

# TRAFFIC IMPACT AND ACCESS STUDY

## *PROPOSED RESIDENTIAL DEVELOPMENT*

*582 Kelley Boulevard  
North Attleborough, Massachusetts*

*Prepared for:*  
**MCP 582 Kelly, LLC**

**September 2024**

**MDM** TRANSPORTATION CONSULTANTS, INC.  
Planners & Engineers

TRAFFIC IMPACT AND ACCESS STUDY

***PROPOSED RESIDENTIAL DEVELOPMENT***

*582 Kelley Boulevard  
North Attleborough, Massachusetts*

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*September 2024*

**MDM.**

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## ***EXECUTIVE SUMMARY***

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MDM Transportation Consultants, Inc. (MDM) has prepared a Traffic Impact and Access Study (TIAS) for a proposed development to be located along Kelley Boulevard in North Attleborough, Massachusetts. The location of the site relative to adjacent roadways is shown in **Figure 1**. The evaluation includes existing traffic operations in the study area and assesses incremental impacts on area roadways under future year conditions with and without the development.

This TIAS has been developed in conformance with guidelines for preparation of traffic studies as jointly issued by the Commonwealth of Massachusetts Executive Office of Energy & Environmental Affairs/Massachusetts Department of Transportation (EEA/MassDOT).

### ***E.1 PROJECT DESCRIPTION***

The Site comprises approximately 13.7± acres located at 582 Kelley Boulevard in North Attleborough, Massachusetts. The property is comprised of the Stix Fun Center which includes mini golf (18 holes), a golf driving range (32 tees/driving positions), batting cages (10 cages), and support building. On-site parking is provided for approximately 106 marked spaces. Access/egress is currently provided via a driveway connection to Kelley Boulevard as well as George Leven Drive.

Under the proposed development program, the Site will be redeveloped to include 304± mid-rise residential apartment units. On-site parking will include approximately 489± parking spaces. Site access/egress is proposed via a driveway from Kelley Boulevard and a full access/egress driveway to George Leven Drive. Based on discussions and feedback from the Town it is assumed for analysis purposes that the Kelley Boulevard driveway will be restricted to right-in/right-out movements.

## E.2 STUDY AREA

This TIAS evaluates transportation characteristics of roadways and intersections that provide a primary means of access to the Site, and that are likely to sustain a measurable level of traffic impact from the proposed development.

- Route 106 at Route 152 (Signalized)
- Kelley Boulevard at Plain Street
- Kelley Boulevard at Site Driveway
- Kelley Boulevard at George Leven Drive
- George Leven Drive at Site Driveway

## E.3 SUMMARY OF ANALYSIS AND FINDINGS

Capacity analyses were conducted for each study area intersection to quantify baseline and future year traffic operations with and without the development for the weekday morning and weekday evening peak hours. These time periods represent the highest activity periods of the proposed project and the adjacent roadway system.

The analyses presented in this TIAS are based on industry-standard trip rates and methodology published by the Institute of Transportation Engineers (ITE). Based on industry-standard trip rates the proposed development is estimated to generate approximately 112 trips during the weekday morning peak hour (26 entering and 86 exiting), 119 net new trips during the weekday evening peak hour (73 entering and 46 exiting), and approximately 1,380 daily trips on a weekday. Journey to work data for the Town of North Attleborough served as the primary basis for distribution for the apartment trips to/from the Site.

The proposed development does not result in any significant change in operations at intersections within the study area compared to No-Build conditions. Therefore, no off-site mitigation is warranted based on the capacity analysis. However, as outlined under *Planned Roadway Improvements*, the Applicant worked with the Town of Plainville and Town of North Attleborough to develop a 10% design and MassWorks application for multi-modal transportation improvements that will support development of the property and provide the basis for future development in the area. The project successfully secured funding through a MassWorks grant in October 2022. The project will enhance safety and/or operations through the study area for pedestrians, bicycles, and motorized vehicles along Route 152 including at the signalized intersections of Route 152 at Route 106 (Plainville) and Route 152 and George Leven Drive (North Attleborough).

## E.4 PLANNED ROADWAY IMPROVEMENTS

In June 2022, the Proponent working in collaboration with the Town of Attleborough and Town of Plainville provided funding for preparation of the MassWorks grant project application for funding of multi-modal transportation improvements that will support development of the property and provide the basis for future development in the area. The complete streets improvements to the corridor as presented in the MassWorks application provided in the **Appendix**. The development agreement from June 2022 stated that the Proponent would pay for the 10% preliminary plans and application for a MassWorks grant. The Proponent has fulfilled this part of the agreement and the MassWorks grant was awarded to the Town in October 2022 to complete the roadway improvements outlined under *Planned Roadway Improvements*. An additional part of the agreement states that the Proponent will also pay \$500,000 to the Town in addition to the previously stated costs once it receives the necessary approvals and building permits.

The proposed public infrastructure project will provide much needed multimodal upgrades in the form of safe and accessible pedestrian, bicycle and vehicle access improvements to existing public amenities and the proposed development along Kelley Boulevard. Geometric and traffic control improvements will also facilitate emergency vehicle access and will support future growth in the area. Specifically, this will include approximately ½ mile of roadway and intersection improvements between Plain Street and George Leven Drive. In particular, said improvements will include the following:

1. Construct bicycle lanes along Kelley Boulevard to provide a direct connection from the surrounding area to the site. Provide sharrows bicycle markings in other areas.
2. Reconstruct sidewalks throughout the project limits to provide a continuous route for pedestrian travel and install an enhanced pedestrian crossing with raised refuge island and rapid rectangular flashing beacon (RRFB) across Kelley Boulevard to the south of Plain Street.
3. Relocate utility poles conflicting with sidewalk and bicycle lane improvements.
4. Consolidate commercial driveways and incorporate turn restrictions where appropriate.
5. Install traffic signal controls at the George Leven intersection with Kelly Boulevard to clearly define driver right-of-way and provide exclusive pedestrian crossing phasing.
6. Re-construct the Taunton Street (Route 152)/Messenger Street (Route 106) traffic signal and expand all of the approaches to the intersection of Route 152 and Route 106 to include exclusive left-turn lanes, a through lane and a shared through-right turn lane and widening the receiving lanes to accommodate two through lanes. Provide protected left-turn phasing and optimized traffic signal timing and phasing improve traffic operations and manage vehicle queueing.

7. Mill and overlay the roadway within the project limits with select areas of full-depth reconstruction to address the deterioration of the existing surface course and pavement failures.

These improvements were incorporated into the future No-Build and Build when conducting the capacity analysis.

## E.5 RECOMMENDATIONS

Roadway improvements and transportation management actions are identified that support projected traffic increases associated with the proposed development serve to minimize/offset project-related traffic impacts, and that reduces or minimizes dependence on single-occupant auto trips generated by the site. Recommended improvements include (a) access-related improvements, (b) pedestrian and bicycle accommodations, (c) off-site improvements and (d) a travel demand management (TDM) program.

### Access/Egress Improvements

Recommended access improvements to support the site are to be integrated as part of the site design and shall include the following elements.

- *Driveway Design.* The driveway alignment, widths and curb radii have been designed to achieve perpendicular alignment with appropriate width and curb radii between the proposed Site Driveways and Kelley Boulevard and George Leven Drive to accommodate the Town's largest fire apparatus (ladder truck) and single unit delivery vehicles. Supporting AutoTurn® truck turn analysis and exhibits are provided to confirm this finding (refer to the **Appendix**). Signs and pavement markings that are compliant with the Manual on Uniform Traffic Control Devices (MUTCD) should be installed on the approaches to Kelly Boulevard and George Leven Drive including STOP signs (R1-1) and STOP line pavement markings. A double yellow centerline and right turn only signs (R3-5R) and pavement markings should also be installed on driveway approach to Kelley Boulevard. Further improvements along Kelley Boulevard at the site driveway and through the study area that were subject of a MassWorks grant prepared by the Proponent on behalf of the Town of Attleborough and Town of Plainville are outlined under *Planned Roadway Improvements*.
- *Sight Line Triangles.* Plantings (shrubs, bushes) and structures (walls, fences, etc.) should be maintained at a height of 2 feet or less within the sight lines in vicinity of the Site driveway intersection with George Leven Drive to provide unobstructed sight lines. Furthermore, the existing vegetation and structures within the sight lines should be cleared when the Site driveways are constructed, and the terrain shall be graded as required to ensure minimum recommended sight line requirements are met or exceeded.

## **Pedestrian and Bicycle Accommodations**

- *Pedestrian Connections.* The development has incorporated sidewalks that connect the parking areas to the main entranceways of the proposed building. A sidewalk that connects the on-site walkways with the existing sidewalk system along Kelley Boulevard also is provided. An extended sidewalk connection to the existing sidewalk along the northern side of George Leven Drive, which stops at the Koko Fit Club should also be provided with ramps.
- *Bicycle Amenities.* The Proponent shall provide bicycle accommodations within the property including “loop” racks near the building entranceways to encourage and facilitate this mode of transportation to/from the Site.

## **Offsite Improvements**

The development agreement from June 2022 between the Proponent and the Town of north Attleboro stated that the Proponent would pay for the 10% preliminary plans and application for a MassWorks grant. The Proponent has fulfilled this part of the agreement and the MassWorks grant was awarded to the Town in October 2022 to complete the roadway improvements outlined under *Planned Roadway Improvements*. An additional part of the agreement states that the Proponent will also pay \$500,000 to the Town in addition to the previously stated costs once it receives the necessary approvals and building permits.

## **Transportation Demand Management (TDM) Program**

The Proponent is committed to reduce auto dependency by residents by implementing a TDM program. A preliminary list of potential TDM program elements may include the following, subject to refinement of the development program and further evaluation by the Proponent:

- *Preferential Parking and Incentives for Low-Emission Vehicles.* Preferential parking locations for residents who use low-emission vehicles will be provided. Charging stations for electric vehicles will also be provided on the Site.
- *Unbundled Parking.* The Proponent will provide one (1) parking space with the rental of a unit. The remaining parking spaces will remain unbundled as an option for residents with their unit, thereby encouraging lower vehicle ownership at time of lease.
- *Pedestrian Infrastructure.* Sidewalk connections within the property will be provided along primary pedestrian desire lines that connect building entrances with the public sidewalk network. The Proponent will also post area maps that highlight area walking/bicycle routes to promote walking and bicycle travel to/from the Site.
- *Bicycle Facilities.* Provide bicycle parking, including conveniently located racks for residents and visitors proximate to the building entrances

- *Car Sharing Spaces.* The Proponent will designate parking spaces on the Site for use by car sharing services such as Zipcar to Turo.

## E.6 CONCLUSIONS

In summary, MDM finds that incremental traffic associated with the proposed development is not expected to materially degrade operating conditions at the study intersections. There will be no degradation in the level of service at any of the study intersections due to the project. However, as outlined under *Planned Area Roadway Improvements*, the Applicant worked with the Town of Plainville and Town of North Attleborough to develop a 10% design and MassWorks application for multi-modal transportation improvements that will support development of the property and provide the basis for future development in the area. The project successfully secured funding through a MassWorks grant in October 2022. The project will enhance safety and/or operations through the study area for pedestrians, bicycles, and motorized vehicles along Route 152 including at the signalized intersections of Route 152 at Route 106 (Plainville) and Route 152 and George Leven Drive (North Attleborough). Proposed access-related improvements are consistent with long-range corridor improvements outlined in the 2014 SRPEDD Corridor Study.

Implementation of access/egress improvements, proposed pedestrian, and bicycle accommodations, off-site improvements, and a Transportation Demand Management (TDM) program as outlined in this study will establish a framework of minimizing Site traffic impacts by encouraging non-motorized travel modes and pedestrian/bicycle accommodation that is compatible with other projects in the study area.

## ***1.0 INTRODUCTION***

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MDM Transportation Consultants, Inc. (MDM) has prepared a Traffic Impact and Access Study (TIAS) for a proposed development to be located along Kelley Boulevard in North Attleborough, Massachusetts. The location of the Site relative to adjacent roadways is shown in **Figure 1**. The evaluation includes existing traffic operations in the study area and assesses incremental impacts on area roadways under future year conditions with and without the development.

This TIAS has been developed in conformance with guidelines for preparation of traffic studies as jointly issued by the Commonwealth of Massachusetts Executive Office of Energy & Environmental Affairs/Massachusetts Department of Transportation (EEA/MassDOT).

### ***1.1 PROPOSED DEVELOPMENT***

The Site comprises approximately 13.7± acres located at 582 Kelley Boulevard in North Attleborough, Massachusetts. The property is comprised of the Stix Fun Center which includes mini golf (18 holes), a golf driving range (32 tees/driving positions), batting cages (10 cages), and support building. On-site parking is provided for approximately 106 marked spaces. Access/egress is currently provided via a driveway connection to Kelley Boulevard as well as George Leven Drive.

Under the proposed development program, the Site will be redeveloped to include 304± mid-rise residential apartment units. On-site parking will include approximately 489± parking spaces. Site access/egress is proposed via a driveway from Kelley Boulevard and a full access/egress driveway to George Leven Drive. Based on discussions and feedback from the Town it is assumed for analysis purposes that the Kelley Boulevard driveway will be restricted to right-in/right-out movements. The preliminary Site layout plan prepared by Bohler is presented in **Figure 2**.

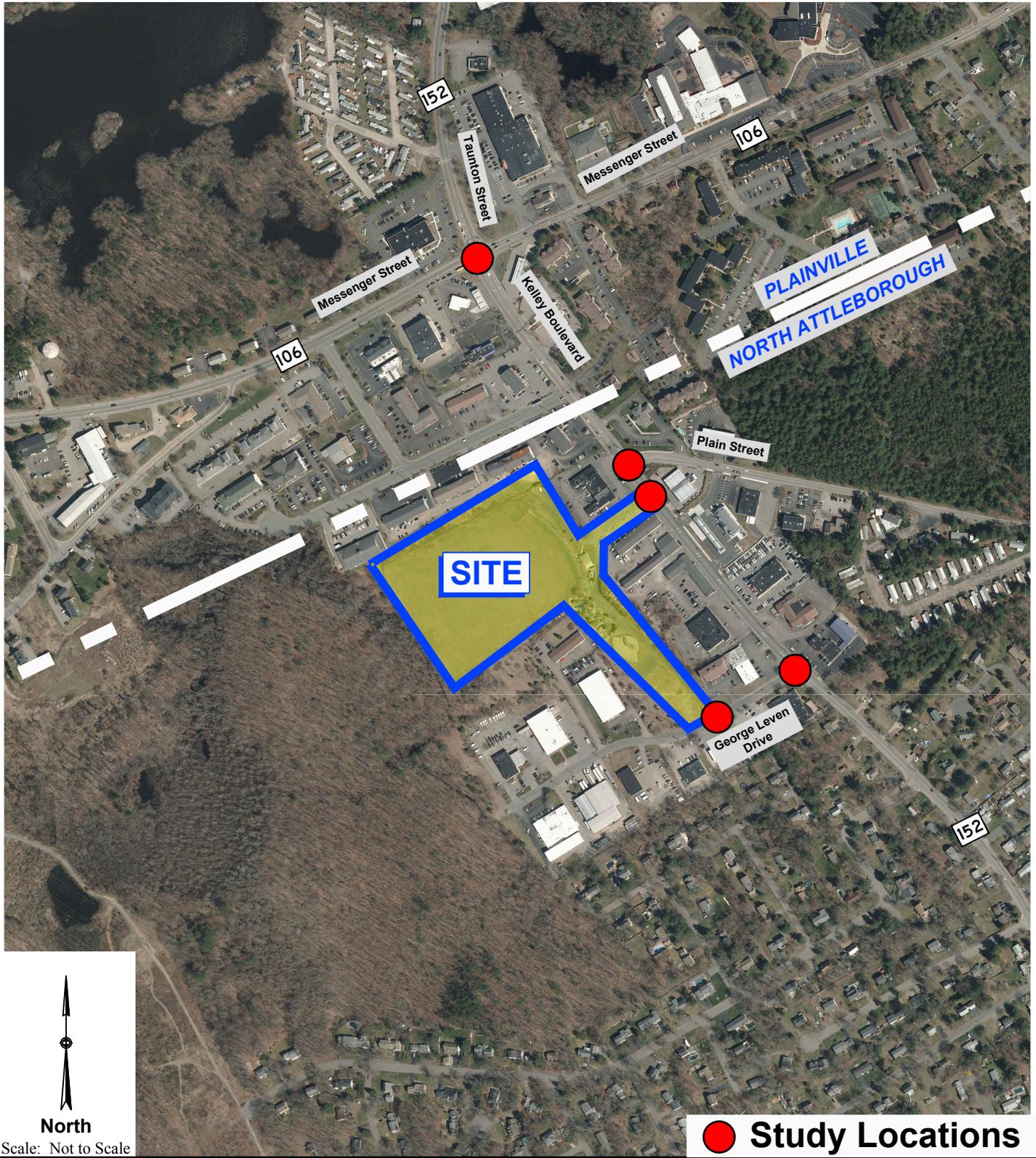
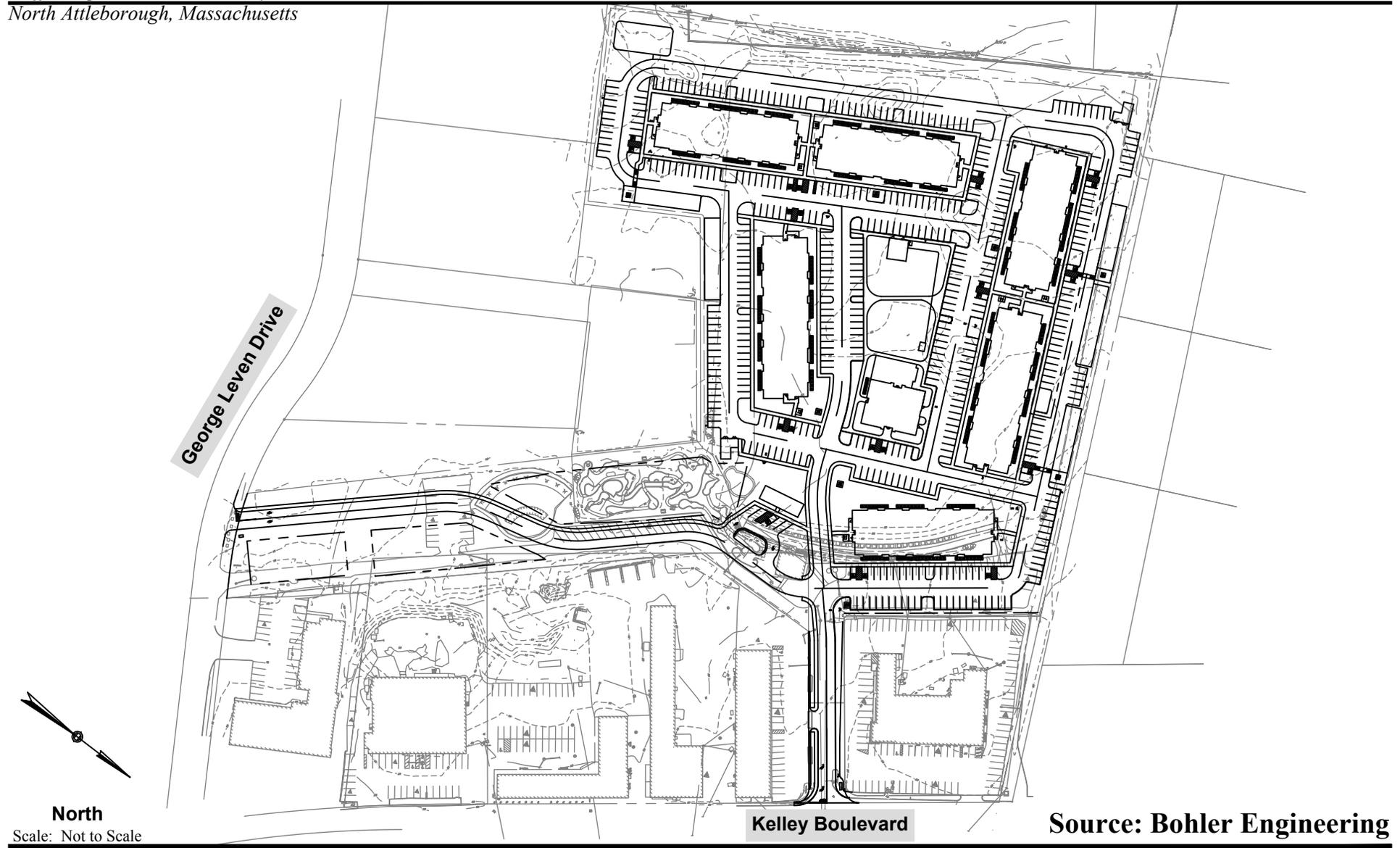


Figure 1



**Source: Bohler Engineering**

**Figure 2**

**Preliminary Site Layout**

## 1.2 STUDY METHODOLOGY

This transportation impact and access evaluation is conducted in accordance with EEA/MassDOT guidelines and consists of several steps. The first step documents existing conditions in the transportation study area including an inventory of roadway geometry, observed traffic volumes, public transportation, and safety characteristics. Next, future year traffic conditions are forecast that account for other planned area developments, normal area growth, and development-related traffic increases. The third step quantifies operating characteristics of the study intersection. Specific attention is given to the incremental impacts of the proposed development. Finally, improvements are identified to address specific development-related requirements as needed.

## 1.3 STUDY AREA

This TIAS evaluates transportation characteristics of roadways and intersections that provide a primary means of access to the site, and that are likely to sustain a measurable level of traffic impact from the development. The study area includes the following intersections, which are also identified in **Figure 1**:

- Route 106 at Route 152 (Signalized)
- Kelley Boulevard at Plain Street
- Kelley Boulevard at Site Driveway
- Kelley Boulevard at George Leven Drive
- George Leven Drive at Site Driveway

## ***2.0 BASELINE CONDITIONS***

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In order to provide a basis for quantifying the transportation impacts of the development, the Baseline roadway system and the baseline traffic operations of study area roadways were reviewed. This section describes the existing traffic characteristics and operations of roadways and intersections within the study area. Specifically, this section presents an overview of baseline traffic volumes, an inventory of crash data and accounting of public transportation systems serving the area.

### ***2.1 STUDY AREA ROADWAY NETWORK***

The study area roadways, intersection, and pedestrian facilities are described briefly in this section along with area roadway commitments by others. A general description of the physical roadway, intersection features, and pedestrian accommodations is provided. The study area includes roadways under local and MassDOT jurisdiction. The study area and intersection are depicted in **Figure 1**.

#### ***2.1.1 Roadways***

##### **Kelley Boulevard/Taunton Street (Route 152)**

Route 152 is generally a northwest-southeast roadway under local jurisdiction within the study area. Route 152 is classified by the MassDOT as an Urban Minor Arterial roadway, and it provides a connection between Route 1 to the north in Plainville and Route 123 in Attleboro to the south. Route 152 provides one travel lane in each direction and a two-way left turn lane ("TWLTL") separated by a double yellow centerline within the study area with additional turn lanes provided at its major intersections. The posted (regulatory) speed limit on Route 152 in the study area is 30 mph in both travel directions. Land uses along Route 152 in the study area are primarily commercial uses and include a McDonalds, Cumberland Farms, Volkswagen Dealership and multiple gas stations.

## **George Leven Drive**

George Leven Drive is a dead-end east-west roadway under local jurisdiction within the study area with a connection to Kelley Boulevard. George Leven Drive is classified as Local Roadway, and it provides one travel lane in each direction with an additional turn lane provided at its intersection with Kelley Boulevard. Land uses along George Leven Drive include Sullivan Tire, BDL Heating and Cooling and Newbury Insurance.

## **Plain Street**

Plain Street is generally an east-west roadway under local jurisdiction within the study and provides a connection to Kelley Boulevard to the west and West Street to the east. Plain Street is classified as an Urban Collector Roadway, and it provides a single travel lane in each direction with additional turn lanes provided at its major intersections. Land uses along Plain Street in the study area include residential uses gas stations and a bank.

## **Messenger Street (Route 106)**

Route 106 is generally an east-west roadway under local jurisdiction within the study and provides a connection to Route 140 to the east and Route 1 to the west. Route 106 is classified as an Urban Minor Arterial Roadway, and it provides a single travel lane in each direction separated by a double yellow centerline with additional turn lanes provided at its major intersections. Land uses along Route 106 in the study area are primarily residential uses and includes an elementary school, a daycare facility and Plainville Crossing Shopping Center.

### 2.1.2 Intersections

#### **Taunton Street/Kelley Boulevard (Route 152) at Messenger Street (Route 106)**

Taunton Street/Kelley Boulevard (Route 152) meets Messenger Street to form a four-legged, signalized intersection under local jurisdiction. The Messenger Street eastbound and westbound approaches and the Taunton Street southbound approach provide a left-turn lane and a shared through/right-turn lane. The Kelley Boulevard northbound approach to the intersection provides a left-turn lane, a through lane, and a right-turn lane. Sidewalks and crosswalks are provided on all the approaches at the intersection. Land uses at the intersection include a Shell gas station, a Mobil gas station, a medical office and urgent care facility and the Plainville Crossing Shopping Center.

### **Kelley Boulevard (Route 152) at Plain Street**

Plain Street meets Kelley Boulevard to form a three-legged, unsignalized intersection under local jurisdiction. The Plain Street approach to Kelley Boulevard provides a left turn lane and a right turn lane under "STOP" control. The Kelley Boulevard northbound and southbound approaches to the intersection provides a through travel lane and a two-way left turn lane. Sidewalks are provided along the eastern side of Kelley Boulevard and both sides of Plain Street. Land uses at the intersection include a bank, a pizza shop, a liquor store and a gas station.

### **Kelley Boulevard (Route 152) at Site Driveway**

The Site Driveway meets Kelley Boulevard to form a three-legged, unsignalized intersection under local jurisdiction. The Kelley Boulevard approaches to the site driveway provides a single thru-lane and a "TWLTL." The Site Driveway approach to the intersection provides a single travel lane. Sidewalks are provided along the eastern side of Kelley Boulevard and the west side of Kelley Boulevard to the south of the site driveway. Land uses at the intersection include a pizza shop, a liquor store and a Sunoco gas station.

### **Kelley Boulevard (Route 152) at George Leven Drive**

George Leven Drive meets Kelley Boulevard to form a three-legged, unsignalized intersection under local jurisdiction. The Kelley Boulevard northbound approach to the intersection provides a left-turn lane and a through lane. The Main Street southbound approach to the intersection provides a left-turn lane and a through travel lane. The Kelley Boulevard southbound approach provides a through lane and a "TWLTL." The George Leven Drive eastbound approach to Kelley Boulevard provides a left turn lane and a right turn lane. Sidewalks are provided along the eastern side of Kelley Boulevard, the western side of Kelley Boulevard to the south of George Leven Drive and the northern side of George Leven Drive. Land uses at the intersection include two residential buildings and a SpeedDee Oil Change.

### **George Leven Drive at Site Driveway**

George Leven Drive meets the Site Driveway to form a three-legged, unsignalized intersection under local jurisdiction. The Site Driveway southbound approach to the intersection provides a shared left/right-turn. The George Leven Drive eastbound approach to the intersection provides a shared through/left-turn lane. The George Leven Drive westbound approach to Site Driveway provides a shared through/right-turn lane. A sidewalk is provided along the westbound side of George Leven Drive. Land uses at the intersection include commercial buildings.

## 2.2 BASELINE TRAFFIC VOLUMES

Traffic-volume data used in this study were obtained by mechanical methods in August 2024. Automatic traffic recorder counts (ATRs) were conducted along Kelley Boulevard adjacent to the Site while manual turning movement counts (TMCs) were conducted at the existing study intersections. Traffic data were collected during the weekday morning (7:00 to 9:00 AM) and weekday evening (4:00 to 6:00 PM) peak periods. These hours represent the combination of busiest activity periods of the Site and adjacent roadway network.

### 2.2.1 Daily Traffic

In addition to TMC data described above, daily traffic volumes were also obtained along Kelley Boulevard to the south of Plain Street in August 2024. This data is summarized in **Table 1** and is discussed below.

**TABLE 1  
BASELINE TRAFFIC VOLUME SUMMARY  
KELLEY BOULEVARD SOUTH OF PLAIN STREET**

Time Period	Daily Volume (vpd) <sup>1</sup>	Percent Daily Traffic <sup>2</sup>	Peak Hour Volume (vph) <sup>3</sup>	Peak Flow Direction <sup>4</sup>	Peak Hour Directional Volume (vph)
Weekday Morning Peak Hour	17,260	7%	1,150	56% NB	644
Weekday Evening Peak Hour	17,260	8%	1,420	61% SB	868

<sup>1</sup>Two-way daily traffic expressed in vehicles per day with no adjustment.

<sup>2</sup>The percent of daily traffic that occurs during the peak hour.

<sup>3</sup>Two-way peak-hour volume expressed in vehicles per hour.

<sup>4</sup>NB = Northbound, SB = Southbound

As summarized in **Table 1**, the weekday daily traffic volume on Kelley Boulevard to the south of Plain Street is approximately 17,260 vehicles per day (vpd) on a weekday with travel patterns skewed in the northbound direction during the weekday morning peak hour and skewed in the southbound direction during the weekday evening peak hour which is consistent with commuter traffic relative to major travel routes in the area. Peak hour traffic flow on Kelley Boulevard ranges from approximately 1,150 to 1,420 vehicles per hour (vph) during the weekday morning and weekday evening peak hours representing 7 to 8 percent of daily traffic flow.

### 2.2.2 Trip Generation Characteristics

Existing trip generation characteristics of the Site by Stix Fun Center were estimated based on traffic counts at the site driveways in August 2024 with the results presented in **Table 2**.

**TABLE 2**  
**TRIP-GENERATION – EXISTING USE**  
**Stix Fun Center**

Period/Direction	Observed Trips <sup>1</sup>
<i>Weekday Morning Peak Hour:</i>	
Entering	5
<u>Exiting</u>	<u>2</u>
Total	7
<i>Weekday Evening Peak Hour</i>	
Entering	20
<u>Exiting</u>	<u>13</u>
Total	33
<i>Daily (24 Hour)</i>	438 <sup>2</sup>

<sup>1</sup>Observed trips counted at the site driveways on August 8<sup>th</sup>, 2024.

<sup>2</sup>Daily trips are estimated based on ITE Golf Driving Range (LUC 432) trip rates applied to 32 tees/driving positions.

As summarized in **Table 2**, the existing Site uses as a Stix Fun Center generates approximately 7 vehicle trips (5 entering and 2 exiting) during the weekday morning peak hour, 33 vehicle trips (20 entering and 13 exiting) during the weekday evening peak hour, and 438 vehicle trips on a weekday.

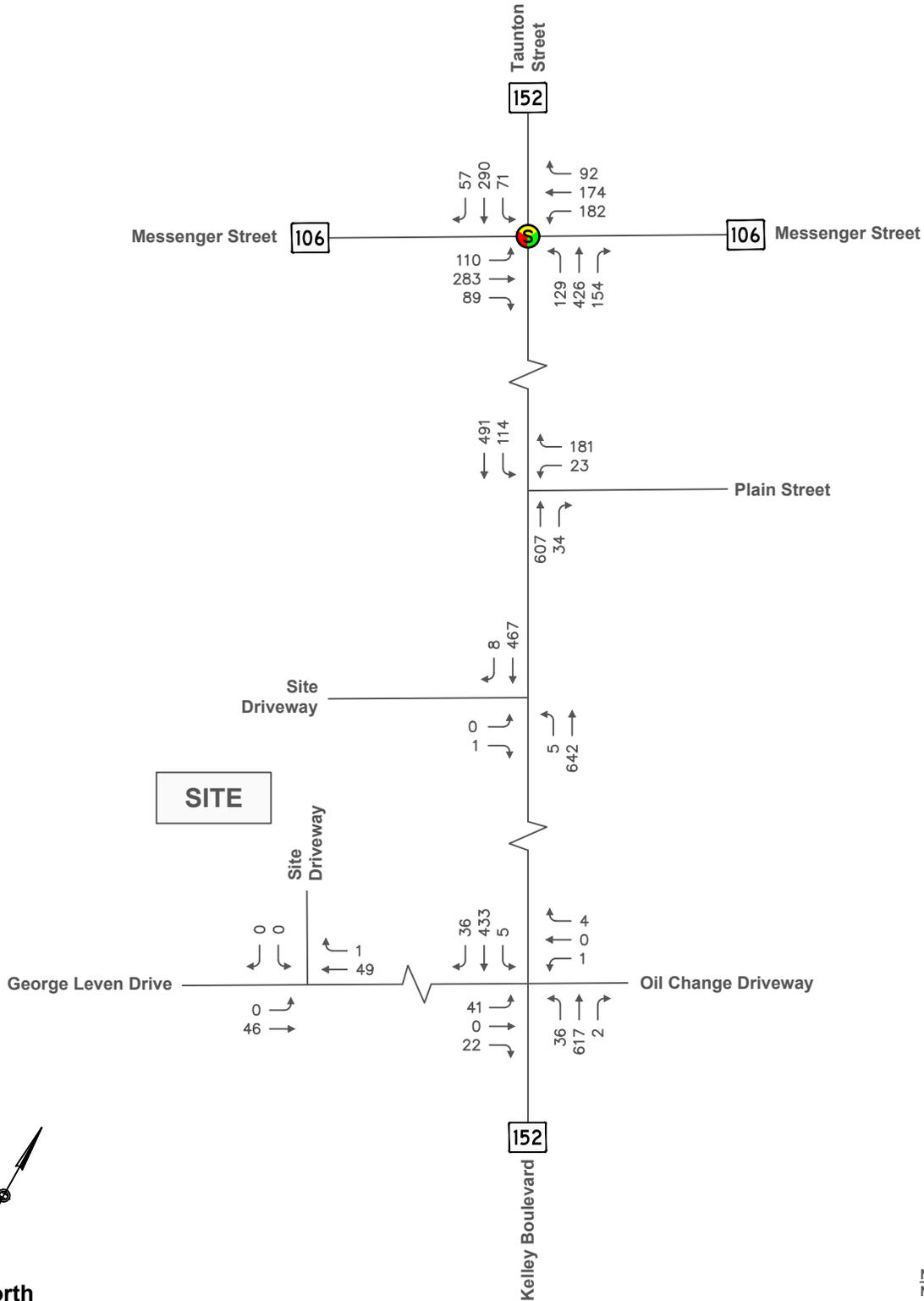
### 2.2.3 Peak-Hour Volumes

#### *Traffic Volumes*

Peak-hour traffic volumes at the study area intersections were collected in August 2024 which is an above average month (approximately 2 percent above average month conditions). To remain conservative, no adjustment (reduction) was applied to the August data to reflect average season conditions. The resulting 2024 Baseline weekday morning and weekday evening peak hour traffic volumes for the study intersections are shown in **Figure 3** and **Figure 4**. Traffic count data and MassDOT permanent count station data are provided in the **Appendix**.

#### *Pedestrian and Bicycle Volumes*

Peak-hour pedestrian and bicycle traffic activity were also observed at the study locations in August 2024. The resulting Baseline weekday morning and weekday evening peak hour pedestrian and bicycle traffic volumes at the study intersections are provided in the **Appendix**.



NOTES:  
 NEGL. = Negligible  
 = Signalized Intersection

North  
 Scale: Not to Scale

**Figure 3**

**2024 Baseline Condition  
 Weekday Morning Peak Hour Volumes**

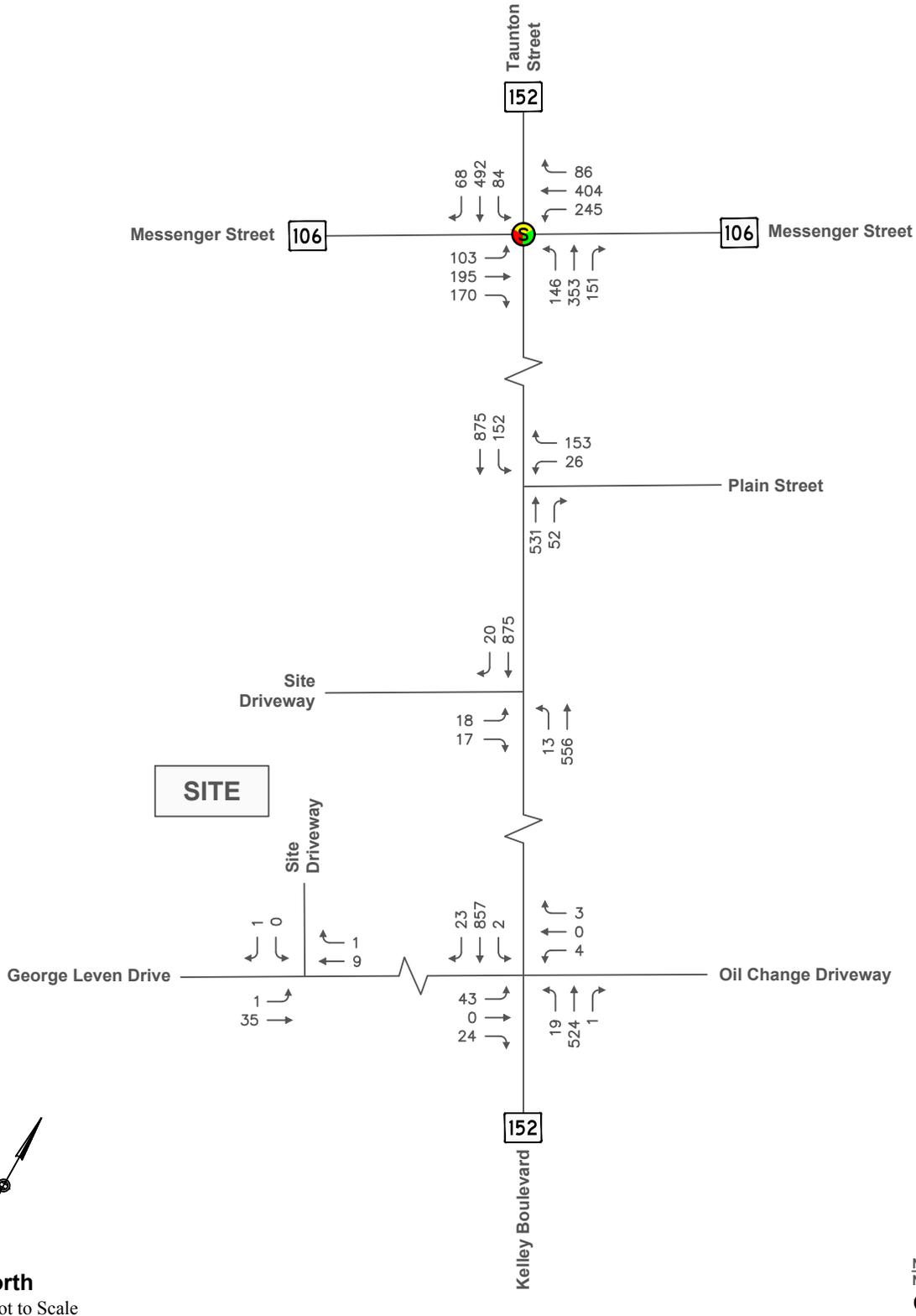


Figure 4

## 2.3 SAFETY

In order to identify crash trends and safety characteristics for study area intersections, crash data were obtained from MassDOT for the Town of North Attleborough for the five-year period covering 2019 through 2023. A summary of the crash data with crash rates for the study intersection with reported crashes is detailed in **Table 3** with detailed data provided in the **Appendix**.

