446	2.0	446	2.0	0.809	23.9	LOS C	12.5	317.7	0.97	1.16	2.00	25.8
12	R2	All MCs	49	2.0	49	2.0	0.809	23.9	LOS C	12.5	317.7	0.97	1.16	2.00	25.7
Approach			652	2.0	652	2.0	0.809	23.9	LOS C	12.5	317.7	0.97	1.16	2.00	25.7
All Vehicles			2223	2.0	2223	2.0	0.809	22.1	LOS C	12.5	317.7	0.92	1.07	1.76	26.4

MOVEMENT SUMMARY

Site: 101 [Mass St. & 19th St. 2043 AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

Mass St. & 19th St.
Site Category: Proposed Design 1
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total	HV]	Arrival Flows [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh.	Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	ft				mph
South: Massachusetts St.															
3	L2	All MCs	83	4.0	83	4.0	0.722	21.2	LOS C	7.0	181.0	0.89	1.03	1.63	26.3
8	T1	All MCs	363	4.0	363	4.0	0.722	21.2	LOS C	7.0	181.0	0.89	1.03	1.63	26.7
18	R2	All MCs	42	4.0	42	4.0	0.722	21.2	LOS C	7.0	181.0	0.89	1.03	1.63	26.5
Approach			488	4.0	488	4.0	0.722	21.2	LOS C	7.0	181.0	0.89	1.03	1.63	26.6
East: 19th St.															
1	L2	All MCs	60	4.0	60	4.0	0.975	49.3	LOS E	24.2	625.5	1.00	1.85	3.46	19.9
6	T1	All MCs	589	4.0	589	4.0	0.975	49.3	LOS E	24.2	625.5	1.00	1.85	3.46	20.1
16	R2	All MCs	60	4.0	60	4.0	0.975	49.3	LOS E	24.2	625.5	1.00	1.85	3.46	20.0
Approach			708	4.0	708	4.0	0.975	49.3	LOS E	24.2	625.5	1.00	1.85	3.46	20.1
North: Massachusetts St.															
7	L2	All MCs	77	4.0	77	4.0	0.614	18.1	LOS C	4.1	105.3	0.82	0.90	1.28	27.2
4	T1	All MCs	190	4.0	190	4.0	0.614	18.1	LOS C	4.1	105.3	0.82	0.90	1.28	27.6
14	R2	All MCs	95	4.0	95	4.0	0.614	18.1	LOS C	4.1	105.3	0.82	0.90	1.28	27.5
Approach			363	4.0	363	4.0	0.614	18.1	LOS C	4.1	105.3	0.82	0.90	1.28	27.5
West: 19th St.															
5	L2	All MCs	101	4.0	101	4.0	0.629	13.1	LOS B	6.9	177.3	0.76	0.69	1.12	29.0
2	T1	All MCs	435	4.0	435	4.0	0.629	13.1	LOS B	6.9	177.3	0.76	0.69	1.12	29.5
12	R2	All MCs	48	4.0	48	4.0	0.629	13.1	LOS B	6.9	177.3	0.76	0.69	1.12	29.3
Approach			583	4.0	583	4.0	0.629	13.1	LOS B	6.9	177.3	0.76	0.69	1.12	29.4
All Vehicles			2143	4.0	2143	4.0	0.975	27.8	LOS D	24.2	625.5	0.88	1.19	2.04	24.7

MOVEMENT SUMMARY

Site: 101 [Mass St. & 19th St. 2043 PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

Mass St. & 19th St.
Site Category: Proposed Design 1
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: Massachusetts St.															
3	L2	All MCs	54	2.0	54	2.0	0.898	42.3	LOS E	11.3	286.1	0.99	1.41	2.51	21.2
8	T1	All MCs	402	2.0	402	2.0	0.898	42.3	LOS E	11.3	286.1	0.99	1.41	2.51	21.4
18	R2	All MCs	54	2.0	54	2.0	0.898	42.3	LOS E	11.3	286.1	0.99	1.41	2.51	21.3
Approach			511	2.0	511	2.0	0.898	42.3	LOS E	11.3	286.1	0.99	1.41	2.51	21.4
East: 19th St.															
1	L2	All MCs	82	2.0	82	2.0	0.923	40.9	LOS E	16.9	428.2	1.00	1.56	2.86	21.5
6	T1	All MCs	484	2.0	484	2.0	0.923	40.9	LOS E	16.9	428.2	1.00	1.56	2.86	21.7
16	R2	All MCs	71	2.0	71	2.0	0.923	40.9	LOS E	16.9	428.2	1.00	1.56	2.86	21.6
Approach			636	2.0	636	2.0	0.923	40.9	LOS E	16.9	428.2	1.00	1.56	2.86	21.7
North: Massachusetts St.															
7	L2	All MCs	136	2.0	136	2.0	0.883	34.6	LOS D	14.0	355.3	1.00	1.39	2.46	22.7
4	T1	All MCs	337	2.0	337	2.0	0.883	34.6	LOS D	14.0	355.3	1.00	1.39	2.46	23.0
14	R2	All MCs	147	2.0	147	2.0	0.883	34.6	LOS D	14.0	355.3	1.00	1.39	2.46	22.9
Approach			620	2.0	620	2.0	0.883	34.6	LOS D	14.0	355.3	1.00	1.39	2.46	22.9
West: 19th St.															
5	L2	All MCs	179	2.0	179	2.0	0.976	48.7	LOS E	25.1	636.9	1.00	1.84	3.43	19.9
2	T1	All MCs	500	2.0	500	2.0	0.976	48.7	LOS E	25.1	636.9	1.00	1.84	3.43	20.1
12	R2	All MCs	54	2.0	54	2.0	0.976	48.7	LOS E	25.1	636.9	1.00	1.84	3.43	20.0
Approach			734	2.0	734	2.0	0.976	48.7	LOS E	25.1	636.9	1.00	1.84	3.43	20.1
All Vehicles			2500	2.0	2500	2.0	0.976	41.9	LOS E	25.1	636.9	1.00	1.57	2.86	21.4

Appendix G

Conceptual Design – Subject to Change

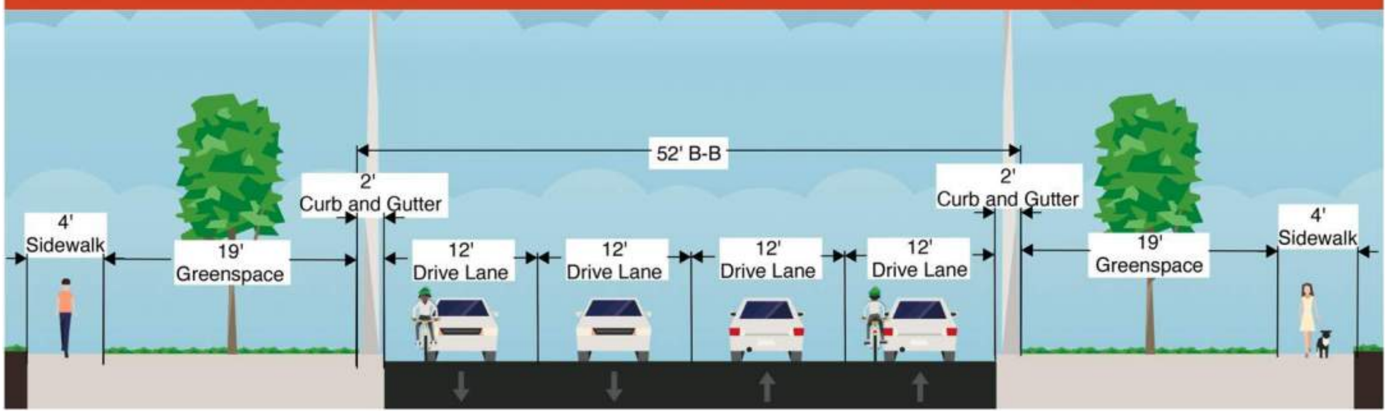
Exhibit E

Public Open House #2 Content

MASS. STREET MULTIMODAL IMPROVEMENTS STUDY
14th to 23rd Street

OPEN HOUSE #2
COMMENT FORM

OPTION A
Mass Street - Existing Condition (4-Lane)



What strengths or weaknesses do you see in OPTION A? ______________________________

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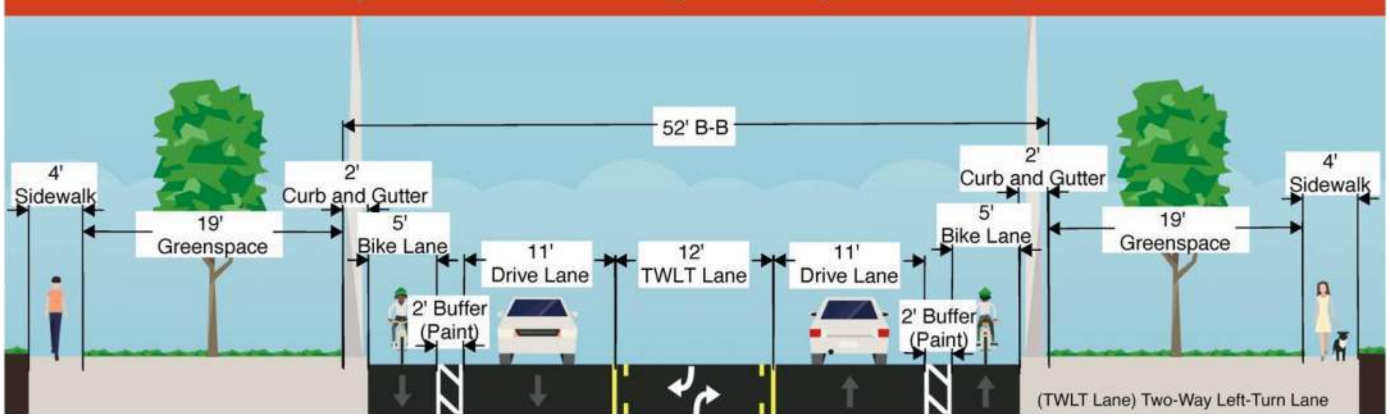
OPTION B
Proposed Conditon (3-Lane) I 2 foot buffer



What strengths or weaknesses do you see in OPTION B? ______________________________