Crash rates were calculated for the study intersection as reported in **Table 3**. This rate quantifies the number of crashes per million entering vehicles. MassDOT has determined the official District 5 (which includes the Town of North Attleborough) crash rate to be 0.57 for unsignalized intersections and 0.75 for signalized intersections. This rate represents MassDOT's "average" crash experience for District 5 communities and serves as a basis for comparing reported crash rates for the study intersections. Where calculated crash rates notably exceed the district average, some form of safety countermeasures may be warranted. A review of Highway Safety Improvement Project (HSIP) locations was also conducted.

**TABLE 3**  
**CRASH SUMMARY – 2019 THROUGH 2023<sup>1</sup>**

Data Category	Study Locations		
	Route 106 at Route 152	Kelley Boulevard at Plain Street	Kelley Boulevard at George Leven Drive
Traffic Control	Signalized	Unsignalized	Unsignalized
Crash Rate <sup>2</sup>	<b>2.57</b>	<b>0.25</b>	<b>0.27</b>
MassDOT Avg. Rate <sup>3</sup>	0.75	0.57	0.57
Above Avg. Rate?	<b>Yes</b>	<b>No</b>	<b>No</b>
<i>Year:</i>			
2019	26	1	2
2020	19	3	1
2021	28	3	1
2022	36	2	1
<u>2023</u>	<u>34</u>	<u>1</u>	<u>4</u>
Total	<b>143</b>	<b>10</b>	<b>9</b>
<i>Type:</i>			
Angle	74	7	3
Rear-End	42	1	0
Head-On	8	0	1
Sideswipe	14	1	3
Single Vehicle	2	1	2
Other/Unknown	3	0	0
<i>Severity:</i>			
P. Damage Only	121	7	9
Personal Injury	22	2	0
Fatality	0	0	0
Other/Unknown	0	1	0
<i>Conditions:</i>			
Dry	113	8	7
Wet	20	2	1
Snow	1	0	0
Other/Unknown	9	0	1
<i>Time:</i>			
7:00 to 9:00 AM	13	1	2
4:00 to 6:00 PM	33	4	4
Rest of Day	97	5	3

<sup>1</sup>Source: MassDOT.

<sup>2</sup>Crashes per million entering vehicles (MEV) for intersections.

<sup>3</sup>District 5 Average Crash Rate.

As summarized in **Table 3**:

- *Route 106 at Route 152.* One hundred forty-three (143) crashes were reported for the Route 106 signalized intersection with Route 152. The crashes at the intersection include crashes associated with the area driveways within the influence area of the signalized intersection. The resulting crash rate of 2.57 is significantly higher than the District 5 average. Additionally, the intersection was listed by MassDOT as a HSIP crash cluster for 2017-2019 but has since been removed from the crash cluster list as of 2021. Intersection improvements to be provided as part of the Massworks Grant improvements within the area will provide enhanced safety at the signalized intersection by providing additional turn lanes and improved signal timing with protected turning phases. The reported crashes included seventy-four (74) angle type collisions (52%), and forty-two (42) rear-end type collisions (29%). One hundred twenty-one (121) crashes resulted in property-damage only (85%), and one hundred thirteen (113) crashes occurred under dry roadway conditions (79%). Forty-six (46) crashes occurred during the peak travel periods (32%). There were two collisions involving bicycles and no fatalities or pedestrian-related incidents were reported during the study period.
- *Kelley Boulevard at Plain Street.* Ten (10) crashes were reported for the Kelley Boulevard unsignalized intersection with Plain Street. The resulting crash rate of 0.25 is lower than the District 5 average. The reported crashes included seven (7) angle type collisions (70%). Seven (7) of the crashes resulted in property damage only (70%), and eight (8) crashes were under dry roadway conditions (80%). Five (5) of the crashes occurred during the peak travel periods (50%). No fatalities or pedestrian-related incidents were reported during the study period.
- *Kelley Boulevard at George Leven Drive.* Nine (9) crashes were reported for the Kelley Boulevard unsignalized intersection with Plain Street. The resulting crash rate of 0.27 is lower than the District 5 average. The reported crashes included three (3) angle/sideswipe type collisions (67%). All of the crashes resulted in property damage only, and 7 crashes were under dry roadway conditions (78%). Six (6) of the crashes occurred during the peak travel periods (67%). No fatalities or pedestrian-related incidents were reported during the study period.

In summary, based on local crash records, the study intersection of Route 106 at Route 152 had crash rates above the District 5 average. Improvements have been funded through a MassWorks grant as of October 2022 and are under design at this location as summarized under *Planned Roadway Improvements*. The remaining study locations experienced crash rates below the District 5 averages and no immediate safety countermeasures are warranted based on the crash history at the study intersections.

## 2.4 SIGHT LINE ANALYSIS

The evaluation documents existing sight distances for vehicles exiting the proposed Site driveways onto Kelley Boulevard and George Leven Drive with comparison to American Association of State Highway and Transportation Officials' (AASHTO)<sup>1</sup> recommended guidelines for the regulatory (posted) speed limits.

The AASHTO standards reference two types of sight distance that are relevant at the proposed primary site driveway intersections with Kelley Boulevard and George Leven Drive: stopping sight distance (SSD) and intersection sight distance (ISD). Sight lines for critical vehicle movements at the site driveway intersections were compared to minimum SSD and ISD recommended for the regulatory speeds along Kelley Boulevard and George Leven Drive.

### **Stopping Sight Distance**

Sight distance is the length of roadway visible to the motorist to a fixed object. The minimum sight distance available on a roadway should be sufficiently long enough to enable a below-average operator, traveling at or near a regulatory speed limit, to stop safely before reaching a stationary object in its path, in this case, a vehicle exiting or slowing to turn at the site driveways. The SSD criteria are defined by AASHTO based on design and operating speeds, anticipated driver behavior and vehicle performance, as well as physical roadway conditions. SSD includes the length of roadway traveled during the perception and reaction time of a driver to an object, and the distance traveled during brake application on wet, level pavements. Adjustment factors are applied to account for roadway grades.

SSD was estimated in the field using AASHTO standards for driver's eye (3.5 feet) and object height equivalent to the taillight height of a passenger car (2.0 feet) for the northbound and southbound Kelley Boulevard approaches to the proposed site driveway and for the eastbound and westbound George Leven Drive approaches to proposed site driveway. **Table 4** presents a summary of the available SSD for the Kelley Boulevard and George Leven Drive segments approaching the proposed site driveways and AASHTO's recommended SSD for the regulatory speed limits.

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<sup>1</sup>A policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials (AASHTO), 2018.

**TABLE 4  
STOPPING SIGHT DISTANCE SUMMARY**

Approach/ Travel Direction	Available SSD	AASHTO Recommended <sup>1</sup>	
		Regulatory Speed Limit <sup>2</sup>	Criteria Satisfied
<i>Kelley Boulevard Approaches to Site Driveway</i>			
<i>Northbound</i>	>500 Feet	200 Feet	Yes
<i>Southbound</i>	>500 Feet	200 Feet	Yes
<i>George Leven Drive Approaches to Site Driveway</i>			
<i>Eastbound</i>	>500 Feet	200 Feet	Yes
<i>Westbound</i>	350± Feet	80 Feet <sup>3</sup>	Yes

<sup>1</sup> Recommended sight distance based on AASHTO, A Policy on Geometric Design of Highways and Streets. Based on driver height of eye of 3.5 feet to object height of 2.0 feet and adjustments for roadway grade were applicable.

<sup>2</sup> Regulatory Speed Limit is 30 mph on Kelley Boulevard and George Leven Drive.

<sup>3</sup> Based on 15 mile per hour travel speed for vehicles turning from Kelley Boulevard.

As summarized in **Table 4**, analysis results indicate that the existing available sight lines at the Kelley Boulevard and George Leven Drive approaches to the Site Driveways exceed AASHTO's recommended SSD criteria based on the regulatory (posted) speed limit.

### Intersection Sight Distance

Clear sight lines provide sufficient sight distance for a stopped driver on a minor-road approach to depart from the intersection and enter or cross the major road. As stated under AASHTO's Intersection Sight Distance (ISD) considerations, "...If the available sight distance for an entering ...vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to avoid collisions...To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road." AASHTO's ISD criteria are defined into several "cases". In this case, the proposed driveway approaches to Kelley Boulevard and George Leven Drive will be under "STOP" control and the ISD in question relates to the ability to turn right from the proposed driveway onto Kelley Boulevard and turn left and right from the proposed driveway onto George Leven Drive.

Available ISD was estimated in the field using AASHTO standards for driver's eye (3.5 feet), object height (3.5 feet) and decision point (8 to 14.5 feet from edge of travel way) looking east and west from the proposed driveway onto George Leven Drive and north from the site driveway onto Kelley Boulevard. **Table 5** presents a summary of the available ISD for the departures from the proposed site driveway and AASHTO's recommended ISD.

**TABLE 5**  
**INTERSECTION SIGHT DISTANCE SUMMARY**

<b>Approach/ Travel Direction</b>	<b>Available ISD</b>	<b>AASHTO Minimum<sup>1</sup></b>	<b>AASHTO Ideal<sup>1</sup></b>
		<b>Regulatory Speed Limit<sup>2</sup></b>	<b>Regulatory Speed Limit<sup>2</sup></b>
<i>Site Driveway Departure to Kelley Boulevard</i>			
<i>Looking North</i>	>500 Feet	200 Feet	290
<i>Site Driveway Departure to George Leven Drive</i>			
<i>Looking East</i>	350± Feet	80 Feet <sup>3</sup>	145 Feet <sup>3</sup>
<i>Looking West</i>	>500 Feet	200 Feet	335 Feet

<sup>1</sup>Recommended sight distance based on AASHTO, A Policy on Geometric Design of Highways and Streets. Based on driver height of eye of 3.5 feet and an object height of 3.5 feet. Minimum value as noted represents SSD per AASHTO guidance.

<sup>2</sup>Regulatory Speed Limit is 30 mph on Kelley Boulevard and George Leven Drive.

<sup>3</sup>Based on 15 mile per hour travel speed for vehicles turning from Kelley Boulevard.

As summarized in **Table 5**, analysis results indicate that the available sight lines looking north onto Kelley Boulevard and east and west onto George Leven Drive will exceed the recommended minimum and ideal sight line requirements from AASHTO for the regulatory speed. MDM recommends that any new plantings (shrubs, bushes) or physical landscape features to be located within driveway sight lines should also be maintained at a height of 2 feet or less above the adjacent existing roadway grade to ensure unobstructed lines of sight.

### ***3.0 FUTURE CONDITIONS***

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Evaluation of the proposed development impacts requires the establishment of a future baseline analysis condition. This section estimates future roadway and traffic conditions with and without the proposed development. To be consistent with EEA/MassDOT guidelines, a seven-year planning horizon was selected.

To determine the impact of Site-generated traffic volumes on the roadway network under future conditions, baseline traffic volumes in the study area were projected to a future year condition. Traffic volumes on the roadway network at that time, in the absence of the development (that is, the No-Build condition), would include existing traffic, new traffic due to general background traffic growth, and traffic related to specific development by others that is currently under review at the local and/or state level. Consideration of these factors resulted in the development of No-Build traffic volumes. Anticipated Site-generated traffic volumes were then superimposed upon these No-Build traffic-flow networks to develop future Build conditions.

The following sections provide an overview of future planned roadway improvements, No-Build traffic volumes, and projected Build traffic volumes.

#### ***3.1 PLANNED ROADWAY IMPROVEMENTS***

In June 2022, the Proponent working in collaboration with the Town of North Attleborough and Town of Plainville provided funding for preparation of the MassWorks grant project application for funding of multi-modal transportation improvements that will support development of the property and provide the basis for future development in the area. The complete streets improvements to the corridor as presented in the MassWorks application provided in the **Appendix**. The development agreement from June 2022 stated that the Proponent would pay for the 10% preliminary plans and application for a MassWorks grant. The Proponent has fulfilled this part of the agreement and the MassWorks grant was awarded to the Town in October 2022 to complete the roadway improvements outlined below. An additional part of the agreement states that the Proponent will also pay \$500,000 to the Town in addition to the previously stated costs once it receives the necessary approvals and building permits.

The proposed public infrastructure project will provide much needed multimodal upgrades in the form of safe and accessible pedestrian, bicycle and vehicle access improvements to existing public amenities and the proposed development along Kelley Boulevard. Geometric and traffic control improvements will also facilitate emergency vehicle access and will support future growth in the area. Specifically, this will include approximately ½ mile of roadway and intersection improvements between Plain Street and George Leven Drive. In particular, said improvements will include the following:

1. Construct bicycle lanes along Kelley Boulevard to provide a direct connection from the surrounding area to the site. Provide sharrow bicycle markings in other areas.
2. Reconstruct sidewalks throughout the project limits to provide a continue route for pedestrian travel and install an enhanced pedestrian crossing with raised refuge island and rapid rectangular flashing beacon (RRFB) across Kelley Boulevard to the south of Plain Street.
3. Relocate utility poles conflicting with sidewalk and bicycle lane improvements.
4. Consolidate commercial driveways and incorporate turn restrictions where appropriate.
5. Install traffic signal controls at the George Leven intersection with Kelly Boulevard to clearly define driver right-of-way and provide exclusive pedestrian crossing phasing.
6. Re-construct the Taunton Street (Route 152) at Messenger Street (Route 106) traffic signal and expand all the approaches to the intersection of Route 152 and Route 106 to include exclusive left-turn lanes, a through lane and a shared through-right turn lane and widening the receiving lanes to accommodate two through lanes. Provide protected left-turn phasing and optimized traffic signal timing and phasing improve traffic operations and manage vehicle queueing.
7. Mill and overlay the roadway within the project limits with select areas of full-depth reconstruction to address the deterioration of the existing surface course and pavement failures.

These improvements were incorporated into the future No-Build and Build when conducting the capacity analysis.

### 3.2 BACKGROUND TRAFFIC GROWTH

Background traffic includes demand generated by other planned developments in the area as well as demand increases caused by external factors. External factors are general increases in traffic not attributable to a specific development and are determined using historical data.

### 3.2.1 Historical Area Growth

Nearby permanent count station data published by MassDOT indicates a 0.4 percent per year growth rate for the area. For purposes of this evaluation, a 1.0 percent compounded annual growth rate was used (7.2 percent increase over a 7-year horizon). This growth rate is higher than historic rates and is also expected to account for any small fluctuation in hourly traffic as may occur from time to time in the study area and traffic associated with other potential small developments or vacancies in the area. MassDOT permanent count station data and background growth calculations are provided in the **Appendix**.

### 3.2.2 Background Development-Related Growth

Development of future No-Build traffic volumes also considers traffic generated through the study area from other specific area developments. Review of Massachusetts Environmental Policy Act (MEPA) files and correspondence with the Town of North Attleboro Planning Staff indicates that there is at least one (1) Site-specific development projects in the area that may increase Baseline traffic at the study intersections:

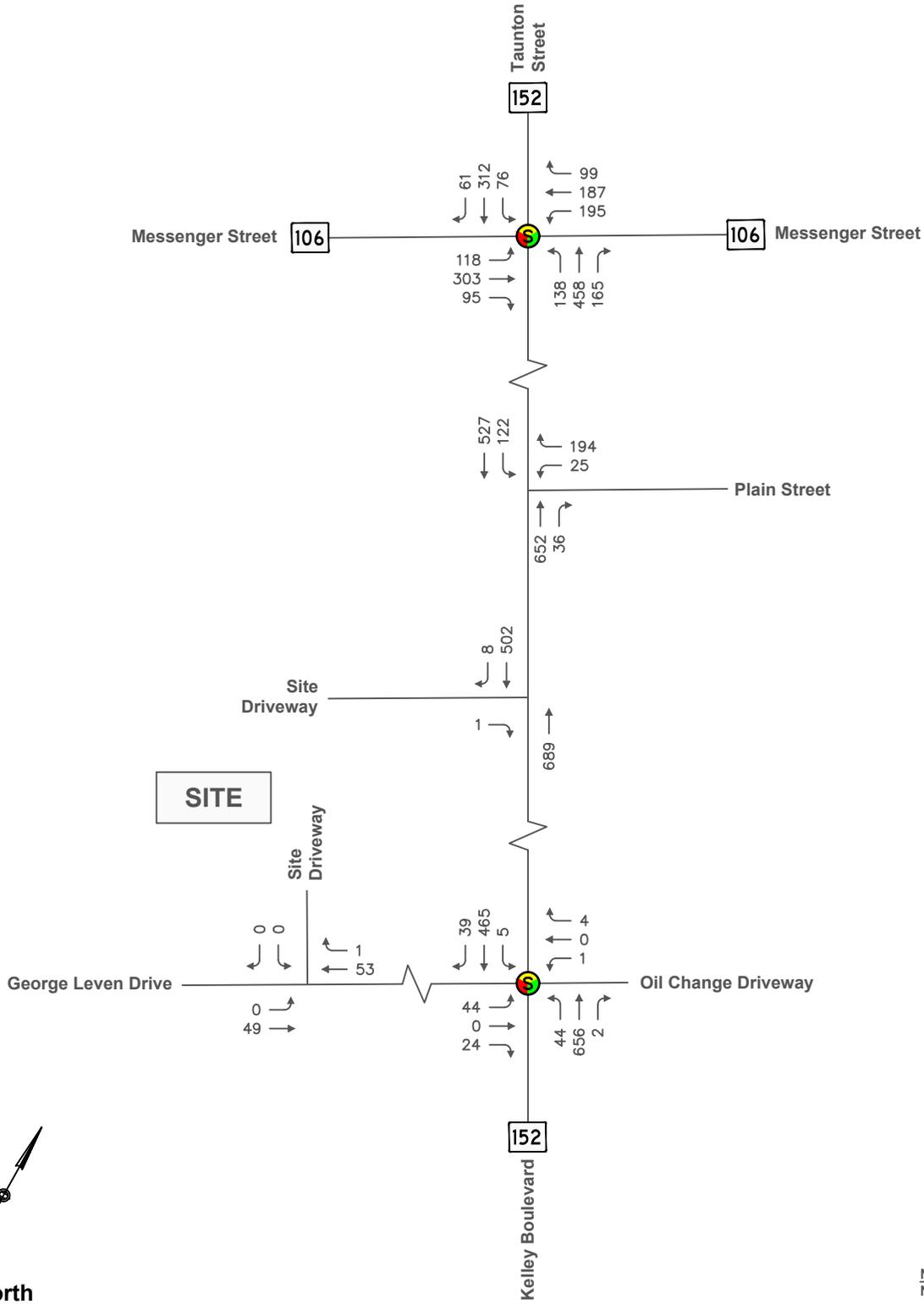
- *Jackson Hill at Sperry Lane*. This under construction residential development will consist of approximately 16 single family homes along Sperry Lane to the south of the Site on Kelley Boulevard. Site-specific trip tracings for the proposed development are provided in the **Appendix**.

## 3.3 NO-BUILD TRAFFIC VOLUMES

To account for future traffic growth along the corridor, the 1.0 percent annual growth rate was applied to existing traffic volumes over a seven-year period along with site-specific trips associated with the Jackson Hill at Sperry Lane project. Future 2031 No-Build traffic volumes are displayed in **Figure 5** and **Figure 6**.

## 3.4 SITE-GENERATED TRAFFIC – ITE BASIS

The methodology utilized to estimate the future trip-generation characteristics of the proposed development are summarized below. In accordance with EEA/MassDOT guidelines, the traffic generated by the proposed development was estimated using trip rates published in ITE's *Trip Generation* for the Land Use Code (LUC) based on trip rates for Multifamily Housing – Mid-Rise (LUC 221). **Table 6** presents the trip-generation estimates for the proposed development based on ITE methodology with appropriate adjustments to reflect net new trip activity. Detailed trip generation calculations are provided in the **Appendix**.



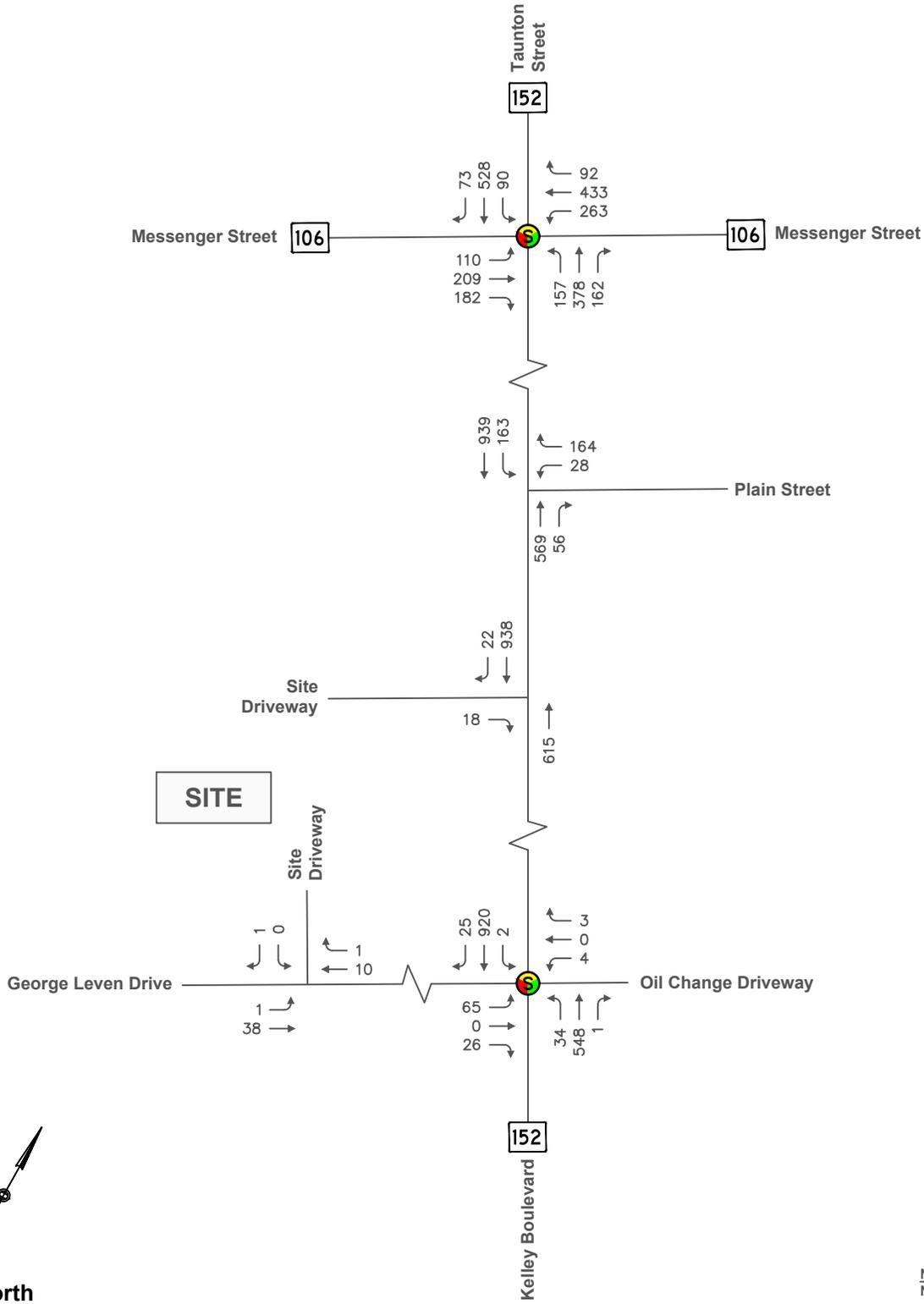
NOTES:  
 NEGL. = Negligible  
 = Signalized Intersection



Scale: Not to Scale

**Figure 5**

**2031 No-Build Condition  
 Weekday Morning Peak Hour Volumes**



NOTES:  
 NEGL. = Negligible  
 = Signalized Intersection



North

Scale: Not to Scale

Figure 6

**2031 No-Build Condition  
 Weekday Evening Peak Hour Volumes**

**TABLE 6**  
**TRIP-GENERATION SUMMARY**

Period/Direction	Multifamily Housing (Mid-Rise) (304 Units) <sup>1</sup>
<i>Weekday Morning Peak Hour:</i>	
Entering	26
<u>Exiting</u>	<u>86</u>
Total	112
<i>Weekday Evening Peak Hour</i>	
Entering	73
<u>Exiting</u>	<u>46</u>
Total	119
<i>Daily (24 Hour)</i>	1,380

<sup>1</sup>ITE LUC 221 trip rates applied to 304 dwelling units.

As summarized in **Table 6**, based on industry-standard trip rates for the proposed development is estimated to generate approximately 112 trips during the weekday morning peak hour (26 entering and 86 exiting), 119 trips during the weekday evening peak hour (73 entering and 46 exiting), and approximately 1,380 daily trips on a weekday.

### 3.5 TRIP GENERATION – EXISTING VS PROPOSED USES

Trip generation estimates for the historical Stix Fun Center were estimated to reflect full occupancy. This allows a relative comparison of trips to the proposed redevelopment of the property to include 304± residential apartment units. **Table 7** presents the comparison of the existing Stix Fun Center use and proposed use of the property based on ITE trip generation methodology. The trip generation worksheets are provided in the **Appendix**.

**TABLE 7  
TRIP-GENERATION COMPARISON**

<b>Period/Direction</b>	<b>Existing Use<sup>1</sup> (Stix Fun Center)</b>	<b>Proposed Residential Use<sup>2</sup></b>	<b>Difference</b>
<i>Weekday Morning Peak Hour:</i>			
Entering	5	26	<b>+21</b>
<u>Exiting</u>	<u>2</u>	<u>86</u>	<b>+84</b>
Total	7	112	<b>+105</b>
<i>Weekday Evening Peak Hour</i>			
Entering	20	73	<b>+53</b>
<u>Exiting</u>	<u>13</u>	<u>46</u>	<b>+33</b>
Total	33	119	<b>+86</b>
<i>Daily (24 Hour)</i>	438	1,380	<b>+942</b>

<sup>1</sup>Trip total from Table 2.

<sup>2</sup>Trip total from Table 6.

As summarized in **Table 7**, the proposed use of the property compared to the existing use results in approximately 105 net new trips during the weekday morning peak hour (21 entering and 84 exiting), 86 net new trips during the weekday evening peak hour (53 entering and 33 exiting), and 942 net new vehicle trips on a weekday.

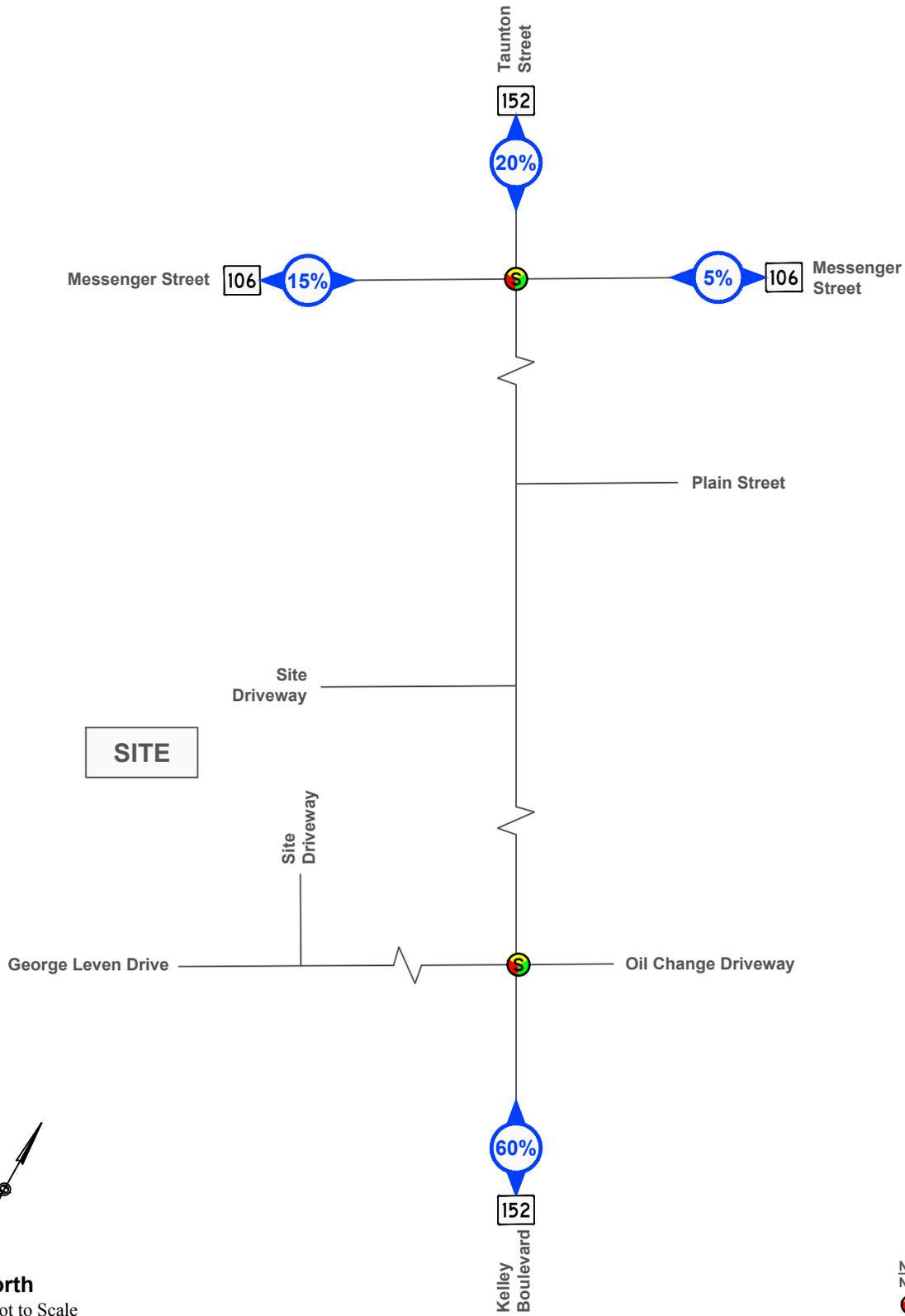
### 3.6 TRIP DISTRIBUTION AND ASSIGNMENT

The directional distribution of development-generated trips on the roadway network is a function of a number of variables including local area populations and the efficiency of the roadways leading to the Site. Journey to work census data served as the primary basis for determining the trip distribution pattern for the proposed development. The resulting trip distribution pattern is presented in **Figure 7**, with detailed calculations provided in the **Appendix**.

**Figure 8** and **Figure 9** present projected site-generated traffic volumes for the weekday morning and weekday evening peak hours for the proposed development based on the trip generation presented in **Table 6** and projected travel patterns presented in **Figure 7**.

### 3.7 BUILD TRAFFIC VOLUMES

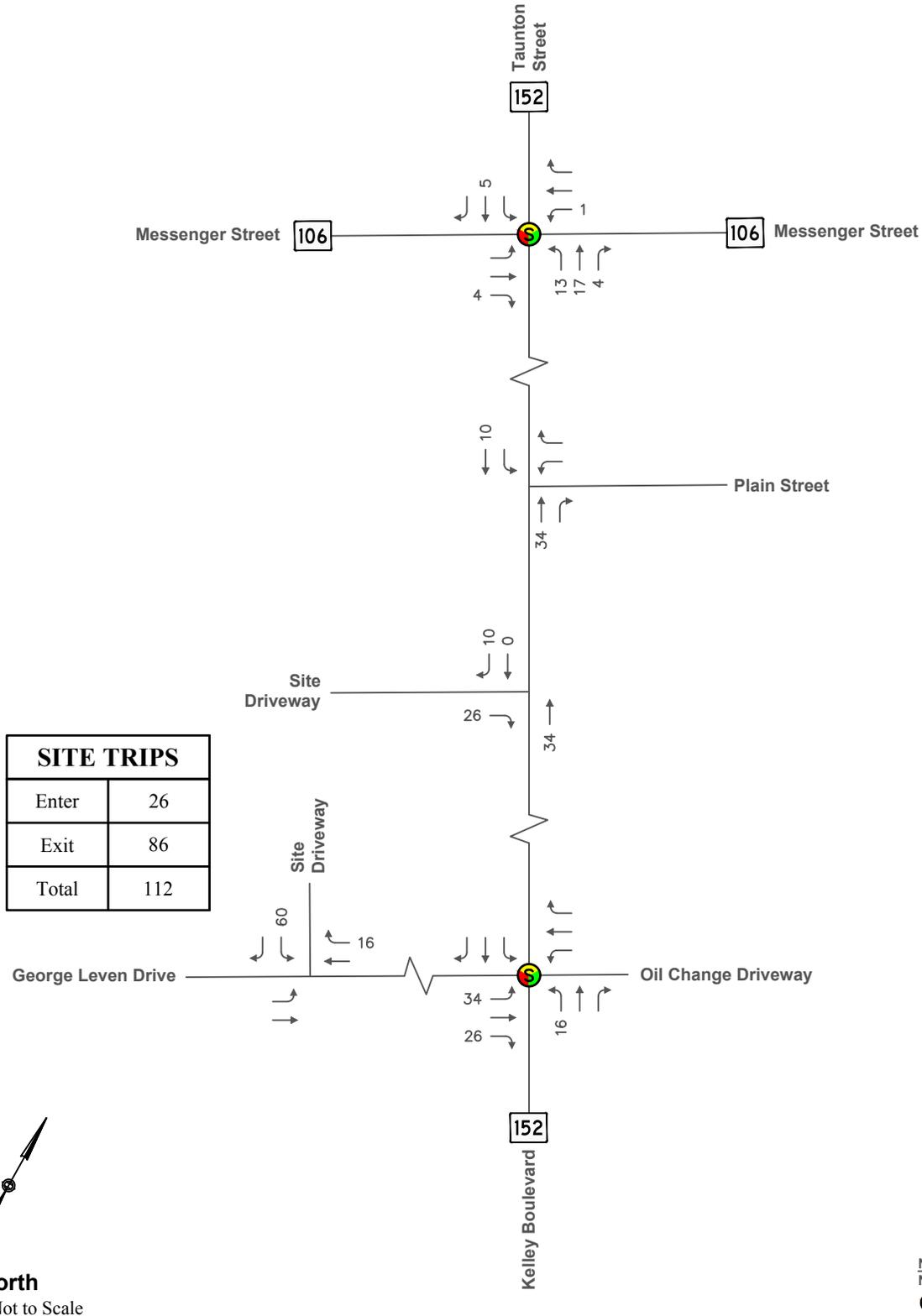
Future Build condition traffic volumes were arrived at by adding development-specific traffic volumes to the 2031 No-Build conditions. The resulting 2031 Build condition traffic-volume networks for the weekday morning and weekday evening peak hours are displayed in **Figure 10** and **Figure 11**.



North

Scale: Not to Scale

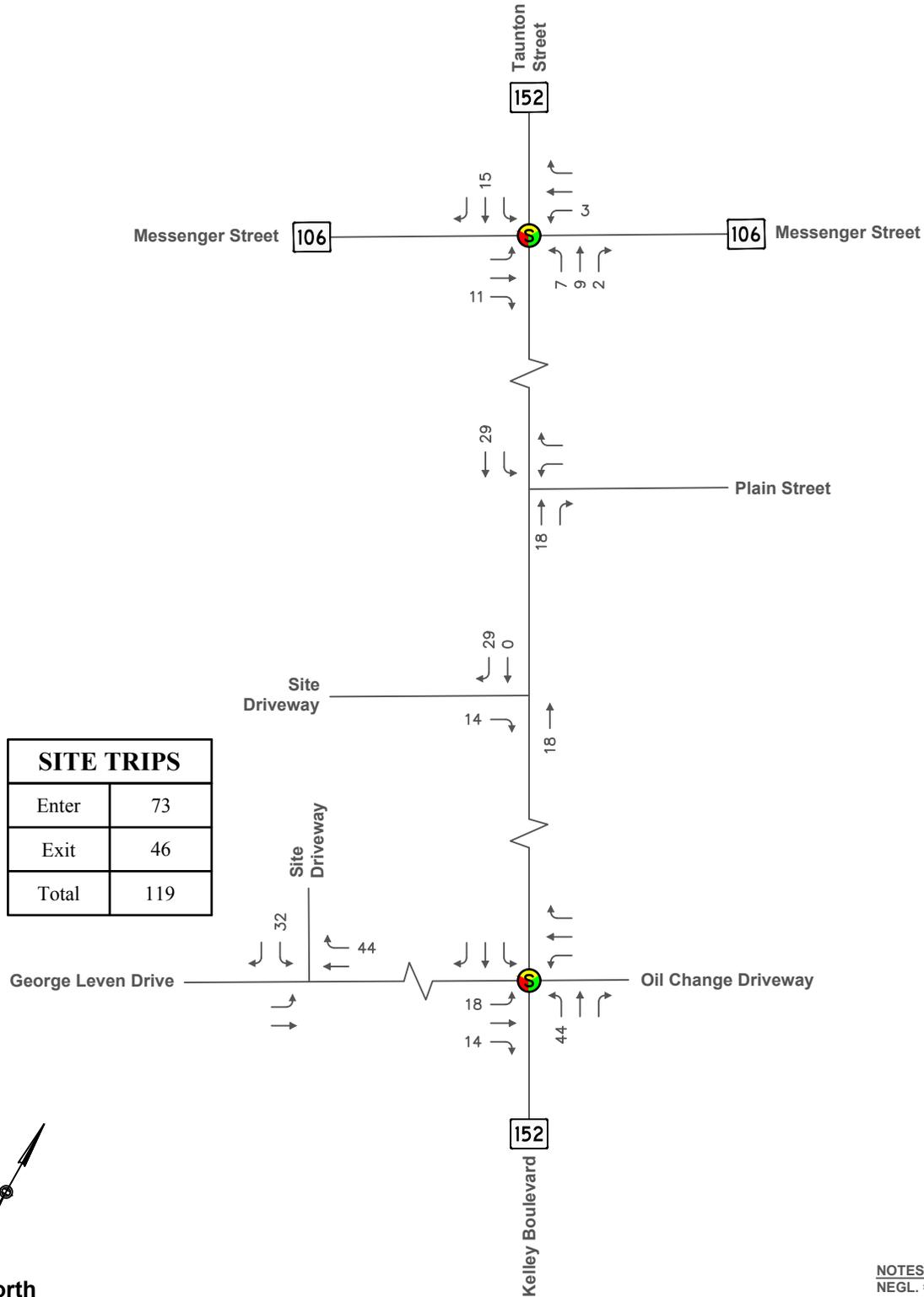
NOTES:  
 NEGL. = Negligible  
 = Signalized Intersection



NOTES:  
 NEGL. = Negligible  
 = Signalized Intersection

Figure 8

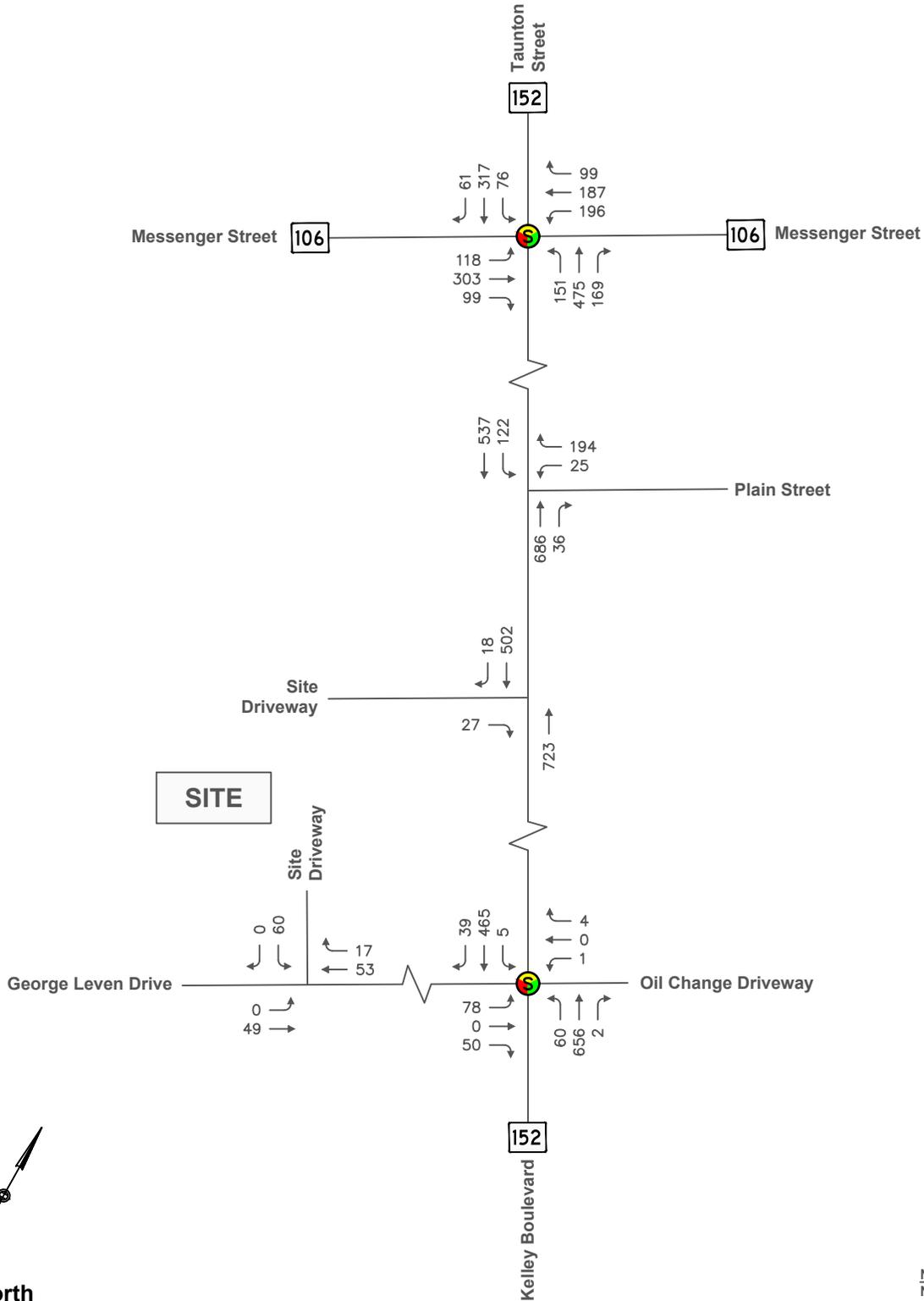
**Trip Generation  
 Weekday Morning Peak Hour Volumes**



NOTES:  
 NEGL. = Negligible  
 = Signalized Intersection

North  
 Scale: Not to Scale

Figure 9

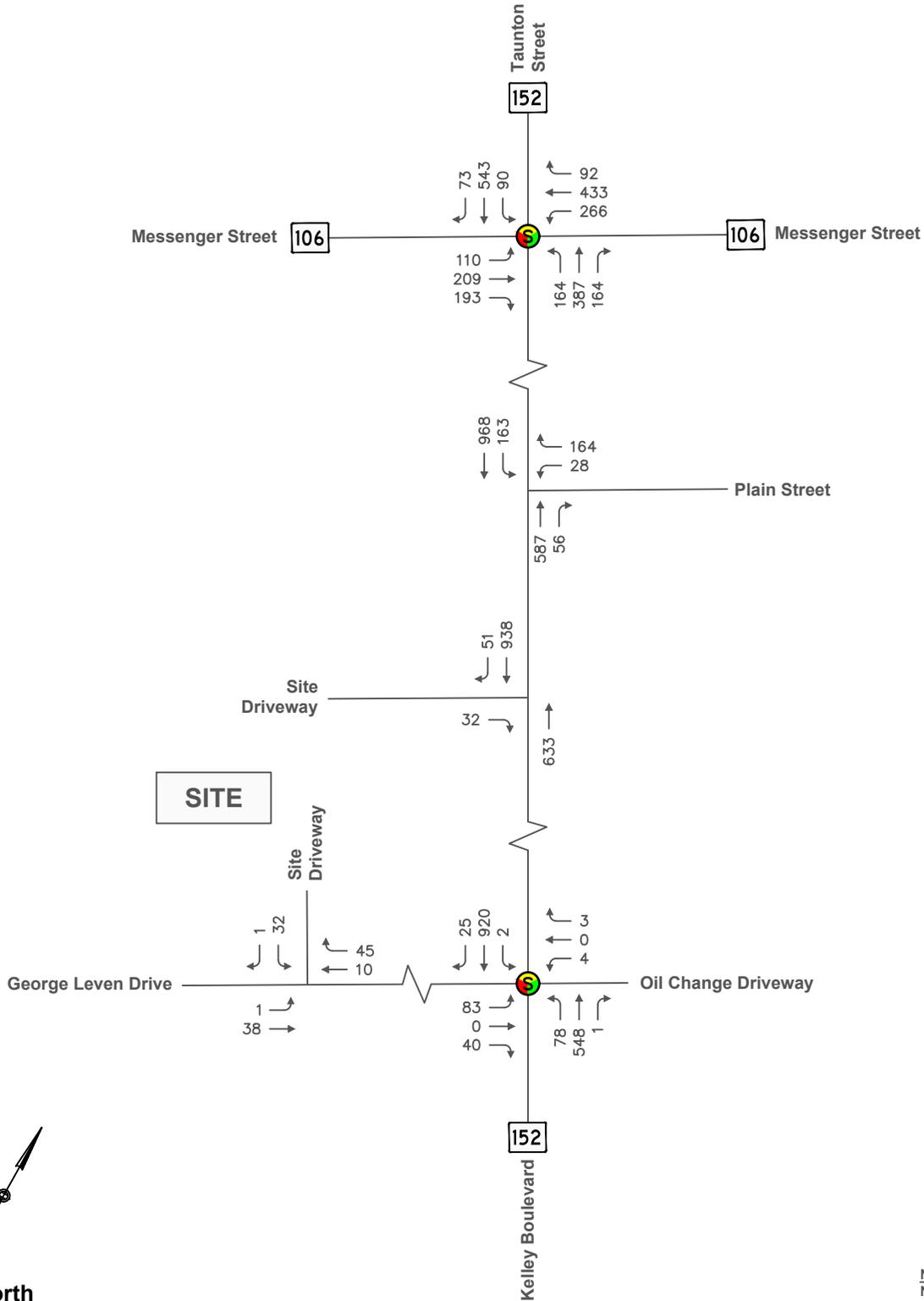


NOTES:  
 NEGL. = Negligible  
 = Signalized Intersection

North  
 Scale: Not to Scale

**Figure 10**

**2031 Build Condition  
 Weekday Morning Peak Hour Volumes**



NOTES:  
 NEGL. = Negligible  
 = Signalized Intersection

Scale: Not to Scale

Figure 11

## ***4.0 TRAFFIC OPERATIONS ANALYSIS***

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Intersection capacity analyses for the primary study intersections are presented in this section for the Baseline, No-Build, and Build traffic-volume conditions. Capacity analyses, conducted in accordance with EEA/MassDOT guidelines, provide an index of how well the roadway facilities serve the traffic demands placed upon them. The operational results provide the basis for recommended access and roadway improvements in the following section. The planned roadway improvements were incorporated into the analysis for the No-Build and Build Conditions.

### ***4.1 CAPACITY ANALYSIS PROCEDURES***

Capacity analysis of intersections is developed using the Synchro® computer software, which implements the methods of the Highway Capacity Manual 6<sup>th</sup> Edition (HCM). The resulting analysis presents a level-of-service (LOS) designation for individual intersection movements. The LOS is a letter designation that provides a qualitative measure of operating conditions based on several factors including roadway geometry, speeds, ambient traffic volumes, traffic controls, and driver characteristics. Since the LOS of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of LOS, depending on the time of day, day of week, or period of year. A range of six levels of service are defined on the basis of average delay, ranging from LOS A (the least delay) to LOS F (delays greater than 50 seconds for unsignalized movements). The specific control delays and associated LOS designations are presented in the **Appendix**.

## 4.2 INTERSECTION CAPACITY ANALYSIS RESULTS

Capacity analysis results for the weekday morning and weekday evening peak hours for the study intersections are described below, with detailed analysis results presented in the **Appendix**.

### 4.2.1 Level of Service Analysis

The capacity analysis results for the intersections in the study area are summarized in **Table 8** and **Table 9** for the weekday morning and weekday evening peak hours, respectively.

**TABLE 8**  
**INTERSECTION CAPACITY ANALYSIS RESULTS**  
**WEEKDAY MORNING PEAK HOUR**

Intersection	Approach	2024 Baseline			2031 No-Build			2031 Build		
		v/c <sup>1</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>	v/c	Delay	LOS	v/c	Delay	LOS
Taunton Street at Messenger Street	Eastbound	0.71	31	C	0.50	29	C	0.53	29	C
	Westbound	0.53	24	C	0.55	24	C	0.59	24	C
	Northbound	0.68	25	C	0.62	26	C	0.58	26	C
	<u>Southbound</u>	<u>0.67</u>	<u>31</u>	<u>C</u>	<u>0.43</u>	<u>27</u>	<u>C</u>	<u>0.46</u>	<u>28</u>	<u>C</u>
	<b>OVERALL</b>	<b>0.71</b>	<b>27</b>	<b>C</b>	<b>0.62</b>	<b>26</b>	<b>C</b>	<b>0.59</b>	<b>27</b>	<b>C</b>
Kelley Boulevard at Plain Street	WB Left	0.09	20	C	0.11	22	C	0.11	22	C
	WB Right	0.42	19	C	0.48	21	C	0.51	22	C
	Northbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.14	<5	A	0.16	<5	A	0.16	<5	A
Kelley Boulevard at Site Driveway	Eastbound	0.00	11	B	0.00	12	B	0.05	12	B
	Northbound	0.01	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
Kelley Boulevard at George Leven Drive	Eastbound	0.14	16	C	0.12	15	B	0.25	15	B
	Westbound	n/a <sup>4</sup>	n/a	n/a	0.01	<5	A	0.01	<5	A
	Northbound	0.04	<5	A	0.46	6	A	0.50	7	A
	<u>Southbound</u>	<u>0.00</u>	<u>&lt;5</u>	<u>A</u>	<u>0.42</u>	<u>8</u>	<u>A</u>	<u>0.49</u>	<u>10</u>	<u>B</u>
	<b>OVERALL</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>0.46</b>	<b>7</b>	<b>A</b>	<b>0.50</b>	<b>9</b>	<b>A</b>
George Leven Drive at Site Driveway	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.00	<5	A	0.00	<5	A	0.09	10	A

<sup>1</sup> Volume-to-capacity ratio

<sup>2</sup> Average control delay per vehicle (in seconds)

<sup>3</sup> Level of service

<sup>4</sup> n/a = not applicable

**TABLE 9  
INTERSECTION CAPACITY ANALYSIS RESULTS  
WEEKDAY EVENING PEAK HOUR**

Intersection	Approach	2024 Baseline			2031 No-Build			2031 Build		
		v/c <sup>1</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>	v/c	Delay	LOS	v/c	Delay	LOS
Taunton Street at Messenger Street	Eastbound	0.63	34	C	0.54	25	C	0.55	25	C
	Westbound	0.81	43	D	0.66	30	C	0.66	31	C
	Northbound	0.62	27	C	0.51	24	C	0.53	25	C
	<u>Southbound</u>	<u>0.87</u>	<u>47</u>	<u>D</u>	<u>0.64</u>	<u>31</u>	<u>C</u>	<u>0.65</u>	<u>31</u>	<u>C</u>
	<b>OVERALL</b>	<b>0.87</b>	<b>38</b>	<b>D</b>	<b>0.66</b>	<b>28</b>	<b>C</b>	<b>0.66</b>	<b>28</b>	<b>C</b>
Kelley Boulevard at Plain Street	WB Left	0.14	26	D	0.17	30	D	0.18	31	D
	WB Right	0.33	16	C	0.37	17	C	0.38	18	C
	Northbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.17	<5	A	0.19	<5	A	0.20	<5	A
Kelley Boulevard at Site Driveway	Eastbound	0.12	18	C	0.06	18	C	0.12	19	C
	Northbound	0.02	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
Kelley Boulevard at George Leven Drive	Eastbound	0.17	20	C	0.25	20	B	0.33	21	C
	Westbound	n/a <sup>4</sup>	n/a	n/a	0.02	<5	A	0.02	<5	A
	Northbound	0.03	<5	A	0.38	5	A	0.40	6	A
	<u>Southbound</u>	<u>0.00</u>	<u>&lt;5</u>	<u>A</u>	<u>0.71</u>	<u>16</u>	<u>B</u>	<u>0.81</u>	<u>21</u>	<u>C</u>
	<b>OVERALL</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>0.71</b>	<b>12</b>	<b>B</b>	<b>0.81</b>	<b>15</b>	<b>B</b>
George Leven Drive at Site Driveway	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.00	<5	A	0.00	8	A	0.05	9	A

<sup>1</sup> Volume-to-capacity ratio

<sup>2</sup> Average control delay per vehicle (in seconds)

<sup>3</sup> Level of service

<sup>4</sup>n/a = not applicable

As summarized in **Table 8 and Table 9**:

- *Taunton Street/Kelley Boulevard (Route 152) at Messenger Street (Route 106)*. Under future Build conditions the intersection will continue to operate above capacity at LOS C or better during the weekday morning and evening peak hours. The proposed development does not result in any significant change in operations at the signalized intersection compared to No-Build conditions with the future Massworks grant improvements in place.
- *Plain Street at Kelley Boulevard*. Under future Build conditions, capacity analyses indicate that the Plain Street approach to Kelley Boulevard will continue to operate below capacity at overall LOS C or better during the weekday morning peak hours and at LOS D or better during the weekday evening peak hours. Mainline operations along Kelley Boulevard will continue to operate unimpeded at LOS A.
- *Kelley Boulevard at Site Driveway*. Under future Build conditions, capacity analyses indicate that the Site Driveway and gas station driveway approaches to Kelley Boulevard will continue to operate below capacity at LOS B or better during the weekday morning and at LOS C during the weekday evening peak hours. Mainline operations along Kelley Boulevard will continue to operate unimpeded at LOS A.
- *George Leven Drive at Kelley Boulevard*. Under future Build conditions the intersection will continue to operate above capacity at LOS A or better during the weekday morning peak hours and at LOS B during the weekday evening peak hours. The proposed development does not result in any significant change in operations at the signalized intersection compared to No-Build conditions.
- *George Leven Drive at Site Driveway*. Under future Build conditions, capacity analyses indicate that the Site Driveway approach to George Leven Drive will continue to operate below capacity at LOS A or better during the weekday morning and weekday evening peak hours. Mainline operations along George Leven Drive will continue to operate unimpeded at LOS A.

In summary, the proposed development does not result in any significant change in operations at intersections within the study area compared to No-Build conditions. Therefore, no off-site mitigation is warranted based on the capacity analysis.

## 4.2.2 Vehicle Queue Analysis

Vehicle queue results are presented for the signalized intersections within the study area. These vehicle queues are compared to available storage lengths, which are defined as lengths of exclusive turn lanes or the distance to the nearest major intersection for through lanes. Vehicle queue results from the capacity analysis are summarized in **Table 10** and **Table 11**. Detailed worksheets of the queuing analysis are provided in the **Appendix**.

**TABLE 10**  
**VEHICLE QUEUE ANALYSIS SUMMARY**  
**TAUNTON STREET AT MESSENGER STREET**

Approach	Storage Length (feet)	2024 Baseline		2031 No-Build		2031 Build	
		Average Queue Length	95 <sup>th</sup> Percentile Queue Length	Average Queue Length	95 <sup>th</sup> Percentile Queue Length	Average Queue Length	95 <sup>th</sup> Percentile Queue Length
<i>Weekday Morning Peak Hour</i>							
Eastbound L	250±	36	79	55	121	55	120
Eastbound T/R	>1000	187	324	85	138	86	139
Westbound L	450	62	124	88	179	90	181
Westbound T/R	>1000	115	215	38	74	38	74
Northbound L	200±	42	95	63	130	70	140
Northbound T/R	>1000	220	405	129	207	136	215
Northbound R	200±	4	51	n/a <sup>2</sup>	n/a	n/a	n/a
Southbound L	200±	22	57	35	84	35	84
Southbound T/R	>1000	174	316	77	135	80	137
<i>Weekday Evening Peak Hour</i>							
Eastbound L	250±	52	89	55	121	58	121
Eastbound T/R	>1000	242	352	54	108	56	108
Westbound L	450	135	200	127	236	134	239
Westbound T/R	>1000	385	530	124	190	128	190
Northbound L	200±	68	167	77	154	84	160
Northbound T/R	>1000	228	381	105	166	110	171
Northbound R	200±	4	54	n/a	n/a	n/a	n/a
Southbound L	200±	37	81	45	102	47	102
Southbound T/R	>1000	432	732	146	225	154	232

<sup>1</sup>Average and 95<sup>th</sup> percentile queue lengths are reported in feet per lane.

<sup>2</sup>n/a = not applicable

**TABLE 11**  
**VEHICLE QUEUE ANALYSIS SUMMARY**  
**KELLEY BOULEVARD AT GEORGE LEVEN DRIVE**

Approach	Storage Length (feet)	2031 No-Build		2031 Build	
		Average Queue Length	95 <sup>th</sup> Percentile Queue Length	Average Queue Length	95 <sup>th</sup> Percentile Queue Length
<i>Weekday Morning Peak Hour</i>					
Eastbound L/T	100±	<25	43	<25	68
Eastbound R	>1000	<25	<25	<25	<25
Westbound L/T/R	30±	<25	<25	<25	<25
Northbound L	100±	<25	<25	<25	<25
Northbound T/R	>1000	<25	309	80	309
Southbound L	100±	<25	<25	<25	<25
Southbound T/R	>1000	45	205	116	205
<i>Weekday Evening Peak Hour</i>					
Eastbound L/T	100±	<25	56	31	69
Eastbound R	>1000	<25	<25	<25	<25
Westbound L/T/R	30±	<25	<25	<25	<25
Northbound L	100±	<25	<25	<25	<25
Northbound T/R	>1000	57	216	62	249
Southbound L	100±	<25	<25	<25	<25
Southbound T/R	>1000	314	618	337	622

<sup>1</sup>Average and 95<sup>th</sup> percentile queue lengths are reported in feet per lane.

As presented in **Table 10** and **Table 11**, average vehicle queues at the signalized study intersections will be contained within available storage lanes during peak hours to accommodate peak period queues. The project will not significantly change queue lengths compared to No-Build conditions and will generally result in an increase of 2 vehicles or less on all approaches to the signalized intersections.

## 5.0 RECOMMENDATIONS AND CONCLUSIONS

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Roadway improvements and transportation management actions are identified that support projected traffic increases associated with the proposed development serve to minimize/offset project-related traffic impacts, and that reduces or minimizes dependence on single-occupant auto trips generated by the site. Recommended improvements include (a) access-related improvements, (b) pedestrian and bicycle accommodations, (c) off-site improvements, and (d) a travel demand management (TDM) program.

### 5.1 PROPOSED ACCESS IMPROVEMENTS

Recommended access improvements to support the site are to be integrated as part of the site design and shall include the following elements.

- *Driveway Design.* The driveway alignment, widths and curb radii have been designed to achieve perpendicular alignment with appropriate width and curb radii between the proposed Site Driveways and Kelley Boulevard and George Leven Drive to accommodate the Town's largest fire apparatus (ladder truck) and single unit delivery vehicles. Supporting AutoTurn® truck turn analysis and exhibits are provided to confirm this finding (refer to the **Appendix**). Signs and pavement markings that are compliant with the Manual on Uniform Traffic Control Devices (MUTCD) should be installed on the approaches to Kelly Boulevard and George Leven Drive including STOP signs (R1-1) and STOP line pavement markings. A double yellow centerline and right turn only signs (R3-5R) and pavement markings should also be installed on driveway approach to Kelley Boulevard. Further improvements along Kelley Boulevard at the site driveway and through the study area that were subject of a MassWorks grant prepared by the Proponent on behalf of the Town of North Attleborough and Town of Plainville are outlined under *Planned Roadway Improvements*.

- *Sight Line Triangles.* Plantings (shrubs, bushes) and structures (walls, fences, etc.) should be maintained at a height of 2 feet or less within the sight lines in vicinity of the Site driveway intersection with George Leven Drive to provide unobstructed sight lines. Furthermore, the existing vegetation and structures within the sight lines should be cleared when the Site driveways are constructed, and the terrain shall be graded as required to ensure minimum recommended sight line requirements are met or exceeded.

## 5.2 PEDESTRIAN AND BICYCLE ACCOMODATIONS

- *Pedestrian Connections.* The development has incorporated sidewalks that connect the parking areas to the main entranceways of the proposed building. A sidewalk that connects the on-site walkways with the existing sidewalk system along Kelley Boulevard also is provided. An extended sidewalk connection to the existing sidewalk along the northern side of George Leven Drive, which stops at the Koko Fit Club should also be provided with ramps.
- *Bicycle Amenities.* The Proponent shall provide bicycle accommodations within the property including “loop” racks near the building entranceways to encourage and facilitate this mode of transportation to/from the Site.

## 5.3 OFFSITE IMPROVEMENTS

The development agreement from June 2022 between the Proponent and the Town of North Attleboro stated that the Proponent would pay for the 10% preliminary plans and application for a MassWorks grant. The Proponent has fulfilled this part of the agreement and the MassWorks grant was awarded to the project in October 2022 to complete the roadway improvements outlined under *Planned Roadway Improvements*. An additional part of the agreement states that the Proponent will also pay \$500,000 to the Town in addition to the previously stated costs once it receives the necessary approvals and building permits.

## 5.4 TRAVEL DEMAND MANAGEMENT (TDM) PROGRAM

The Proponent is committed to reduce auto dependency by residents by implementing a TDM program. A preliminary list of potential TDM program elements may include the following, subject to refinement of the development program and further evaluation by the Proponent:

- *Preferential Parking and Incentives for Low-Emission Vehicles.* Preferential parking locations for residents who use low-emission vehicles will be provided. Charging stations for electric vehicles will also be provided on the Site.
- *Unbundled Parking.* The Proponent will provide one (1) parking space with the rental of a unit. The remaining parking spaces will remain unbundled as an option for residents with their unit, thereby encouraging lower vehicle ownership at time of lease.

- *Pedestrian Infrastructure.* Sidewalk connections within the property will be provided along primary pedestrian desire lines that connect building entrances with the public sidewalk network. The Proponent will also post area maps that highlight area walking/bicycle routes to promote walking and bicycle travel to/from the Site.
- *Bicycle Facilities.* Provide bicycle parking, including conveniently located racks for residents and visitors proximate to the building entrances.
- *Car Sharing Spaces.* The Proponent will designate parking spaces on the Site for use by car sharing services such as Zipcar to Turo.

## 5.5 CONCLUSIONS

In summary, MDM finds that incremental traffic associated with the proposed development is not expected to materially degrade operating conditions at the study intersections. There will be no degradation in the level of service at any of the study intersections due to the project. However, as outlined under *Planned Area Roadway Improvements*, the Applicant worked with the Town of Plainville and Town of North Attleborough to develop a 10% design and MassWorks application for multi-modal transportation improvements that will support development of the property and provide the basis for future development in the area. The Town successfully secured funding through a MassWorks grant in October 2022. The project will enhance safety and/or operations through the study area for pedestrians, bicycles, and motorized vehicles along Route 152 including at the signalized intersections of Route 152 at Route 106 (Plainville) and Route 152 and George Leven Drive (North Attleborough). Proposed access-related improvements are consistent with long-range corridor improvements outlined in the 2014 SRPEDD Corridor Study.

Implementation of access/egress improvements, proposed pedestrian, and bicycle accommodations, off-site improvements, and a Transportation Demand Management (TDM) program as outlined in this study will establish a framework of minimizing Site traffic impacts by encouraging non-motorized travel modes and pedestrian/bicycle accommodation that is compatible with other projects in the study area.

# ATTACHMENTS

- Traffic Volume Data
- Seasonal/ Yearly Growth Data
- Crash Data
- Sight Distance Calculations
- Planned Area Roadway Improvements
- Trip Generation
- Trip Distribution Calculations
- Capacity Analysis
- AutoTURN® Analysis

□ Traffic Volume Data

# MDM Transportation Consultants, Inc.

N/S: Kelley Boulevard  
 South of Plain Street  
 North Attleborough, MA

28 Lord Road, Suite 280  
 Marlborough, MA 01752

Site Code: 1188  
 Station ID:  
 1188

Start Time	07-Aug-24 Wed	Northbound		Hour Totals		Southbound		Combined Totals			
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon		
12:00		7	151			11	152				
12:15		1	148			7	162				
12:30		1	136			12	158				
12:45		3	154	12	589	5	149	35	621		
01:00		2	138			3	147				
01:15		2	145			7	155				
01:30		2	121			5	174				
01:45		2	150	8	554	2	136	17	612		
02:00		2	138			6	175				
02:15		2	145			1	173				
02:30		1	137			1	160				
02:45		0	154	5	574	3	169	11	677		
03:00		3	129			1	187				
03:15		7	139			3	166				
03:30		3	140			5	206				
03:45		5	158	18	566	3	204	12	763		
04:00		6	151			3	197				
04:15		16	151			4	192				
04:30		23	150			9	191				
04:45		19	141	64	593	10	228	26	808		
05:00		32	125			14	221				
05:15		65	153			16	229				
05:30		85	139			22	220				
05:45		84	133	266	550	28	198	80	868		
06:00		88	127			37	195				
06:15		126	112			54	168				
06:30		164	100			45	148				
06:45		152	79	530	418	68	132	204	643		
07:00		126	73			64	133				
07:15		153	73			79	128				
07:30		169	64			99	104				
07:45		167	50	615	260	113	89	355	454		
08:00		154	52			117	80				
08:15		164	60			112	94				
08:30		145	49			150	79				
08:45		181	38	644	199	129	61	508	314		
09:00		160	39			116	62				
09:15		147	42			122	68				
09:30		139	23			124	42				
09:45		137	23	583	127	107	33	469	205		
10:00		122	26			103	62				
10:15		125	17			112	26				
10:30		129	21			111	26				
10:45		125	18	501	82	125	32	451	146		
11:00		140	11			113	29				
11:15		116	15			131	31				
11:30		140	8			141	24				
11:45		161	6	557	40	139	18	524	102		
<b>Total</b>		<b>3803</b>	<b>4552</b>			<b>2692</b>	<b>6213</b>			<b>6495</b>	<b>10765</b>
<b>Percent</b>		<b>45.5%</b>	<b>54.5%</b>			<b>30.2%</b>	<b>69.8%</b>			<b>37.6%</b>	<b>62.4%</b>
<b>Combined Total</b>		<b>8355</b>				<b>8905</b>				<b>17260</b>	

# MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280  
Marlborough, MA, 01752

E/W: George Leven Drive  
SB: Stix Fun Center  
North Attleborough, MA

File Name : 1188 George\_Leven\_Drive\_at\_Site\_08-07-2024  
Site Code : 1188  
Start Date : 8/7/2024  
Page No : 1

### Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Road

Start Time	Stix Fun Center From North				George Leven Drive From East				George Leven Drive From West				Int. Total
	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	
07:00 AM	0	0	0	0	0	17	0	17	13	0	0	13	30
07:15 AM	0	0	0	0	0	9	0	9	7	0	0	7	16
07:30 AM	0	0	0	0	0	22	0	22	14	0	0	14	36
07:45 AM	0	0	0	0	0	21	0	21	17	0	0	17	38
Total	0	0	0	0	0	69	0	69	51	0	0	51	120
08:00 AM	0	0	0	0	0	16	0	16	14	0	0	14	30
08:15 AM	0	0	0	0	0	12	0	12	14	0	0	14	26
08:30 AM	0	0	0	0	0	8	0	8	6	0	0	6	14
08:45 AM	0	0	0	0	1	13	0	14	12	0	0	12	26
Total	0	0	0	0	1	49	0	50	46	0	0	46	96
04:00 PM	1	0	0	1	0	12	0	12	21	1	0	22	35
04:15 PM	1	1	0	2	0	8	0	8	20	0	0	20	30
04:30 PM	0	0	0	0	2	6	0	8	13	0	0	13	21
04:45 PM	0	0	0	0	1	2	0	3	13	0	0	13	16
Total	2	1	0	3	3	28	0	31	67	1	0	68	102
05:00 PM	0	0	0	0	0	1	0	1	9	0	0	9	10
05:15 PM	0	0	0	0	0	4	0	4	9	0	0	9	13
05:30 PM	1	0	0	1	0	2	0	2	4	1	0	5	8
05:45 PM	0	0	0	0	0	1	0	1	4	0	0	4	5
Total	1	0	0	1	0	8	0	8	26	1	0	27	36
Grand Total	3	1	0	4	4	154	0	158	190	2	0	192	354
Apprch %	75	25	0		2.5	97.5	0		99	1	0		
Total %	0.8	0.3	0	1.1	1.1	43.5	0	44.6	53.7	0.6	0	54.2	
Lights	3	1	0	4	4	139	0	143	174	2	0	176	323
% Lights	100	100	0	100	100	90.3	0	90.5	91.6	100	0	91.7	91.2
Mediums	0	0	0	0	0	14	0	14	13	0	0	13	27
% Mediums	0	0	0	0	0	9.1	0	8.9	6.8	0	0	6.8	7.6
Articulated Trucks	0	0	0	0	0	1	0	1	3	0	0	3	4
% Articulated Trucks	0	0	0	0	0	0.6	0	0.6	1.6	0	0	1.6	1.1
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0



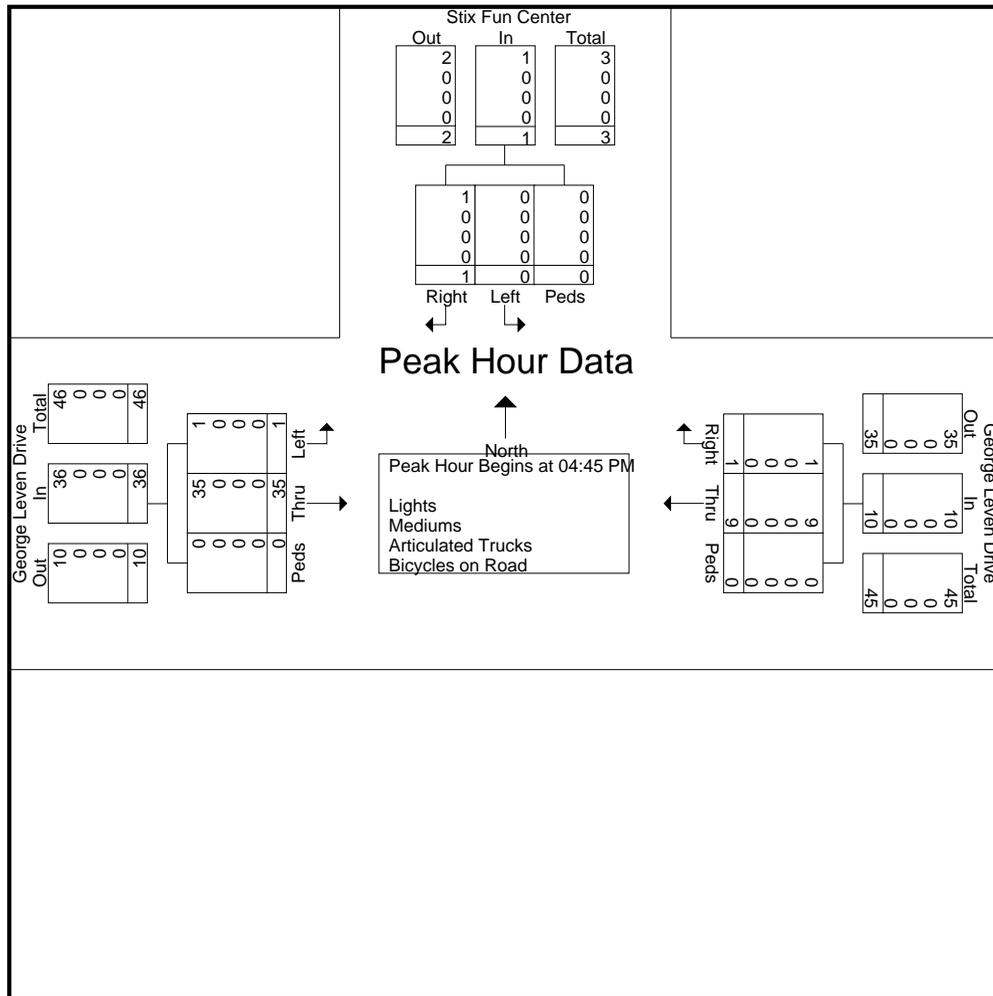
# MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280  
Marlborough, MA, 01752

E/W: George Leven Drive  
SB: Stix Fun Center  
North Attleborough, MA

File Name : 1188 George\_Leven\_Drive\_at\_Site\_08-07-2024  
Site Code : 1188  
Start Date : 8/7/2024  
Page No : 3