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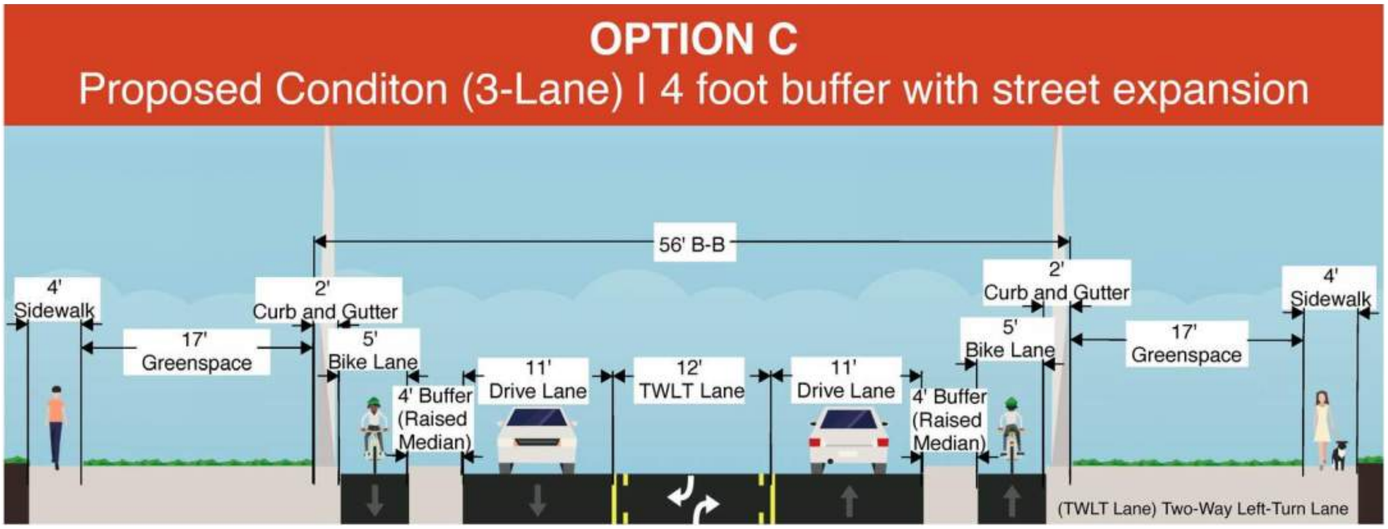

What strengths or weaknesses do you see in OPTION C? ______________________________

____

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____

What other issues or concerns do you have? ______________________________

____

____

____

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____

What is your age? [check one]

- ☐ Under 18 years
- ☐ 18-24 years
- ☐ 25-34 years
- ☐ 35-44 years
- ☐ 45-54 years
- ☐ 55-64 years
- ☐ 65 years and over
- ☐ Prefer not to answer

Which race/ethnicity best describes you? [check all that apply]

- ☐ American Indian & Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Hispanic
- ☐ Native Hawaiian or Pacific Islander
- ☐ White
- ☐ Other (please specify): ______________________________
- ☐ Prefer not to answer

Please provide your email if you want to receive updates on the project. [optional]

____

Thank you.

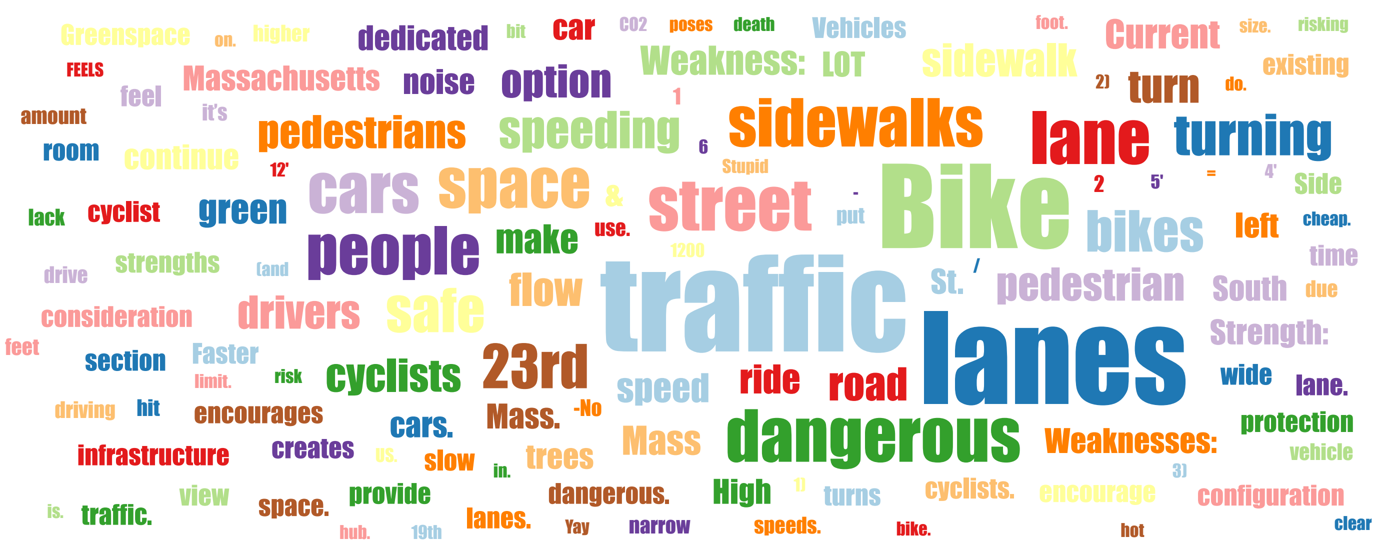
Exhibit F

Public Open House #2 Feedback Summary

Mass Street Multimodal Improvements Study - Open House #2 Comment Form

1.

- **What strengths or weaknesses do you see in OPTION A?**



Response	Count
Yay Greenspace!	1
Weaknesses: no safe space for cyclists; encourages higher-than-necessary (and higher-than-safe) dri ving speeds. Strength: cheap.	1
Weaknesses: it's dangerous, cyclists can't use it without risking death, and it encourages drivers to ex ceed the speed limit. It FEELS like a road you should drive much faster on.	1
Weaknesses Narrow sidewalks Wide Lanes = higher CO2 output, less shade, faster traffic flow meani ng more noise and more dangerous for pedestrians Not safe for cyclists Induced traffic demand Stren gths Plenty green space	1
Weakness: No protection for cyclists, no consideration for for further traffic accidents. Too much road f or the amount of cars	1

Weakness: broken traffic model. I'm a gonzo cyclist and I will only take 23rd street on very early non-workday mornings (like before 7:00am). Otherwise, it's just not safe at all for cyclists. The larger road way also encourages higher speeds by geometry and psychology.	1
Weakness - 1) More of same 2) doesn't slow traffic 3) lacks clear lanes for bikes	1
Unnecessary Time to put bikes & People in a safer space on Mass. St.	1
Too many cars.	1
Too car-centric, reduces walkability and creates pedestrian hazards.	1
This option would still allow motorists to speed on this road. There is a lot of speeding for cars turning off of 23rd St. onto mass. One of the areas that I have noticed we have quite a bit of speeding occurs even towards the pedestrian crosswalk it was put in. I see people hit their brakes and coming to a scr eeching halt as kids are trying to cross the street to get to school. The speeding is really out of control. It happens more in the evenings, but you see it throughout the entire day.	1
This is the best option, assuming it requires no additional budget allocation.	1
This has unnecessary vehicle lanes that encourage high speeds, but don't actually improve throughpu t, because the road eventually becomes two lanes anyway. Bicycling is difficult in this arrangement.	1
This doesn’t make sense as Massachusetts street should be a pedestrian hub, NOT car hub. Also the re is no protection for cyclists which would be very dangerous.	1
The lack of separation between the bikes and the cars makes it less safe to bike.	1
The green space is wonderful; trees need 1200 cubic feet of soil to reach a healthy and mature size. T his will help reduce heat island issues and enhance pedestrian experience while also providing enoug h horizontal space to accommodate underground utilities without omitting trees, as many engineers o pt to do. Weaknesses, this isn't safe for pedestrians, isn't inspiring or enjoyable to travel down as it pri oritizes cars. The 4' sidewalk width isn't wide enough; 5' sidewalks are common across the US. That b iker is already dead.	1
The current layout is hostile to pedestrians and cyclists, while also causing traffic problems for cars w hen southbound traffic turns left into Dillons.	1
The current condition of this section is highly dangerous. There are no sidewalks for a large portion of the west side of the street forcing pedestrians in the road and into private property. The curved yield tu rn on the northeast side of 23rd is horribly dangerous. We need to slow traffic and provide space for n on-car use.	1

Terrible configuration for basically all users But if protected bicycle infrastructure will not be provided, the project should be scrapped	1
Strengths: the existing, mature trees provide beauty and much needed shade in the hot Kansas summers. Weaknesses: the absence of bike lanes. Many cyclists use the sidewalks, because they do not feel safe in the street. They are an inconvenience and, at times, a danger for pedestrians.	1
Strengths that traffic both ways on Massachusetts Street from 19th to/between 23rd Street moves efficiently because there are two (2) lanes each, going north and south, and many cars use this section as people turn as people turn on or off 23rd Street. Cutting down the 2 lanes to 1 car lane heading south will make drivers turning right/west on 23rd have to wait to get in the right-lane corner turning lane which even now gets filled up with turners before other would-be turners can joint the turning right lane.	1
Strength: Nothing needs to be done, more time for community impact and project consideration Weakness: continuation of existing problems	1
Strength: None Weaknesses: Side walk is too small, not enough greenspace, too much land given for automotive traffic, no dedicated bike lane.	1
Strength: no change might be lower cost. Weakness: it doesn't feel like the same street as the northern section of Massachusetts st.	1
Stength: greenspace & safe sidewalks Weakness: no dedicated bike lanes	1
Status quo is inherently a weakness. There is no benefit in keeping things the same other than saving money.	1
Sidewalks are too narrow, they should be 6 feet wide minimum. No protection for cyclists.	1
Sidewalk too narrow. Challenges turning in to adjacent driveways.	1
Sidewalk needs more space. There are many people using the sidewalk and some are standing or sitting there.	1
Pro: Good throughput on high traffic days Pro: Service vehicles have lots of room Con: Can't charge tickets to view drag racing that will continue	1
People will continue to speed with two lanes of traffic going both directions. Currently we have a tremendous amount of speeding on the street especially coming from traffic turning from 23rd St. onto mass. This also does not take into consideration a bike lane which would make individuals continue to ride their bike on the sidewalk. The sidewalk in a lot of locations is very dilapidated. If people ride their bikes on the road, then it is pretty unsafe with all the speeding.	1

-Not safe for bicycles -Left lanes impractical for thru traffic due to left turns -Right lane also unpredicta ble for thru traffic if parked cars	1
Not bike friendly and offers too much flow into mass from the South (going from 2 lane to 1 lane aroun d South Park creates a lot of congestion)	1
Non-dedicated lanes will make most bicyclists feel unsafe and therefore discourage cycling. Nobody li kes to ride among car traffic.	1
No strengths	1
No street parking. too much Greenspace	1
No safe place for bikes. Bikes will either use the street with drivers who don’t watch out for them or cr owd the sidewalks with walking pedestrians.	1
-No change to speeding cars and motorcycles -No bike lanes	1
No bike separation from vehicles	1
No bike lane, bikes are on the sidewalk	1
Keeping the existing infrastructure is not an option. Massachusetts street is a dangerous thoroughfar e. Lane reduction and protected bike lanes need to be installed on the road.	1
It’s fine? We already have it so it’s paid for.	1
It does not adequately use the traffic space and is dangerous for bikers / bicyclists as most drivers do not respect shared roads.	1
I will miss the 4-lane especially during peek times in Lawerence (May, August, games, etc...) I do agre e need bike lanes. In perfect world would have 4-lane with bike lanes My least favorite option is this o ne.	1
I love the 19' green space. I don't love the lack of separated biking infrastructure, or the think sidewalk s. I also believe the two lanes in both direction, without a center turn lane, is a more dangerous option for turning drivers/bikers, and more dangerous for those in the oncoming lanes, due to turning drivers feeling stressed about holding up traffic.	1
I like the green space but I dislike the bikes being forced into the same lanes as cars.	1