Start Time	Stix Fun Center From North				George Leven Drive From East				George Leven Drive From West				Int. Total
	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 04:45 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	0	0	0	0	1	2	0	3	13	0	0	13	16
05:00 PM	0	0	0	0	0	1	0	1	9	0	0	9	10
05:15 PM	0	0	0	0	0	4	0	4	9	0	0	9	13
05:30 PM	1	0	0	1	0	2	0	2	4	1	0	5	8
Total Volume	1	0	0	1	1	9	0	10	35	1	0	36	47
% App. Total	100	0	0		10	90	0		97.2	2.8	0		
PHF	.250	.000	.000	.250	.250	.563	.000	.625	.673	.250	.000	.692	.734
Lights	1	0	0	1	1	9	0	10	35	1	0	36	47
% Lights	100	0	0	100	100	100	0	100	100	100	0	100	100
Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0
% Mediums	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
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0



# MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280  
Marlborough, MA, 01752

N/S: Kelley Boulevard  
EB: George Leven Drive  
North Attleborough, MA

File Name : 1188\_George\_Leven\_Dr\_at\_Kelley\_Blvd\_08-07-2024  
Site Code : 1188  
Start Date : 8/7/2024  
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Road

Start Time	Kelley Blvd From North				Kelley Blvd From South				George Leven Dr. From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
07:00 AM	7	58	0	65	114	7	0	121	3	13	0	16	202
07:15 AM	9	64	0	73	139	8	0	147	4	7	0	11	231
07:30 AM	17	86	0	103	160	12	0	172	4	15	0	19	294
07:45 AM	17	97	0	114	165	11	0	176	6	13	0	19	309
Total	50	305	0	355	578	38	0	616	17	48	0	65	1036
08:00 AM	4	102	0	106	149	14	0	163	5	12	0	17	286
08:15 AM	10	100	0	110	157	6	1	164	5	12	0	17	291
08:30 AM	12	122	0	134	142	5	0	147	7	3	0	10	291
08:45 AM	10	109	0	119	169	11	0	180	5	14	1	20	319
Total	36	433	0	469	617	36	1	654	22	41	1	64	1187
04:00 PM	8	198	0	206	139	8	0	147	16	14	2	32	385
04:15 PM	11	183	0	194	151	3	0	154	18	11	0	29	377
04:30 PM	7	185	0	192	140	3	0	143	10	7	0	17	352
04:45 PM	9	211	0	220	124	7	0	131	14	8	0	22	373
Total	35	777	0	812	554	21	0	575	58	40	2	100	1487
05:00 PM	5	214	0	219	119	4	0	123	15	4	1	20	362
05:15 PM	6	215	0	221	147	4	0	151	8	7	0	15	387
05:30 PM	3	217	0	220	134	4	0	138	6	5	1	12	370
05:45 PM	4	193	0	197	132	6	0	138	11	7	3	21	356
Total	18	839	0	857	532	18	0	550	40	23	5	68	1475
Grand Total	139	2354	0	2493	2281	113	1	2395	137	152	8	297	5185
Apprch %	5.6	94.4	0		95.2	4.7	0		46.1	51.2	2.7		
Total %	2.7	45.4	0	48.1	44	2.2	0	46.2	2.6	2.9	0.2	5.7	
Lights	132	2280	0	2412	2206	109	1	2316	132	149	8	289	5017
% Lights	95	96.9	0	96.8	96.7	96.5	100	96.7	96.4	98	100	97.3	96.8
Mediums	7	58	0	65	62	3	0	65	3	3	0	6	136
% Mediums	5	2.5	0	2.6	2.7	2.7	0	2.7	2.2	2	0	2	2.6
Articulated Trucks	0	16	0	16	10	1	0	11	2	0	0	2	29
% Articulated Trucks	0	0.7	0	0.6	0.4	0.9	0	0.5	1.5	0	0	0.7	0.6
Bicycles on Road	0	0	0	0	3	0	0	3	0	0	0	0	3
% Bicycles on Road	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0.1

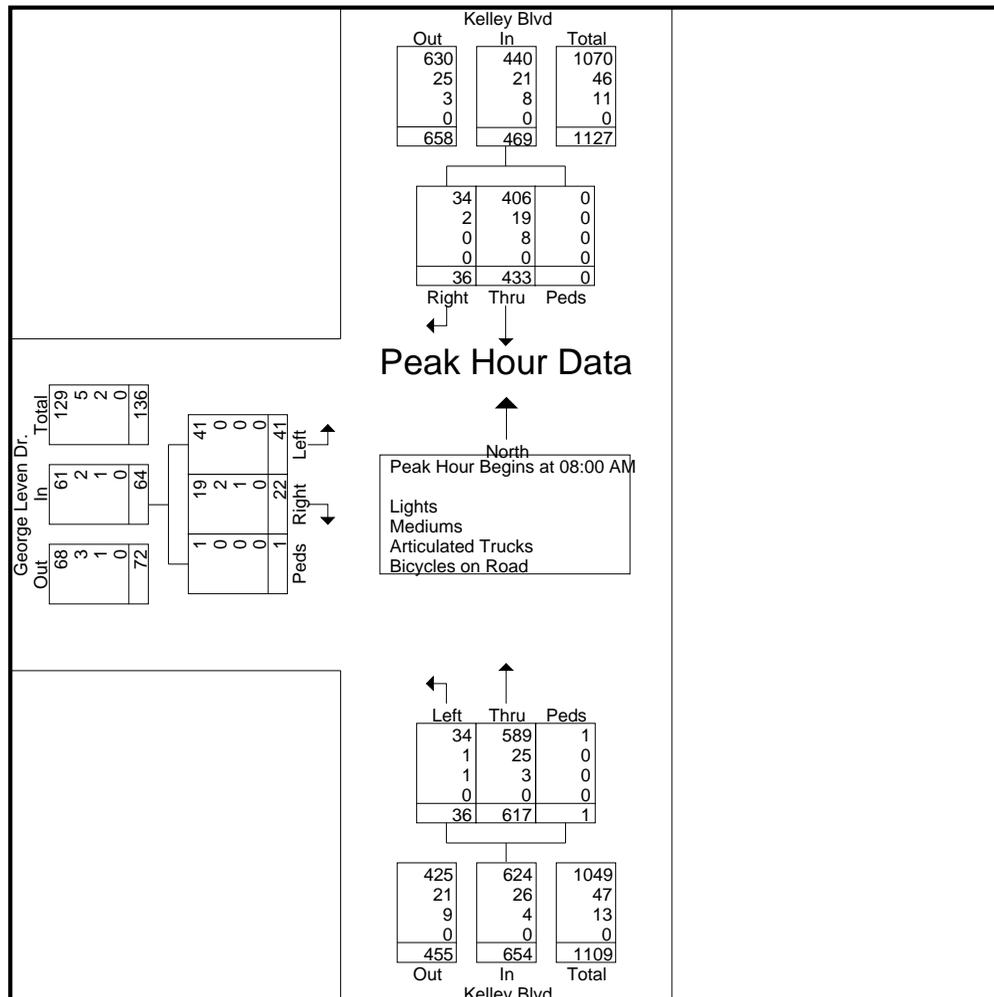
# MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280  
Marlborough, MA, 01752

N/S: Kelley Boulevard  
EB: George Leven Drive  
North Attleborough, MA

File Name : 1188\_George\_Leven\_Dr\_at\_Kelley\_Blvd\_08-07-2024  
Site Code : 1188  
Start Date : 8/7/2024  
Page No : 2

Start Time	Kelley Blvd From North				Kelley Blvd From South				George Leven Dr. From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	4	102	0	106	149	14	0	163	5	12	0	17	286
08:15 AM	10	100	0	110	157	6	1	164	5	12	0	17	291
08:30 AM	12	122	0	134	142	5	0	147	7	3	0	10	291
08:45 AM	10	109	0	119	169	11	0	180	5	14	1	20	319
Total Volume	36	433	0	469	617	36	1	654	22	41	1	64	1187
% App. Total	7.7	92.3	0		94.3	5.5	0.2		34.4	64.1	1.6		
PHF	.750	.887	.000	.875	.913	.643	.250	.908	.786	.732	.250	.800	.930
Lights	34	406	0	440	589	34	1	624	19	41	1	61	1125
% Lights	94.4	93.8	0	93.8	95.5	94.4	100	95.4	86.4	100	100	95.3	94.8
Mediums	2	19	0	21	25	1	0	26	2	0	0	2	49
% Mediums	5.6	4.4	0	4.5	4.1	2.8	0	4.0	9.1	0	0	3.1	4.1
Articulated Trucks	0	8	0	8	3	1	0	4	1	0	0	1	13
% Articulated Trucks	0	1.8	0	1.7	0.5	2.8	0	0.6	4.5	0	0	1.6	1.1
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0



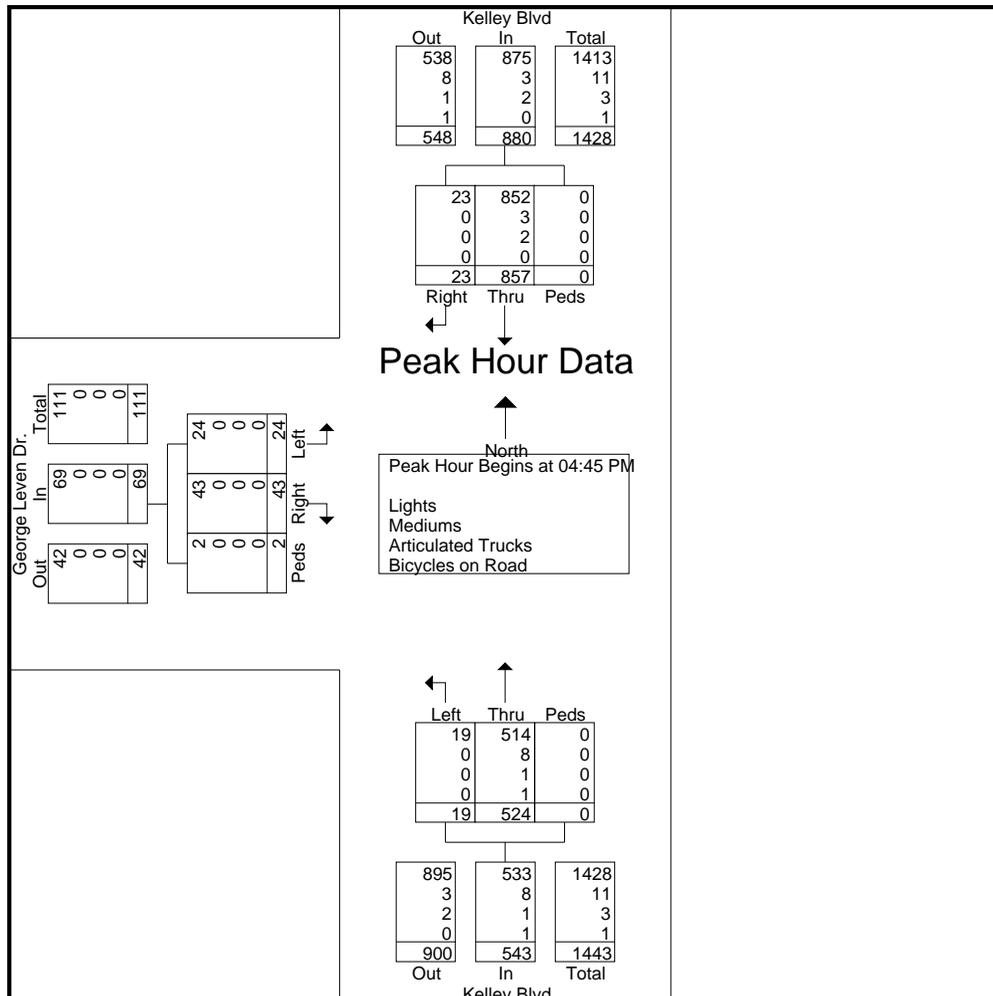
# MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280  
Marlborough, MA, 01752

N/S: Kelley Boulevard  
EB: George Leven Drive  
North Attleborough, MA

File Name : 1188\_George\_Leven\_Dr\_at\_Kelley\_Blvd\_08-07-2024  
Site Code : 1188  
Start Date : 8/7/2024  
Page No : 3

Start Time	Kelley Blvd From North				Kelley Blvd From South				George Leven Dr. From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	9	211	0	220	124	7	0	131	14	8	0	22	373
05:00 PM	5	214	0	219	119	4	0	123	15	4	1	20	362
05:15 PM	6	215	0	221	147	4	0	151	8	7	0	15	387
05:30 PM	3	217	0	220	134	4	0	138	6	5	1	12	370
Total Volume	23	857	0	880	524	19	0	543	43	24	2	69	1492
% App. Total	2.6	97.4	0		96.5	3.5	0		62.3	34.8	2.9		
PHF	.639	.987	.000	.995	.891	.679	.000	.899	.717	.750	.500	.784	.964
Lights	23	852	0	875	514	19	0	533	43	24	2	69	1477
% Lights	100	99.4	0	99.4	98.1	100	0	98.2	100	100	100	100	99.0
Mediums	0	3	0	3	8	0	0	8	0	0	0	0	11
% Mediums	0	0.4	0	0.3	1.5	0	0	1.5	0	0	0	0	0.7
Articulated Trucks	0	2	0	2	1	0	0	1	0	0	0	0	3
% Articulated Trucks	0	0.2	0	0.2	0.2	0	0	0.2	0	0	0	0	0.2
Bicycles on Road	0	0	0	0	1	0	0	1	0	0	0	0	1
% Bicycles on Road	0	0	0	0	0.2	0	0	0.2	0	0	0	0	0.1



# MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280  
Marlborough, MA, 01752

E/W: Messenger Street  
N/S: Taunton Street  
Plainville, MA

File Name : 1188\_Messenger\_St\_at\_Taunton\_St\_08-07-2024  
Site Code : 1188  
Start Date : 8/7/2024  
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Road

Start Time	Taunton St. From North					Messenger St. From East					Taunton St. From South					Messenger St. From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	5	46	9	0	60	24	12	18	0	54	23	112	11	0	146	5	54	18	0	77	337
07:15 AM	6	37	6	0	49	15	25	32	0	72	28	115	20	1	164	11	66	22	0	99	384
07:30 AM	5	64	5	0	74	26	29	28	0	83	27	108	27	0	162	13	80	28	0	121	440
07:45 AM	14	58	14	0	86	23	40	40	0	103	26	113	24	1	164	15	82	24	0	121	474
<b>Total</b>	<b>30</b>	<b>205</b>	<b>34</b>	<b>0</b>	<b>269</b>	<b>88</b>	<b>106</b>	<b>118</b>	<b>0</b>	<b>312</b>	<b>104</b>	<b>448</b>	<b>82</b>	<b>2</b>	<b>636</b>	<b>44</b>	<b>282</b>	<b>92</b>	<b>0</b>	<b>418</b>	<b>1635</b>
08:00 AM	19	71	17	0	107	20	25	44	0	89	30	111	35	1	177	22	66	18	0	106	479
08:15 AM	11	66	26	0	103	18	34	43	0	95	48	108	26	0	182	21	85	35	0	141	521
08:30 AM	9	83	16	0	108	38	57	54	0	149	36	107	21	0	164	27	68	22	0	117	538
08:45 AM	18	70	12	0	100	16	58	41	0	115	40	100	47	0	187	19	64	35	0	118	520
<b>Total</b>	<b>57</b>	<b>290</b>	<b>71</b>	<b>0</b>	<b>418</b>	<b>92</b>	<b>174</b>	<b>182</b>	<b>0</b>	<b>448</b>	<b>154</b>	<b>426</b>	<b>129</b>	<b>1</b>	<b>710</b>	<b>89</b>	<b>283</b>	<b>110</b>	<b>0</b>	<b>482</b>	<b>2058</b>
04:00 PM	14	101	32	0	147	20	101	53	0	174	40	87	44	0	171	48	45	38	0	131	623
04:15 PM	18	114	24	0	156	25	81	66	0	172	50	97	39	0	186	27	57	32	0	116	630
04:30 PM	20	113	27	1	161	23	95	66	0	184	46	71	41	0	158	38	53	33	0	124	627
04:45 PM	18	127	18	0	163	15	86	58	1	160	40	93	36	0	169	44	44	29	0	117	609
<b>Total</b>	<b>70</b>	<b>455</b>	<b>101</b>	<b>1</b>	<b>627</b>	<b>83</b>	<b>363</b>	<b>243</b>	<b>1</b>	<b>690</b>	<b>176</b>	<b>348</b>	<b>160</b>	<b>0</b>	<b>684</b>	<b>157</b>	<b>199</b>	<b>132</b>	<b>0</b>	<b>488</b>	<b>2489</b>
05:00 PM	15	121	22	2	160	19	99	53	1	172	40	77	35	0	152	40	57	33	0	130	614
05:15 PM	20	112	24	2	158	28	123	70	0	221	35	92	37	0	164	42	54	14	2	112	655
05:30 PM	15	132	20	1	168	24	96	64	0	184	36	91	38	0	165	44	40	27	0	111	628
05:45 PM	13	123	18	0	154	18	82	65	0	165	44	82	42	0	168	44	54	37	0	135	622
<b>Total</b>	<b>63</b>	<b>488</b>	<b>84</b>	<b>5</b>	<b>640</b>	<b>89</b>	<b>400</b>	<b>252</b>	<b>1</b>	<b>742</b>	<b>155</b>	<b>342</b>	<b>152</b>	<b>0</b>	<b>649</b>	<b>170</b>	<b>205</b>	<b>111</b>	<b>2</b>	<b>488</b>	<b>2519</b>
<b>Grand Total</b>	<b>220</b>	<b>1438</b>	<b>290</b>	<b>6</b>	<b>1954</b>	<b>352</b>	<b>1043</b>	<b>795</b>	<b>2</b>	<b>2192</b>	<b>589</b>	<b>1564</b>	<b>523</b>	<b>3</b>	<b>2679</b>	<b>460</b>	<b>969</b>	<b>445</b>	<b>2</b>	<b>1876</b>	<b>8701</b>
Apprch %	11.3	73.6	14.8	0.3		16.1	47.6	36.3	0.1		22	58.4	19.5	0.1		24.5	51.7	23.7	0.1		
<b>Total %</b>	<b>2.5</b>	<b>16.5</b>	<b>3.3</b>	<b>0.1</b>	<b>22.5</b>	<b>4</b>	<b>12</b>	<b>9.1</b>	<b>0</b>	<b>25.2</b>	<b>6.8</b>	<b>18</b>	<b>6</b>	<b>0</b>	<b>30.8</b>	<b>5.3</b>	<b>11.1</b>	<b>5.1</b>	<b>0</b>	<b>21.6</b>	
<b>Lights</b>	<b>214</b>	<b>1402</b>	<b>287</b>	<b>6</b>	<b>1909</b>	<b>350</b>	<b>1034</b>	<b>769</b>	<b>2</b>	<b>2155</b>	<b>570</b>	<b>1529</b>	<b>507</b>	<b>3</b>	<b>2609</b>	<b>446</b>	<b>961</b>	<b>434</b>	<b>2</b>	<b>1843</b>	<b>8516</b>
% Lights	97.3	97.5	99	100	97.7	99.4	99.1	96.7	100	98.3	96.8	97.8	96.9	100	97.4	97	99.2	97.5	100	98.2	97.9
<b>Mediums</b>	<b>5</b>	<b>29</b>	<b>3</b>	<b>0</b>	<b>37</b>	<b>2</b>	<b>6</b>	<b>23</b>	<b>0</b>	<b>31</b>	<b>18</b>	<b>29</b>	<b>15</b>	<b>0</b>	<b>62</b>	<b>11</b>	<b>7</b>	<b>9</b>	<b>0</b>	<b>27</b>	<b>157</b>
% Mediums	2.3	2	1	0	1.9	0.6	0.6	2.9	0	1.4	3.1	1.9	2.9	0	2.3	2.4	0.7	2	0	1.4	1.8
Articulated Trucks																					
% Articulated Trucks	0.5	0.5	0	0	0.4	0	0.2	0.4	0	0.2	0.2	0.4	0.2	0	0.3	0.7	0.1	0.4	0	0.3	0.3
Bicycles on Road	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% Bicycles on Road	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

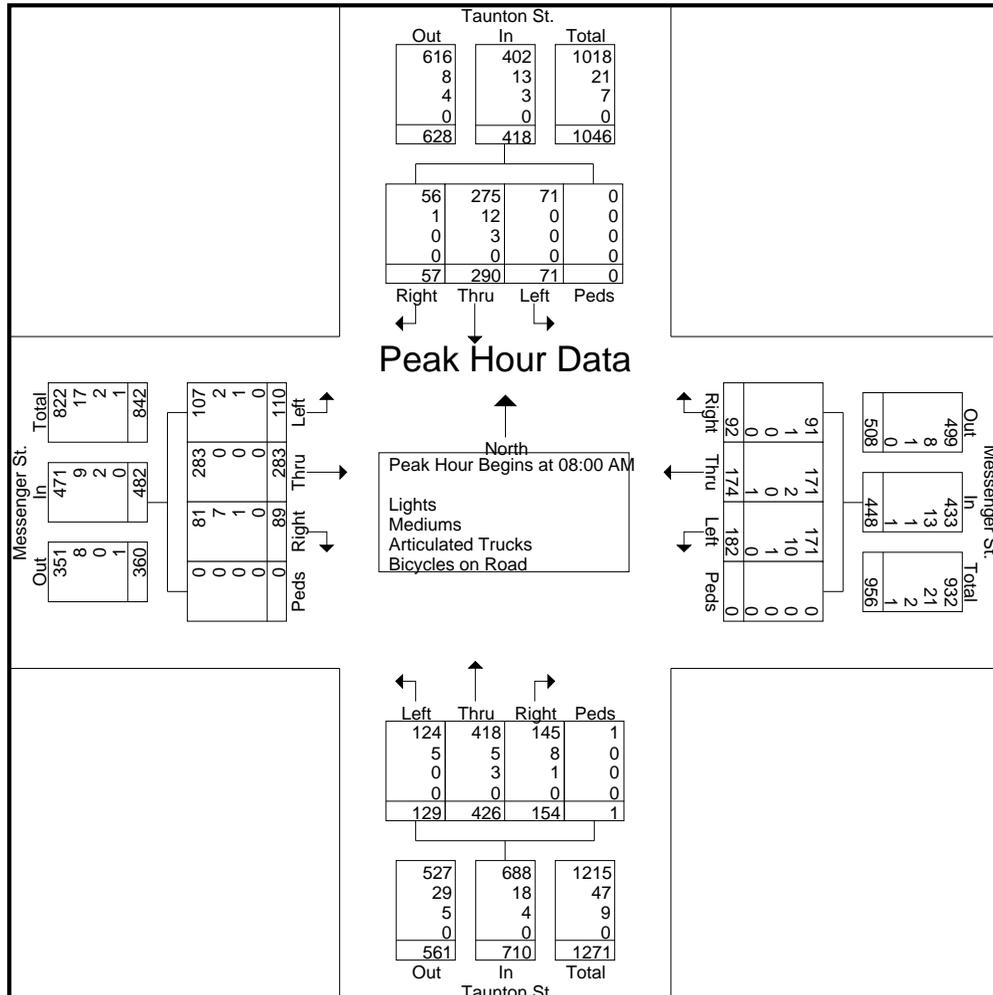
# MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280  
Marlborough, MA, 01752

E/W: Messenger Street  
N/S: Taunton Street  
Plainville, MA

File Name : 1188\_Messenger\_St\_at\_Taunton\_St\_08-07-2024  
Site Code : 1188  
Start Date : 8/7/2024  
Page No : 2

Start Time	Taunton St. From North					Messenger St. From East					Taunton St. From South					Messenger St. From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	19	71	17	0	107	20	25	44	0	89	30	111	35	1	177	22	66	18	0	106	479
08:15 AM	11	66	26	0	103	18	34	43	0	95	48	108	26	0	182	21	85	35	0	141	521
08:30 AM	9	83	16	0	108	38	57	54	0	149	36	107	21	0	164	27	68	22	0	117	538
08:45 AM	18	70	12	0	100	16	58	41	0	115	40	100	47	0	187	19	64	35	0	118	520
Total Volume	57	290	71	0	418	92	174	182	0	448	154	426	129	1	710	89	283	110	0	482	2058
% App. Total	13.6	69.4	17	0		20.5	38.8	40.6	0		21.7	60	18.2	0.1		18.5	58.7	22.8	0		
PHF	.750	.873	.683	.000	.968	.605	.750	.843	.000	.752	.802	.959	.686	.250	.949	.824	.832	.786	.000	.855	.956
Lights	56	275	71	0	402	91	171	171	0	433	145	418	124	1	688	81	283	107	0	471	1994
% Lights	98.2	94.8	100	0	96.2	98.9	98.3	94.0	0	96.7	94.2	98.1	96.1	100	96.9	91.0	100	97.3	0	97.7	96.9
Mediums	1	12	0	0	13	1	2	10	0	13	8	5	5	0	18	7	0	2	0	9	53
% Mediums	1.8	4.1	0	0	3.1	1.1	1.1	5.5	0	2.9	5.2	1.2	3.9	0	2.5	7.9	0	1.8	0	1.9	2.6
Articulated Trucks	0	3	0	0	3	0	0	1	0	1	1	3	0	0	4	1	0	1	0	2	10
% Articulated Trucks	0	1.0	0	0	0.7	0	0	0.5	0	0.2	0.6	0.7	0	0	0.6	1.1	0	0.9	0	0.4	0.5
Bicycles on Road	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% Bicycles on Road	0	0	0	0	0	0	0.6	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0.0



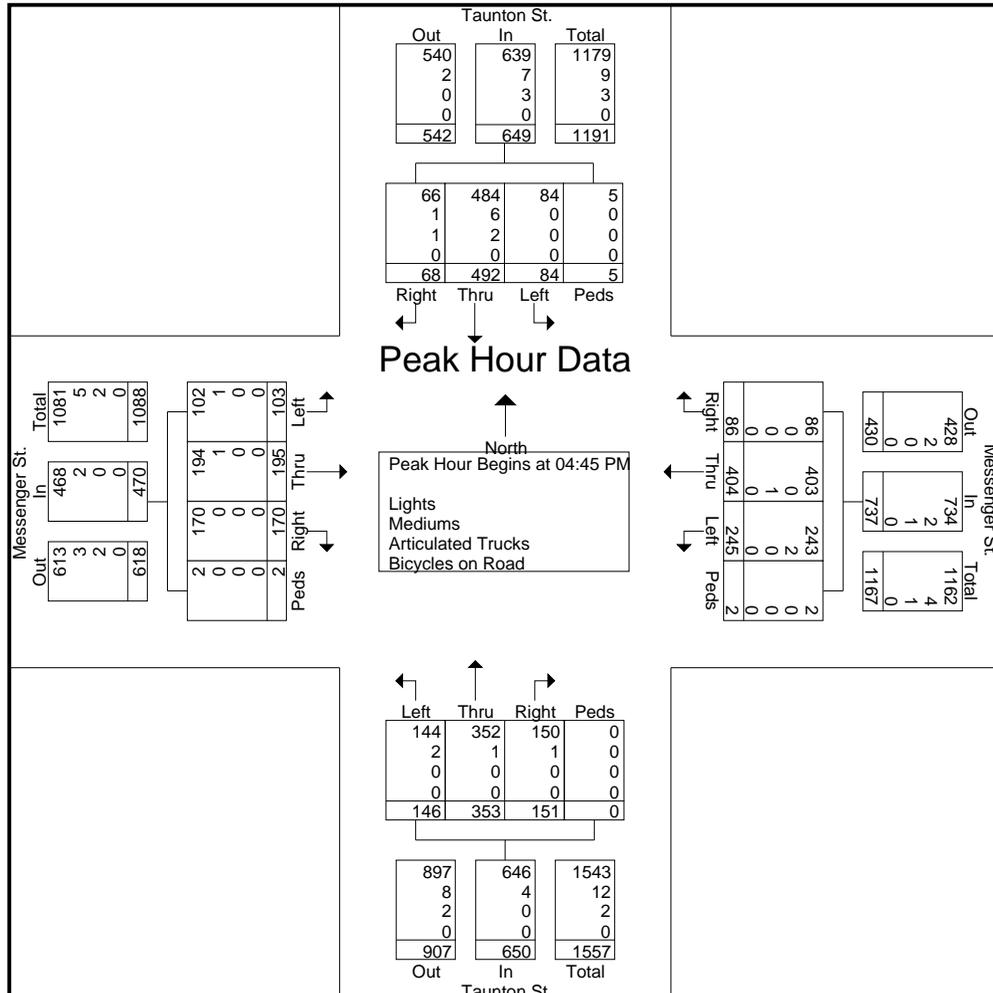
# MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280  
Marlborough, MA, 01752

E/W: Messenger Street  
N/S: Taunton Street  
Plainville, MA

File Name : 1188\_Messenger\_St\_at\_Taunton\_St\_08-07-2024  
Site Code : 1188  
Start Date : 8/7/2024  
Page No : 3

Start Time	Taunton St. From North					Messenger St. From East					Taunton St. From South					Messenger St. From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	18	127	18	0	163	15	86	58	1	160	40	93	36	0	169	44	44	29	0	117	609
05:00 PM	15	121	22	2	160	19	99	53	1	172	40	77	35	0	152	40	57	33	0	130	614
05:15 PM	20	112	24	2	158	28	123	70	0	221	35	92	37	0	164	42	54	14	2	112	655
05:30 PM	15	132	20	1	168	24	96	64	0	184	36	91	38	0	165	44	40	27	0	111	628
Total Volume	68	492	84	5	649	86	404	245	2	737	151	353	146	0	650	170	195	103	2	470	2506
% App. Total	10.5	75.8	12.9	0.8		11.7	54.8	33.2	0.3		23.2	54.3	22.5	0		36.2	41.5	21.9	0.4		
PHF	.850	.932	.875	.625	.966	.768	.821	.875	.500	.834	.944	.949	.961	.000	.962	.966	.855	.780	.250	.904	.956
Lights	66	484	84	5	639	86	403	243	2	734	150	352	144	0	646	170	194	102	2	468	2487
% Lights	97.1	98.4	100	100	98.5	100	99.8	99.2	100	99.6	99.3	99.7	98.6	0	99.4	100	99.5	99.0	100	99.6	99.2
Mediums	1	6	0	0	7	0	0	2	0	2	1	1	2	0	4	0	1	1	0	2	15
% Mediums	1.5	1.2	0	0	1.1	0	0	0.8	0	0.3	0.7	0.3	1.4	0	0.6	0	0.5	1.0	0	0.4	0.6
Articulated Trucks	1	2	0	0	3	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	4
% Articulated Trucks	1.5	0.4	0	0	0.5	0	0.2	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0.2
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



# MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280  
Marlborough, MA, 01752

N/S: Route 152  
WB: Plain Street  
North Attleborough, MA

File Name : 1188\_Plain\_St\_at-Taunton\_St\_08-07-2024  
Site Code : 1188  
Start Date : 8/7/2024  
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Road

Start Time	Taunton St. From North				Plain Street From East				Kelley Blvd From South				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
07:00 AM	62	14	0	76	29	5	0	34	4	124	0	128	238
07:15 AM	82	17	0	99	39	2	1	42	5	151	0	156	297
07:30 AM	94	26	0	120	39	8	0	47	6	161	0	167	334
07:45 AM	109	30	0	139	41	9	0	50	9	157	0	166	355
Total	347	87	0	434	148	24	1	173	24	593	0	617	1224
08:00 AM	115	28	0	143	42	5	0	47	8	143	0	151	341
08:15 AM	105	25	0	130	54	8	1	63	9	156	0	165	358
08:30 AM	147	29	0	176	41	5	0	46	6	139	0	145	367
08:45 AM	124	32	0	156	44	5	0	49	11	169	0	180	385
Total	491	114	0	605	181	23	1	205	34	607	0	641	1451
04:00 PM	195	42	0	237	38	6	3	47	12	149	0	161	445
04:15 PM	191	41	0	232	43	5	2	50	7	154	0	161	443
04:30 PM	188	42	0	230	28	4	0	32	6	145	0	151	413
04:45 PM	229	46	0	275	50	6	2	58	11	136	0	147	480
Total	803	171	0	974	159	21	7	187	36	584	0	620	1781
05:00 PM	214	40	0	254	32	8	1	41	9	123	0	132	427
05:15 PM	216	38	0	254	39	6	0	45	13	149	0	162	461
05:30 PM	216	28	0	244	32	6	0	38	19	123	0	142	424
05:45 PM	198	50	0	248	32	4	0	36	11	129	0	140	424
Total	844	156	0	1000	135	24	1	160	52	524	0	576	1736
Grand Total	2485	528	0	3013	623	92	10	725	146	2308	0	2454	6192
Apprch %	82.5	17.5	0		85.9	12.7	1.4		5.9	94.1	0		
Total %	40.1	8.5	0	48.7	10.1	1.5	0.2	11.7	2.4	37.3	0	39.6	
Lights	2439	503	0	2942	597	69	10	676	125	2256	0	2381	5999
% Lights	98.1	95.3	0	97.6	95.8	75	100	93.2	85.6	97.7	0	97	96.9
Mediums	38	15	0	53	18	18	0	36	10	43	0	53	142
% Mediums	1.5	2.8	0	1.8	2.9	19.6	0	5	6.8	1.9	0	2.2	2.3
Articulated Trucks	8	10	0	18	8	5	0	13	11	7	0	18	49
% Articulated Trucks	0.3	1.9	0	0.6	1.3	5.4	0	1.8	7.5	0.3	0	0.7	0.8
Bicycles on Road	0	0	0	0	0	0	0	0	0	2	0	2	2
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0.1	0	0.1	0

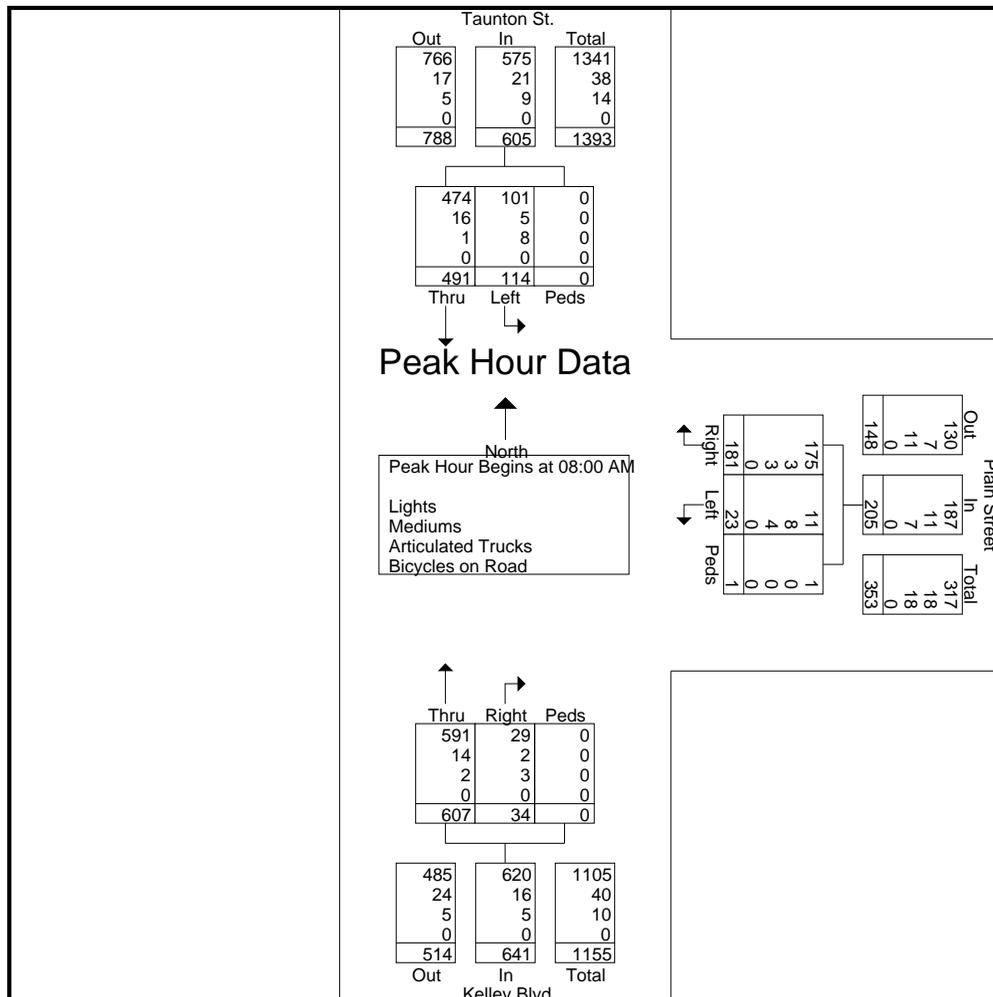
# MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280  
Marlborough, MA, 01752

N/S: Route 152  
WB: Plain Street  
North Attleborough, MA

File Name : 1188\_Plain\_St\_at-Taunton\_St\_08-07-2024  
Site Code : 1188  
Start Date : 8/7/2024  
Page No : 2

Start Time	Taunton St. From North				Plain Street From East				Kelley Blvd From South				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	115	28	0	143	42	5	0	47	8	143	0	151	341
08:15 AM	105	25	0	130	<b>54</b>	<b>8</b>	<b>1</b>	<b>63</b>	9	156	0	165	358
08:30 AM	<b>147</b>	29	0	<b>176</b>	41	5	0	46	6	139	0	145	367
08:45 AM	124	<b>32</b>	0	156	44	5	0	49	<b>11</b>	<b>169</b>	0	<b>180</b>	<b>385</b>
Total Volume	491	114	0	605	181	23	1	205	34	607	0	641	1451
% App. Total	81.2	18.8	0		88.3	11.2	0.5		5.3	94.7	0		
PHF	.835	.891	.000	.859	.838	.719	.250	.813	.773	.898	.000	.890	.942
Lights	474	101	0	575	175	11	1	187	29	591	0	620	1382
% Lights	96.5	88.6	0	95.0	96.7	47.8	100	91.2	85.3	97.4	0	96.7	95.2
Mediums	16	5	0	21	3	8	0	11	2	14	0	16	48
% Mediums	3.3	4.4	0	3.5	1.7	34.8	0	5.4	5.9	2.3	0	2.5	3.3
Articulated Trucks	1	8	0	9	3	4	0	7	3	2	0	5	21
% Articulated Trucks	0.2	7.0	0	1.5	1.7	17.4	0	3.4	8.8	0.3	0	0.8	1.4
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0