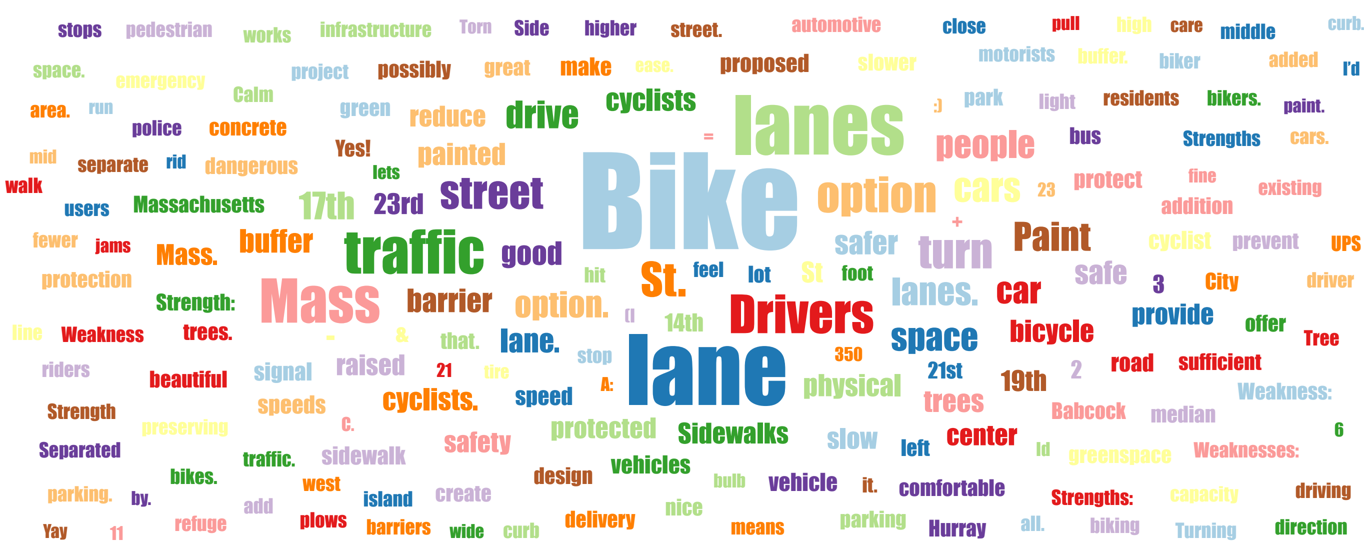
I am a cyclist and find it abjectly terrifying to bike on Mass as is. People are pulling out of parking spot s without looking, starting and stopping without warning... it's dangerous and discourages me from ev er biking to Mass even though I live an accessible bike ride away. It would be awesome to bike down t here and get a coffee or buy a book without having to risk my life or waste time circling around looking for parking.	1
I always liked the green space. Bike riders can’t safely ride on the road without being worried they are going to get hit by a car.	1
Great drive, working just fine.	1
Faster traffic flow, although I live on Mass near 22nd and I don’t think traffic flow would be wildly impac ted by having fewer lanes. This current arrangement does seem to encourage speeding and people ra cing north from 23rd at very high speeds. Which also creates a LOT of noise in the neighborhood.	1
Everything will remain the same. All the trees will be saved. The character of the neighborhood will be maintained.	1
Enough room for both pedestrians and cars, but no bike lanes	1
Does not slow down the flow of traffic or address the need for noise enforcement. Speed and noise wil l continue to be a problem.	1
Dangerous for cyclists. High workload for drivers whenever they need to pass a cyclist. Difficult and d angerous to cross on foot. A vehicle stopped for a pedestrian may hide said pedestrian from view of a djacent lane. Opposing left turns block each others' view of oncoming traffic. Vehicles waiting to turn l eft block traffic behind them. 12' lane width is excessive for city streets and may encourage speeding.	1
Dangerous & Stupid	1
Current configuration has a major weakness of speeding and dangerous conditions for bicycles.	1
Current configuration doesn't reduce speed or provide for improved bike use. As it stands, we rarely s ee people biking down Mass and instead the use the sidewalks, which are in poor repair. If we stuck w ith this option, I'd still like to see the sidewalks improved and the removal of the channel turn curve on 23rd & Mass.	1
Bike lanes integrated into driving lanes poses safety hazards for riders. Four lanes of traffic give plent y of room for motorists. Large buffer between cars and people.	1
As a cyclist, riding in the same lane as cars makes me uncomfortable and therefore less likely to use t he route. In this option, too much space is dedicated to cars. Finally, more space dedicated to pedestri ans would make the sidewalks more accessible and more comfortable.	1

Allies for good traffic flow, but no specialized lanes for bikes	1
5/5 discomfort outside of a car	1

Answered: 61 Skipped: 11

2.

- **What strengths or weaknesses do you see in OPTION B?**



Response	Count
Yes! Yes! Yes! Torn on physical bike buffer vs paint. I wonder about water runoff & grates in bike lane being tire hazard.	1
Yay bike lanes. I suppose stripes would be theoretically less safe than a raised buffer like a curb. And this may have less of an impact on calming traffic, though I'd wager it would still be better than what w e have currently. I do like preserving the green space and this option would be a lot less expensive th an curbs to separate the bike lanes. And it would take a lot less time, after the big 23rd St project som e folks might appreciate that. Maybe we could do this with the occasional curbed island or bulb out typ e of thing to calm traffic. Barker is a good example of that I think.	1

Worst = proposed changes of 17th St. traffic signal to be removed for drivers at 17th St. and Mass St. The biggest weakness in the proposed condition is the proposed removal of the 4-way traffic signal for drivers using 17th street to turn or go straight across Massachusetts St. because a driver going west on 17th St. will have to cross past on Massachusetts 3 lanes and other cars going north speed from 19th St. to 14th St. Also, without a traffic signal which lets 17th St. drivers go after the traffic light has recognized a car on 17th St. and only then allows going forward onto Massachusetts St. Babcock housing on the north-east corner of 17th and Mass St. has frequent Fire and police emergency vehicles and the position of the traffic signal alerts drivers to slow down and not interfere with emergency vehicles. Visitors to Babcock use 17th St./Mass St. when they drive to see family residents, and public service vehicles come every day to stop in the Babcock loading zone.	1
Why? It was fine before. How are people who want to bike to mass going to get down there on 23rd or 19th to begin with?	1
While this option does provide the 3 lane conversion, the proposed painted/striped bike lanes are not sufficient or safe. Paint does not protect bicyclists; it just makes the road more dangerous and less comfortable. This option does not protect vulnerable road users - safe infrastructure is necessary. Why can't the 2 foot bike lanes be protected? Why is paint there? What prevents the city from doing this? This is a critical change that must be made. With a 2 foot protected barrier next to the bike lane, this would be the winning option.	1
Weaknesses: "raised median buffer... after ensuring City services..." sounds like a sneaky way to never actually provide proper, protected raised-median bike lanes. I'm worried about how the bike lanes would interface with bus stops. Strengths: fewer car lanes and slower driver speeds means safer streets. Buffered or protected bike lanes means safer riders than current configuration. Design still has far higher car capacity than needed for this street.	1
Weaknesses Narrow sidewalks Illusion of safety for cyclists as motorists are well known to drive or park on the bike lanes TWLT lanes creates chances for a collision Strengths Plenty green space Less lanes = Slower drives and less cars on Mass street	1
Traffic jams and hazards, waste of money	1
This works only if we remove the turn barrier at the 21st street intersection. Also would prefer a physical barrier for the bike lane, which could help mitigate sand/gravel/trash buildup.	1
This seems to be the best of the 3 options. Calm traffic and make it safer for bikes. This allows the existing trees to remain. Save those trees - nice to have tree lined street as the entrance to downtown.	1
This option appears to best satisfy the project objectives. Strength: gives riders using the 21st st bicycle boulevard a safe way to get downtown	1

This only improves things for cars. A painted bike lane, or "bike gutter", is a half-measure.	1
This is the best option. I appreciate the fewer lanes with the addition of a center turn lane which will greatly benefit homeowners in this area. The addition of sidewalks will reduce pedestrian traffic on the east side along with the bike lanes.	1
This is the best option if the buffer is raised - balancing bike safety and preserving trees. My only concern is the lane potentially filling with leaves/debris, but the electric street sweeper should help with that.	1
This is great; it helps provide some space for cyclists in this area, and will help us drivers keep to an appropriate speed. This layout works great on Mass between 14th & 11th. We should do this!	1
This is getting better, but having lived in New York City, people may step into the bike lane without looking if there isn’t a concrete buffer. Concrete buffers protect both cyclists and pedestrians.	1
This is by far the best :)	1
This is an improvement from option A but paint does not physically prevent drivers from going into the bike lane.	1
This is a good option, but not as good as option C	1
The semi protected bike lanes seem much safer. There is still too little space afforded to pedestrians at the expense of cars.	1
The addition on bike lanes is a strength, but as a biker, I usually do not feel comfortable in them due to the lack of a physical barrier and the max speed differential between cars and bikes. Having the extra space between the drive lane and the curb also tends to make drivers more comfortable at higher speeds, increasing the danger for bikers.	1
Strengths: Raised median between automotive traffic and bicycle traffic. Weaknesses: Side walk is too small, not enough greenspace, too much land given to automotive traffic, bike lane should also be raised.	1
Strengths - bike lanes added, sidewalk added Downsides - paint cannot stop cars, physical barriers can Possibly reduce vehicle lane widths and add separated bike infrastructure? Would keep existing curb widths. I believe 39th St. at State Line KCMO is 9ft lanes...	1
Strength: More protected space for bikers. Weakness: More space for cyclists doesn't translate into vehicle drivers being more comfortable driving alongside cyclists.	1

Strength: same road width and turning lane will be nice for traffic Weakness: sometimes people drive down Mass st like the speed is 20mph. In this case everyone would be stuck behind the slow driver.	1
Strength is it designates a bike lane. Weakness, by just doing a painted divider through there will still be drivers who drive into the middle lane to give the bicyclist more space. That's what they do on Mich igan where there are designated lanes.	1
Stength: greenspace, safe sidewalks, dedicated bike lanes Weakness: no safety features for cyclist	1
Similar vehicle capacity to option A: 2 approach lanes per direction at intersections. Safer for cyclists. Less stressful for everyone. Opposing left turns can see around each other. Center lane presents opp ortunities for pedestrian refuge islands (perhaps in spots where left turn volume is low enough not to n eed the separate turn lane). Physical buffer may prevent snow plows from reaching bike lane (I wonde r if more bicycle-friendly countries like the Netherlands use specialized plows for that). But it would als o prevent vehicles from parking in the bike lane on the 350 days it isn't snowing. A faster cyclist canno t pass a slower cyclist.	1
Sidewalk too narrow. Reduced vehicle capacity. Issues with street parking.	1
Separated bike lanes offer more safety to cyclists. Can foresee people parking in bike lanes though, li miting their use. Joint turn lane is helpful to eliminate traffic back ups for a slow turn.	1
Seems like a good compromise	1
safer for bikers which has been an issue when biking on Mass.	1
Removing the traffic light at 17th & Mass. will likely result in more accidents. There will be no stops fro m 19th to 14th and motorists will accelerate racing to be in their chosen lane. I hope there will be a pol ice presence from 19th + Mass to 14th + Mass so as to catch speeders.	1
Really like the buffer for the bike lanes. Less space for cars, may cause congestion by the schools ne ar mass.	1
Please keep the trees. This should be held high above "progress" and "development" This is favorite o ption.	1
Painted lanes will deter cycling for the casual users because they are scared of the cars passing by. T hey are just too near and a simple mistake away. Paint seems more like a guideline than a rule. Cars will also park on the painted bicycle lanes and ruin your beautiful idea of a safe bicycle lane.	1

Paint isn't infrastructure, so this bike lane is an engineers bare minimum solution to accommodating multi-mobility which is dangerous and sad. Tree yard is great once again. Single travel lanes are likely sufficient for most traffic in Lawrence and for it's foreseeable future growth rates. Sidewalks are too thin; why isn't there a shared use path? The street (drive lanes specifically) is still too wide. This is the Midwest, those bike lanes are gutters and what are gutters filled with in the Midwest? Gravel, salt, pollution, and the dead cyclist that attempted to ride in this after thought of a design solution.	1
Paint does not offer any protection for cyclists. Sidewalks should be 6 feet minimum	1
Paint buffer may not be a good enough detergent for drivers, concerned about biker safety.	1
Option B in my opinion is the best option. Reducing Mass to two lanes and providing a center turn lane I think will reduce speed as well as still provide for good traffic flow with the new center turn lane. This will also help residents of Mass street to turn into their homes with greater ease. I also think the provision of the bike lane is a great, possibly temporary option to provide for better bike use on Mass without disturbing the trees along mass.	1
No physical barrier between vehicles and bikes	1
More room for mistake recovery, but we may have created a delivery van lane that obliterates the bike path. Without UPS, Amazon and food delivery, this provides the most flexibility, but delivery vans are going to be a real problem.	1
More bicycle friendly but poor separation.	1
Love it. In design process please add refuge island between 19th + 23rd to create more safety for peds and to create obstacle so motorcycles can't race to up left turn lane.	1
Keeping green space/existing trees - strength. Turning lane - strength.	1
Just put in a suicide lane, I don't care whether the bike lane has a barrier or even if there's bike lanes at all. The 3 lane is just more predictable and less infuriating to drive at moderate/busy times.	1
It reduces traffic to 2 lanes on a major street.	1
Improved bikeability, reduce car speeds, reduce noise.	1
I would love this, except I do not trust people to not skip the paint "buffer" and run me over. I think the middle two-way-left-turn-lane is effective and shouldn't slow down traffic too much, if at all. Mass seems to me to function basically like a 1-lane street anyways. While this technically has a bike lane, I would not necessarily feel significantly safer biking on Mass with this. It still seems dangerous and puts me too close to cars for my, and probably for drivers', liking.	1

I think it's the best developed and balanced option. I especially like proposals for bus stops remodelin g, sidewalk connecting between 21 and 23 street and getting rid of channelized right turn lane on 23rd	1
I like this design. I think the 2' raised median is sufficient for protection and separation. Trees are impo rtant as well, Mass St is a beautiful entry way into Lawrence.	1
I like the bike lanes. Id consider riding my bike to mass street instead of walking or taking a car (taking a car will create traffic) Unfortunately I have seen videos and stories of car drivers completely ignoring the painted lines and parking there.	1
I like that this option reduces to one travel lane per direction, and that we cut it down to 11 feet. This w ill slow drivers and improve the road for everyone else. However, more could be done to protect cyclis ts.	1
-I have long desired a sidewalk west of Mass between 21st & 23rd -We like the center turn option with bike lanes.	1
I believe this is the best option. It provides lanes for bicycles, and it leaves the beautiful mature trees where they are!	1
Having a bike line is nice but people will still park in it and drive in and out of it.	1
Excellent plan. I walk a lot and witness what kids do in their cars with so much wide open space. Not s afe for humans or pets.	1
Establishes a bike lane, but painted buffer may not be enough to establish a safe space for bikers with Lawrence drivers unaccustomed to sharing the road.	1
Drivers will squish cyclists. Paint is not a force-field and offers no protection. I have zero confidence th at people will respect or even notice the bike lanes. Every year there are new people on town, driving the wrong way down clearly marked one way streets	1
Drivers are really bad at using a central turn lane here. It's also a major truck route, narrowed drive lan es are iffy for that.	1
cars may drift into the bike lane and possibly hit bicyclists because there is nothing, keeping them out of the bicycle lane. I often see people drive way too close to cyclists, and I imagine this would continu e without a barrier to keep the cyclist lane separate.	1
Bike lane won’t be used enough to justify having one. No street parking. Too much greenspace	1

Bike friendly, but where do those bikes go once you hit 11th/Mass and farther North? The shopping/eating portion of Mass St is definitely the part of Mass that needs the most multimodal. Especially with hover boards, scooters, skateboars.... seems silly to make it safer for them between 13th-23rd, but not the main drag of Mass.	1
Better than A however not as good as C. Like the raised buffer.	1
Best option. Hurray for a bus pull off area. Hurray for mid block crossing. Hurray for trees.	1
Best option.	1
A painted-buffer is so insufficient as to make option B practically worthless, should concrete barriers not be installed. Flex-posts are insufficient to offer meaningful protection to cyclists, so much so that I'd rather not do anything to the roadway. car speeds are too high for flex posts.	1

Answered: 67 Skipped: 5

3.

- **What strengths or weaknesses do you see in OPTION C?**

Response	Count
Would be great but too expensive and the city wouldn't fund it	1
Wider buffer would be nice, but not worth losing several trees. The wider buffer also makes it less likely cars will notice bikes before turning at intersections/driveways.	1

While better than plan A, I believe that this plan is excessive	1
Where did the trees go? Why even provide a tree strip of you're not trying to utilize it for the best carb on sink mitigation which is too increase biomass? The buffered bike lane is massive and this should b e the bare minimum. The buffer could be landscaped using salt tolerant and xeric native plants instea d of using concrete which isn't great from a sustainability perspective or deferred maintenance that th e city will eventually have to deal with and doesn't plan for.	1
What happened to the trees? Green space needs to be green, not lawns that need a lot of maintenan ce and water	1
Weaknesses: Too much lane width for bikes; are we really proposing getting rid of existing trees in ord er to lessen the green space on either side of the road?	1
Weaknesses: I'm worried about how the bike lanes would interface with bus stops. Strengths: fewer c ar lanes and slower driver speeds means safer streets. Buffered or protected bike lanes means safer r iders than current configuration. Design still has far higher car capacity than needed for this street, whi ch is acceptable.	1
Weaknesses Narrow sidewalks TWLT lanes creates chances for a collision Smaller green space Stre ngths Less lanes = Slower drives and less cars on Mass street Buffer raised means it facilitates safe c ycling and promotes alternative transportation methods	1
Traffic flow is better than b and the bike lanes are safer.	1
This would change the look and feel of Mass St. too much.	1
This would be nice - the same facilities for drivers and safer options for cyclists. But I would guess that widening the street will cost WAY more and involve a lot of extra work - like addressing street trees, m oving sidewalks, redoing every driveway and parking lot entrance. If we had infinite money and time I would choose this.	1
This seems way safer. I would actually bike on Mass if there was a safe raised buffer and designated l anes! I think this would be so cool to let parents bike with their little kiddie trailers... allow students wh o don't have cars to access Mass... encourage more community engagement with Mass Street busine sses... let people take in more of the environment and new stores they might be interested in than the y could while speeding by in a car... reduce our dependence on cars as a city and be one step closer t o making it a modern, walkable, sustainable-transport city... put cars further away from people walking on the sidewalk to make them feel safer and make the street feel more neighborly... help people enjoy South Park, the Watkins museum, and businesses on both ends of Mass... I really quite like this optio n and would love to see it happen.	1

This option is okay but not as strong as option B. I don't want to be 2' closer to the road and think that traffic and speed reduction is the best protection for bikers. I want to preserve trees and know this opti on will remove many old trees on Mass.	1
This offers protection for cyclists. This seems like it would be the safer option.	1
This is, on paper, my favorite. This will encourage people to cycle, reduce the speed of some drivers, and eliminate unnecessary travel lanes.	1
This is the safest option for all users. We do not have City of Lawrence tree plan. We do have a bike p lan. Most residents strongly prefer protected bicycle infrastructure. We should follow the Lawrence bik es plan.	1
This is the ideal. It protects the most vulnerable (pedestrians and cyclists) and de-centers the car. The main street of Lawrence should be about the PERSON not about the VEHICLE.	1
This is the best option, keeping all groups safer	1
This is the best option, as long as there is a way for Southbound cyclists to turn left into Dillons.	1
This is my preferred option because it defines better where the bike traffic and car traffic go. Weaknes s, the trees along the road may need to be removed, but homes can still have trees in their yards.	1
The protected bike lanes are ideal. There is still too little space afforded to pedestrians at the expense of cars. Wider sidewalks would be more accessible	1
The bike side of the raised median needs to be soft mountable BY BICYCLE. Shouting this as loudly as possible to anyone who can hear: the protected bike lane has just become a trap. We MUST have an escape path, because people make mistakes. I need a way to recover from that mistake of a car or bike suddenly blocking my path without going down. Fortunately, a milder curb provides a partial esca pe path IF I can go to the right - I go up the curb an into the grass to stop, hopefully without falling ove r or getting muddy. I want to see the bike lane side of the median be a softer curb that can survive slig ht contact. Right now if there is accidental contact (which could be created by a faster bike overtaking on the left and then having to avoid something), the overtaking bike is going down and likely spilling in to traffic. I agree the automobile side is designed correctly.	1
Strengths: Raised median between automotive traffic and bicycle traffic. Weaknesses: Side walk is to o small, not enough greenspace, too much land given to automotive traffic, bike lane should also be r aised.	1
Strengths - Physical separation b/t cars/bikes/peds Weakness - further widening of streets/public dom ain	1

Strength: Overall more space for multimodal transportation. Weakness: Loss of trees a burden for ped estrians and cyclists in warmer weather; shade is a need!	1
Strength: most protective of bicyclists. Weakness, this is wider than current street so it will end up with more street and city space closer to the front of houses. Raised median will impact snow removal and collect leaves in the bike lanes making them less useable.	1
Stength: greenspace, safe sidewalks, safer bike lanes	1
Sidewalk too narrow. Reduced vehicle capacity. Issues with street parking and existing driveway acce ss. Maintenance.	1
Same as B	1
Raised median buffer reinforces bike lane safety.	1
Raised barrier provides greater safety for cyclists. Joint turn lane helps eliminate traffic back-up for tur ns. Only problem I can see is the raised barrier causing problems for snow removal.	1
Problems with right of way for bikes versus cars. Also the 21st street intersection barring left turns is a sinine for a three lane street.	1
People will actually use the bike lane if they feel protected. Mass currently has a bike lane. It is not pro tected with a physical barrier. I see few people ever use it and fewer young people because it is not sa fe. I mainly walk. I own 2 cars and haven't driven in 8 years. My observation from the sidewalk is we n eed more safety and consideration for pedestrians. It is becoming incredibly unsafe to use modern tec hnology like noice canceling headphones on Lawrence sidewalks. Bikers have little infrastructure and many students come from areas with far greater bike lanes. This causes bikers to use non sidewalks i nstead of bike paths. I have almost been hit by several bikes who are trying to communicate with me f rom behind and want me to move aside off a sidewalk. I don't get mad. I understand road quality and safety is so non existent in this town that sidewalks have become the defacto bike infrastructure you w ill never build. Be bolder, consider modeling our city similarly to boulder CO	1
Option C is the 2nd best option to B. While it provides for the best bike use on Mass, it would reduce t he green space and likely impact trees. That said, I'd still prefer this option over the current configurati on.	1
Not enough cyclists to justify a bike lane	1
Not cost effective and dangerous for anyone needing to move over out of a near accident.	1