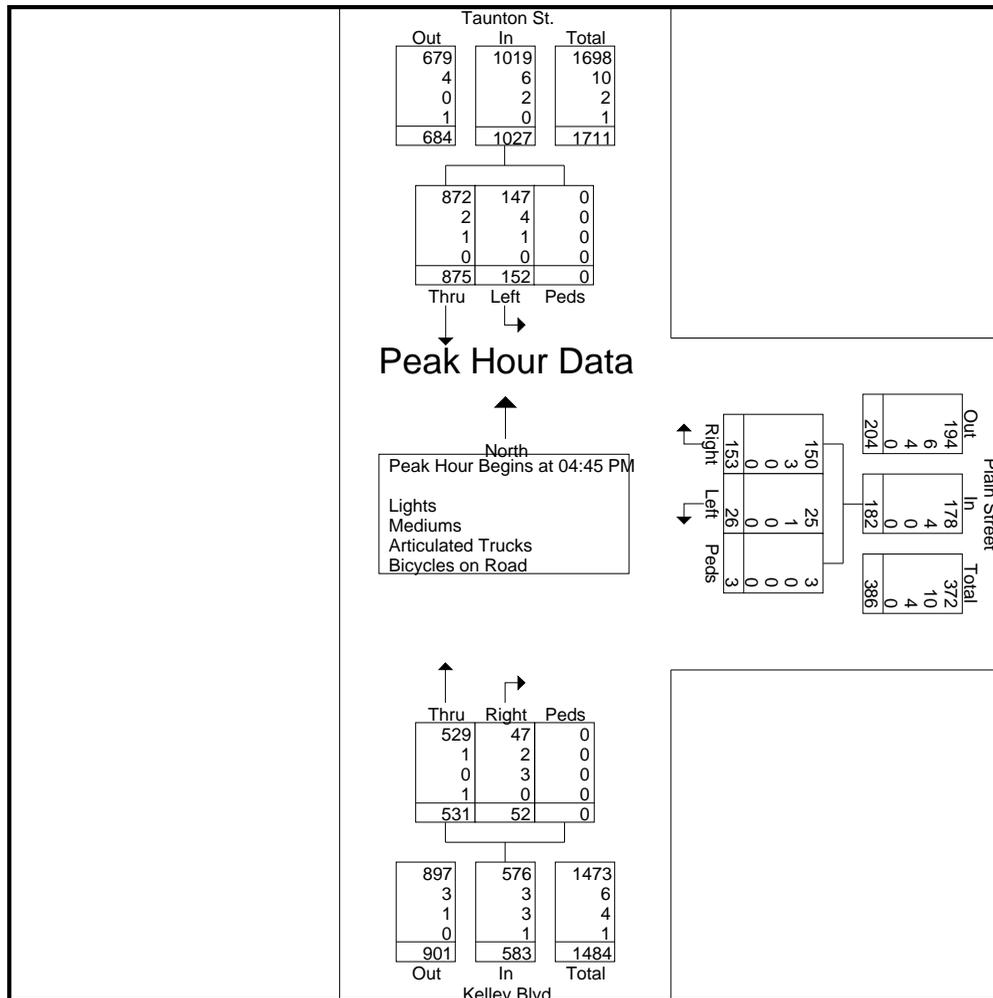
# MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280  
Marlborough, MA, 01752

N/S: Route 152  
WB: Plain Street  
North Attleborough, MA

File Name : 1188\_Plain\_St\_at-Taunton\_St\_08-07-2024  
Site Code : 1188  
Start Date : 8/7/2024  
Page No : 3

Start Time	Taunton St. From North				Plain Street From East				Kelley Blvd From South				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	229	46	0	275	50	6	2	58	11	136	0	147	480
05:00 PM	214	40	0	254	32	8	1	41	9	123	0	132	427
05:15 PM	216	38	0	254	39	6	0	45	13	149	0	162	461
05:30 PM	216	28	0	244	32	6	0	38	19	123	0	142	424
Total Volume	875	152	0	1027	153	26	3	182	52	531	0	583	1792
% App. Total	85.2	14.8	0		84.1	14.3	1.6		8.9	91.1	0		
PHF	.955	.826	.000	.934	.765	.813	.375	.784	.684	.891	.000	.900	.933
Lights	872	147	0	1019	150	25	3	178	47	529	0	576	1773
% Lights	99.7	96.7	0	99.2	98.0	96.2	100	97.8	90.4	99.6	0	98.8	98.9
Mediums	2	4	0	6	3	1	0	4	2	1	0	3	13
% Mediums	0.2	2.6	0	0.6	2.0	3.8	0	2.2	3.8	0.2	0	0.5	0.7
Articulated Trucks	1	1	0	2	0	0	0	0	3	0	0	3	5
% Articulated Trucks	0.1	0.7	0	0.2	0	0	0	0	5.8	0	0	0.5	0.3
Bicycles on Road	0	0	0	0	0	0	0	0	0	1	0	1	1
% Bicycles on Road	0	0	0	0	0	0	0	0	0.2	0	0	0.2	0.1



# MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280  
Marlborough, MA, 01752

N/S: Kelley Boulevard  
EB: Strip Plaza Road  
North Attleborough, MA

File Name : 1188\_Taunton\_Street\_at\_Strip\_Mall\_Parking\_Lot\_08-07-2024  
Site Code : 1188  
Start Date : 8/7/2024  
Page No : 1

### Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Road

Start Time	Kelley Boulevard From North				Kelley Boulevard From South				Strip Plaza Road From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
07:00 AM	0	66	0	66	124	0	0	124	0	0	1	1	191
07:15 AM	1	84	0	85	155	1	0	156	0	0	0	0	241
07:30 AM	0	99	0	99	166	0	0	166	2	0	0	2	267
07:45 AM	0	116	0	116	165	0	0	165	0	0	0	0	281
<b>Total</b>	<b>1</b>	<b>365</b>	<b>0</b>	<b>366</b>	<b>610</b>	<b>1</b>	<b>0</b>	<b>611</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>980</b>
08:00 AM	1	112	0	113	154	0	0	154	0	0	0	0	267
08:15 AM	0	109	0	109	164	1	0	165	0	0	0	0	274
08:30 AM	3	142	0	145	144	2	0	146	0	0	0	0	291
08:45 AM	4	104	0	108	180	2	0	182	1	0	1	2	292
<b>Total</b>	<b>8</b>	<b>467</b>	<b>0</b>	<b>475</b>	<b>642</b>	<b>5</b>	<b>0</b>	<b>647</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>1124</b>
04:00 PM	4	199	0	203	151	2	0	153	5	8	0	13	369
04:15 PM	6	188	0	194	154	1	0	155	6	2	0	8	357
04:30 PM	3	192	0	195	151	2	0	153	2	2	0	4	352
04:45 PM	7	227	0	234	139	5	0	144	3	3	0	6	384
<b>Total</b>	<b>20</b>	<b>806</b>	<b>0</b>	<b>826</b>	<b>595</b>	<b>10</b>	<b>0</b>	<b>605</b>	<b>16</b>	<b>15</b>	<b>0</b>	<b>31</b>	<b>1462</b>
05:00 PM	6	211	0	217	126	2	0	128	6	4	1	11	356
05:15 PM	4	219	0	223	154	3	0	157	6	7	0	13	393
05:30 PM	3	218	0	221	137	3	0	140	2	4	0	6	367
05:45 PM	8	193	0	201	134	3	0	137	5	4	1	10	348
<b>Total</b>	<b>21</b>	<b>841</b>	<b>0</b>	<b>862</b>	<b>551</b>	<b>11</b>	<b>0</b>	<b>562</b>	<b>19</b>	<b>19</b>	<b>2</b>	<b>40</b>	<b>1464</b>
<b>Grand Total</b>	<b>50</b>	<b>2479</b>	<b>0</b>	<b>2529</b>	<b>2398</b>	<b>27</b>	<b>0</b>	<b>2425</b>	<b>38</b>	<b>34</b>	<b>4</b>	<b>76</b>	<b>5030</b>
Apprch %	2	98	0		98.9	1.1	0		50	44.7	5.3		
Total %	1	49.3	0	50.3	47.7	0.5	0	48.2	0.8	0.7	0.1	1.5	
Lights	50	2406	0	2456	2327	26	0	2353	37	33	4	74	4883
% Lights	100	97.1	0	97.1	97	96.3	0	97	97.4	97.1	100	97.4	97.1
Mediums	0	63	0	63	59	1	0	60	0	0	0	0	123
% Mediums	0	2.5	0	2.5	2.5	3.7	0	2.5	0	0	0	0	2.4
Articulated Trucks	0	10	0	10	10	0	0	10	1	1	0	2	22
% Articulated Trucks	0	0.4	0	0.4	0.4	0	0	0.4	2.6	2.9	0	2.6	0.4
Bicycles on Road	0	0	0	0	2	0	0	2	0	0	0	0	2
% Bicycles on Road	0	0	0	0	0.1	0	0	0.1	0	0	0	0	0

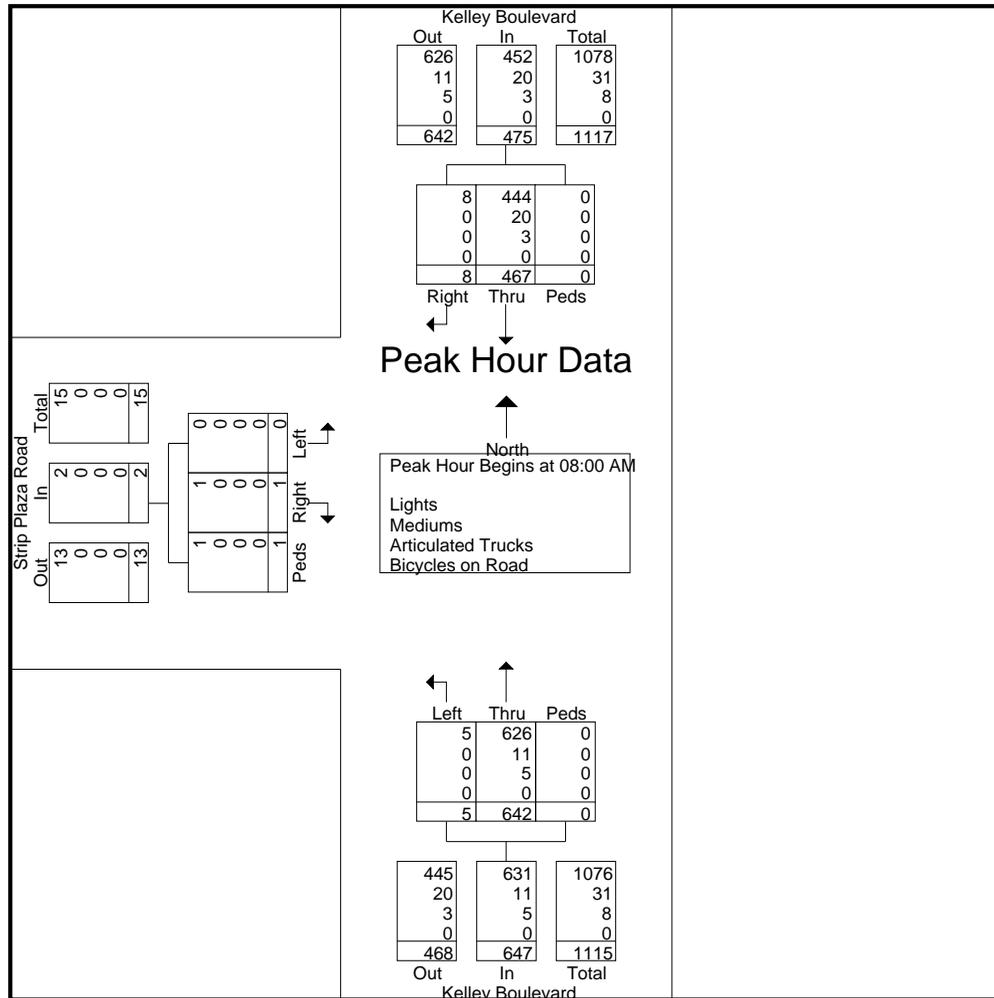
# MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280  
Marlborough, MA, 01752

N/S: Kelley Boulevard  
EB: Strip Plaza Road  
North Attleborough, MA

File Name : 1188\_Taunton\_Street\_at\_Strip\_Mall\_Parking\_Lot\_08-07-2024  
Site Code : 1188  
Start Date : 8/7/2024  
Page No : 2

Start Time	Kelley Boulevard From North				Kelley Boulevard From South				Strip Plaza Road From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	1	112	0	113	154	0	0	154	0	0	0	0	267
08:15 AM	0	109	0	109	164	1	0	165	0	0	0	0	274
08:30 AM	3	<b>142</b>	0	<b>145</b>	144	<b>2</b>	0	146	0	0	0	0	291
08:45 AM	<b>4</b>	104	0	108	<b>180</b>	2	0	<b>182</b>	<b>1</b>	0	<b>1</b>	<b>2</b>	<b>292</b>
Total Volume	8	467	0	475	642	5	0	647	1	0	1	2	1124
% App. Total	1.7	98.3	0		99.2	0.8	0		50	0	50		
PHF	.500	.822	.000	.819	.892	.625	.000	.889	.250	.000	.250	.250	.962
Lights	8	444	0	452	626	5	0	631	1	0	1	2	1085
% Lights	100	95.1	0	95.2	97.5	100	0	97.5	100	0	100	100	96.5
Mediums	0	20	0	20	11	0	0	11	0	0	0	0	31
% Mediums	0	4.3	0	4.2	1.7	0	0	1.7	0	0	0	0	2.8
Articulated Trucks	0	3	0	3	5	0	0	5	0	0	0	0	8
% Articulated Trucks	0	0.6	0	0.6	0.8	0	0	0.8	0	0	0	0	0.7
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0



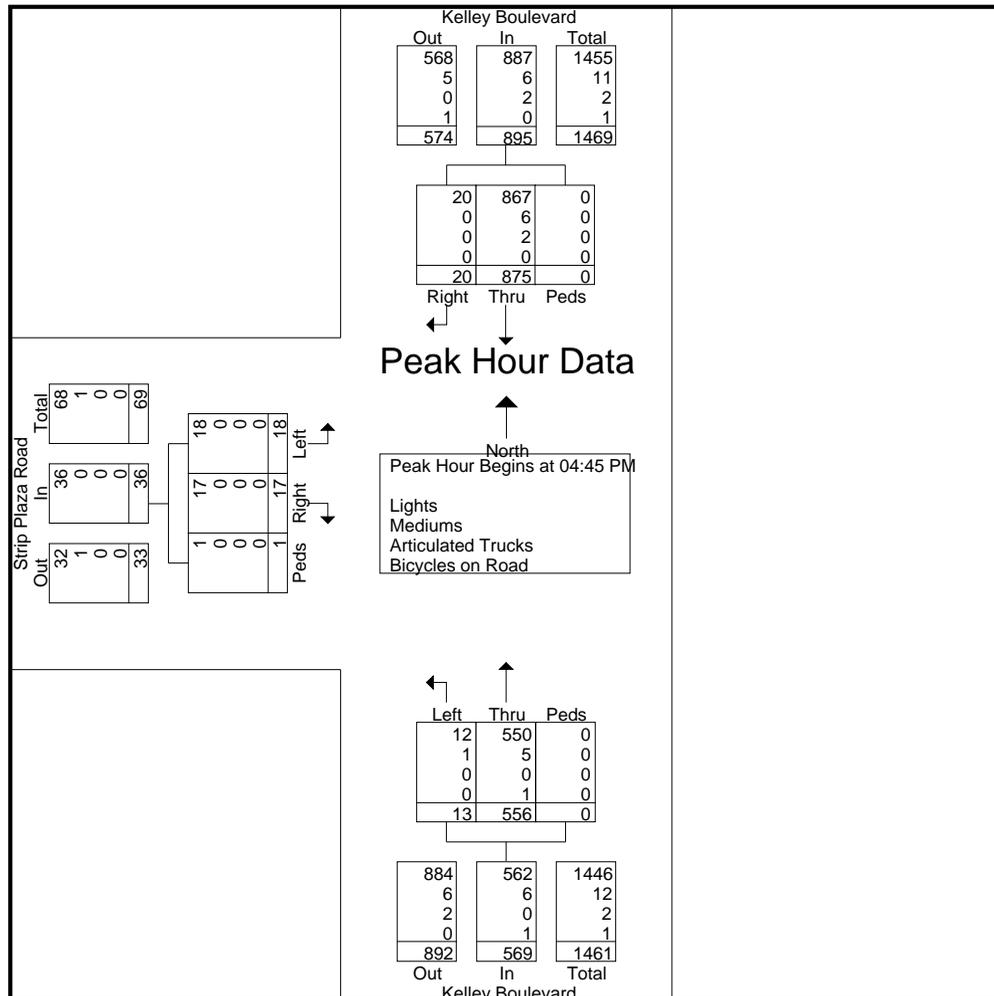
# MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280  
Marlborough, MA, 01752

N/S: Kelley Boulevard  
EB: Strip Plaza Road  
North Attleborough, MA

File Name : 1188\_Taunton\_Street\_at\_Strip\_Mall\_Parking\_Lot\_08-07-2024  
Site Code : 1188  
Start Date : 8/7/2024  
Page No : 3

Start Time	Kelley Boulevard From North				Kelley Boulevard From South				Strip Plaza Road From West				Int. Total
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	7	227	0	234	139	5	0	144	3	3	0	6	384
05:00 PM	6	211	0	217	126	2	0	128	6	4	1	11	356
05:15 PM	4	219	0	223	154	3	0	157	6	7	0	13	393
05:30 PM	3	218	0	221	137	3	0	140	2	4	0	6	367
Total Volume	20	875	0	895	556	13	0	569	17	18	1	36	1500
% App. Total	2.2	97.8	0		97.7	2.3	0		47.2	50	2.8		
PHF	.714	.964	.000	.956	.903	.650	.000	.906	.708	.643	.250	.692	.954
Lights	20	867	0	887	550	12	0	562	17	18	1	36	1485
% Lights	100	99.1	0	99.1	98.9	92.3	0	98.8	100	100	100	100	99.0
Mediums	0	6	0	6	5	1	0	6	0	0	0	0	12
% Mediums	0	0.7	0	0.7	0.9	7.7	0	1.1	0	0	0	0	0.8
Articulated Trucks	0	2	0	2	0	0	0	0	0	0	0	0	2
% Articulated Trucks	0	0.2	0	0.2	0	0	0	0	0	0	0	0	0.1
Bicycles on Road	0	0	0	0	1	0	0	1	0	0	0	0	1
% Bicycles on Road	0	0	0	0	0.2	0	0	0.2	0	0	0	0	0.1



□ Seasonal Data/ Yearly Growth

**MassDOT - Seasonal Data**

**STATION 10 - MANSFIELD - RTE.I-495 - SOUTH OF RTE.I-95**

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
06	66,252	66,734	71,184	73,369	77,097	82,255	84,082	89,043	83,291	79,323	77,215	78,285	77,344
	14%	17%	7%	8%	6%	3%	0%	-1%	-4%	-4%	-5%	-9%	2%
07	75,400	78,330	76,420	79,150	81,825	84,941	84,351	88,055	79,635	76,089	73,340	71,256	79,066
	-7%	-9%	-6%	-8%	-6%	-5%	-1%	-1%	-3%	0%	-2%	-1%	-4%
08	70,162	71,102	71,657	73,183	77,206	80,852	83,086	87,198	76,916	76,443	71,615	70,381	75,817
	-5%	-2%	-4%	2%	1%	4%	4%	1%	7%	-3%	0%	-1%	0%
09	66,605	69,744	68,604	74,723	77,817	84,054	86,530	88,284	82,220	73,808	71,467	69,883	76,145
	15%	6%	3%	1%	3%	2%	2%	3%	2%	-1%	4%	-3%	3%
10	76,838	73,749	70,970	75,352	79,811	85,598	88,075	91,303	83,504	72,928	74,559	67,505	78,349
	-12%	-12%	7%	9%	10%	10%	9%	9%	11%	21%	12%	20%	8%
15	67,262	64,888	75,876	81,858	88,078	94,251	96,244	99,293	93,096	88,114	83,336	80,970	84,439
Seasonal Adjustment Factor (to average month)	1.12	1.12	1.08	1.03	0.98	0.92	0.90	0.87	0.95	1.01	1.04	1.08	<b>Growth 0.60%</b>

**STATION 6647 - PLAINVILLE - RTE.1 - SOUTH OF RTE.152**

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
06	16,136	16,177	16,793	16,635	16,763	17,137	16,432	16,995	17,013	17,067	17,113	17,769	16,836
	-1%	-2%	3%	2%	7%	4%	3%	2%	-2%	0%	1%	-5%	1%
07	15,944	15,859	17,304	17,030	17,864	17,901	16,906	17,416	16,727	17,138	17,324	16,879	17,024
	-1%	-1%	-3%	-1%	-4%	-4%	-1%	0%	3%	4%	-1%	5%	0%
08	15,821	15,698	16,800	16,942	17,171	17,178	16,746	17,340	17,202	17,760	17,072	17,679	16,951
	1%	4%	2%	4%	5%	7%	7%	5%	5%	3%	7%	8%	5%
09	16,043	16,380	17,174	17,667	17,999	18,392	17,996	18,129	18,133	18,217	18,190	19,022	17,779
	6%	-3%	1%	4%	6%	6%	1%	3%	2%	3%	0%	-9%	2%
13	16,927	15,836	17,405	18,408	19,117	19,419	18,199	18,723	18,472	18,737	18,205	17,328	18,065
	-7%	3%	2%	0%	2%	2%	1%	1%	2%	1%	0%	11%	1%
14	15,736	16,233	17,681	18,472	19,522	19,772	18,390	18,870	18,813	18,862	18,248	19,311	18,326
	13%	10%	1%	3%	2%	-1%	1%	-1%	-1%	1%	3%	-5%	2%
17	17,706	17,890	17,915	19,029	20,003	19,636	18,552	18,745	18,579	18,970	18,705	18,257	18,761
	2%	2%	6%	5%	-1%	8%	7%	4%	3%	-1%	0%	0%	2%
19	17,990	18,216	18,917	20,071	19,898	21,248	19,845	19,455	19,142	18,793	18,637	18,240	19,204
Seasonal Adjustment Factor (to average month)	1.08	1.08	1.02	0.99	0.96	0.95	1.00	0.98	0.99	0.98	1.00	0.99	<b>Growth 1.3%</b>

Average Seasonal Adjustment Factor (to average month)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	1.10	1.10	1.05	1.01	0.97	0.94	0.95	0.92	0.97	1.00	1.02	1.03

Average Yearly Growth Calculated 1.0%  
**Yearly Growth Factor Used 1.0%**

□ Crash Data

## INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : North Attleborough      COUNT DATE : Aug-24

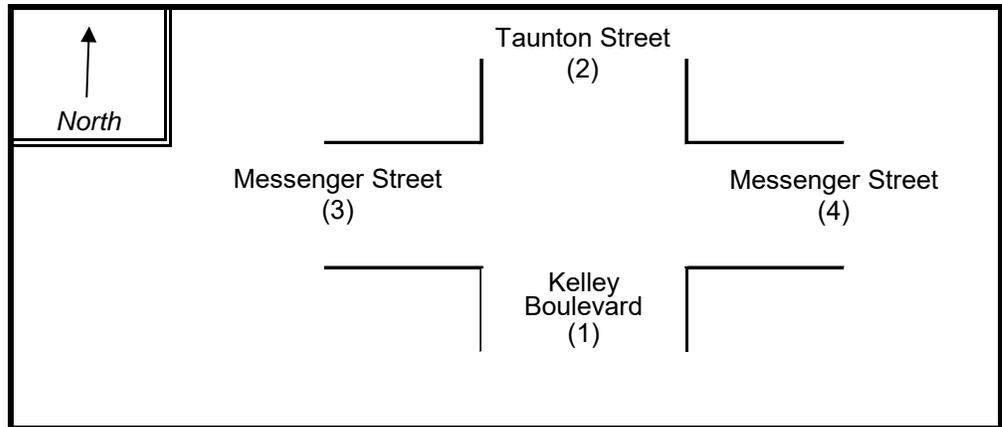
DISTRICT : 5      UNSIGNALIZED :       SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Taunton Street (Route 152), Kelley Boulevard (Route 152)

MINOR STREET(S) : Messenger Street (Route 106)

**INTERSECTION  
 DIAGRAM  
 (Label Approaches)**



**PEAK HOUR VOLUMES**

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	650	644	468	735		2,497

" K " FACTOR :       INTERSECTION ADT ( V ) = TOTAL DAILY APPROACH VOLUME :

TOTAL # OF CRASHES :       # OF YEARS :       AVERAGE # OF CRASHES PER YEAR ( A ) :

**CRASH RATE CALCULATION :**

**2.57**

$$\text{RATE} = \left( \frac{A * 1,000,000}{V * 365} \right) \quad ($$

Comments : District 5 Averages: Signalized = 0.75, Unsignalized = 0.57

Project Title & Date: 1188 - North Attleborough

## INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : North Attleborough      COUNT DATE : Aug-24

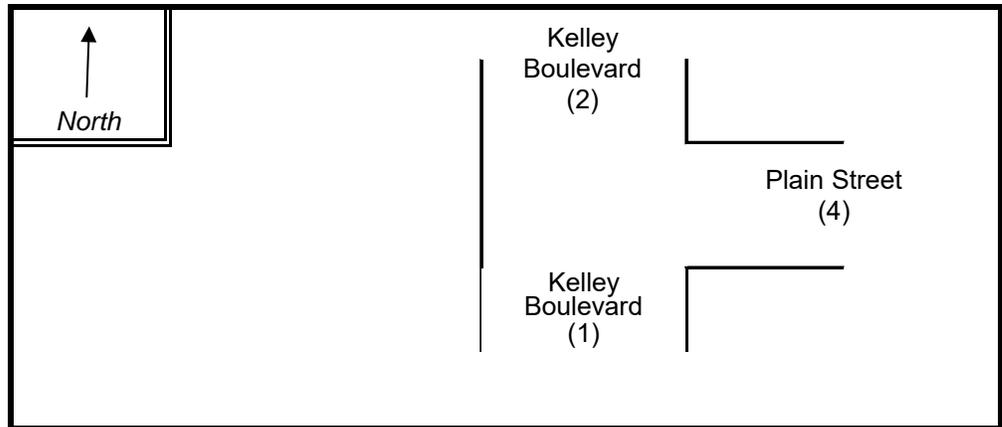
DISTRICT : 5      UNSIGNALIZED :       SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Kelley Boulevard (Route 152)

MINOR STREET(S) : Plain Street

**INTERSECTION  
 DIAGRAM**  
 (Label Approaches)



**PEAK HOUR VOLUMES**

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	583	1,027	N/A	161		1,771

" K " FACTOR :       INTERSECTION ADT ( V ) = TOTAL DAILY APPROACH VOLUME :

TOTAL # OF CRASHES :       # OF YEARS :       AVERAGE # OF CRASHES PER YEAR ( A ) :

**CRASH RATE CALCULATION :**       RATE =  $\frac{(A * 1,000,000)}{V * 365}$  (

Comments : District 5 Averages: Signalized = 0.75, Unsignalized = 0.57

Project Title & Date: 1188 - North Attleborough

## INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : North Attleborough      COUNT DATE : Aug-24

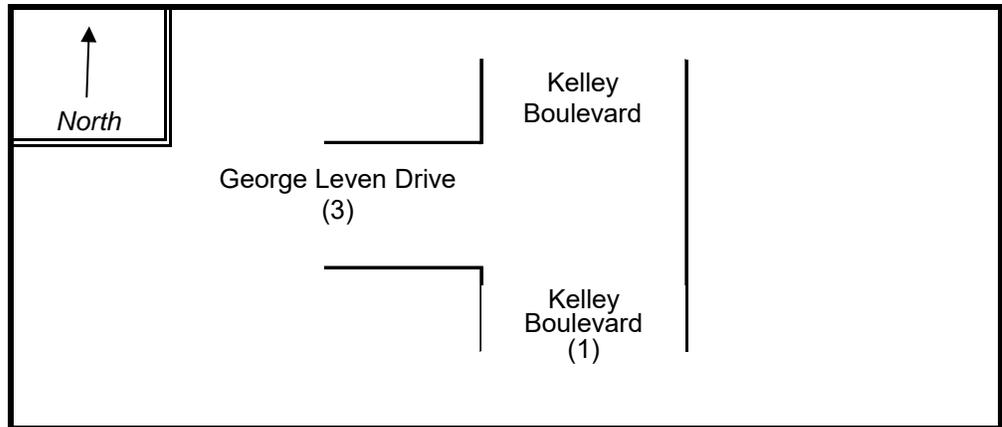
DISTRICT : 5      UNSIGNALIZED :       SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Kelley Boulevard (Route 152)

MINOR STREET(S) : George Leven Drive

**INTERSECTION  
 DIAGRAM  
 (Label Approaches)**



**PEAK HOUR VOLUMES**

APPROACH :	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Total Peak Hourly Approach Volume</b>
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	543	880	67	N/A		<b>1,490</b>

" K " FACTOR :       INTERSECTION ADT ( V ) = TOTAL DAILY APPROACH VOLUME :

TOTAL # OF CRASHES :       # OF YEARS :       AVERAGE # OF CRASHES PER YEAR ( A ) :

**CRASH RATE CALCULATION :**       RATE =  $\frac{(A * 1,000,000)}{V * 365}$  (

Comments : District 5 Averages: Signalized = 0.75, Unsignalized = 0.57

Project Title & Date: 1188 - North Attleborough

Crash Number	Crash Date	Crash Severity	Crash Time	Number of Vehicles	Light Conditions	Manner of Collision	Road Surface Condition	Total Fatalities	Total Non-Fatal Injuries	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Most Harmful Event (All Vehicles)	X	Y
<b>Kelley Boulevard at George Levin Drive</b>																
4654310	01/23/2019	Property damage only (none injured)	8:02 AM	3	Daylight	Angle	Ice	0	0	V1: Travelling straight ahead / V2: Travelling straight ahead / V3: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car) / V3:(Passenger car)	V1: S / V2: N / V3: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic)	216465.0577	861814.4874
4709925	06/07/2019	Property damage only (none injured)	4:42 PM	2	Daylight	Angle	Dry	0	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Passenger car) / V2:(Passenger car) / V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: E / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216465.0577	861814.4874
4902661	11/17/2020	Property damage only (none injured)	4:51 PM	2	Dark - lighted roadway	Angle	Dry	0	0	V1: Turning right / V2: Travelling 0 straight ahead	V1:(Passenger car)	V1: E / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216496.2343	861783.6251
4926201	02/02/2021	Property damage only (none injured)	4:23 PM	2	Dusk	Front to Front	Wet	0	0	V1: Turning right / V2: Turning 0 left	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: S	Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216506.0581	861775.1196
5118962	06/26/2022	Property damage only (none injured)	8:05 PM	2	Daylight	Sideswipe, same direction	Dry	0	0	V1: Travelling straight ahead / V2: Overtaking/passing	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216465.0577	861814.4874
5202691	01/11/2023	Property damage only (none injured)	1:58 AM	1	Dark - lighted roadway	Single vehicle crash	Dry	0	0	V1: Travelling straight ahead	V1:(Passenger car)	V1: N	Clear	V1:(Collision with utility pole)	216528.6266	861755.5797
5265645	06/15/2023	Property damage only (none injured)	8:57 AM	2	Daylight	Sideswipe, same direction	Dry	0	0	V1: Turning left / V2: Turning left 0 straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216496.2343	861783.6251
5324455	07/30/2023	Property damage only (none injured)	11:19 AM	2	Daylight	Sideswipe, same direction	Dry	0	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216465.0577	861814.4874
5341397	12/27/2023	Property damage only (none injured)	4:17 PM	2	Dusk	Single vehicle crash	Dry	0	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: S	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216465.0577	861814.4874
<b>Kelley Boulevard at Plain Street</b>																
4700202	05/12/2019	Not Reported	12:42 PM	2	Daylight	Angle	Wet	0	2	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: Not Reported	Rain/Rain	V2:(Collision with motor vehicle in traffic)	216291.3366	862013.8053
4868098	08/10/2020	Property damage only (none injured)	11:03 AM	2	Daylight	Angle	Dry	0	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: S	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216291.3366	862013.8053
4902662	11/19/2020	Property damage only (none injured)	7:54 AM	3	Daylight	Rear-end	Dry	0	0	V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic / V1: Travelling straight ahead	V2:(Light truck(van, mini-van, pickup, sport utility)) / V3:(Passenger car) / V1:(Other)	V2: W / V3: W / V1: W	Clear/Clear	V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic) / V1:(Collision with motor vehicle in traffic)	216284.5323	862021.8163
4903211	12/01/2020	Non-fatal injury	8:57 PM	2	Dark - lighted roadway	Angle	Dry	0	1	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216291.2291	862013.9318
4938847	03/07/2021	Property damage only (none injured)	3:04 PM	2	Daylight	Angle	Dry	0	0	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: Not Reported	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216291.3366	862013.8053
4941070	03/15/2021	Property damage only (none injured)	2:16 PM	2	Daylight	Angle	Dry	0	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216284.5323	862021.8163
5044193	12/10/2021	Property damage only (none injured)	4:41 PM	1	Dark - lighted roadway	Sideswipe, opposite direction	Dry	0	0	V1: Travelling straight ahead	V1:(Passenger car)	V1: N	Clear	V1:(Collision with motor vehicle in traffic)	216291.3366	862013.8053
5078334	03/07/2022	Property damage only (none injured)	4:01 PM	2	Daylight	Angle	Dry	0	0	V1: Turning right / V2: Travelling 0 straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216291.2291	862013.9318
5194238	12/28/2022	Property damage only (none injured)	5:03 PM	1	Dark - lighted roadway	Single vehicle crash	Dry	0	0	V1: Turning left	V1:(Passenger car)	V1: E	Clear	V1:(Collision with motor vehicle in traffic)	216284.5323	862021.8164
5324519	11/01/2023	Non-fatal injury	4:56 PM	2	Daylight	Angle	Wet	0	2	V1: Turning right / V2: Travelling 2 straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216291.2292	862013.9319

Taunton Street at Messenger Street

Crash Number	Crash Date	Crash Severity	Crash Time	Number of Vehicles	Light Conditions	Manner of Collision	Road Surface Condition	Total Fatalities	Total Non-Fatal Injuries	Vehicle Actions Prior to Crash (All Vehicles)	Vehicle Configuration (All Vehicles)	Vehicle Travel Directions (All Vehicles)	Weather Conditions	Most Harmful Event (All Vehicles)	X	Y
4647395	01/01/2019	Property damage only (none injured)	12:32 AM	1	Dark - lighted roadway	Single vehicle crash	Wet	0	0	V1: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: S	Rain/Cloudy	V1:(Collision with utility pole)	216099.6996	862267.19
4650204	01/11/2019	Property damage only (none injured)	4:52 PM	3	Dark - lighted roadway	Rear-end	Dry	0	0	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility)) / V3:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E / V3: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic)	216107.4711	862270.9855
4682035	02/01/2019	Property damage only (none injured)	12:02 PM	2	Daylight	Rear-end	Dry	0	0	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6996	862267.19
4682044	02/12/2019	Non-fatal injury	3:56 PM	2	Daylight	Head-on	Snow	0	1	V1: Leaving traffic lane / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: E	Snow/Sleet, hail (freezing rain or drizzle)	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216052.3514	862239.3301
4682049	03/12/2019	Property damage only (none injured)	5:32 PM	2	Daylight	Angle	Dry	0	0	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216103.5995	862259.076
4688295	04/10/2019	Property damage only (none injured)	4:21 PM	2	Daylight	Rear-end	Not reported	0	0	V1: Turning left / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216089.9714	862261.4658
4699814	05/10/2019	Property damage only (none injured)	12:42 PM	2	Daylight	Rear-end	Dry	0	0	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
4722739	05/21/2019	Property damage only (none injured)	5:22 PM	2	Daylight	Angle	Dry	0	0	V1: Turning left / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: W	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216089.9714	862261.4658
4722741	05/28/2019	Property damage only (none injured)	4:31 PM	2	Daylight	Head-on	Wet	0	0	V1: Entering traffic lane / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: S	Rain	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216086.5644	862259.4612
4722742	05/31/2019	Property damage only (none injured)	2:43 PM	3	Daylight	Rear-end	Dry	0	0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic / V3: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility)) / V3:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N / V3: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic)	216151.1662	862183.5651
4722744	06/03/2019	Property damage only (none injured)	7:44 AM	2	Daylight	Rear-end	Dry	0	0	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
4722745	06/03/2019	Property damage only (none injured)	12:05 PM	2	Daylight	Sideswipe, same direction	Dry	0	0	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Single-unit truck (3-or-more axles))	V1: W / V2: W	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216107.4711	862270.9855
4722747	06/06/2019	Property damage only (none injured)	3:11 PM	2	Daylight	Angle	Dry	0	0	V1: Turning left / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216089.9714	862261.4658
4722749	06/07/2019	Property damage only (none injured)	11:49 AM	2	Daylight	Rear-end	Wet	0	0	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: W	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6996	862267.19
4723236	07/11/2019	Not Reported	1:43 PM	2	Daylight	Angle		0	0	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car)	V1: E / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216103.5993	862259.0759
4723911	07/12/2019	Property damage only (none injured)	6:33 PM	2	Daylight	Angle		0	0	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
4726913	07/19/2019	Property damage only (none injured)	4:14 PM	2	Daylight	Angle		0	0	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216103.7248	862258.8148
4726914	07/19/2019	Property damage only (none injured)	5:31 PM	2	Daylight	Angle		0	0	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216094.8947	862276.6671
4732926	07/29/2019	Property damage only (none injured)	5:19 PM	2	Daylight	Angle		0	0	V1: Turning right / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216103.7248	862258.8148
4736595	08/12/2019	Property damage only (none injured)	2:49 PM	2	Daylight	Rear-end	Dry	0	0	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
4737394	08/15/2019	Property damage only (none injured)	8:55 AM	2	Daylight	Rear-end	Dry	0	0	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
4780446	11/12/2019	Property damage only (none injured)	5:09 PM	2	Dark - lighted roadway	Rear-end	Wet	0	0	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216107.471	862270.9856
4780447	11/12/2019	Property damage only (none injured)	6:06 PM	2	Dark - lighted roadway	Angle	Wet	0	0	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: W	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216039.2073	862231.623
4780449	11/14/2019	Property damage only (none injured)	6:21 PM	2	Dark - lighted roadway	Angle	Dry	0	0	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: W	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216107.471	862270.9856
4792651	12/23/2019	Property damage only (none injured)	2:33 PM	2	Daylight	Rear-end	Dry	0	0	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216079.3767	862310.4274
4808771	12/31/2019	Non-fatal injury	8:13 AM	2	Daylight	Angle	Wet	0	0	V1: Turning left / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216151.1657	862183.5649
4808774	01/07/2020	Property damage only (none injured)	8:48 AM	2	Daylight	Rear-end	Dry	0	0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216039.2073	862231.623
4808777	01/11/2020	Non-fatal injury	1:56 PM	2	Not reported	Not reported	Not reported	0	0	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Motorcycle)	V1: S / V2: W	Not Reported	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216039.2073	862231.623

4821836	02/13/2020	Non-fatal injury	1:58 PM	2 Daylight	Angle	Wet	0	V1: Travelling straight ahead / V2: Turning left	V1:(Passenger car) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: S / V2: N	Rain	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216094.8947	862276.6671
4826486	03/06/2020	Property damage only (none injured)	9:59 AM	2 Daylight	Rear-end	Dry	0	V1: Slowing or stopped in traffic 0 / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
4855137	03/28/2020	Property damage only (none injured)	5:41 PM	2 Daylight	Angle	Wet	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: S / V2: E	Rain	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
4855283	05/16/2020	Property damage only (none injured)	3:04 PM	3 Daylight	Angle	Dry	0	V1: Entering traffic lane / V2: Travelling straight ahead / V3: 0 Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car) / V3:(Passenger car)	V1: N / V2: E / V3: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic)	216027.8643	862225.2043
4858440	07/12/2020	Non-fatal injury	9:59 AM	1 Daylight	Angle	Dry	0	1 V1: Travelling straight ahead	V1:(Passenger car)	V1: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216106.8412	862253.1691
4866848	07/20/2020	Property damage only (none injured)	3:47 PM	2 Daylight	Sideswipe, same direction	Dry	0	V1: Travelling straight ahead / 0 V2: Changing lanes	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216103.5993	862259.0759
4868683	08/12/2020	Property damage only (none injured)	11:06 AM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / 0 V2: Turning left	V1:(Passenger car) / V2:(Passenger car) / V1:(Passenger car) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: E / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216094.8947	862276.6671
4880075	09/05/2020	Property damage only (none injured)	12:02 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / 0 V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: E / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216154.4757	862293.942
4880077	09/12/2020	Property damage only (none injured)	3:12 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / 0 V2: Entering traffic lane	V1:(Passenger car) / V1:(Passenger car) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: E / V2: W	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
4883084	09/29/2020	Property damage only (none injured)	3:16 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / 0 V2: Entering traffic lane	V1:(Passenger car) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: E / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216039.2073	862231.623
4904685	10/09/2020	Non-fatal injury	1:15 PM	2 Daylight	Angle Sideswipe, opposite direction	Dry	0	V1: Travelling straight ahead / 1 V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216039.2073	862231.623
4904684	10/09/2020	Non-fatal injury	12:15 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / 2 V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: N	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with parked motor vehicle)	216039.2073	862231.623
4904628	10/16/2020	Non-fatal injury	2:30 PM	2 Daylight	Angle	Wet	0	V1: Turning left / V2: Travelling 1 straight ahead	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: E / V2: W	Rain/Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216107.471	862270.9857
4904690	10/28/2020	Property damage only (none injured)	1:12 PM	2 Daylight	Angle	Wet	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: S	Rain/Rain	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216103.5993	862259.0759
4904634	11/18/2020	Property damage only (none injured)	12:21 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / 0 V2: Entering traffic lane	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: E / V2: N	Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
4915229	12/01/2020	Property damage only (none injured)	3:15 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / 0 V2: Turning left	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: W / V2: S	Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216107.471	862270.9857
4915235	12/20/2020	Non-fatal injury	12:23 PM	2 Daylight	Angle	Sand, mud, dirt, oil, gravel	0	V1: Travelling straight ahead / 1 V2: Turning left	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: E / V2: N	Cloudy/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216033.1018	862229.1547
4936717	02/09/2021	Non-fatal injury	1:37 PM	3 Daylight	Sideswipe, opposite direction	Wet	0	V1: Travelling straight ahead / 1 V3: Backing / V2: Parked	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Bus (seats for 9-15 people, including driver)) / V3:(Passenger car)	V1: E / V3: S / V2: Not Reported	Snow	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic)	216039.2073	862231.623
4947832	03/03/2021	Property damage only (none injured)	12:42 PM	2 Daylight	Angle	Dry	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Passenger car)	V1: W / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
4947833	03/13/2021	Property damage only (none injured)	10:34 AM	2 Daylight	Rear-end	Dry	0	V1: Travelling straight ahead / 0 V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: E / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
4947960	03/27/2021	Property damage only (none injured)	3:55 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / 0 V2: Travelling straight ahead	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: W / V2: S	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216167.6963	862301.3809
4957310	03/29/2021	Property damage only (none injured)	4:10 PM	2 Daylight	Angle	Dry	0	V1: Turning left / V2: Turning 0 right	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216210.7862	862321.399
4957404	04/09/2021	Property damage only (none injured)	3:50 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / 0 V2: Turning left	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: E / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
4957411	04/25/2021	Property damage only (none injured)	9:31 PM	Dark - lighted 2 roadway	Angle	Dry	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: Not Reported / V2: Not Reported	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216151.1657	862183.5649
4957413	04/27/2021	Property damage only (none injured)	5:02 PM	2 Daylight	Rear-end	Dry	0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in 0 traffic	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: S / V2: S	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216094.8947	862276.6671
4978381	06/03/2021	Property damage only (none injured)	2:23 PM	2 Daylight	Rear-end	Wet	0	V1: Slowing or stopped in traffic 0 / V2: Travelling straight ahead	V1:(Light truck/van, mini-van, pickup, sport utility)	V1: W / V2: Not Reported	Cloudy/Rain	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
4978387	06/11/2021	Non-fatal injury	2:42 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / 1 V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: N	Clear/Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216167.7361	862301.4003
4978391	06/16/2021	Property damage only (none injured)	4:58 PM	2 Daylight	Angle	Dry	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216107.471	862270.9857
4978394	06/25/2021	Property damage only (none injured)	10:52 AM	2 Daylight	Angle	Dry	0	V1: Turning left / V2: Slowing or 0 stopped in traffic	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Passenger car)	V1: N / V2: S	Cloudy/Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216107.471	862270.9857
4978396	06/28/2021	Property damage only (none injured)	12:06 PM	2 Daylight	Sideswipe, same direction	Dry	0	0 V1: Parked / V2: Turning left	V1:(Passenger car) / V2:(Passenger car) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: Not Reported / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with parked motor vehicle)	216039.2073	862231.623
4990330	07/01/2021	Property damage only (none injured)	6:50 AM	2 Daylight	Rear-end	Dry	0	V1: Travelling straight ahead / 0 V2: Travelling straight ahead	V1:(Light truck/van, mini-van, pickup, sport utility)	V1: N / V2: N	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
4990329	07/16/2021	Property damage only (none injured)	12:40 PM	2 Daylight	Sideswipe, same direction	Dry	0	V1: Travelling straight ahead / 0 V2: Travelling straight ahead	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Passenger car)	V1: N / V2: N	Cloudy/Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901

4990465	Property damage	07/26/2021 only (none injured)	8:39 AM	2 Daylight	Rear-end	Dry	0	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: W	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
5003302	Property damage	08/13/2021 only (none injured)	11:20 AM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: W / V2: Not Reported	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216220.2503	862326.9119
5003306	Property damage	08/24/2021 only (none injured)	6:48 PM	2 Daylight	Angle	Dry	0	0 V1: Turning left / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: N / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
5015741	Property damage	09/16/2021 only (none injured)	3:18 PM	2 Daylight	Angle	Dry	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: N / V2: E	Clear/Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
5027277	Property damage	10/02/2021 only (none injured)	5:20 PM	2 Daylight	Angle	Dry	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Motorcycle)	V1: N / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
5027283	Property damage	10/21/2021 only (none injured)	4:42 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: N / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216151.1657	862183.5649
5027293	Property damage	10/21/2021 only (none injured)	8:05 PM	Dark - lighted roadway	Rear-end	Dry	0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: S	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
5027286	Property damage	10/26/2021 only (none injured)	5:21 PM	2 Daylight	Angle	Wet	0	V1: Entering traffic lane / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: W	Rain/Rain	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216159.4183	862297.338
5051482	Property damage	11/30/2021 only (none injured)	2:25 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: E / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.4295	862251.7329
5051493	Property damage	11/30/2021 only (none injured)	3:23 PM	2 Daylight	Sideswipe, same direction	Dry	0	V1: Travelling straight ahead / V2: Turning right	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: E / V2: Not Reported	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
5051502	Property damage	12/04/2021 only (none injured)	3:17 PM	2 Daylight	Head-on	Dry	0	0 V1: Turning left / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216039.2073	862231.623
5051496	Property damage	12/18/2021 only (none injured)	12:20 PM	2 Daylight	Sideswipe, same direction	Dry	0	V1: Travelling straight ahead / V2: Overtaking/passing	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216094.8947	862276.6671
5051491	Property damage	12/20/2021 Non-fatal injury	1:03 PM	2 Daylight	Sideswipe, opposite direction	Dry	0	V1: Turning left / V2: Travelling 3 straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
5065923	Property damage	01/10/2022 only (none injured)	7:56 AM	2 Daylight	Sideswipe, same direction	Dry	0	0 V1: Turning left / V2: Turning right	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: S	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
5065920	Property damage	01/27/2022 only (none injured)	3:47 PM	2 Daylight	Angle	Dry	0	0 V1: Turning left / V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
5076078	Property damage	01/31/2022 only (none injured)	4:46 PM	2 Dusk	Angle	Dry Sand, mud, dirt, oil, gravel	0	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216094.8947	862276.6671
5076080	Property damage	02/01/2022 only (none injured)	12:54 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: W	Cloudy/Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216103.5993	862259.0759
5076077	Property damage	02/10/2022 only (none injured)	4:24 PM	3 Daylight	Rear-end	Dry	0	V1: Travelling straight ahead / V2: Travelling straight ahead / V3: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car) / V3:(Passenger car)	V1: W / V2: W / V3: Not Reported	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic)	216107.471	862270.9857
5087880	Property damage	03/02/2022 only (none injured)	6:11 PM	2 Daylight	Angle	Dry	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Passenger car) / V2:(Truck/trailer)	V1: W / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
5087875	Property damage	03/11/2022 only (none injured)	8:05 AM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
5087884	Property damage	03/18/2022 only (none injured)	8:54 AM	2 Daylight	Angle	Dry	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216032.1498	862228.616
5099569	Property damage	03/30/2022 only (none injured)	8:54 AM	2 Daylight	Rear-end	Dry	0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: S	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216094.8947	862276.6671
5110539	Property damage	05/06/2022 only (none injured)	2:54 PM	2 Daylight	Rear-end	Dry	0	V1: Slowing or stopped in traffic / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: Not Reported	Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
5110532	Property damage	05/10/2022 only (none injured)	5:31 PM	2 Daylight	Angle	Dry	0	V1: Entering traffic lane / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: Not Reported / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
5110529	Property damage	05/18/2022 only (none injured)	3:44 PM	3 Daylight	Rear-end	Dry	0	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car) / V3:(Passenger car)	V1: E / V2: E / V3: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic)	216047.1596	862236.2756
5110538	Property damage	05/21/2022 only (none injured)	12:26 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: E / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
5158638	Property damage	05/25/2022 only (none injured)	11:01 AM	2 Daylight	Head-on	Dry	0	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: S	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216094.8947	862276.6671
5121645	Property damage	06/02/2022 only (none injured)	2:54 PM	2 Daylight	Angle	Dry	0	V1: Backing / V2: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: Not Reported / V2: Not Reported	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
5121703	Property damage	06/03/2022 only (none injured)	2:51 PM	2 Daylight	Sideswipe, same direction	Dry	0	V1: Travelling straight ahead / V2: Changing lanes	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216103.7248	862258.8148
5121700	Property damage	06/12/2022 only (none injured)	2:11 PM	3 Daylight	Rear-end	Dry	0	V1: Travelling straight ahead / V2: Slowing or stopped in traffic / V3: Slowing or stopped in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility)) / V3:(Passenger car)	V1: N / V2: N / V3: N	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
5121696	Property damage	06/23/2022 only (none injured)	5:20 PM	2 Daylight	Angle	Dry	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: S / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
5133310	Property damage	07/15/2022 only (none injured)	12:46 PM	2 Daylight	Rear-end	Dry	0	V1: Travelling straight ahead / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216107.471	862270.9857

5133314	Property damage 07/17/2022 only (none injured)	4:56 PM	2 Daylight	Rear-end	Dry	0	0	V1: Slowing or stopped in traffic 0 / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: E / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405 862251.6217
5133306	Property damage 07/17/2022 only (none injured)	12:00 PM	2 Daylight	Angle	Dry	0	0	V1: Turning right / V2: Parked	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: E	Clear/Clear	V1:(Collision with parked motor vehicle) / V2:(Collision with motor vehicle in traffic)	216094.8947 862276.6671
5145445	Property damage 07/30/2022 only (none injured)	3:30 PM	2 Daylight	Rear-end	Dry	0	0	V1: Travelling straight ahead / 0 V2: Parked	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993 862267.1901
5145448	Property damage 08/21/2022 only (none injured)	12:45 PM	2 Daylight	Rear-end	Dry	0	0	V1: Slowing or stopped in traffic 0 / V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993 862267.1901
5158643	Property damage 08/23/2022 only (none injured)	12:00 AM	2 Daylight	Angle	Dry	0	0	V1: Entering traffic lane / V2: 0 Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405 862251.6217
5158641	Property damage 08/30/2022 Non-fatal injury	12:52 PM	2 Daylight	Angle	Dry	0	0	V1: Travelling straight ahead / 2 V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: S	Clear/Other	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216107.471 862270.9857
5158644	Property damage 09/10/2022 only (none injured)	9:04 AM	2 Daylight	Angle	Dry	0	0	V1: Travelling straight ahead / 0 V2: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216107.471 862270.9857
5158640	Property damage 09/15/2022 only (none injured)	2:15 PM	3 Daylight	Rear-end	Dry	0	0	V3: Travelling straight ahead / V1: Slowing or stopped in traffic / V2: Slowing or stopped in 0 traffic	V3:(Passenger car) / V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Single-unit truck (2-axle, 6-tires))	V3: E / V1: E / V2: E	Clear/Clear	V3:(Collision with motor vehicle in traffic) / V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993 862267.1901
5171457	Property damage 10/04/2022 Non-fatal injury	6:13 PM	Dark - lighted 2 roadway	Head-on	Wet	0	0	V1: Travelling straight ahead / 1 V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: N / V2: S	Rain/Rain	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993 862267.1901
5171464	Property damage 10/21/2022 Non-fatal injury	7:47 AM	2 Daylight	Angle	Dry	0	0	V1: Travelling straight ahead / 2 V2: Entering traffic lane	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216101.3 862221.3446
5182996	Property damage 11/07/2022 only (none injured)	4:50 PM	Dark - lighted 2 roadway	Rear-end	Dry	0	0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in 0 traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: W / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216107.471 862270.9857
5182995	Property damage 11/09/2022 only (none injured)	5:14 PM	Dark - lighted 2 roadway	Angle	Dry	0	0	V1: Travelling straight ahead / 0 V2: Turning left	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216107.471 862270.9857
5183004	Property damage 11/16/2022 only (none injured)	4:45 PM	Dark - lighted 3 roadway	Rear-to-rear	Dry	0	0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in 0 in traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N / V3: N	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic) / V3:(Collision with motor vehicle in traffic)	216099.6993 862267.1901
5195982	Property damage 11/30/2022 only (none injured)	4:05 PM	Dark - unknown 2 roadway lighting	Rear-end	Wet	0	0	V1: Travelling straight ahead / 0 V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Rain/Rain	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993 862267.1901
5195997	Property damage 12/09/2022 only (none injured)	5:22 PM	Dark - lighted 2 roadway	Sideswipe, opposite direction	Dry	0	0	V1: Travelling straight ahead / 0 V2: Turning left	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Passenger car)	V1: E / V2: W	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993 862267.1901
5195998	Property damage 12/09/2022 only (none injured)	5:58 PM	Dark - roadway 2 not lighted	Rear-end	Dry	0	0	V1: Travelling straight ahead / 0 V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993 862267.1901
5195987	Property damage 12/22/2022 only (none injured)	2:48 PM	2 Daylight	Angle	Dry	0	0	V1: Overtaking/passing / V2: 0 Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Clear/Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216094.8947 862276.6671
5209307	Property damage 01/21/2023 only (none injured)	2:00 PM	2 Daylight	Angle	Wet	0	0	V1: Changing lanes / V2: 0 Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216103.5993 862259.0759
5228263	Property damage 02/08/2023 only (none injured)	9:24 AM	2 Daylight	Angle	Wet	0	0	V1: Slowing or stopped in traffic 0 / V2: Turning right	V1:(Passenger car) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: S	Cloudy/Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with parked motor vehicle)	216094.8947 862276.6671
5228274	Property damage 02/10/2023 only (none injured)	3:30 PM	2 Daylight	Angle	Dry	0	0	V1: Entering traffic lane / V2: 0 Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405 862251.6217
5228255	Property damage 02/11/2023 only (none injured)	4:07 PM	2 Daylight	Rear-end	Dry	0	0	V1: Turning left / V2: Traveling 0 straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216137.6772 862203.0285
5239470	Property damage 02/26/2023 only (none injured)	12:09 PM	2 Daylight	Angle	Dry	0	0	V1: Travelling straight ahead / 0 V2: Travelling straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: S	Cloudy/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216107.471 862270.9857
5239489	Property damage 03/27/2023 Non-fatal injury	1:16 PM	2 Daylight	Angle	Dry	0	0	V1: Turning right / V2: Travelling 1 straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: S / V2: N	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216094.8947 862276.6671
5239488	Property damage 03/27/2023 only (none injured)	10:14 AM	Dark - lighted 1 roadway	Head-on	Wet	0	0	V1: Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: S	Rain/Rain	V1:(Collision with utility pole)	216103.7248 862258.8148
5248723	Property damage 03/30/2023 Unknown	2:04 AM	1 roadway	Dark - lighted Single vehicle crash	Dry	0	0	0 V1: Travelling straight ahead	V1:(Passenger car)	V1: E	Clear/Clear	V1:(Collision with guardrail)	216210.7862 862321.3999
5248716	Property damage 04/15/2023 only (none injured)	3:42 PM	2 Daylight	Rear-end	Dry	0	0	V1: Turning right / V2: Slowing or 0 stopped in traffic	V1:(Passenger car) / V2:(Tractor/semi-trailer)	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216094.8947 862276.6671
5248734	Property damage 04/21/2023 only (none injured)	4:41 PM	1 Daylight	Sideswipe, same direction	Dry	0	0	0 V1: Travelling straight ahead	V1:(Passenger car)	V1: N	Clear/Clear	V1:(Collision with motor vehicle in traffic)	216151.3035 862183.3661
5261961	Property damage 05/10/2023 only (none injured)	7:05 AM	2 Daylight	Rear-end	Dry	0	0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in 0 traffic	V1:(Light truck(van, mini-van, pickup, sport utility)) / V2:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: N	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993 862267.1901
5261947	Property damage 05/11/2023 only (none injured)	11:02 AM	2 Daylight	Angle	Dry	0	0	V1: Entering traffic lane / V2: 0 Travelling straight ahead	V1:(Light truck(van, mini-van, pickup, sport utility))	V1: N / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216049.3541 862237.5668
5270392	Property damage 05/29/2023 only (none injured)	3:14 PM	2 Daylight	Rear-end	Dry	0	0	V1: Travelling straight ahead / 0 V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993 862267.1901
5270399	Property damage 06/12/2023 only (none injured)	12:10 PM	2 Daylight	Rear-end	Dry	0	0	V1: Slowing or stopped in traffic 0 / V2: Travelling straight ahead	V1:(Single-unit truck (2-axle, 6-tires)) / V2:(Passenger car)	V1: E / V2: E	Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993 862267.1901
5270411	Property damage 06/22/2023 only (none injured)	8:45 AM	2 Daylight	Rear-end	Dry	0	0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in 0 traffic	V1:(Passenger car) / V2:(Tractor/semi-trailer)	V1: N / V2: N	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216103.5993 862259.0759
5270408	Property damage 06/26/2023 only (none injured)	1:36 PM	2 Daylight	Angle	Dry	0	0	V1: Overtaking/passing / V2: 0 Turning right	V1:(Passenger car) / V2:(Passenger car)	V1: S / V2: S	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216103.7248 862258.8148
5282828	Property damage 07/26/2023 Non-fatal injury	5:43 PM	2 Daylight	Angle	Dry	0	0	V1: Travelling straight ahead / 1 V2: Turning left	V1:(Motorcycle) / V2:(Passenger car)	V1: W / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216219.2902 862325.4706

5293096	Property damage 08/08/2023 only (none injured)	4:31 PM	2 Daylight	Rear-end	Dry	0	V1: Travelling straight ahead / 0 V2: Slowing or stopped in traffic	V1:(Passenger car) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: E / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216020.408	862220.9849
5293090	Property damage 08/09/2023 only (none injured)	12:25 PM	2 Daylight	Rear-end	Dry	0	V1: Slowing or stopped in traffic / V2: Slowing or stopped in traffic 0 traffic	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216147.7981	862188.4243
5293098	Non-fatal injury 08/11/2023	10:13 AM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / 1 V2: Turning right	V1:(Other) / V2:(Passenger car)	V1: E / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
5293097	Property damage 08/18/2023 only (none injured)	10:19 AM	2 Daylight	Head-on	Wet	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: W / V2: S	Rain/Rain	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216033.055	862228.1416
5306517	Property damage 09/05/2023 only (none injured)	2:42 PM	2 Daylight	Angle	Dry	0	V1: Entering traffic lane / V2: 0 Travelling straight ahead	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Passenger car)	V1: S / V2: W	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216039.2073	862231.623
5306518	Property damage 09/06/2023 only (none injured)	5:17 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / 0 V2: Turning right	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216210.8059	862321.4084
5306528	Non-fatal injury 09/09/2023	1:28 PM	1 Daylight	Angle	Dry	0	1 V1: Travelling straight ahead	V1:(Light truck/van, mini-van, pickup, sport utility)	V1: S	Clear	V1:(Collision with cyclist (bicycle, tricycle, unicycle, pedal car))	216099.6993	862267.1901
5306536	Property damage 09/27/2023 only (none injured)	9:19 AM	2 Daylight	Rear-to-rear	Dry	0	0 V1: Turning left / V2: Backing 0 straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: E / V2: W	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216107.471	862270.9857
5329362	Property damage 10/31/2023 only (none injured)	3:05 PM	2 Daylight	Rear-end	Dry	0	V1: Travelling straight ahead / 0 V2: Travelling straight ahead	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: E / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216210.8059	862321.4084
5329340	Non-fatal injury 10/31/2023	12:50 PM	2 Daylight	Head-on	Wet	0	V1: Travelling straight ahead / 1 V2: Turning left	V1:(Passenger car) / V2:(Truck/van, mini-van, pickup, sport utility) / V2:(Passenger car)	V1: N / V2: S	Rain/Rain	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
5329344	Property damage 11/04/2023 only (none injured)	12:46 PM	2 Daylight	Angle	Dry	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Passenger car)	V1: N / V2: E	Clear/Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216073.2405	862251.6217
5329361	Property damage 11/05/2023 only (none injured)	12:42 PM	2 Daylight	Angle	Dry	0	V1: Entering traffic lane / V2: 0 Travelling straight ahead	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: E / V2: E	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216103.7248	862258.8148
5329339	Property damage 11/06/2023 only (none injured)	3:25 PM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / 0 V2: Turning left	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: E / V2: W	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
5329346	Property damage 11/08/2023 only (none injured)	12:00 AM	2 Daylight	Angle	Dry	0	V1: Travelling straight ahead / 0 V2: Entering traffic lane	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Passenger car)	V1: S / V2: S	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216039.2073	862231.623
5333405	Property damage 12/05/2023 only (none injured)	12:39 PM	2 Daylight	Rear-end	Dry	0	V1: Slowing or stopped in traffic 0 / V2: Travelling straight ahead	V1:(Passenger car) / V2:(Light truck/van, mini-van, pickup, sport utility)	V1: N / V2: N	Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901
5337675	Property damage 12/06/2023 only (none injured)	7:43 AM	2 Daylight	Angle	Dry	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Passenger car) / V2:(Passenger car)	V1: N / V2: E	Cloudy/Cloudy	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216039.2073	862231.623
5333583	Property damage 12/08/2023 only (none injured)	4:23 PM	2 Dusk	Sideswipe, same direction	Dry	0	V1: Turning left / V2: Travelling 0 straight ahead	V1:(Light truck/van, mini-van, pickup, sport utility) / V2:(Passenger car)	V1: N / V2: N	Clear	V1:(Collision with motor vehicle in traffic) / V2:(Collision with motor vehicle in traffic)	216099.6993	862267.1901

## □ Sight Distance Calculations

**Stopping Sight Distance - Posted**

Kelley Boulevard

		<b>SPEED (MPH)</b>	<b>BRAKE REACTION DISTANCE (FT)</b>	<b>BRAKING DISTANCE (FT)</b>	<b>CALCULATED STOPPING SIGHT DISTANCE (FT)</b>
<b>Direction 1</b>	NB	30	110.25	86.3	196.5
<b>Direction 2</b>	SB	30	110.25	86.3	196.5

<u>INPUTS</u>	<u>Direction 1</u>	<u>Direction 2</u>
Travel Direction	NB	SB
Speed	30	30
Grade	0	0
t	2.5	2.5
a	11.2	11.2

**Stopping Sight Distance (SSD) - Source: AASHTO**

SSD = Reaction Distance + Brake Distance

Reaction Distance = 1.47 x t x V

Brake Distance =  $V^2 / (30 \times ((a/32.2)+G))$

Where:  
t = reaction time (sec)  
V = travel speed (mph)  
G = roadway grade  
a = deceleration rate (ft/sec<sup>2</sup>)

**Stopping Sight Distance - Posted**

George Leven Drive

		SPEED (MPH)	BRAKE REACTION DISTANCE (FT)	BRAKING DISTANCE (FT)	CALCULATED STOPPING SIGHT DISTANCE (FT)
<b>Direction 1</b>	EB	30	110.25	86.3	196.5
<b>Direction 2</b>	WB	15	55.125	21.6	76.7

INPUTS	Direction 1	Direction 2
Travel Direction	EB	WB
Speed	30	15
Grade	0	0
t	2.5	2.5
a	11.2	11.2

**Stopping Sight Distance (SSD) - Source: AASHTO**

SSD = Reaction Distance + Brake Distance

Reaction Distance = 1.47 x t x V

Brake Distance =  $V^2 / (30 \times ((a/32.2)+G))$

Where:  
t = reaction time (sec)  
V = travel speed (mph)  
G= roadway grade  
a - deceleration rate (ft/sec<sup>2</sup>)

## Intersection Sight Distance Calculations

Source: *A Policy on Geometric Design of Highways and Street, 7th Edition*; AASHTO; 2018.

### Intersection Sight Distance

$$\text{ISD} = 1.47 * V * t$$

V = speed

t = time gap

t = 7.5 s for a passenger car for Left Turn from a Stop

t = 6.5 s for a passenger car for Right Turn from a Stop

### Kelley Boulevard

Proposed Driveway ISD =  $1.47 * 30 * 6.5 = 287$  ft **SAY 290 ft**  
(right-turn from a stop)

### George Leven Drive

Proposed Driveway ISD =  $1.47 * 30 * 7.5 = 331$  ft **SAY 335 ft**  
(left-turn from a stop)

Proposed Driveway ISD =  $1.47 * 15 * 6.5 = 143$  ft **SAY 145 ft**  
(right-turn from a stop)

□ Planned Area Improvements



Figure 15

Conceptual Roadway Improvements Plan

KELLEY BOULEVARD CORRIDOR STUDY  
NORTH ATTLEBOROUGH, MASSACHUSETTS  
PREPARED FOR:  
TOWN OF NORTH ATTLEBOROUGH

**MDM** TRANSPORTATION CONSULTANTS, INC.  
PLANNERS & ENGINEERS

28 Lord Road, Suite 280  
Marlborough, MA 01752  
Tel: (508) 303-0370  
Fax: (508) 303-0371

Project No. 1188	File: 1188 Concept Plan (2022-10-28).dwg
Date: Oct. 24, 2022	Scale: As Noted



Figure 12

Conceptual Roadway Improvements Plan

KEY PLAN  
 KELLEY BOULEVARD CORRIDOR STUDY  
 NORTH ATTLEBOROUGH, MASSACHUSETTS  
 PREPARED FOR:  
 TOWN OF NORTH ATTLEBOROUGH

**MDM** TRANSPORTATION CONSULTANTS, INC.  
 PLANNERS & ENGINEERS

28 Lord Road, Suite 200  
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 FAX: (508) 304-0271

Project No. 118#	File: 118# Concept Plan (2022-10-28).dwg
Date: Oct. 24, 2022	Scale: As Noted
	Sheet 1 of 4



Figure 13

Conceptual Roadway Improvements Plan

KELLEY BOULEVARD CORRIDOR STUDY  
 NORTH ATTLEBOROUGH, MASSACHUSETTS  
 PREPARED FOR:  
 TOWN OF NORTH ATTLEBOROUGH

**MDM** TRANSPORTATION CONSULTANTS, INC.  
 PLANNERS & ENGINEERS

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 Marlborough, MA 01752  
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 Fax: (508) 303-0371

Project No. 1188	File: 1188 Concept Plan (2022-10-28).dwg
Date: Oct. 24, 2022	Scale: As Noted
	Sheet 2 of 4

CONT. ON  
 FIGURE 14



CONT. ON FIGURE 13

CONT. ON FIGURE 15

Figure 14

Conceptual Roadway Improvements Plan

KELLEY BOULEVARD CORRIDOR STUDY  
 NORTH ATTLEBOROUGH, MASSACHUSETTS  
 PREPARED FOR:  
 TOWN OF NORTH ATTLEBOROUGH

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28 Lord Road, Suite 280  
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Project No. 1188	File: 1188 Concept Plan (2022-10-28).dwg
Date: Oct. 24, 2022	Scale: As Noted
	Sheet 3 of 4

## DEVELOPMENT AGREEMENT

This DEVELOPMENT AGREEMENT (“Agreement”) is made as of the 28 day of June, 2022 (the “Effective Date”) by and between the Town of North Attleboro, a Massachusetts municipality, with a principal place of business at 43 South Washington Street, North Attleborough, Massachusetts 02760 (referred to as the “Town of North Attleboro”) and MCP 582 KELLEY LLC with a principal business address of 260 Franklin Street, Suite 620, Boston, MA 02110 (referred to as the “Developer”), and may be referred to individually as “Party” and collectively as the “Parties.”

### RECITALS

Developer has asked the Town of North Attleboro to consider amending the North Attleborough Zoning Bylaw (“Zoning Bylaw”) by adopting the “Kelley Boulevard Smart Growth Overlay District” (KBSGOD) pursuant to G.L. Chapter 40R and Chapter 40A, a copy of which is attached as **Exhibit A**, at a meeting of the Town Council to be held \_\_\_, 2022 (“Council Meeting”) and to include in the KBSGOD a parcel of land consisting of approximately 13.679 acres, more or less, (the “Property”) more particularly shown on the KBSGOD plan attached hereto as **Exhibit B** and incorporated by reference. The adoption of the KBSGOD and the inclusion of the Property within the KBSGOD would enable Developer to apply to the North Attleborough Plan Approval Authority (“PAA”) for Plan Approval as required under the proposed KBSGOD for development of a Smart Growth Project on the Property (the “Project”).

### AGREEMENT

Now, therefore, for mutual consideration, the receipt and sufficiency of which are hereby acknowledged, the Town of North Attleboro and the Developer agree that, if, and only if, the KBSGOD is adopted at the Council Meeting in the form attached hereto as **Exhibit A**, without modification which materially affects Developer’s rights as set forth herein and Developer applies for and is issued a building permit in accordance with Plan Approval granted by the PAA for a Project as described in the KBSGOD, then the Town of North Attleboro and the Developer shall each perform the actions as set forth herein; provided, however, that with respect to the actions described in Paragraphs 1A, the Developer shall perform its obligations regardless of the action of such Council Meeting, or the status of any building permit application; and provided, however, that with regard to the actions described in Paragraphs 1.B, 2, 5, 6, 7 and 11, the Developer shall perform its obligations only if the Town of North Attleboro applies for Chapter 40R approval and the Town Council adopts the KBSGOD in the form attached hereto as **Exhibit**

before December 1, 2022. A schedule indicating 40R-related milestones is attached as Exhibit C.

**1. FY 2022 and FY 2023 MassWorks Grant Applications.**

A. Developer will pay all costs to fund the preparation and submission of an application for a grant from the MassWorks Infrastructure Grant Program or any successor grant program (MassWorks) for Fiscal Year 2022 (FY 2022) Funding. Developer will engage the services of Anderson Strategic Advisors, LLC (Anderson) and MDM Transportation Consultants, Inc. (MDM) to prepare and submit the MassWorks application(s). Anderson will provide a draft of the MassWorks grant application prior to submittal to the Town of North Attleboro and the Town of Plainville. The Town of North Attleboro and the Town of Plainville must agree in writing to the final version of the MassWorks grant application by May 31, 2022 for FY 2022.

B. In the event of an unsuccessful application for FY 2022, Developer will facilitate the resubmission in Fiscal Year 2023 (FY 2023), again using the services of Anderson and MDM. Anderson will provide a draft of the MassWorks grant application prior to submittal to the Town of North Attleboro and the Town of Plainville. The Town of North Attleboro and the Town of Plainville must agree in writing to the final version of the MassWorks grant application by January 31, 2023 for FY 2023.

**2. Contents of Applications.**

The application to MassWorks for the FY 2022 will include the following design and construction components to benefit the Town of North Attleboro (Town):

**North Attleborough:** Preliminary (10% Design) Concept of improvements along Route 152 (Kelley Boulevard) from George Leven Drive to the Plainville Town Line. Anticipated improvements include a new signal and associated sidewalk and pedestrian crossings at George Leven Drive, a right-in and right-out only turning lane at the site driveway fronting Kelley Boulevard, a new pedestrian crossing at Plain Street equipped with pedestrian beacons (Rapid Rectangular Flashing Beacons/RRFB), a new sidewalk along the west side of Kelley Boulevard from George Leven Drive to the Plainville Town Line.

In addition, said application to MassWorks will include the following design and construction components to benefit the Town of Plainville:

**Plainville:** Preliminary (10% Design) Concept of improvements along Taunton Street (Route 152) from Route 106 (Messenger Street) to the North Attleboro Town Line. Anticipated improvements include lane widening along Route 152 and Route 106 to accommodate an additional through lane in all travel directions, a new multi-phase traffic signal to accommodate coordinated operation with a new signal at George Leven Drive in North Attleborough, reconstruction of sidewalks.

The application to MassWorks for FY 2023 will include the same traffic improvements set forth in Item 2 but the design will be advanced to 25%. Developer shall be responsible for all costs associated with such as further detailed in Section 5.

**3. Total MassWorks Request.**

The estimated total amount of the MassWorks grant request will be in the vicinity of \$5.5 million. This figure includes design, engineering, and construction costs. The costs of private land takings and/or permitting, municipal fees, utility fees, and the like, are not included in this figure.

**4. Town and Developer Contributions in FY2022.**

The Town of North Attleboro, subject to Town Council approval of funding, will make a commitment to fund a cash and/or in-kind contribution of \$200,000 towards the MassWorks application for the FY 2022 application.