Making Massachusetts St. wider will make it harder to cross or turn from 17th St. without a traffic sign al for drivers which now helps East Lawrence residents to be saved from speedy drivers on Massachu setts St.	1
Major weakness would be the removal of trees to accommodate the wider street. Not sure what benefi t that 4 extra feet would have. Also, more expensive than leaving street the current width.	1
Love this as it would create a physical barrier between vehicles and bikes.	1
Loss of too many trees.	1
Lose too many trees. Too much cement.	1
Lack of understanding by the planners. Snow plows and treatments will not be effective. Waste of mo ney	1
In addition to everything in option B: May be more expensive to build. Enough space to squeeze in a p edestrian refuge island AND a left turn lane. Take those extra two feet on each side and put them into the bike lane instead. Ta-daaa, cyclists can overtake each other now. I like this one too.	1
If you have to spend money on something, I guess go with this one.. but I still think it's going to be exp ensive.	1
I think it is amazing and would allow pedestrians to walk safely, those riding bikes to do it safely and k eep the cars speed possibly down on the street.	1
I really love the raised median buffer. It makes it much harder for drivers to ignore bikes lanes. This is my favorite option and I would love to see this in Lawrence. I would go to mass street much more if thi s would be adopted.	1
I prefer having the protected bike lane to help keep cyclists safe.	1
I love the physical barrier separating bikes and cars. I love the TWLT lane. I believe turning a 2-way 4 lane road in to a 2-way 3 lane road with a TWLT lane would have a massive increase in road safety a nd driver/biker predictability, and would reduce speeding significantly.	1
I do not like this option as much as option B. I think the raised median intended to buffer the bike lane s would be cumbersome since it would have to be interrupted in front of every driveway. Moreover, the drawing displayed at the meeting showed no trees, but only grass between the bike lanes and the sid ewalks. In my opinion, the removal of the mature trees that line Mass. Street would be a terrible mista ke, and an expensive one. Why get rid of a beautiful thing?	1

I believe this is the best of the 3. A protected bike lane is the best option for cyclists, the green space is still adequate and downsizing the lanes would make downtown more appealing for non motorists. I hope this one goes forward!	1
Here all road users are safe - it's an appropriate application of lane reduction and protected bike lanes. I understand that because the road would be widened, the trees roots systems would be affected. If this is the "last" priority option for the city, why can't Option B have a 2 foot protected barrier for the bike lane? Why is the 4 foot protected median presented here? Can't concrete be made 4 feet wide?	1
From a ‘clean slate’ perspective this is my favorite. But I’d like to see cost, adding curbs and making the green space smaller could be a huge cost. Compared to option B I’m not sure it’s worth it, honestly. I’d lean towards option B with limited curbing for islands, which I think would accomplish the goals well enough at a much lower cost. I think, I’m not a civil engineer!	1
Feels much safer for cyclists - sends a message to the motorists. "Bicycle safety is important" - lookout Values of the city - foot, bike or car. Trees are important, but replacement trees will grow and become significant.	1
Destruction of trees, while the extra buffer might be helpful, I feel with the switch to 3 lane will decrease people passing fast on that side of the road. Least favorite option.	1
Damage to trees I don't think the extra 2' adds much & actually is less attractive to lose green space.	1
Crosswalks will still be too wide due to no median. Sidewalks are too narrow, should be 6 feet minimum	1
Con: Avtos can't stop motorcycles from using bike lane for passing. -We love trees. Con: Trash pickup a problem if you have all types of waste/recycle (multiple bins + bags) Pro: good for bikes! Con: Fedex, UPS, Amazon deliveries: where do they stop?	1
Better, safer for bicycles.	1
Believe this to be the best option, but other barriers exist vs the raised median that could create a safe bike lane with out utilizing a full 4 feet	1
All the same benefits as option B, but with some drawbacks...increased cost, reduced green space..	1
Agree on the bicycle lane. This is the only plausible way of these three options. Option A and B are just lip service. While the drawing does not show any trees in the greenspace, they are totally doable in this area and can be mixed with the sidewalk to accomodate more foot traffic. Trees for example do not live in a line. Hedges do. Depending of the tree size they could be 30' apart and not bother the walkers too much. That could even allow two male dog owners to pass each others safely.	1

Added cost, not sure about trash access	1
4' buffer is too much and suddenly the trees have disappeared from the rendering!	1

Answered: 63 Skipped: 9

4. What other issues or concerns do you have?

Response	Count
We need a cost-effective solution. Driving lanes cost disproportionately more, relative to capacity, than cycling lanes. An investment into cycling lanes (in a place where people would cycle - like mass stree t), will pay for itself.	1
Want to make sure all the small businesses are able to maintain their parking & their accessibility to th eir spaces.	1

Trees are non-negotiable. Study housing density needed to afford maintenance/deferred maintenance of city infrastructure to also determine which one is financially sustainable. Hint: residential housing ne eds to be around 13 units per acre to pay enough property tax to remain solvent. Don't screw over fut ure generations because you don't understand how to properly plan infrastructure and deferred maint enance budgeting, please! Why doesn't the amount of green space flex? While providing that much gr een space is unheard of, everything in a street section should be subject to "right sizing". Don't forget bulb-outs, pedestrian refuges, and green storm water infrastructure. Don't forget that omitting setback s allows buildings to front streets, creating a sense of space and place but also reducing walking dista nce to doors, thus automatically increasing walkability, which is highly complementary to multi-mobilit y. Option C > option B > option A. The bikes can be raised to sidewalk grades.	1
Trees along Mass St make a lovely drive into town.	1
The southern end of this project at 23rd is going to have lots of crossing traffic and could be really con fusing. The current right turn lane (ramp, really) between westbound 23rd and northbound Massachus etts needs a much tighter radius, similar to the turn lanes at 23rd and Iowa. That crossing path is goin g to need a lot of design attention.	1
The curve at 23rd has to go. Cars look over their shoulder at potential traffic from the south and do not look at driveways, bikers or other obstacles that are in front of them. Speeds need to be reduced any way possible. Sidewalks need to be added and improved.	1
The back-in parking is big concern for traffic back-up with only 3 lanes. What other parking options are there that don't compromise safety?	1
Save the trees!	1
Remove the left turn restriction from 21st intersection or else put them on every intersection.	1
Reduce to two lanes to make more greenspace and wider sidewalks. Bike lane should be raised.	1
Please keep right-turn lane onto 23rd street from Mass St.	1
Performance of 19th and Mass intersection. Traffic to/from the north/downtown. How do we want thos e commuting to our City from K10 to access downtown? Haskell, Conneticuit, Ousdaul, Naismith, Ten nessee, and Kentucky are all awful from 23rd St. Mass is the only good existing option. Proposed imp rovements need to think through another improved alternative.	1
None at this time	1

Noise has to be addressed, too. Yes, traffic flow is a major problem but the noise from modified illegal mufflers is even worse. There are plenty of studies about how this type of noise causes PTSD in not o nly nearby residents but in animals, too. I would suggest a noise monitoring and automatic ticketing sy stem like they have in NYC that issues tickets on any vehicle above a certain level. In my opinion, this is a must-have part of this project as traffic flow is only half of the problem.	1
No street parking planned. Cycling isn’t popular enough. Less than 1% of the US commutes by bike p er studies and even then you don’t need a specific lane to ride a bike	1
No major concerns, I’m very supportive of what you all are trying to accomplish here. I live on Mass so I assume there would be some impact to my driveway access while the project is being completed an d I’m totally fine with that.	1
No bike path needed all the way to 23rd - since there is no where to go at 23rd and mass	1
My only worry about eliminating the second lane for each direction is a lack of space for busses (witho ut negatively impacting the flow of traffic.)	1
My main issue and concern with the current configuration of Mass st from 23rd to 14th is the speed wi th which people drive and the channel curve on 23rd to Mass. As I mentioned before, the current confi guration doesn't provide for use of bikes and they instead use the sidewalks, which are in rough shap e. I also liked the proposed improvements to the intersections at 19th and 17th. The traffic light at 17th is unnecessary and 19th could be made safer for all users. If 17th had a crosswalk setup similar to wh at was installed at 21st, that'd be great (we love the crosswalk setup at 21st). I loved the idea of addin g sidewalks to the west side of Mass from 21st to 23rd as well. I believe we would see a decided incre ase in pedestrian use, whether on foot or bike, if this project is seen to completion. I appreciate everyo ne's hard work on this project, everything looked great at the last open house!	1
My biggest goal is slowing traffic from 23rd to 19th. Optimize looks like a good approach. Also removi ng channelized right turn at 23rd - yes! -Thanks for ruling out roundabout at 19th + Mass. Love replaci ng light at 17th w/pedestrian activated	1
Love the bike lanes Love the 3 lanes Love the mid-block crossing Thank you for your work for the city!	1
Liked -Like Hawk signal @ 17th + Mass -Like the floating bus stop -Pedestrian crossings mid block -1 9th street intersection improvements -New sidewalk on west side to 23rd	1
It would be great to reduce the late night drag racing, but that requires Law Enforcement, not traffic bu ffers. Reducing the lanes to turn into from either way on 19th, 23rd is a huge mistake.	1
It will be all torn up when the sidewalks are widened. Why direct more bike traffic to 23rd? Keep the la nes as they are now.	1