Developer will make a commitment to fund a cash contribution of \$500,000 in addition to the costs associated with the design, engineering, and grant submission costs committed to in item 1.

The total contribution from the Town of North Attleboro and the Developer will be \$700,000.

**5. FY 2023 MassWorks Application.**

In the event that MassWorks does not approve the application in FY 2022, Developer and the Town of North Attleboro will hold a meeting with the Executive Office of Housing and Economic Development (OHED) for an evaluation of the application. Necessary changes and modifications will be made based on the meeting and Developer will pay all costs to fund the preparation and submission of a revised application for a MassWorks grant for FY 2023. This commitment excludes costs related to matching funds that may be required from the Towns, private takings, and/or any other items that are not related to design and/or preparation and submission of the FY 2023 application. Developer will again engage the services of Anderson and MDM to prepare and submit the MassWorks application.

**6. Town and Developer Contributions in FY 2023.**

If MassWorks denies the Town's application in FY 2022, the Town of North Attleboro, subject to Town Council approval of funding, will make a commitment to fund a cash or in-kind contribution in the amount of \$1,200,000 for the FY 2023 application. The following contributions will be made:

1. The Town of North Attleboro will contribute \$1,200,000 including the \$200,000 stated in Paragraph 4;
2. The Town of Plainville will contribute \$500,000;
3. The Developer will renew the commitment made in Paragraph 4 to fund a cash contribution of \$500,000 in addition to the costs associated with the design, engineering, and grant submission costs committed to in Paragraphs 1, 2, and 6; and
4. The Developer will contribute any estimated waived development permit fees.

All parties may increase their contribution. If approved by the Town of North Attleboro, in-kind contributions (such as the waiver of permit fees, including building permit fees) will be used by the Developer to increase their FY 2023 contribution by such waived amount.

**7. No FY 2022 or FY 2023 MassWorks Grant.**

In the event that MassWorks does not fund the application for in FY 2022 or FY 2023, the Town of North Attleboro will commit \$1,200,000 and Developer \$500,000 for a total of \$1,700,000 to facilitate the following traffic improvements in North Attleborough. In no event shall Developer be responsible to commit and/or contribute cash in excess of \$500,000.

- \* A new traffic signal and associated sidewalk and pedestrian crossing at George Leven Drive;
- \* A right-in, right-out only turning lane at the site driveway fronting Kelley Boulevard or another agreed upon solution;
- \* A new pedestrian crossing at Plain Street equipped with pedestrian beacons (rapid rectangular flashing beacons/RRFP);
- \* A new sidewalk along the west side of Kelley Boulevard from George Leven Drive to the Plainville line

**8. Town Responsibilities.**

The Town promises to do the following for the FY 2022 and FY 2023 MassWorks applications:

- \* Negotiate with the Town of Plainville to secure agreement from Plainville to provide funding, either in-kind contributions or in matching funds;
- \* Coordinate with the Town of Plainville to secure cooperation and all required materials/signatures from Plainville that may be required to facilitate the MassWorks application process;
- \* Coordinate with Plainville to secure Letters of Intent and commitment to pay for all costs associated with all private takings within the Town of Plainville prior to the date set forth in Paragraph 1 regarding the Town Approvals required for FY 2023. The Parties acknowledge that such private takings will be the responsibility of Plainville.

After the MassWorks application phase, the Town promises to do the following:

- \* The Town of North Attleboro shall assume all responsibilities associated with advancing the traffic mitigation efforts beyond the 25% design that Developer has committed to. Developer will have no further role in or responsibility for the design, financing, permitting, construction, payment of costs and/or fees, nor any other aspect of the traffic mitigation efforts.
- \* With the Town of Plainville, obtain all design, engineering, permitting/approvals, project management, construction, testing, inspections or any other item related to the design, permitting, and installation of the traffic mitigation efforts required following a successful and/or an unsuccessful MassWorks;
- \* No approvals, inspections, occupancies, or any other administrative responsibility of the Town of North Attleboro shall be contingent upon the start and/or completion of the traffic mitigation efforts identified in Paragraph 2 or any others that may arise. The Town agrees that the 40R process and subsequent application for Plan Approval will not be held up or made contingent upon MassWorks progress or success.
- \* The Town shall approve all permits/approvals that it directly controls within 90 days. For those permits/approvals that the Town administers but relies on Peer Review to complete, the Town shall accept and approve finalized Peer Reviews at the next Planning Board meeting or, in the case that the final approval does not reside within the purview of the Planning Board, within 7 days of receipt of the final Peer Review approval(s). Initial Peer Review cycles shall take no more than 30 days to complete and Comment Response Peer Review cycles shall take no more than 15 days to complete (i.e. Peer Reviewers shall have 30 days from the date by which Developer submits initial materials to return comments and 15-days from the date by which Developer submits comments responses to return additional comments and/or approvals). Developer shall respond to respond to Peer Review comments within seven (7) days.
- \* Developer and Town shall work cooperatively to expedite the approval and permitting processes. In the event that the durations set forth in this paragraph cannot be achieved, Developer and Town shall work together to identify alternative durations and/or timelines that are mutually agreeable. Developer acknowledges that Town Reviewers and/or Peer Reviewers may have multiple rounds of comments. Developer will address all comments in a comprehensive manner to streamline the review process.

## **9. Developer Responsibilities.**

Starting one year after Final Occupancy, Developer must provide an occupancy report that includes the number of tenants with school age children (ages 7-18) that are enrolled in North Attleborough Public Schools. If the number of such children exceeds ten, Developer will pay \$5,000 per child in excess of 10 each year. This requirement will remain in place for three years

after Final Occupancy. Thereafter, Developer will not be responsible for any costs associated with site-specific enrollment at North Attleborough Public Schools.

**10. Existing Conditions.**

The Developer and the Town agree that the MassWorks application and traffic mitigation efforts are intended to address existing conditions in the area of Kelley Boulevard, and acknowledge that Developer's proposed 40R project is not the cause of the existing conditions.

**11. Town and Developer Reservation of Rights.**

The parties to this Agreement anticipate that a zoning amendment pursuant to G. L. Chapter 40R will be submitted to the Town of North Attleboro Town Council for adoption, and, if approved, Developer anticipates filing an application for Plan Approval of a mixed-use development at 582 Kelley Boulevard in North Attleborough. It is expressly understood by the parties to this Agreement that nothing contained herein or extraneous hereto compels the Town of North Attleboro Town Council to approve said zoning amendment.

Developer generally reserves the right not to pursue redevelopment of the Property under a Chapter 40R zoning amendment to be adopted by the Town Council. If at any time the Developer elects not to apply for Chapter 40R approval, this Development Agreement shall be null and void.

**MISCELLANEOUS PROVISIONS**

**12. Invalidity.**

The Town and Developer agree that if the Town of North Attleboro's adoption of the proposed KBSGOD is determined to be invalid, illegal, or unconstitutional by the Attorney General of the Commonwealth of Massachusetts or by a court of competent jurisdiction prior to the performing of the actions described herein, then the provisions of this Agreement and each of the agreements and documents referenced herein shall be null and void; provided, however, that the provisions of Paragraph 1.A shall survive any such determination and shall continue to be in full force and effect.

**13. Compliance.**

The Developer agrees that during the Plan Approval process it shall submit all necessary evidence, to the satisfaction of the PAA, to show compliance with the terms of this Agreement.

**14. Intent to Bind Successors, Heirs and Assigns.**

The foregoing obligations shall run with the Property and shall be binding upon and inure to the benefit and burden of the Developer, its heirs, successors, and assigns.

**15. Effect; Amendment.**

This Agreement shall not take effect until voted and executed by the Town Council of the Towns. Upon such vote, this Agreement shall not be amended in any material respect except by a further majority vote of the Town Council.

**16. Required Notice.**

Unless otherwise specified in this Agreement, any notice to be given under this Agreement shall be in writing and signed by the party (or the party's attorney) and shall be deemed to have been given (a) when delivered, if delivered by hand, or (b) two business days after the date mailed, if mailed by registered or certified mail, all charges prepaid, in either event addressed as follows:

In the case of the Towns, to:

Michael Borg  
Town Manager  
Town Hall  
North Attleborough, MA

In the case of the Developer, to:

MCP 582 Kelley LLC  
260 Franklin Street, Suite 620  
Boston, MA 02110

By such notice, either party (or such party's attorney) may specify a new address, which thereafter shall be used for subsequent notices.

**17. Default and Notice.**

A. *By Developer.* If Developer shall default in the performance of any term, covenant or condition of this Development Agreement, which default shall continue for more than thirty (30) days after written notice to Developer (or if such default shall be reasonably

expected to take more than thirty (30) days to cure, said longer period of time), the Town of North Attleboro shall have the right to (i) terminate this Development Agreement. The Town of North Attleboro agrees that if, within ten (10) days after Developer's receipt of a notice of a claim of default, Developer shall give notice to the Town that Developer contests the same, then the Town of North Attleboro shall not have the right to exercise the foregoing right in respect thereto until such claim shall have been finally adjudicated in such contest. The Developer agrees to diligently prosecute any such contest and if such adjudication is in favor of Developer, then Developer shall be reimbursed its reasonable legal fees and other expenses in prosecuting such contest by the Town of North Attleboro; if such matter is determined adversely to Developer, Developer shall have thirty (30) days (or such longer period of time as shall be reasonable under the circumstances) to effect such cure and in addition thereto, Developer shall reimburse the Town of North Attleboro its reasonable legal fees and other expenses in defending any such contest.

**B. *By the Town.*** If the Town of North Attleboro shall default in the performance of any term, covenant or condition of this Development Agreement, which default shall continue for more than thirty (30) days after written notice to the Town of North Attleboro (or if such default shall be reasonably expected to take more than thirty (30) days to cure, said longer period of time), the Developer shall have the right to terminate this Development Agreement.

**18. Effective Date of Agreement.**

This Development Agreement shall be effective as of the date it shall be executed by the Town of North Attleboro and Developer.

**19. Plainville Obligations.**

All Plainville obligations subject to this agreement if any will be finalized in a separate agreement with the Town of North Attleboro.

**20. Dispute Resolution.**

Prior to the initiation of any court proceeding regarding the terms of this Agreement or performance thereunder, the Town of North Attleboro and Developer agree that such disputes shall be first subject to nonbinding arbitration or mediation, for a period not longer than ninety (90) days.

**21. Applicable Law; Construction.**

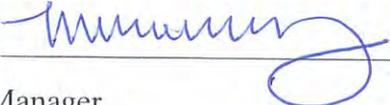
A. This Development Agreement shall be deemed to have been executed within the Commonwealth of Massachusetts, and the rights and obligations of the parties hereto

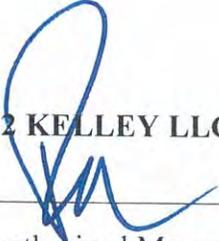
shall be construed and enforced in accordance with, and governed by, the laws of the Commonwealth of Massachusetts.

B. This Development Agreement is the entire agreement among the parties with respect to the subject matter hereof and supersedes all prior and contemporaneous oral and written agreements and discussions.

Executed under seal as of the date first above written.

**TOWN OF NORTH ATTLEBOROUGH**

By:  \_\_\_\_\_  
Town Manager

**MCP 582 KELLEY LLC**  
By:  \_\_\_\_\_  
Its duly authorized Manager

## **SCHEDULE OF EXHIBITS**

- Exhibit A: KBSGOD Chapter 40R Bylaw
- Exhibit B: KBSGOD Map
- Exhibit C: 40R Entitlement Schedule

# Exhibit A

PLEASE RED-LINE ALL CHANGES TO THE SMART GROWTH ZONING TEMPLATE

page 1

## CHAPTER 40R LOCAL ZONING BYLAW GUIDANCE DOCUMENT

### OVERVIEW

This document has been developed by the Department of Housing and Community Development (DHCD, or the Department) to assist communities in drafting zoning bylaws in accordance with M.G.L. chapter 40R, the Smart Growth Zoning Overlay District Act (Chapter 40R or the Act). The Department has adopted regulations, 760 CMR 59.00 (the 40R Regulations), that expand upon the requirements of the Act for the submission of applications and the approval of Smart Growth Zoning Overlay Districts under the Act. For any capitalized terms not defined in this document, see the meaning given in the 40R Regulations.

Chapter 40R encourages communities to create dense residential or mixed-use smart growth zoning districts, including a substantial percentage of affordable housing units, to be located near transit stations, in areas of concentrated development such as existing city and town centers, and in other highly suitable locations. Projects must be developable under the community's smart growth zoning adopted under Chapter 40R, either purely as-of-right or through an as-of-right plan review process as provided for in corresponding definition contained in the sample bylaw below. Upon state review and approval of a local overlay district, communities become eligible for payments administered by DHCD, as well as other financial incentives.

The Department has developed a sample zoning bylaw, with accompanying comments, that addresses the full range of issues that must be included in a community's Smart Growth Zoning (SGZ). A community is not required to use the format or specific language of the sample bylaw (although there are some specific instances, highlighted in the comments, where DHCD will require either these specific provisions or language of substantially equivalent effect), but *applications that do not include a red-lined copy of the Smart Growth Zoning against this template will be delayed.* Here is an overview of the sample bylaw:

### Section A: General Regulations that apply to all Smart Growth Zoning Districts

#### A.1 and A.2: Purpose and Definitions

The sample bylaw recommends referencing Chapter 40R and its smart growth goals in Section 1, as well as other applicable local purposes. Section 2 contains specific definitions relating to the sample text; other definitions should be included as necessary. Note that under the 40R Regulations, the Smart Growth Zoning must be an all-inclusive, separate section of the zoning ordinance or bylaw.

#### A.3: Applicability (Scope & Authority)

The sample bylaw contains provisions clarifying the physical scope of any overlay district and any sub-districts, and the relationship of the Smart Growth Zoning to underlying provisions of the local zoning bylaw. The sample bylaw reflects Chapter 40R in stating that a developer may either develop a Project in accordance with the requirements of the Smart Growth Zoning, or in accordance with the requirements of the regulations for use, dimension, and all other provisions of the Zoning Bylaw governing the underlying zoning district(s).

6/29/2022

**A.4: Permitted Uses - General**

The sample bylaw contains provisions for the different types of residential uses that a community may choose to permit within a District: single-family, two- and three-family, and/or multi-family (defined under 40R as a structure with four or more residential units). In addition, a community may elect to allow Mixed-use Development Projects within a District. The sample bylaw also provides for parking and other accessory uses.

**A.6: Affordability**

Chapter 40R requires that under the Smart Growth Zoning, at least 20% of all units constructed within Projects of more than 12 units shall be Affordable. The Act also requires mechanisms to ensure that at least 20% of the total number of units constructed in the District will be Affordable, and it requires provisions to ensure effective monitoring and enforcement. The Department has developed detailed language in Section 6 of the sample bylaw to address these statutory provisions; it will require the Smart Growth Zoning to contain these provisions, or language of substantially equivalent effect.

**A.7 and A.8: Dimensional, Density, and Parking Requirements - General**

The sample bylaw includes these sections, while leaving the actual physical requirements within the District (and any sub-districts) to be defined by each community. The one provision in this area that Chapter 40R does impose is minimum allowable residential densities: the SGZ must allow at least 8 units per acre for single-family residential use; at least 12 units per acre for 2- and/or 3-family residential use; and at least 20 units per acre for multi-family residential use. The Smart Growth Zoning may provide for different sub-districts with different allowable uses and densities in each, so long as each sub-district meets the minimum density standards of the Act.

**A.9 through A.12: Plan Approval Process**

A community may elect to subject some or all Projects within a District to a Plan Approval process. Chapter 40R and the Regulations spell out detailed procedural and substantive requirements for the Plan Approval process, which are reflected in these sections of the sample bylaw. Therefore, the Department will require the Smart Growth Zoning to contain these provisions, or language of substantially equivalent effect. Among other related issues, the sample bylaw addresses the phasing and segmenting of projects, and they allow the Plan Approval Authority (PAA) to issue waivers from dimensional and other requirements (but not Affordability).

**A.13: Design Standards – General**

As part of the Plan Approval process, Chapter 40R allows the PAA to apply Design Standards, to ensure that a Project is complementary to adjacent buildings and structures and shall provide for high density quality development consistent with design features traditionally found in densely settled areas of the community. The Design Standards are subject to the Department's review and approval; the Department may disallow a design standard as unduly restrictive if it would add unreasonable costs or unreasonably impair the economic feasibility of Projects within the District

or if the standard is not sufficiently clear such that it conflicts with the requirement that the SGZ be as of right.

**A.14: Severability**

**B. Establishment and Delineation of the Smart Growth Overlay Districts**

**B.1: Establishment & Delineation - (District-Specific)**

**B.2: Permitted Uses - (District-Specific)**

**B.3: Dimensional & Density Requirements – (District-Specific)**

**B.4: Parking Requirements - (District-Specific)**

**B.5: Design Standards - (District-Specific)**

## SAMPLE ZONING BYLAW WITH COMMENTS

*COMMENTS: The Regulations state that the Smart Growth Zoning must be all-inclusive. This means that the development of a Project within the District shall be governed solely by the Smart Growth Zoning, without reference to any standards or procedures contained elsewhere in the Zoning Bylaw.*

### **SECTION II.F: KELLEY BOULEVARD SMART GROWTH OVERLAY DISTRICT (KBSGOD)**

#### **A. General Regulations that apply to the Kelley Boulevard Smart Growth Overlay District**

##### **1. PURPOSE**

The purpose of this Section II.F is to establish the Kelly Boulevard Smart Growth Overlay District (KBSGOD) to encourage smart growth in accordance with the purposes of G. L. Chapter 40R., and to foster a range of housing opportunities that promotes compact design. The goals of the 40R overlay district is to produce affordable housing with amenities and encourage other development like mixed-use for urban revival in the area. The objectives are to:

- Promote the public health, safety, and welfare by encouraging a diversity of housing opportunities;
- Provide a range of housing choices for households of varying size, incomes and ages and increase the production of housing to meet existing and anticipated housing needs;
- Establish requirements, standards and guidelines which will ensure suitable and cost-effective development and a clear, predictable and efficient development review and permitting process;
- Encourage other development in the Kelley Boulevard/Route 152 area; and
- Enable the Town to receive zoning incentive and density bonus payments under G.L. Chapter 40R and Chapter 40S.

*COMMENTS: Since the Smart Growth Zoning must be all-inclusive – that is, no other provisions of the Zoning Bylaw are applicable to a Project being developed pursuant to the Smart Growth Zoning within a District -- the Department recommends that the Smart Growth Zoning should contain a purpose section. The purpose section should state that the Smart Growth Zoning will encourage smart growth in accordance with the purposes of G.L. Chapter 40R.*

## 2. DEFINITIONS

For purposes of this Section II.F, the following definitions shall apply. All capitalized terms shall be defined in accordance with the definitions established under the Governing Laws or Section 2.0, or as set forth in the PAA Regulations. With respect to their application to this Section II.F, to the extent that there is any conflict between the definitions or terms set forth in, or otherwise regulated by, the Governing Laws and those defined or used in this Section II.F, inclusive of any applicable Design Standards, PAA Regulations, or any other applicable associated local zoning requirement (e.g., zoning requirement contained in another section of the Zoning [Bylaw/Ordinance] that is nonetheless incorporated by reference), the terms of the Governing Laws shall govern.

***Affordable Homeownership Unit*** - an Affordable Housing unit required to be sold to an Eligible Household.

***Affordable Housing*** - housing that is affordable to and occupied by Eligible Households.

***Affordable Housing Restriction*** - a deed restriction of Affordable Housing meeting the statutory requirements in G.L. Chapter 184, Section 31 and the requirements of Section 6.5 of this Bylaw.

***Affordable Rental Unit*** - an Affordable Housing unit required to be rented to an Eligible Household.

***Applicant*** – the individual or entity that submits a Project application for Plan Approval.

***As-of-right*** - a use allowed under Section 5.0 without recourse to a special permit, variance, zoning amendment, or other form of zoning relief. A Project that requires Plan Approval by the PAA pursuant to Sections 9.0 through 13.0 shall be considered an as-of-right Project, subject to review and approval by DHCD of any Municipal 40R regulations, guidelines, application forms, or other requirements applicable to review of Projects by the Plan Approval Authority under the 40R Zoning and 760 CMR 59.00.

***Department or DHCD*** - the Massachusetts Department of Housing and Community Development, or any successor agency.

***Design Standards*** – provisions of Section 13 made applicable to Projects within the SGOD that are subject to the Plan Approval process.

***Eligible Household*** - an individual or household whose annual income is less than or equal to 80 percent of the area-wide median income as determined by the United States Department of Housing and Urban Development (HUD), adjusted

for household size, with income computed using HUD's rules for attribution of income to assets.

*COMMENTS: The Smart Growth Zoning may further decrease the maximum income limits of eligible households (below 80 percent of the area-wide median income as determined by HUD). The Municipality shall be required to prove to the Department in its submission that any such decrease will not "unduly restrict" opportunities for development within the proposed District under the Smart Growth Zoning: that means that the decrease may not add unreasonable costs or unreasonably impair the economic feasibility of proposed Projects.*

**Governing Laws** - G.L. Chapter 40R and 760 CMR 59.00.

**Mixed-Use Development Project** – a Project containing a mix of residential uses and non-residential uses, as allowed in Section 5.2, and subject to all applicable provisions of this Section II.F.

**Monitoring Agent or Administering Agent** – the local housing authority or other qualified housing entity designated by the municipality's PAA, pursuant to Section 6.2, to review and implement the Affordability requirements affecting Projects under Section 6.0.

**PAA Regulations** – the rules and regulations of the PAA adopted pursuant to Section 9.3.

**Plan Approval** - standards and procedures which [certain categories of] Projects in the SGOD must meet pursuant to Sections 9.0 through 13.0 and the Governing Laws.

*COMMENTS: A Municipality has the option, in Section 9.1, either to subject all Projects within the SGOD to the Plan Approval process, or to limit the review process to certain categories of Projects.*

**Plan Approval Authority (PAA)** - The local approval authority authorized under Section 9.2 to conduct the Plan Approval process for purposes of reviewing Project applications and issuing Plan Approval decisions within the SGOD. The PAA shall be the Planning Board.

**Project** - a Residential Project or Mixed-use Development Project undertaken within the SGOD in accordance with the requirements of this Section II.F.

**Residential Project** - a Project that consists solely of residential, parking, and accessory uses, as further defined in Section 5.1.

**SGOD** – the Kelley Boulevard Smart Growth Overlay District established in accordance with this Section II.F.

Subject Property – The property described in the following deeds recorded in the Bristol County Northern District Registry of Deeds:

Book 1439, Page 992  
Book 20721, Page 325  
Book 21818, Page 201

**Zoning Bylaw** - - the Zoning Bylaw of the Town of North Attleborough.

*COMMENTS: Because of the requirement in the Regulations that the local Smart Growth Zoning must be all-inclusive, it must contain a definitions Section with all defined terms, rather than referring the reader to other sections of the local zoning code. In particular, to satisfy the requirements of Chapter 40R and the 40R Regulations regarding Affordable Housing, the following definitions are required by the Department:*

- *Monitoring Agent*
- *Affordable Homeownership Unit*
- *Affordable Housing*
- *Affordable Housing Restriction*
- *Affordable Rental Unit*
- *Eligible Household*

*The sample bylaw includes certain definitions required by the text. Other definitions are likely to be required (for example, terms used in relation to the use and dimensional provisions of Sections 5.0 and 7.0) The drafter may choose to locate certain text elements, including Design Standard (see Section 13.0) and certain definitions, in the PAA Regulations, rather than in the Smart Growth Zoning. Note, however, that under the 40R Regulations any change in the PAA Regulations must be reviewed and approved by the Department.*

### **3. APPLICABILITY OF SGOD – SCOPE AND AUTHORITY**

**3.1 Applicability of SGOD.** An applicant may seek development of a Project located within the SGOD in accordance with the provisions of the Governing Laws and this Section II.F, including a request for Plan Approval by the PAA, if necessary. In such case, notwithstanding anything to the contrary in the Zoning Bylaw, such application shall not be subject to any other provisions of the Zoning Bylaw, including limitations upon the issuance of building permits for residential uses related to a rate of development or phased growth limitation or to a local moratorium on the issuance of such permits, or to other building permit or dwelling unit limitations. To the extent that there is any conflict between the Governing Laws and this Section II.F, inclusive of the Design Standards, the PAA Regulations, and any applicable associated local zoning requirement (e.g., zoning requirement contained in another section of the Zoning Bylaw that is nonetheless incorporated by reference), the Governing Laws shall govern.

*COMMENTS: The 40R Regulations state that Projects within a District shall not be subject to limitation of the issuance of building permits for residential uses or a local moratorium on the issuance of such permits. Therefore, the Smart Growth Zoning must specify that Projects in the SGOD are not subject to any such provisions within the Zoning Bylaw. It is also recommended that the Smart Growth Zoning state that a local rate of development provision (if any) does not apply to Projects in the SGOD.*

**3.2 Underlying Zoning.** The SGOD is an overlay district superimposed on all underlying zoning districts. The SGOD is set forth on the map entitled “Kelley Boulevard Smart Growth Overlay District,” dated \*\*\*, prepared by \*\*\*. This map is hereby made a part of the Zoning Map and Zoning By-law and is on file in the Office of the Town Clerk.

The regulations for use, dimension, and all other provisions of the Zoning Bylaw governing the underlying zoning district(s) shall remain in full force, except for those Projects undergoing development pursuant to this Section II.F. Within the boundaries of the SGOD, a developer may elect either to develop a Project in accordance with the requirements of this Section II.F, or to develop a project in accordance with requirements of the regulations for use, dimension, and all other provisions of the Zoning Bylaw governing the underlying zoning district(s).

*COMMENTS: Chapter 40R and the 40R Regulations state that within the boundaries of a District, a developer may elect either to develop a Project in accordance with the requirements of the Smart Growth Zoning, or to develop a project in accordance with the requirements of the Underlying Zoning. Therefore, for the sake of clarity the Smart Growth Zoning must acknowledge that the underlying zoning remains in effect, except for Projects specifically being developed under the Smart Growth Zoning.*

**3.3 Administration, Enforcement, and Appeals.** The provisions of this Section II.F shall be administered by the Building Commissioner, except as otherwise provided herein. Any legal appeal arising out of a Plan Approval decision by the PAA under Sections 9 through 13 shall be governed by the applicable provisions of G. L. Chapter 40R. Any other request for enforcement or appeal arising under this Section II.F shall be governed by the applicable provisions of G. L. Chapter 40A.

**4. RESERVED**

**5. PERMITTED USES - GENERAL**

The following uses are permitted As-of-Right for Projects within SGODs unless otherwise specified under the corresponding section of the District-specific requirements.

**Residential Projects.** A Residential Project within the SGOD shall include and be limited to a) Multi-family Residential Use;

- b) Parking accessory to the above permitted use, including surface, garage-under, and structured parking (e.g., parking garages); and
- c) Accessory uses customarily incidental to any of the above permitted uses, including but not limited to communal workspace, fitness space, gathering space, bicycle storage, pedestrian path and crosswalks around the site, pool, fire pit, grilling area, tot lot, and dog park..

*COMMENTS: Chapter 40R and the 40R Regulations state that Residential Projects must be permitted as of right, although they may be subject to Plan Approval by the PAA (see definition of "as-of-right" in Section 2 above). If there are sub-districts within the District, the Smart Growth Zoning must specify which types of residential uses are allowed within each sub-district.*

*Note that Chapter 40R and the 40R Regulations state that within a Substantially Developed Sub-district, the Smart Growth Zoning must permit the as-of-right construction of additional housing units in existing residential buildings or additions thereto or replacements thereof. Drafters should consult with DHCD on this and other issues if the Smart Growth Zoning will include provisions for a Substantially Developed Sub-district. See also Section 7.2.*

**5.2 Mixed-use Development Projects.** A Mixed-use Development Project within the SGOD may include:

Multi-family Residential Use, provided that the minimum allowable as-of-right density requirements for residential use specified in Section 7.1 shall apply to the residential portion of any Mixed-use Development Project; Any of the following Non-residential uses:

- \* Small retail or restaurant uses with less than 5,000 sf GFA;
- \* Child care center

The total gross floor area devoted to such Non-residential uses within a Mixed-use Development Project shall not exceed 20,000 sf GFA

- a) Parking accessory to any of the above permitted uses, including surface, garage-under, and structured parking (e.g., parking garages); and
- d) Accessory uses customarily incidental to any of the above permitted uses.

*COMMENTS: Chapter 40R and the 40R Regulations state that if the Smart Growth Zoning allows Mixed-use Development Projects, such projects must also be allowed as-of-right. The minimum allowable as-of-right density requirements for residential use apply to the residential portion of a mixed-use development project. The Smart Growth Zoning may limit Mixed-use Development Projects to certain sub-districts of a District.*

*Under Chapter 40R and the 40R Regulations, provisions of the Smart Growth Zoning and/or the Design Standards may require that the non-residential elements of any Mixed-Use Development*

*Project are planned and designed “in an integral manner to complement the residential uses, and help foster vibrant, workable, livable, and attractive neighborhoods” consistent with the smart growth goals of the Act. For further discussion of this issue, see the Design Standards guidance document.*

*COMMENTS: The 40R Regulations state that the Smart Growth Zoning must specify the minimum portion of a mixed-use development project that must be devoted to residential use.*

*COMMENTS: Chapter 40R allows a municipality to permit business, commercial, or other uses that are consistent with the permitted primary residential use in a District. Such uses may be permitted as-of-right, through the Plan Approval process, or (in the case of projects consisting solely of non-residential uses) by special permit review.*

## 6. HOUSING AND HOUSING AFFORDABILITY

**6.1 Number of Affordable Housing Units.** For all Projects containing at least 13 residential units, not less than twenty five percent (25%) of housing units constructed shall be Affordable Housing. Unless the PAA provides a waiver on the basis that the Project is not otherwise financially feasible, not less than twenty-five percent (25%) of rental dwelling units constructed in a Project containing rental units must be Affordable Rental Units. For purposes of calculating the number of units of Affordable Housing required within a Project, any fractional unit shall be deemed to constitute a whole unit. A Project shall not be segmented to evade the Affordability threshold set forth above.

*COMMENTS: Chapter 40R and the 40R Regulations require that under the Smart Growth Zoning, not less than 20 percent of all units constructed within Projects containing at least 13 units shall be Affordable. The 20% affordability standard and the 13-unit threshold apply to all units in a Project that is developed under the Smart Growth Zoning and is subject to this Section 6. Therefore, the Smart Growth Zoning must contain the above language. With the exception of Projects within the SGOD designated exclusively for the elderly, persons with disabilities, or for assisted living which per Section 6.8 must require 25% Affordable Housing, the minimum percentage of Affordable Housing required under the statute is 20%. Nonetheless, DHCD has added the default 25% requirement above for Affordable Rental Units because most 40R communities to date have inserted such a requirement so that, based on the associated rules, all of the rental units in a given Project will count as affordable on the Subsidized Housing Inventory (SHI).*

*The 40R Regulations state that the Smart Growth zoning must require that Projects are not segmented to evade the size threshold for the Affordability requirements. As discussed below, the Municipality also has the option to apply the Affordability requirements to smaller Projects, or to all Projects within the District. In the latter case, the bracketed sentence on segmentation would*

not be required.

*The Smart Growth Zoning and/or the Community Housing Plan shall contain mechanisms to ensure that the total number of Affordable units constructed in the District equals not less than twenty percent (20%) of the total number of all units constructed within Projects in the District. Such mechanisms might include some or all of the following:*

- *Applying the 20% affordability standard to some or all Projects with fewer than 13 units;*
- *Increasing the affordability standard beyond 20% for certain categories of Projects; and*
- *Identifying specific Projects within the District that are projected to have significantly greater than 20% of their units Affordable (for example, Projects undertaken by a local housing authority or community development corporation).*

*The Municipality shall be required to prove to the Department in its submission that its use of such mechanisms will not “unduly restrict” opportunities for development within the proposed District under the Smart Growth Zoning: that means that the mechanisms may not add unreasonable costs or unreasonably impair the economic feasibility of proposed Projects. Note that for the purposes of satisfying the twenty percent (20%) overall Affordability requirement, any project located within the geographic boundaries of the District, and which receives a comprehensive permit under M.G.L. c.40B after the date upon which the application was submitted to the Department, shall be treated as if it were a Project developed under the Smart Growth Zoning.*

**6.2 Monitoring Agent.** A Monitoring Agent which may be the local housing authority or other qualified housing entity shall be designated by the PAA (the “designating official”). In a case where the Monitoring Agent cannot adequately carry out its administrative duties, upon certification of this fact by the designating official or by DHCD such duties shall devolve to and thereafter be administered by a qualified housing entity designated by the designating official. In any event, such Monitoring Agent shall ensure the following, both prior to issuance of a Building Permit for a Project within the SGOD, and on a continuing basis thereafter, as the case may be:

1. prices of Affordable Homeownership Units are properly computed; rental amounts of Affordable Rental Units are properly computed;
  2. income eligibility of households applying for Affordable Housing is properly and reliably determined;
  3. the housing marketing and resident selection plan conform to all requirements, have been approved by DHCD specifically with regard to conformance with M.G.L. c.40R and 760 CMR 59.00, and are properly administered;
  4. sales and rentals are made to Eligible Households chosen in accordance with the housing marketing and resident selection plan with appropriate unit size for each household being properly determined and proper preference being given;
- and

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5. Affordable Housing Restrictions meeting the requirements of this section are approved by DHCD specifically with regard to conformance with M.G.L. c.40R and 760 CMR. 59.00, recorded with the proper registry of deeds.

*COMMENTS: Chapter 40R and the 40R Regulations state that the Smart Growth Zoning shall contain provisions to ensure that there shall be effective monitoring and enforcement of the affordable housing restriction during the term of Affordability. Therefore, the Smart Growth Zoning must contain this provision, or language of substantially equal effect.*

**6.3 Submission Requirements.** As part of any application for Plan Approval for a Project within the SGOD submitted under Sections 9.0 through 13.0, the Applicant must submit the following documents to the PAA and the Monitoring Agent:

- 1) evidence that the Project complies with the cost and eligibility requirements of Section 6.4;
- 2) Project plans that demonstrate compliance with the requirements of Section 6.5; and
- 3) a form of Affordable Housing Restriction that satisfies the requirements of Section 6.6.

These documents in combination, to be submitted with an application for Plan Approval (or, for Projects not requiring Plan Approval, prior to submission of any application for a Building Permit), shall include details about construction related to the provision, within the development, of units that are accessible to the disabled and appropriate for diverse populations, including households with children, other households, individuals, households including individuals with disabilities, and the elderly.

*COMMENTS: Chapter 40R and the 40R Regulations require within a District the development of housing which is appropriate for a diverse population, including households with children, other households, individuals, households including individuals with disabilities, and the elderly. Therefore, the Smart Growth Zoning must contain this provision, or language of substantially equal effect.*

**6.4 Cost and Eligibility Requirements.** Affordable Housing shall comply with the following requirements:

1. Affordable Housing required to be offered for rent or sale shall be rented or sold to and occupied only by Eligible Households.
2. For an Affordable Rental Unit, the monthly rent payment, including applicable utility allowances, shall not exceed 30 percent of the maximum monthly income permissible for an Eligible Household, assuming a family size equal to the number of bedrooms in the unit plus

one, unless another affordable housing program methodology for calculating rent limits, as approved by DHCD, applies.

3. For an Affordable Homeownership Unit the monthly housing payment, including mortgage principal and interest, private mortgage insurance, property taxes, condominium and/or homeowner's association fees, and insurance, shall not exceed 30 percent of the maximum monthly income permissible for an Eligible Household, assuming a family size equal to the number of bedrooms in the unit plus one, unless another affordable housing program methodology for calculating rent limits, as approved by DHCD, applies.

Prior to the granting of any Plan Approval for a Project, the Applicant must demonstrate, to the satisfaction of the Monitoring Agent, that the method by which such affordable rents or affordable purchase prices are computed shall be consistent with state or federal guidelines for affordability applicable to North Attleborough .

*COMMENTS: The Smart Growth Zoning must contain this provision, or language of substantially equal effect. Chapter 40R and the 40R Regulations require assurances in the Smart Growth Zoning that under the affordable housing restriction on an Affordable unit, it shall be occupied by an eligible household paying an affordable rent or affordable purchase price during the term of the restriction. The Smart Growth Zoning shall contain provisions specifying the method by which such affordable rents or affordable purchase prices shall be computed.*

**6.5 Design and Construction.** Units of Affordable Housing shall be finished housing units. With respect to the minimum number of units in a given Project that are required to be Affordable Housing under Section II.F and the Governing Laws, such units shall be equitably integrated and proportionately dispersed throughout the residential portion of the Project of which they are part, across all residential buildings, floors, distinct unit types, and with respect to the gross floor area devoted to residential units, in accordance with the Affordable Housing Restriction and the Affirmative Fair Housing Marketing and Resident Selection Plan, as approved by DHCD. The Affordable Housing units shall be comparable in initial construction quality, size, amenities, and exterior design to the other housing units in the Project. Unless expressly required otherwise under one or more applicable state or federal housing subsidy programs, the bedroom-per-unit average for the Affordable Housing must be equal to or greater than the bedroom-per-unit average for the unrestricted/market-rate units.