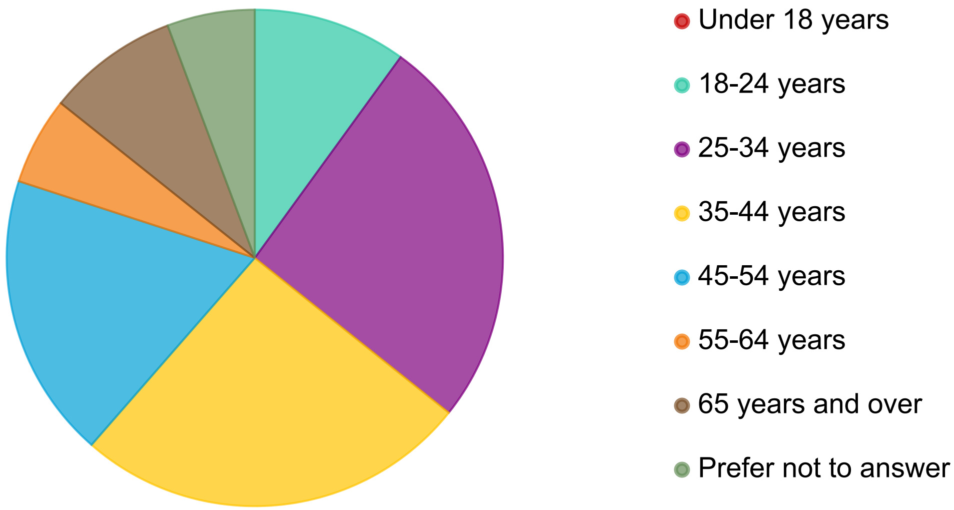
Is landscaping along bike lane median in scenario B or C an option? Will there be any additional stree tlights added for the bike lanes? Consider removing stoplight at 17th and making that intersection right -turn only coming from 17th (east or west)?	1
Instead of the TWLT lane a dedicated bus lane or a median strip with trees and green space would be more utilitarian and reduce noise levels on Mass street	1
In addition to making Mass St, south of 13th St more accessible to multimodal transportation, I would encourage the city to consider banning cars entirely between 13th St and 6th St.	1
I'm concerned that we may go overboard in trying to satisfy	1
I wonder what is meant by raised median. Is this a speed bump type thing that can be driven over to g et to a parking spot? Or a curb that would be more protective of bikes?	1
I think we need to change this section of Mass to be more pedestrian and bicyclist friendly.	1
I think we need more of a police presence keeping individuals from speeding when they turn onto mas s from 23rd St. There is also constant racing of cars at night on that side of mass Street.	1
I really do not want painted bike lanes, it’s not adequate cycling infrastructure and I hope it’s not taken as the middle of the road option, please choose option C, thanks!	1
I like the curb extensions at 19th and would like to see these used where possible, e.g. at 14th, and e nsure they are physically raised like roundabout aprons, not just paint.	1
I hope the bike lanes will be salted or plowed too in the winter. When I ride my bike on the sidewalk, i m scared my bike will slip and fall.	1
I feel that public comments have not been handled well. People were presented options w/o meaningf ul information on the implications of those options. Additionally, I think the comments have been group ed together in ways that do not currently reflect support for protected bicycle infrastructure. Also, were rec bicycle lanes not considered?	1
I dont see parking on these scenarios. If you don't have parking on mass then I don't get the point. I w ould prefer it to be a one way on mass and still have parking rather than any option above.	1
I do not support the proposal of eliminating the traffic light at the intersection with 17th Street. It would encourage speeding between 19th Street and 14th Street. Moreover it would make it dangerous for ca rs coming from 17th Street to turn left on Mass.	1
I do not live in this country where this survey is possibly used. This simplistic design does not take cro ssings in to consideration. They also should be made safe for pedestrians and bicyclists.	1

I believe that we have a big problem with traffic calming in Lawrence. Implementing physical barriers, bollards, and trees along the edge of the road could do wonders for decreasing speeding and increasi ng safety for drivers, bikers, and pedestrians. Having physical barriers for bike lanes could be MASSI VE.	1
Having specialized bike lanes is nice but at cross streets there is more of a chance of someone turnin g in front of a bike as they way off to the side and less visible	1
Get rid of stoplight at 17th & Mass. Drivers need to mature and focus on driving when behind the whe el and we will have less accidents.	1
Drivers on Massachusetts St. going from 19th St. to 14th St. (where it is not proposed to take out the t raffic signal!) will really be going fast if the 17th St. traffic light for drivers is removed and East Lawrenc e drivers & residents are at the mercy of having no programmed traffic signal at 17th St./Mass. interse ction.	1
Design is not consistent on recommending either Standard or Back-in Angled parking on the West sid e of Mass St; just pick one approach and use it throughout the corridor. Good: 'floating' bus stop additi ons. Good: mid-block pedestrian crossings. Good: sidewalk between 21st and 23rd. Good: removing channelized right-turn at 23rd St. Questionable: removal of traffic signal at 17th St. Lots of Cordley & KU students and staff cross here. Suggestion: implemented "delayed" streetlight/pedestrian crossing signals, where all traffic lights stay red for the first few seconds of pedestrian crossing. Suggestion: to slow traffic: what about a traffic circle/roundabout at either 14th or15th, or at 23rd?	1
Definitely concerned what this would do to traffic piling up at the light on 23rd and Mass	1
Costs.	1
Construction noise and/or loss of power/internet services during construction window(s).	1
Change Option B to include 2 foot protected barrier adjacent to the bike lane and we've got a winning solution. As it stands "Options" A and B aren't options at all.	1
Average traffic on Mass may be 11k/day, but on game days both Mass and Luisiana can be gridlocke d, even w 4 and 2 lanes respectively.	1
A large number of the sidewalks have become very dilapidated. Those should be addressed, because many have started to buckle and have become trip hazards.	1
19th & Mass. Intersection north side; super busy walking route for Cordley Elementary. Wondering ab out adding extra room for pedestrians @ crosswalk for when waiting on light to cross. Wider sidewalks on east & west side of Mass. St. might be nice & safer too.	1

1) I do like the hawk sign option for 17th & Mass. I hate waiting for the crosswalk sign w/the traffic sign al. 2) PLEASE PLEASE PLEASE Improve sidewalks!!	1

Answered: 51 Skipped: 21

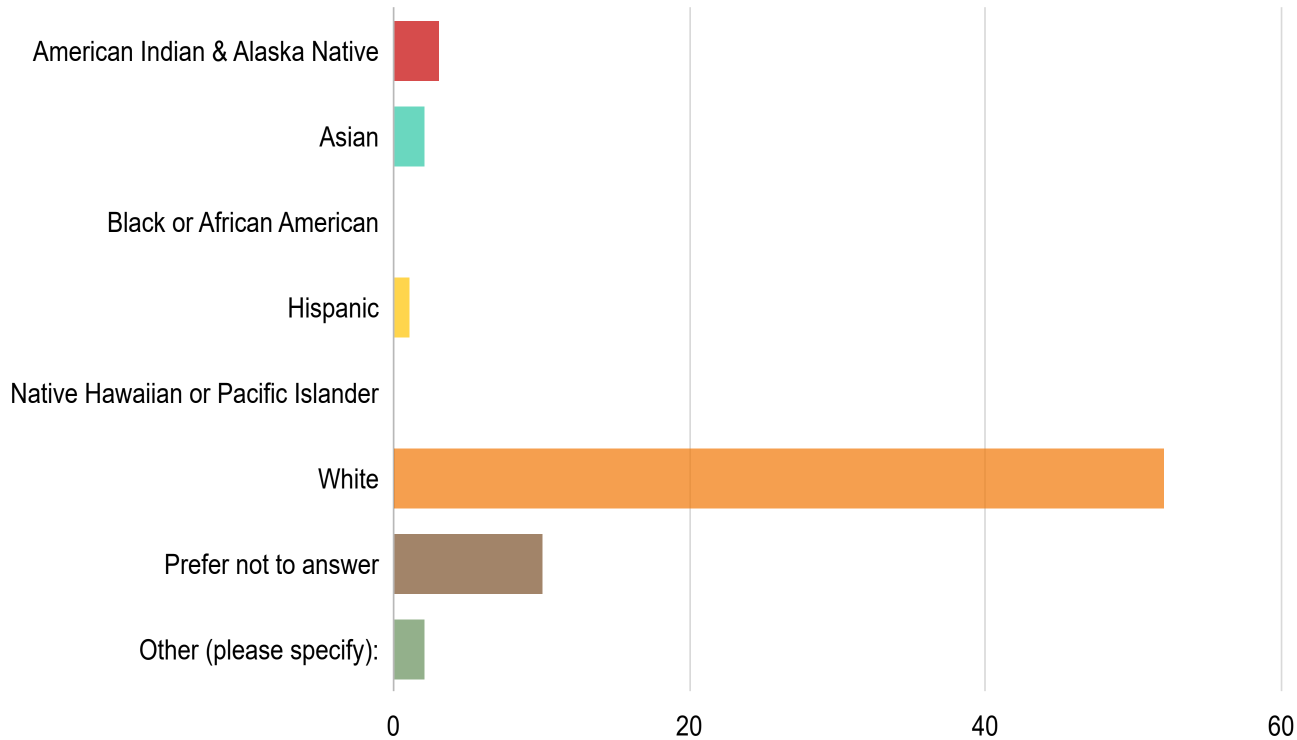
5. What is your age? (select one)



Answers	Count	Percentage
Under 18 years	0	0%
18-24 years	7	9.72%
25-34 years	18	25%
35-44 years	18	25%
45-54 years	13	18.06%
55-64 years	4	5.56%
65 years and over	6	8.33%
Prefer not to answer	4	5.56%

Answered: 70 Skipped: 2

6. Which race/ethnicity best describes you? (check all that apply)



Answers	Count	Percentage
American Indian & Alaska Native	3	4.17%
Asian	2	2.78%
Black or African American	0	0%
Hispanic	1	1.39%
Native Hawaiian or Pacific Islander	0	0%
White	52	72.22%
Prefer not to answer	10	13.89%
Other (please specify):	2	2.78%

Answered: 67 Skipped: 5

Mass. Street Multimodal Improvements Study – 14th to 23rd Street
Public Open House #2 – February 7, 2024

Liberty Memorial Central Middle School – 1400 Massachusetts

Attendees: 43 signed-in

FEEDBACK on Project Area Map

23rd

- Bad Lane, go away
- Remove for safety yes, Can add additional turning lane? Traffic backup could become worse
- Remove turn lane, and people will just floor it here instead, out of spite
- This is my house, please remove the channelized turn it is so dangerous
- Remove turn lane or add speed bumps, add audio monitoring and automatic ticketing
- This part is very important, both sidewalk connectivity between 21st and 23rd and cornering channelized right turn
- I'm a big proponent of removing the channelized right turn lane
- YES (by improved sidewalk connectivity…)

22nd

- Strongly support adding a sidewalk 22nd block – west side. Please.
- Please include refuge island(s) (1-2) between 23rd and 19th to make it hard for motorcycles to seep up left turn lane

21st

- This intersection is great!

21st

19th

- Yes, Yes, Yes
- Looks great
- Awesome sauce!!
- Excited about better crossing
- Yes
- Prohibit left turns onto 19th
- Big Problem will be present for New Hampshire Street, drivers turning onto 19th st going west

18th

- Southbound traffic will left turn into spaces, then realize later they can't get out easily
- Raised median at traffic stop light with inability to turn left into or out of KwikShop/Cottins Mass Street entrance/exit
- This crossing would be great (mid street crossing by Dillons)

17th

- Love the back-in parking, much safer for bicyclist
- Don't get rid of stop signal at 17th street as it will be dangerous for cars turning onto or crossing Mass St
- No good (HAWK SIGNAL) to have "Hawk" Signal instead of traffic signal
- Keep the traffic light at 17th
- Keep this traffic signal please
- As a pedestrian, I like the HAWK signal idea
- There will be more accidents at 17th and Mass if the traffic light is removed
- Love Hawk light at 17th and Mass – the light breaks the flow of traffic
- What happens when the bus picks up passengers and there is no traffic light?

16th
15th

- Like cross walk paint at 15th
- Possibly decrease corner radius here? If this crossing moves closer westward this would increase driver visibility. Currently very dangerous to cross here. Street lighting should also be a priority here, very hard to see people crossing at night.
- Could bike line be routed behind parked cars here like at other sections? Would be better than conventional lane (in front of Liberty)

14th

- Lite routing bicycle riders around parking and transit stops
- Add a curb extension here like at 19th to protect the bike lane instead of having right turns cross the bike lane
- How have the small businesses who already here feel about 3 lans? Making sure small local businesses can still function

Exhibit G

MMTC #2 Agenda – Concept Vision

Agenda Item Report

Multi-modal Transportation Commission - Mar 04 2024

Department	Staff Contact
Municipal Services & Operations (MSO)	Aaron Parker, Senior Project Engineer

Recommendations

Consider providing feedback on the Massachusetts Street 14th Street to 23rd Street Multimodal Improvement Project MS1-00005.

Executive Summary

The Massachusetts St 14th Street to 23rd Street Multimodal Improvements project MS1-00005 is intended to assess the corridor for improvement to safety, efficiency, and multi-modal accessibility. This project will consider all modes of transportation including walking, rolling, cycling, bus ridership, and safe auto transport. The project addresses gaps and safety in the bike and pedestrian network per the Lawrence Bikeways Plan and the Regional Pedestrian Plan. The project will include transit stop improvements that coordinate with multi-modal improvements. The project will address non-compliant public sidewalk and ADA access.

The project will culminate in a concept design report based on a traffic study and community input that supports a preferred concept design alternative. The report is in process and the final draft traffic study is attached; the MMTC will consider a recommendation with the final report at the April 1st meeting.

The project has been undertaken at the Involve (3rd of 4) level of community engagement because it is located in a signature corridor and has significant public interest. A second public open house was held February 7, 2024, to discuss the three concept design alternatives developed and solicit feedback from the community. The boards and strip map presented at the second open house and the survey that requested feedback are attached. A third public open house will occur March 27, 2024, to present the final draft report and preferred concept design to the community.

The survey results from the second open house are attached and indicate the option presented on the strip map, Option B, is overall preferred by the community. Option A, no change, was not preferred due to the existing condition of speeding motorists and no safe bike facilities. Option C which widens the road to accommodate wider bike lanes and physical bike lane buffers was not preferred due to its significant impact to existing mature street trees.

The design report will include the following elements:

(1) Introduction
(2) Summary of Traffic Analysis/Engineering Findings
(3) Public Meeting Summary to Date (through 2 public meetings)
    (a) Content Shared
    (b) Feedback
(4) MMTC Meeting Summary to Date
    (a) Content Shared
    (b) Feedback
(5) Further Community Engagement
    (a) City has provided community feedback information to TREKK (engagement with middle
        school students in corridor and KU Civil Engineering students)
        (i) Summarize student outreach showing greater community engagement
(6) Other Design Considerations/Next Steps
    (a) Maintenance, ADA, etc.
(7) Cost Estimate of Recommendation
(8) Conclusion & Recommendations

Design of the preferred alternative has been funded in the 2024 - 2028 Capital Improvement Plan (CIP) for Fiscal Year 2024 at $300,000. Construction is currently unfunded in the CIP, however the City is pursuing a FHWA Transportation Alternatives grant for the project this spring. A construction cost estimate will be provided in the concept design report.

City staff seek MMTC feedback on the project including the traffic study, concept design alternatives, and community input. At next months meeting, the MMTC will consider making a recommendation on the final design that will be provided to the City Commission.

Alignment to Strategic Plan

Connected City

Fiscal Impact

The fiscal impact to the City is $0.

Action Requested

Provide feedback on the Massachusetts Street 14th Street to 23rd Street Multimodal Improvement Project MS1-00005.

Previous Agenda Reports:

Receive an update to the Massachusetts Street 14th Street to 23rd Street Multimodal Improvement Project MS1-00005.
Agenda Item Report 23-847 - Pdf

Attachments

- Second Open House Board & Strip Map
- Second Public Open House Survey
- Second Open House Survey Results
- Mass St Multimodal Traffic Study

Open House #2 Boards & Strip Map, Survey, Survey Results, and Mass St Multimodal Traffic Study shared as part of the MMTC #2 Agenda.

Removed from document to minimize redundancy.

See Exhibit E, Exhibit F, and Exhibit D for further information.

Exhibit H

Conceptual Construction Cost Estimate

TREKK DESIGN GROUP, LLC

City of Lawrence, Kansas
MS1-00005 Mass Street Multimodal Improvements Study - From 14th Street to 23rd Street
Engineer's Opinion of Probable Construction Costs - March 2024
Conceptual Preferred Alternative

Bid Item	Quantity	Unit	Unit Cost	Item Cost
MOBILIZATION	1	LSUM	$ 208,000	$ 208,000
TRAFFIC CONTROL	1	LSUM	$ 149,000	$ 149,000
DEMOLITION & REMOVAL	1	LSUM	$ 90,000	$ 90,000
CONTRACTOR CONSTRUCTION STAKING	1	LSUM	$ 60,000	$ 60,000
EARTHWORK	1	LSUM	$ 90,000	$ 90,000
TEMPORARY EROSION CONTROL	1	LSUM	$ 60,000	$ 60,000
MILLING (2")	35000	SQYD	$ 3	$ 105,000
ASPHALT SURFACE COURSE (2")	4000	TON	$ 110	$ 440,000
CONCRETE MEDIAN (6")[1]	2080	SQYD	$ 125	$ 260,000
CONCRETE SIDEWALK (4")[2]	1900	SQYD	$ 65	$ 123,500
CONCRETE PAVEMENT[3]	700	SQYD	$ 100	$ 70,000
CURB & GUTTER	1800	LNFT	$ 70	$ 126,000
PAVEMENT MARKING (4")	40400	LNFT	$ 2	$ 80,800
PAVEMENT MARKING, CROSSWALK MARKING (24")	2600	LNFT	$ 20	$ 52,000
PAVEMENT MARKING, STOP LINE (24")	600	LNFT	$ 20	$ 12,000
PAVEMENT MARKING SYMBOL	125	EA	$ 250	$ 31,250
SIGNING	1	LSUM	$ 90,000	$ 90,000
TRAFFIC SIGNAL MODIFICATIONS[4]	1	LSUM	$ 100,000	$ 100,000
RECTANGULAR RAPID FLASHING BEACON SYSTEM[5]	2	LSUM	$ 35,000	$ 70,000
PEDESTRIAN HYBRID BEACON SYSTEM[6]	1	LSUM	$ 150,000	$ 150,000
			Construction Subtotal	$ 2,370,000
			Contingency (25%)	$ 600,000
			TOTAL	**$ 2,970,000**

Notes:

[1]Concrete Median quantity assumes a central median at RRFB locations (2), medians near 19th Street for access management and protected intersection, and estimated 75% of total study area length on each size for 2' medians seperating travel and bicycle lanes.

[2]Concrete Sidewalk quantity assumes new sidewalk from 21st Street to 23rd Street on west side of Mass Street and replacement of 25% of existing sidewalk within study area.

[3]Concrete Pavement assumes widening for floating bus stop locations (3) and 23rd Street westbound right turn lane.

[4]Traffic signal modifications assume modifications at 19th Street and 23rd Street due to roadway reconfiguration and turn lane revisons.

[5]Rectuangular Rapid Flashing Beacon System quantity assumes an RRFB installation between 15th and 16th Street and between 17th and 19th Street.

[6]Pedestrian Hybrid Beacon System quantity assumes the installation of a HAWK signal at Mass Street and 17th Street.

This cost estimate is in 2024 dollars and does not account for any factor of inflation. Client and Engineer acknowledge that Engineer has no control over cost of labor, materials, equipment of services furnished by others, over contractors' methods of determining prices, or other competitive bidding or market conditions. Engineer does not guarantee that proposal, bids, or actual construction cost will not vary from its estimates of Project cost.

Exhibit I

Public Open House #3 Content

Exhibit J

MMTC #3 Agenda – Preferred Alternative

AGENDA

Multi-modal Transportation Commission Meeting

Monday, April 1, 2024 @ 5:00 PM
City Commission Room, City Hall 6 E 6th St
Lawrence, KS 66044
First Floor of City Hall, 6 East 6th Street

To view this meeting live: Live Video Stream or the City's YouTube Channel

To provide public comment: Virtual Meeting Registration via Zoom

This meeting will be held in a hybrid format. Multi-Modal Transportation Commissioners will be in-person at City Hall. Virtual participation is allowed for any participant, including staff and the public. Some staff will be present in the room while others will participate virtually. Individuals may join the meeting virtually by Zoom or in-person.
Study sessions for MMTC begin @ 5:00 p.m. on the day of the meeting. The regular session begins @ 6:15 p.m.
Those who want to provide public comment may continue to do so virtually or by attending the meeting in person.

Written public comment must be received by the Municipal Services & Operations Department by 12:00 p.m. on the day of the meeting. Send correspondence electronically to mso@lawrenceks.org. Comments received after the deadline will not be posted and there is no guarantee that such comments will be considered.

The primary format for accessing or participating in this meeting is in person at City Hall. Virtual access to view or participate in the meeting cannot be guaranteed due to potential technology issues.

A. STUDY SESSION:

1. Transit Update
   MMTC transit update

B. APPROVE MINUTES:

1. Approve March 4, 2024 Meeting Minutes
   Multi-modal Transportation Commission - Mar 04 2024 - Minutes - Pdf

C. PUBLIC COMMENT:

The public is allowed to speak to any items or issues that are not scheduled on the regular agenda. Public comment will not be received for Staff Items, Commission Items, or Calendar. Each person or organization will be limited to three (3) minutes. As a general practice, the Commission will not discuss/debate these items, nor will the Commission make decisions on items presented at this time. Individuals are asked to come to the microphone, sign in, and state their name and address. Speakers should address all comments to the Commission.

D. AGENDA ITEMS:

1. Consider recommending approval of the Massachusetts Street 14th Street to 23rd Street Multimodal Improvement Study MS1-00005.

   ACTION: Recommend approval of the Massachusetts Street 14th Street to 23rd Street Multimodal Improvement Project MS1-00005.
   Agenda Item Report 24-208 - Pdf
   MS1-00005 Massachusetts St 14th St to 23rd St Multimodal Improvements Study
   Mass St Multimodal LMCMS Presentation Apr 2024
   Mass St rightsizing_Sustainability Action_1Apr24
   Mass St Multimodal Public Comment

2. Consider recommending approval of the Bicycle Wayfinding Strategy.

   ACTION: Recommend approval of the Bicycle Wayfinding Strategy.
   Agenda Item Report 24-212 - Pdf
   Bicycle Wayfinding Design Intent Guidelines
   Sign Schedule Plan - Naismith Valley Route
   Wayfinding Strategy Memo_FINAL

3. Consider recommending approval of the 2024-2025 Transportation Alternatives project applications.

   ACTION: Recommend approving the 2024-2025 Transportation Alternatives project applications.
   Agenda Item Report 24-203 - Pdf

E. STAFF ITEMS:

1. KDOT Pilot Program for Midwest Road Usage Charge

2. Connected Freight KC 2050 - Regional Freight Study

F. COMMISSION ITEMS:

1. Climate Action Plan Steering Committee(Baltuska)

2. Land Development Code Steering Committee(Kuzmyak)

3. Vision Zero Safety Action Plan Steering Committee (Carter)

4. Brick Streets and Sidewalks Committee (Aydelott/Baltuska)

G. CALENDAR:

1. MMTC Calendar
   4_1_2024_MMTC_Calendar

H. ADJOURNMENT

Exhibit K

City Commission Agenda – Preferred Alternative

AGENDA

City Commission Meeting

Tuesday, April 9, 2024 @ 5:00 PM
1st Floor of City Hall, 6 East 6th Street
Virtual Meeting via Zoom

PLEASE SILENCE YOUR CELL PHONE

The City Commission will immediately recess for two closed executive sessions. The City Commission will resume its regular meeting after the executive sessions have concluded.