*COMMENTS: The Smart Growth Zoning must contain this provision, or language of substantially equal effect. Only unit types (e.g., live/work units, 3-bedroom units) that contain a proportionate share of the required percentage of Affordable Housing will be considered eligible Bonus Units for the purposes of the Governing Laws.*

**6.6 Affordable Housing Restriction.** Each Project shall be subject to an Affordable Housing Restriction which is recorded with the appropriate registry of deeds or district registry of the Land Court and which meets the following:

1. the term of the Affordable Housing Restriction shall be in perpetuity, or for as long as the residential structures;
2. the name and address of the Monitoring Agent with a designation of its power to monitor and enforce the Affordable Housing Restriction;
3. a description of the Affordable Homeownership Unit(s), if any, by address and number of bedrooms; and a description of the overall quantity, initial unit designations and number of bedrooms and number of bedroom types of Affordable Rental Units in a Project or portion of a Project which are rental. Such restriction shall apply individually to the specifically identified Affordable Homeownership Unit and shall apply to a percentage of rental units of a rental Project or the rental portion of a Project with the initially designated Affordable Rental Units identified in, and able to float subject to specific approval by DHCD in accordance with, the corresponding Affirmative Fair Housing Marketing Plan (AFHMP) and DHCD's AFHMP guidelines.
4. reference to an affirmative fair housing marketing and resident selection plan, to which the Affordable Housing is subject, and which includes an affirmative fair housing marketing program, including public notice and a fair resident selection process. Such plan shall be consistent with DHCD guidance and approved by DHCD. Consistent with DHCD guidance, such plan shall include a preference based on need for the number of bedrooms in a unit and a preference based on need for the accessibility features of a unit where applicable, and may only provide for additional preferences in resident selection to the extent such preferences are also consistent with applicable law and approved by DHCD.
5. a requirement that buyers or tenants will be selected at the initial sale or initial rental and upon all subsequent sales and rentals from a list of Eligible Households compiled in accordance with the housing marketing and selection plan;
6. reference to the formula pursuant to which the maximum rent of an Affordable Rental Unit or the maximum resale price of an Affordable Homeownership Unit will be set;
7. a requirement that only an Eligible Household may reside in Affordable Housing and that notice of any lease of any Affordable Rental Unit shall be given to the Monitoring Agent;
8. provision for effective monitoring and enforcement of the terms and provisions of the Affordable Housing Restriction by the Monitoring Agent;

9. provision that the AHR on an Affordable Homeownership Unit shall run in favor of the Monitoring Agent and/or the municipality, in a form approved by municipal counsel, and shall limit initial sale and re-sale to and occupancy by an Eligible Household;
10. provision that the AHR on Affordable Rental Units in a rental Project or rental portion of a Project shall run with the rental Project or rental portion of a Project and shall run in favor of the Monitoring Agent and/or the municipality, in a form approved by municipal counsel, and shall limit rental and occupancy to an Eligible Household;
11. provision that the owner[s] or manager[s] of Affordable Rental Unit[s] shall file an annual report to the Monitoring Agent, in a form specified by that agent certifying compliance with the Affordability provisions of this Bylaw and containing such other information as may be reasonably requested in order to ensure affordability; and
12. a requirement that residents in Affordable Housing provide such information as the Monitoring Agent may reasonably request in order to ensure affordability.

*COMMENTS: Chapter 40R and the 40R Regulations state that the Smart Growth Zoning shall contain provisions to ensure that there shall be effective monitoring and enforcement of the affordable housing restriction during the term of Affordability. Therefore, the Smart Growth Zoning must contain this provision, or language of substantially equal effect.*

**6.7 Costs of Affirmative Fair Housing Marketing and Resident Selection Plan.** The affirmative fair housing marketing and resident selection plan and/or any associated Monitoring Services Agreement may make provision for payment by the Project Applicant of reasonable costs to the Monitoring Agent to monitor and enforce compliance with affordability requirements consistent with the Affordable Housing Re and otherwise fulfill the responsibilities contained in Section 6.2.

*COMMENTS: To ensure that the costs of the marketing and enforcement measures are not unduly burdensome, the Smart Growth Zoning must contain this provision, or language of substantially equal effect.*

**6.8 Age Restrictions.** Nothing in this Section II.F shall permit the imposition of restrictions on age upon Projects unless proposed or agreed to voluntarily by the Applicant. However, the PAA may, in its review of a submission under Section 6.3, allow a specific Project within the SGOD designated exclusively for the elderly, persons with disabilities, or for assisted living, provided that any such Project shall be in compliance with all applicable federal, state and local fair housing laws and regulations and not less than twenty-five percent (25%) of the housing units in such a restricted Project shall be restricted as Affordable Housing units.

*COMMENTS: Chapter 40R and the 40R Regulations state that the Smart Growth Zoning for the proposed District shall not impose restrictions on age or any other forms of occupancy restrictions upon the District as a whole. This provision does not preclude the development of specific Projects within the District that may be exclusively for the elderly, persons with disabilities, or for assisted living, provided that any such Project shall be in compliance with all applicable fair housing laws. Not less than twenty-five percent (25%) of the housing units in such a Project shall be Affordable. Therefore, the Smart Growth Zoning must contain this provision, or language of substantially equal effect.*

**6.9 Phasing.** For any Project that is approved and developed in phases in accordance with Section 9.4, the percentage of Affordable units in each phase shall be at least equal to the minimum percentage of Affordable Housing required under Section 6.1 or 6.8, as applicable. Where the percentage of Affordable Housing is not uniform across all phases, the unit dispersal and bedroom proportionality requirements under Section 6.5 shall be applied proportionately to the Affordable Housing provided for in each respective phase.

*COMMENTS: To address the proportionality requirements of the 40R Regulations, the Smart Growth Zoning must contain this provision, or language of substantially equal effect.*

**6.10 No Waiver.** Notwithstanding anything to the contrary herein, the Affordability provisions in this Section 6.0 shall not be waived unless expressly approved in writing by DHCD at the request of the Plan Approval Authority.

*COMMENTS: The 40R Regulations state that the Affordability requirements may not be waived as part of the Plan Approval process for a Project. Therefore, the Smart Growth Zoning must contain this provision.*

**7. DIMENSIONAL AND DENSITY REQUIREMENTS - GENERAL**

**7.1 Requirements.** Notwithstanding anything to the contrary in this Zoning Bylaw, the dimensional requirements applicable in the SGOD are as follows in Table 1 and Table 2

TABLE 1

REQUIREMENT	Principal Residential Structures	Accessory Residential Structures
Front Yard Setback to SGOD property boundary	140'	15'
Side Yard Setback to SGOD property	75'	3'

**PLEASE RED-LINE ALL CHANGES TO THE SMART GROWTH ZONING TEMPLATE**

boundary		
Rear Yard Setback to SGOD property boundary	115'	140'

TABLE 2

REQUIREMENT	
Max. coverage by buildings	20%
Max coverage by impervious surface	60%
Building height	60 feet

The KBSGOD shall contain a single Multifamily or Mixed Use Project under Chapter 40R. The maximum allowed density is up to 21.93 units per acre. Nonresidential uses are limited to an aggregate total of 20,000 square feet of GFA.

*COMMENTS: Without limitation, the Smart Growth Zoning shall set out the dimensional, use, parking, and other standards applicable to Projects within the District (including within any Substantially Developed sub-district) including but not limited to height limits, setbacks, lot areas, lot dimensions, unit to lot ratios, floor area ratios, lot coverage ratios, and open space ratios. (For discussion of parking ratios, parking locations, and roadway design standards, see Sections 8.0 and 13.0.)*

*For large Projects containing multiple buildings and uses, it may preserve greater flexibility for minimum lot size, setback, and yard standards to apply to the Project site as a whole, and not to internal dimensions.*

*The Smart Growth Zoning must provide for any one or more of the following minimum allowable as-of-right densities unless the Department has previously approved a density reduction:*

- 1. a density of at least 8 units per acre for Developable Land zoned for single-family residential use;*
- 2. a density of at least 12 units per acre for Developable Land zoned for 2- and/or 3-family residential use; or*
- 3. a density of at least 20 units per acre for Developable Land zoned for multi-family residential use.*

*If the SGOD is anticipated to contain only a single Project, then restricting the total number of residential units developable within the SGOD is permissible, provided that the maximum number will permit the SGOD to achieve the minimum applicable as-of right density required by chapter 40R.*

*A District may contain one or more sub-districts. The allowable residential density and other dimensional requirements may vary from one sub-district to another (even for the same permitted residential use), so long as each residential sub-district meets the minimum allowable as-of-right*

*density requirements. For Substantially Developed Sub-districts, see COMMENTS on Section 7.2 below.*

*Under Chapter 40R and the 40R Regulations, a Municipality may adopt Design Standards to ensure that the physical character of Projects within the District will be “complementary to nearby buildings and structures,” and will provide for “high-density quality development consistent with the character of building types, streetscapes, and other community features traditionally found in densely settled areas of the Municipality or in the region of the Municipality.” On the possible inclusion of the Design Standards within the Smart Growth Zoning, see COMMENTS on Section 13. For discussion of the relationship between dimensional requirements and Design Standards in meeting these goals, see the Design Standards guidance document.*

*COMMENTS: The Chapter 40R Regulations allow that for some or all of the “substantially developed land” (as defined in the Regulations) within a District, the Smart Growth Zoning need not satisfy the minimum As-of-right residential densities, so long as the allowable residential densities in the Substantially Developed sub-district are no less than those in the Underlying Zoning. Within the sub-district, the Smart Growth Zoning shall modify the dimensional and other applicable standards of the Underlying Zoning when the Smart Growth Zoning provides for a greater residential density than the Underlying Zoning, in order to permit the As-of-right construction of infill housing on existing vacant lots. The Smart Growth Zoning may impose reasonable lot area, frontage, setback and other dimensional requirements within such Substantially Developed sub-districts, consistent with neighborhood building and use patterns, and building, fire, and safety codes.*

## **8. PARKING REQUIREMENTS AND TRAFFIC MANAGEMENT - GENERAL**

The parking requirements applicable for Projects within the SGOD are as follows.

**8.1 Number of parking spaces.** Unless otherwise approved by the PAA and subject to any conditions DHCD’s determination of eligibility and approval of the SGOD, the following minimum and] maximum number of off-street parking spaces shall be provided either in surface parking, within garages or other structures: not less than 1.35 spaces per unit and not more than 1.75 spaces per unit. \*\*\*

The PAA may allow for additional visitor parking spaces beyond the allowed maximum spaces per unit if deemed appropriate given the design, layout and density of the proposed residential or other development. The PAA may allow for a decrease in any required parking as provided in Sections 8.2 and 8.3 below.

*COMMENTS: To support the smart growth goals of Chapter 40R and encourage alternatives to automobile travel, the Department requires that the SGZ at least establish parking maximums*

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*along with any minimum parking ratios that the municipality may choose to require under the SGZ. Where minimum requirements are deemed necessary, DHCD encourages allowing the reduction of minimum parking requirements beyond what is commonly required. Particularly for locations near transit stations, setting maximum as well as minimum parking requirements can further support the smart growth goals of Chapter 40R. For further discussion of this issue, see the Design Standards guidance document.*

**8.2 Shared Parking.** Notwithstanding anything to the contrary herein, the use of shared parking to fulfill parking demands noted above that occur at different times of day is strongly encouraged. Any minimum parking requirements above may be reduced by the PAA through the Plan Approval process (or, for Projects not requiring Plan Approval, prior to submission of any application for a Building Permit), if the Applicant can demonstrate that shared or acquired spaces will meet parking demands by using accepted methodologies (e.g. the Urban Land Institute Shared Parking Report, ITE Shared Parking Guidelines, or other approved studies).

*COMMENTS: Where minimum requirements are deemed necessary, DHCD encourages allowing the reduction of minimum parking requirements if parking is shared by different uses, within Mixed-use Development Projects or otherwise.*

**8.3 Reduction in parking requirements.** Notwithstanding anything to the contrary herein, any minimum required amount of parking may be reduced by the PAA through the Plan Approval process (or, for Projects not requiring Plan Approval, prior to submission of any application for a Building Permit), if the Applicant can demonstrate that the lesser amount of parking will not cause excessive congestion, endanger public safety, or that lesser amount of parking will provide positive environmental or other benefits, taking into consideration:

- a) the availability of surplus off-street parking in the vicinity of the use being served and/or the proximity of a bus stop or transit station;
- b) the availability of public or commercial parking facilities in the vicinity of the use being served;
- c) shared use of off-street parking spaces serving other uses having peak user demands at different times;
- d) To the extent consistent with 760 CMR 59.04(1)(g) and 760 CMR 59.04(1)(i)1., age or other occupancy restrictions which are likely to result in a lower level of auto usage;
- e) impact of the parking requirement on the physical environment of the affected lot or the adjacent lots including reduction in green space, destruction of significant existing trees and other vegetation, destruction of existing dwelling units, or loss of pedestrian amenities along public ways; and
- f) Any applicable transportation demand management strategies that will be integrated into the Project or such other factors as may be considered by

the PAA.

*COMMENTS: The Department encourages communities to consider provisions allowing the reduction of minimum parking requirements.*

**8. Location of Parking.** Any surface parking lot shall, to the maximum extent feasible, be located at the rear or, where not feasible or otherwise preferred by the PAA, side of a building, relative to any principal street, public open space, or pedestrian way.

### **8.5 Traffic Impact Assessment.**

**1. Objectives.** To document existing traffic conditions (both vehicular and pedestrian) in the vicinity of the proposed Project, to describe the volume and effect of projected traffic generated by the proposed Project, and to identify measures proposed to mitigate any adverse impacts on traffic.

**2. Applicability.** The PAA may request an Applicant for Plan Approval to prepare a traffic impact assessment if the project meets a Level 3 Major Site Plan Special Permit Review in Section VI. H of the North Attleboro Zoning Bylaws.

The traffic impact assessment shall be prepared by a registered professional civil or traffic engineer in the Commonwealth of Massachusetts.

**3.** All applications for Plan Approval shall provide the following documentation as part of any required traffic impact assessment:

a. Existing traffic conditions. Average daily and peak-hour volumes, average and peak speeds, sight distances, accident data, and levels of service (LOS) of intersections and streets likely to be affected by the proposed development. Generally, such data shall be presented for all streets and intersections adjacent to or within 1,000 feet of the projected boundaries or impacted by the development.

b. Projected traffic conditions for design year of occupancy.

c. Projected impact of proposed development. Projected peak-hour and daily traffic generated by the development on roads and ways in the vicinity of the development; sight lines at the intersections of the proposed driveways and streets; existing and proposed traffic controls in the vicinity of the proposed development; proposed pedestrian ways and design elements to maximize pedestrian safety and usage; and projected post-development traffic volumes and level of service (LOS) of intersections and streets likely to be affected by the proposed development.

d. Proposed measures that satisfactorily address traffic and vehicular safety and

mitigate any affected intersections or ways.

*COMMENTS: For further discussion of issues relating to the location and design of parking, in order to achieve Chapter 40R's goal of creating "high-density quality development consistent with the character of building types, streetscapes, and other community features traditionally found in densely settled areas of the Municipality or in the region of the Municipality," see the Design Standards guidance document.*

## 9. PLAN APPROVAL OF PROJECTS: GENERAL PROVISIONS

*The 40R Regulations state that the Plan Approval provisions of the Smart Growth Zoning and/or any separate Design Standards must be clearly written, fairly and consistently applied, and allow for flexibility and creativity, consistent with the goals of the Act. The contents of the following Sections 9.0 through 13.0 are intended to satisfy these regulatory requirements. For any community that subjects Projects to Plan Approval, the Smart Growth Zoning must contain these provisions, or language of substantially equivalent effect.*

**9.1 Plan Approval.** An application for Plan Approval shall be reviewed by the PAA for consistency with the purpose and intent of Section II. F. Such Plan Approval process shall be construed as an As-of-Right review and approval process as required by and in accordance with the Governing Laws. The following categories of Projects shall be subject to the Plan Approval process:

- a) Any Residential Project containing at least 13 residential units;
- b) Any Mixed-use Development Project;

[c)

*COMMENTS: The 40R Regulations state that if the Smart Growth Zoning provides for Plan Approval of Projects within the District, it shall specify the categories of Projects that will be subject to Plan Approval(defined by size, type, or otherwise). The sample bylaw suggests that a reasonable threshold of review for Residential Projects would be the size of Project that would be subject to the Affordability requirements of Section 6 – see COMMENTS on that section. The sample bylaw also suggests that all Mixed-use Development Projects and all projects consisting solely of non-residential uses should be subject to Plan Approval, to ensure that the non-residential elements are planned and designed in an integral manner to complement the residential uses – see Sections 5.2 and 13.4.*

**9.2 Plan Approval Authority (PAA).** The Planning Board, consistent with G.L. Chapter 40R and 760 CMR 59.00, shall be the Plan Approval Authority (the "PAA"), and it is authorized to conduct the Plan Approval process for purposes of reviewing Project applications and issuing Plan Approval decisions within the SGOD.

*COMMENTS: The 40R Regulations state that if the Smart Growth Zoning provides for Plan*

*Approval of Projects within the District, it shall specify the Approving Authority. Therefore, the Department will require the Smart Growth Zoning to contain this provision if Projects are subject to Plan Approval.*

**9.3 PAA Regulations.** The Plan Approval Authority may adopt administrative rules and regulations relative to Plan Approval. Such rules and regulations and any amendments thereof must be approved by the Department of Housing and Community Development.

*COMMENTS: If the Smart Growth Zoning empowers the PAA to adopt rules and regulations for the Plan Approval of Projects, such regulations must be dated and approved by DHCD.*

**9.4 Project Phasing.** The PAA may require the Applicant to provide an estimated construction schedule subject to the approval of the PAA. In the event the Applicant proposes a phased development plan, a proposed timeline for each section of the development shall be included in the Plan Approval submission, provided that the submission shows the full buildout of the Project and all associated impacts as of the completion of the final phase. The Applicant is not obligated to pursue a phased development plan. Any phased Project shall comply with the provisions of Section 6.9.

*COMMENTS: The 40R Regulations permit Projects to be phased; see also Section 11.4 below. Therefore, the Department will require the Smart Growth Zoning to contain this provision. (However, the 40R Regulations also state that the Smart Growth Zoning must require that Projects are not segmented to evade the size threshold for the Affordability requirements. See Section 6.1.)*

## 10. PLAN APPROVAL PROCEDURES

**10.1 Preapplication.** Prior to the submittal of a Plan Approval submission, a “Concept Plan” may be submitted to help guide the development of the definitive submission for Project buildout and individual elements thereof. If submitted, such Concept Plan should reflect the following:

1. Overall building envelope areas;
2. Open space and natural resource areas; and
3. General site improvements, groupings of buildings, and proposed land uses.

The Concept Plan is intended to be used as a tool for both the Applicant and the PAA to ensure that the proposed Project design will be consistent with the Design Standards and other requirements of the SGOD.

*COMMENTS: Voluntary pre-application provisions are recommended, although Chapter 40R does not permit a municipality to require a mandatory pre-application process.*

**10.2 Required Submittals.** An application for Plan Approval shall be submitted to the PAA on the form provided by the PAA and approved by DHCD, [along with application fee(s)] which shall be as set forth in the PAA Regulations. The application shall be accompanied by such plans and documents as may be required and set forth in the PAA Regulations. For any Project that is subject to the Affordability requirements of Section 6.0, the application shall be accompanied by all materials required under Section 6.3. All site plans shall be prepared by a certified architect, landscape architect, and/or a civil engineer registered in the Commonwealth of Massachusetts. All landscape plans shall be prepared by a certified landscape architect registered in the Commonwealth of Massachusetts. All building elevations shall be prepared by a certified architect registered in the Commonwealth of Massachusetts. All plans shall be signed and stamped, and drawings prepared at a scale of [one inch equals forty feet (1"=40') or larger], or at a scale as approved in advance by the PAA.

*COMMENTS: The 40R Regulations state that if the Smart Growth Zoning provides for Plan Approval of Projects within the District, it shall specify the procedures for such review, including the contents of an application for approval of a Project. The Department recommends that the form of application, and rules governing the content of the application to be filed with the PAA, be included in the PAA Regulations, rather than including such requirements in the Smart Growth Zoning. Note that the PAA Regulations will be subject to review and approval by the Department. Where filing fees are required, documentation must be submitted justifying the required fee(s).*

**10.3 Filing.** An Applicant for Plan Approval shall file the required number of copies of the application form and the other required submittals as set forth in the PAA Regulations with the Town Clerk and a copy of the application including the date of filing certified by the Town Clerk shall be filed forthwith with the PAA.

*COMMENTS: The Department will require the Smart Growth Zoning to contain this provision if Projects are subject to Plan Approval.*

**10.4 Circulation to Other Boards.** Upon receipt of the application, the PAA shall immediately provide a copy of the application materials to the City Council, Board of Appeals, Board of Health, Conservation Commission, Fire Department, Police Department, Building Commissioner, Department of Public Works, the Monitoring Agent (if already identified, for any Project subject to the Affordability requirements of Section 6.0), and other municipal officers, agencies or boards for comment, and any such board, agency or officer shall provide any written comments within 60 days of its receipt of a copy of the plan and application for approval.

*COMMENTS: If an application is to be referred to any municipal officer, agency or board, including but not limited to the Monitoring Agent referenced in Section 6.0, the Department will*  
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*require the Smart Growth Zoning to contain this provision.*

**10.5 Hearing.** The PAA shall hold a public hearing for which notice has been given as provided in Section 11 of G.L. Chapter 40A. The decision of the PAA shall be made, and a written notice of the decision filed with the Town Clerk, within 120 days of the receipt of the application by the Town Clerk. The required time limits for such action may be extended by written agreement between the Applicant and the PAA, with a copy of such agreement being filed in the office of the Town Clerk. Failure of the PAA to take action within said 120 days or extended time, if applicable, shall be deemed to be an approval of the Plan Approval application.

*COMMENTS: The Department will require the Smart Growth Zoning to contain this provision if Projects are subject to Plan Approval.*

**10.6 Peer Review.** The Applicant shall be required to pay for reasonable consulting fees to provide peer review of the Plan Approval application, pursuant to G.L. Chapter 40R, Section 11(a). Such fees shall be held by the Town in a separate account and used only for expenses associated with the review of the application by outside consultants, including, but not limited to, attorneys, engineers, urban designers, housing consultants, planners, and others. Any surplus remaining after the completion of such review, including any interest accrued, shall be returned to the Applicant forthwith.

*COMMENTS: If an application is to be reviewed by outside consultants, the Department will require the Smart Growth Zoning to contain this provision.*

## 11. PLAN APPROVAL DECISIONS

**11.1 Plan Approval.** Plan Approval shall be granted where the PAA finds that:

1. the Applicant has submitted the required fees and information as set forth in the PAA Regulations; and
2. the Project as described in the application meets all of the requirements and standards set forth in this Section II.7F and the PAA Regulations, or a waiver has been granted therefrom; and
3. any extraordinary adverse potential impacts of the Project, including traffic impacts exclusively and specifically attributable to the Project, on nearby properties have been adequately mitigated.

For a Project subject to the Affordability requirements of Section 6.0, compliance with condition (2) above shall include written confirmation by the Monitoring Agent that all requirements of that Section have been satisfied. Any Plan Approval decision for a Project subject to the affordability restrictions of Section 6.0 shall specify the term of such affordability, which shall be no less than thirty years. The PAA may attach conditions to the Plan Approval decision that are

necessary to ensure substantial compliance with this Section II.F, or to mitigate any extraordinary adverse potential impacts of the Project on nearby properties.

*COMMENTS: The 40R Regulations state that if the Smart Growth Zoning provides for Plan Approval of Projects within the District, it shall specify the criteria upon which the Approving Authority may condition its approval. The Department will require the Smart Growth Zoning to contain this provision if Projects are subject to Plan Approval.*

**11.2 Plan Disapproval.** A Plan Approval application may be disapproved only where the PAA finds that:

1. the Applicant has not submitted the required fees and information as set forth in the Regulations; or
2. the Project as described in the application does not meet all of the requirements and standards set forth in this Section II.F and the PAA Regulations, or that a requested waiver therefrom has not been granted; or
3. it is not possible to adequately mitigate extraordinary adverse Project impacts, including traffic impacts exclusively and specifically attributable to the Project, on nearby properties by means of suitable conditions.

*COMMENTS: The 40R Regulations state that if the Smart Growth Zoning provides for Plan Approval of Projects within the District, it shall specify the criteria upon which the Approving Authority may disapprove a proposed Project or condition its approval. Chapter 40R states that a proposed Project may be denied Plan Approval only on the grounds that:*

- 1) *the Project does not meet the conditions and requirements set forth in the Smart Growth Zoning;*
- 2) *the applicant failed to submit information and fees required by the Smart Growth Zoning and necessary for an adequate and timely review of the design of the Project or potential Project impacts; or*
- 3) *it is not possible to adequately mitigate extraordinary adverse Project impacts on nearby properties by means of suitable conditions.*

*To implement this provision, the Department will require the Smart Growth Zoning to contain this provision if Projects are subject to Plan Approval.*

**11.3 Waivers.** Upon the request of the Applicant and subject to compliance with M.G.L. c. 40R, 760 CMR 59.00 and Section 6.10, the Plan Approval Authority may waive dimensional and other requirements of Section II.F, including the Design Standards, in the interests of design flexibility and overall project quality, and upon a finding of consistency of such variation with the overall purpose and objectives of the SGOD, or if it finds that such waiver will allow the Project to achieve the density, affordability, mix of uses, and/or physical character allowable under this Section II.F.

*COMMENTS: Chapter 40R states that the Smart Growth Zoning may allow the Approving Authority, through the Plan Approval process, to waive specific dimensional and other standards (other than Affordability requirements) otherwise applicable to a Project, if it finds that the waiver will allow the Project to achieve the density, Affordability, mix of uses, and/or physical character allowable under the Smart Growth Zoning, and that the Project is consistent with the Design Standards. The 40R Regulations state that the waiver criteria must be defined in the Smart Growth Zoning. Therefore, if the community intends to grant waivers through the Plan Approval process, the Smart Growth Zoning must contain this provision.*

*COMMENTS: The Chapter 40R Regulations state that the Smart Growth Zoning may permit the Plan Approval approvals of proposed Projects to be phased for the purpose of coordinating development with the construction of Planned Infrastructure Upgrades or that are required to mitigate any extraordinary adverse Project impacts on neighboring properties. For Projects that are approved and developed in phases, the proportion of Affordable units shall be at least equal to the minimum percentage of Affordable Housing required under Section 6.1. Therefore, the Department will require the Smart Growth Zoning to contain this provision if Projects are subject to Plan Approval.*

**11.4 Form of Decision.** The PAA shall issue to the Applicant a copy of its decision containing the name and address of the owner, identifying the land affected, and the plans that were the subject of the decision, and certifying that a copy of the decision has been filed with the [City / Town] Clerk and that all plans referred to in the decision are on file with the PAA. If twenty (20) days have elapsed after the decision has been filed in the office of the [City / Town] Clerk without an appeal having been filed or if such appeal, having been filed, is dismissed or denied, the [City/Town] Clerk shall so certify on a copy of the decision. If a plan is approved by reason of the failure of the PAA to timely act, the Town Clerk shall make such certification on a copy of the application. A copy of the decision or application bearing such certification shall be recorded in the registry of deeds for the county and district in which the land is located and indexed in the grantor index under the name of the owner of record or recorded and noted on the owner's certificate of title. The fee for recording or registering shall be paid by the Applicant.

*COMMENTS: The Department will require the Smart Growth Zoning to contain this provision if Projects are subject to Plan Approval.*

**11.5 Validity of Decision.** A Plan Approval shall remain valid and shall run with the land indefinitely, provided that construction has commenced within two years after the decision is issued, which time shall be extended by the time required to adjudicate any appeal from such approval and which time shall also be extended if the Project proponent is actively pursuing other required permits for the Project or there is other good cause for the failure to commence construction, or as may be provided in a Plan Approval for a multi-phase Project.

*COMMENTS: The Department recommends that the Smart Growth Zoning contain this provision if Projects are subject to Plan Approval.*

## 12. CHANGE IN PLANS AFTER APPROVAL BY PAA

**12.1 Minor Change.** After Plan Approval, an Applicant may apply to make minor changes in a Project involving minor utility or building orientation adjustments, or minor adjustments to parking or other site details that do not affect the overall buildout or building envelope of the site, or provision of open space, number of housing units, or housing need or affordability features. Such minor changes must be submitted to the PAA on redlined prints of the approved plan, reflecting the proposed change, and on application forms provided by the PAA. The PAA may authorize such changes at any regularly scheduled meeting, without the need to hold a public hearing. The PAA shall set forth any decision to approve or deny such minor change by motion and written decision and provide a copy to the Applicant for filing with the Town Clerk.

*COMMENTS: The Department recommends that the Smart Growth Zoning contain this provision if Projects are subject to Plan Approval.*

**12.2 Major Change.** Those changes deemed by the PAA to constitute a major change in a Project because of the nature of the change in relation to the prior approved plan, or because such change cannot be appropriately characterized as a minor change as described above, shall be processed by the PAA as a new application for Plan Approval pursuant to Sections 9.0 - through 13.0.

*COMMENTS: The Department recommends that the Smart Growth Zoning contain this provision if Projects are subject to Plan Approval*

## 13. DESIGN STANDARDS - GENERAL

**13.1 Purpose.** The Design Standards are adopted to ensure that the physical character of Projects within the SGOD:

- 1) will be complementary to nearby buildings and structures;
- 2) will be consistent with the Comprehensive Housing Plan, an applicable master plan, an area specific plan, or any other plan document adopted by the Town]; and
- 3) will provide for high-density quality development consistent with the character of building types, streetscapes, and other community features traditionally found in densely settled areas of the Town.

*OMMENTS: The Design Standards may address some or all of the following factors:*

- a) the scale, proportions, and exterior appearance of buildings;
- b) the placement, alignment, width, and grade of streets and sidewalks;

- c) *the type and location of infrastructure;*
- d) *the location of building and garage entrances;*
- e) *off-street parking;*
- f) *the protection of significant natural site features;*
- g) *the location and design of on-site open spaces;*
- h) *landscaping;*
- i) *exterior signs; and*
- j) *buffering in relation to adjacent properties.*

*Under the Chapter 40R Regulations, the Municipality has the option either to include the Design Standards within the Smart Growth Zoning, or to make them a part of the PAA Regulations. In either case, they must be reviewed and approved by the Department before they can take effect. The Municipality must demonstrate to the satisfaction of the Department that its Design Standards will not "unduly restrict" the development of Projects in the District: that means that the Design Standards may not add unreasonable costs or unreasonably impair the economic feasibility of proposed Projects. The Department may disapprove a proposed District if the Design Standards fail to meet this test.*

*If the Design Standards are to be contained within the PAA Regulations, the Department requires the Smart Growth Zoning contain the following provisions:*

**13.2. Design Standards.** The Plan Approval Authority may adopt, by simple majority vote, Design Standards which shall be applicable to Development Projects subject to Plan Approval by the Plan Approval Authority. Such Design Standards must be objective and not subjective and may only address the scale and proportions of buildings, the alignment, width, and grade of streets and sidewalks, the type and location of infrastructure, the location of building and garage entrances, off street parking, the protection of significant natural site features, the location and design of on-site open spaces, exterior signs, and buffering in relation to adjacent properties. DHCD may, at its discretion, may require Design Standards to contain graphics illustrating a particular standard or definition in order to make such standard or definition clear and understandable.

**13.3. DHCD Approval.** After adopting Design Standards, the PAA shall submit Design Standards to DHCD for approval. Design Standards shall not take effect until approved by DHCD and filed with the Town Clerk. In submitting proposed Design Standard for DHCD approval, the PAA shall also submit sufficient documentation clearly showing that the proposed Design Standards will not add unreasonable costs to Development Projects or unreasonably impair the economic feasibility of a Development Project. A letter from a developer, property owner or other interested party indicating that the Design Standards will not add unreasonable costs or unreasonably impair the economic feasibility of a Development Project shall not constitute sufficient documentation. At its discretion, DHCD may disapprove Design Standards if it finds that the PAA has not adopted objective Design Standards or has not submitted such documentation.

**13.4. Plan Approval.** An application for Plan Approval that has been submitted to the Town Clerk pursuant to this Section II.F shall not be subject to Design Standards that have not been approved by DHCD and filed with the Town Clerk. An application for Plan Approval shall be subject only to those Design Standards approved by DHCD and filed with the Town Clerk on or before the date of said application.

13.5 Approved Design Standards. DHCD has approved the following initial Design Standards:

1. Long horizontal facades should be avoided by the incorporation of clear distinction in materials and colors and/or other means of breaking down such spans.
2. The general character, proportion and scale of the building should be complementary to the surrounding buildings. Multiple building developments are encouraged to incorporate courtyard space and greenspace buffers.
3. If a proposal is for a large structure, the break-up, or appearance of a break-up into multiple smaller structures should be considered to minimize bulk.
4. Long continuous roof lines should be avoided. Varying roof lines and forms are encouraged.
5. Blank facades are not permitted. Changes in plane or material shall be used to provide a pedestrian scale in areas where windows and doors are not functionally required.
6. Buildings shall be oriented parallel or perpendicular to the street and/or village green or common. The development's main building entry should face the street and development entryway. There should be a clear indication of the front entrance.

**13. SEVERABILITY.**

If any provision of this Section II.F is found to be invalid by a court of competent jurisdiction, the remainder of Section II.F shall not be affected but shall remain in full force. The invalidity of any provision of this Section II.F shall not affect the validity of the remainder of the [Town's Zoning Bylaw.

*COMMENTS: The Department recommends that the Smart Growth Zoning should contain this section.*

**PLEASE RED-LINE ALL CHANGES TO THE SMART GROWTH ZONING TEMPLATE**

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6/29/2022



## Exhibit C

### 582 Kelley – 40R Schedule

- **6/8/22:**
  - Public Hearing
- **6/22/22**
  - Town Council Meeting – status update and ‘vote of support’
- **6/24/22:**
  - Submit 40R Application to DHCD
- **6/25/22 – 9/24/22:**
  - DHCD Reviews Application and Zoning
  - Approves 40R Zone
- **9/26/22:**
  - Next Town Council Meeting
  - Need all documents in by 9/22
  - Council will refer this then to the Bylaw Committee
- **9/28/22:**
  - Town Council advertises Public Hearing
- **10/1/22:**
  - Bylaw gets submitted to Planning Board 1<sup>st</sup> week of October
- **10/1/22:**
  - Planning Board advertises Public Hearing
- **10/12/22:**
  - Town Council holds Public Hearing
- **10/19/22:**
  - Planning Board holds Public Hearing
- **11/7/22:**
  - Next Town Council Meeting
  - Vote to Adopt 40R
- **11/8/22:**
  - Planning Board advertises for Site Plan Review
- **11/28/22:**
  - Site Plan review

## □ Trip Generation Calculations

**Institute of Transportation Engineers (ITE) 11th Edition  
Land Use Code (LUC) 221 - Multifamily Housing (Mid-Rise)**

Average Vehicle Trips Ends vs: Dwelling Units  
Independent Variable (X): 304

**AVERAGE WEEKDAY DAILY**

$$T = 4.54 * X$$

$$T = 4.54 * 304$$

$$T = 1380.16$$

$$T = 1,380 \text{ vehicle trips}$$

with 50% ( 690 vpd) entering and 50% ( 690 vpd) exiting.

**WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC**

$$T = 0.37 * X$$

$$T = 0.37 * 304$$

$$T = 112.48$$

$$T = 112 \text{ vehicle trips}$$

with 23% ( 26 vph) entering and 77% ( 86 vph) exiting.

**WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC**

$$T = 0.39 * X$$

$$T = 0.39 * 304$$

$$T = 118.56$$

$$T = 119 \text{ vehicle trips}$$

with 61% ( 73 vph) entering and 39% ( 46 vph) exiting.

**SATURDAY DAILY**

$$T = 4.57 * X$$

$$T = 4.57 * 304$$

$$T = 1389.28$$

$$T = 1,390 \text{ vehicle trips}$$

with 50% ( 695 vpd) entering and 50% ( 695 vpd) exiting.

**SATURDAY MIDDAY PEAK HOUR OF GENERATOR**

$$T = 0.39 * X$$

$$T = 0.39 * 304$$

$$T = 118.56$$

$$T = 119 \text{ vehicle trips}$$

with 49% ( 58 vph) entering and 51% ( 61 vph) exiting.

Institute of Transportation Engineers (ITE) 11th Edition  
Land Use Code (LUC) 432 - Golf Driving Range

Average Vehicle Trips Ends vs: Tees/Driving Positions  
Independent Variable (X): 32

**AVERAGE WEEKDAY DAILY**

$T = 13.65 * (X)$  (Use Caution - Small Sample Size)  
 $T = 13.65 * 32$   
 $T = 436.80$   
 $T = 438$  vehicle trips  
with 50% ( 219 vph) entering and 50% ( 219 vph) exiting.

**WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC**

$T = 0.40 * (X)$  (Use Caution - Small Sample Size)  
 $T = 0.40 * 32$   
 $T = 12.80$   
 $T = 13$  vehicle trips  
with 61% ( 8 vph) entering and 39% ( 5 vph) exiting.

**WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC**

$T = 1.25 * (X)$   
 $T = 1.25 * 32$   
 $T = 40.00$   
 $T = 40$  vehicle trips  
with 45% ( 18 vph) entering and 55% ( 22 vph) exiting.

**SATURDAY DAILY**

$T = 17.68 * (X)$  (Use Caution - Small Sample Size)  
 $T = 17.68 * 32$   
 $T = 565.76$   
 $T = 566$  vehicle trips  
with 50% ( 283 vph) entering and 50% ( 283 vph) exiting.

**SATURDAY MIDDAY PEAK HOUR OF GENERATOR**

$T = 1.30 * (X)$  (Use Caution - Small Sample Size)  
 $T = 1.30 * 32$   
 $