This meeting will be held in a **hybrid format**. Members of the public are invited to join the meeting in-person at City Hall or virtually using the Zoom link provided below.

To view this meeting live: Live Video Stream or the City's YouTube Channel
To view or attend virtually: ZoomRegistration

The primary format for accessing or participating in this meeting is in person at City Hall. Virtual access to view or participate in the meeting cannot be guaranteed due to potential technology issues.

Note: If the YouTube stream is not working, you can join the Zoom meeting by clicking on the zoom meeting registration link to listen in.

Written public comment must be received by the City Clerk's Office by 12:00 p.m. on the day of the meeting. Send correspondence electronically to ccagendas@lawrenceks.org. If you wish to have your contact information withheld, please indicate so in your correspondence. Comments received after the deadline will not be posted and there is no guarantee that such comments will be considered.

Live public comment can be made in person at City Hall or virtually using the Zoom link provided.

Visual documentation to be shared during the meeting (map, photo, document, etc.), ***must*** be emailed as a PDF, to ccagendas@lawrenceks.org by 12:00 p.m. on the day of the meeting. Hard copies will also be accepted for sharing with the Commission at the meeting. Please provide six (6) hard copies, five for Commissioners and one for the City Clerk.

Media: The Lawrence City Commission room has a dedicated space reserved for members of the media. The reserved media area is to the right after entering the Commission room. The area is noted with a sign.

A. EXECUTIVE SESSION:

1. Consider a motion to recess into executive session.

   ACTION:
   Move to recess into executive session for approximately 30 minutes to discuss a personnel matter involving a city employee pursuant to the non-elected personnel matter exception, K.S.A. 75-4319(b)(1).The justification

of the executive session is to protect employee privacy. The City Commission will resume its regular meeting in the City Commission room (at _:__ p.m.) after the executive session is concluded.
Agenda Item Report 22-964 - Pdf

* 2. Consider a motion to recess into executive session.

ACTION: Move to recess into executive session for approximately 25 minutes to discuss privileged legal communications from the City's attorneys regarding pending litigation pursuant to K.S.A. 75-4319(b)(2). The justification for the executive session is to keep attorney-client privileged matters confidential at this time. The City Commission will resume its regular meeting in the City Commission room (at _:__ p.m.) after the executive session is concluded.
Agenda Item Report 24-234 - Pdf

B. APPROVE AGENDA:

1. The City Commission reserves the right to amend, supplement, or re-order the agenda during the meeting.

ACTION: Approve the agenda.

C. RECOGNITION/PROCLAMATION/PRESENTATION:

1. Recognition of Son Venezuela.
Recognition

2. Proclaim April 30th, 2024 as National Therapy Animal Day.
Proclamation

3. Proclaim the month of April 2024 as Fair Housing Month.
Proclamation

D. GENERAL PUBLIC COMMENT:

The public is allowed to speak on issues or items that are not scheduled for discussion on the agenda. Comments should be limited to issues and items germane to the business of the Governing Body. The Commission will not discuss or debate these items, nor will the Commission make decisions on items presented during this time. Members of the public will be limited to three (3) minutes for comments.

* 1. Public comment.
Public Comment - Added 04/08/24

E. CONSENT AGENDA:

Items on the Consent Agenda are considered under one motion and approved by one motion. Members of the Governing Body may remove items for separate discussion if desired. Members of the public may remove items identified as Quasi-Judicial for separate discussion if desired. Members of the public will be limited to three (3)

minutes for comments.

E.1 CITY COMMISSION MEETING MINUTES:

* a) Consider approving City Commission meeting minutes.

ACTION: Approve the 04/02/24 City Commission meeting minutes.
City Commission - Apr 02 2024 - Minutes - Pdf

E.2 BOARD AND COMMISSION MEETING MINUTES:

a) Receive Affordable Housing Advisory Board meeting minutes.
Affordable Housing Advisory Board - Feb 12 2024 - Minutes - Pdf

E.3 CLAIMS:

a) Consider approving all claims. The list of claims will be posted by the Finance Department on Monday prior to the meeting. If Monday is a holiday, the claims will be posted as soon as possible the next business day.

ACTION: Approve claims.

E.4 MAYOR APPOINTMENTS:

* a) Consider approving appointments as recommended by the Mayor.

ACTION: Approve appointments as recommended by the Mayor.
Agenda Item Report 24-235 - Pdf

E.5 BID AND PURCHASE ITEMS:

a) Consider awarding RFP bid No. 2300114 for the Kaw WTP Lime lagoon residuals removal, transportation, and beneficial reuse of residuals to Denali Water Solutions, LLC and consider authorizing the City Manager to execute the Agreement & 1st Amendment.

ACTION: Award RFP bid No. 2300114 for the Kaw WTP Lime lagoon residuals removal, transportation, & beneficial reuse and authorize the City Manager to execute the Agreement & 1st Amendment.
Agenda Item Report 24-172 - Pdf

b) Consider waiving the requirement to rebid Bid No. 2400002 for the Urgent Storm Sewer Repair Project and award RD Johnson Excavating Co., LLC in the amount of $754,990.00, authorizing the City Manager to execute the construction contract.

ACTION: Waive the requirement to rebid Bid No. 2400002 for

the Urgent Storm Sewer Repair Project and award RD Johnson Excavating Co., LLC in the amount of $754,990.00, authorizing the City Manager to execute the construction contract.
[Agenda Item Report 24-144 - Pdf]

c) Consider awarding Request for Bid No. 2400011 to Downing Sales & Service, Inc in the amount of $158,485.

ACTION: Award Request for Bid No. 2400011 to Downing Sales & Service, Inc in the amount of $158,485.
[Agenda Item Report 24-216 - Pdf]

d) Consider awarding Bid No. 2400014 for the Bicycle and Pedestrian Crossing Project CI-210002 to C-HAWKK Construction, Inc. in the amount of $148,757.50 and authorize the City Manager to execute the construction contract. Consider authorizing a purchase order in the amount of $175,000.00 to allow contingency funds for the project.

ACTION:
Award Bid No. 2400014 for the Bicycle and Pedestrian Crossing Project CI-210002 to C-HAWKK Construction, Inc. in the amount of $148,757.50 and authorize the City Manager to execute the construction contract in the amount of $175,000.00 to allow contingency funds for the project.
[Agenda Item Report 24-213 - Pdf]

e) Consider approving the purchase of one (1) replacement utility crew truck from Premier Truck Group utilizing the MACPP (Mid America Council of Public Procurement) cooperative contract for the chassis and American Equipment Co. for the body up fit utilizing the Kansas City, MO cooperative contract.

ACTION: Approve the purchase of one (1) replacement utility crew truck from Premier Truck Group utilizing the MACPP (Mid America Council of Public Procurement) cooperative contract for the chassis and American Equipment Co. for the body up fit utilizing the Kansas City, MO cooperative contract.
[Agenda Item Report 24-221 - Pdf]

E.6 ORDINANCES ON SECOND AND FINAL READING:

a) Adopt on second and final reading, Ordinance No. 10044, to rezone, Z-23-00427, approximately 13.126 acres from PCD-2 (Planned Commercial Development) District to CC600 (Community Commercial) District, located at 550 Congressional Drive.

ACTION:
Adopt on second and final reading, Ordinance No. 10044.
[Agenda Item Report 24-163 - Pdf]

E.7 GENERAL CONSENT ITEMS:

* a) Consider authorizing the 2024-25 Transportation Alternatives grant applications for the Safe Routes to School project and the Massachusetts Street Multimodal project; consider adopting Resolution No. 7529 and Resolution No. 7530.

ACTION: Authorize the 2024-25 Transportation Alternatives grant applications for the Safe Routes to School project and the Massachusetts Street Multimodal project; and, adopt Resolution No. 7529 and Resolution No. 7530.
Agenda Item Report 24-206 - Pdf

b) Consider approving a text amendment, TA-24-00028, to Sections 20-529, 20-1305, and 20-1701 of the City of Lawrence Code to remove the minor site plan review standards and modify related standards. Adopt on first reading, Ordinance No. 10030 and Ordinance No.10031;

Consider approving a text amendment, TA-24-00029, to Sections 20-1305 and 20-1701 of the City of Lawrence Code to modify the standard site plan review for projects requiring a Community Design Manual review. Adopt on first reading, Ordinance No. 10031.

ACTION:
Approve text amendment, TA-24-00028, to the City of Lawrence Land Development Code, Articles 5, 13, and 17, to remove the minor site plan review standards and modify related standards, and adopt on first reading, Ordinance No. 10030 and Ordinance 10031;

Approve text amendment, TA-24-00029, to the City of Lawrence Land Development Code, Articles 13 and 17, to modify the standard site plan review for projects requiring a Community Design Manual review, and adopt on first reading, Ordinance No. 10031.
Agenda Item Report 24-205 - Pdf

* c) Consider approval of the Massachusetts Street 14th Street to 23rd Street Multimodal Improvement Study MS1-00005.

ACTION: Approve the Massachusetts Street 14th Street to 23rd Street Multimodal Improvement Study MS1-00005.
Agenda Item Report 24-214 - Pdf

d) Consider approving the 2024 second quarter budget adjustment and amending the Capital Improvement Plan.

ACTION: Approve the second quarter budget adjustment and amend the Capital Improvement Plan as presented.

Agenda Item Report 24-223 - Pdf

e) Consider authorizing Mayor Littlejohn to travel to Washington D.C., April 15-17, 2024 to attend the DC Fly In with the Lawrence Chamber of Commerce.

ACTION: Authorize Mayor Littlejohn to travel to Washington D.C., April 15-17, 2024 to attend the DC Fly In with the Lawrence Chamber of Commerce.
Agenda Item Report 24-230 - Pdf

F. ITEMS REMOVED FOR SEPARATE VOTE:

G. REGULAR AGENDA ITEMS:

* 1. Consider a , DP-24-1000, a 108 unit, multi-dwelling residential development, located at 5555 West 6th Street. Submitted by Landplan Engineering on behalf of GB Alvadora SPE LLC, property owner of record.

ACTION:
Approve the revised final development plan, DP-24-1000, for Aberdeen on 6th, located at 5555 West 6th Street.
Agenda Item Report 24-145 - Pdf

H. COMMISSION ITEMS:

1. Commission items.

I. CITY MANAGER'S REPORT:

1. Receive ex parte information regarding upcoming agenda items.
Agenda Item Report 24-220 - Pdf

2. Review future agenda items.
Agenda Item Report 21-750 - Pdf

J. COMMISSION CALENDAR:

1. Review Calendar items.
Meeting List

K. ADJOURNMENT: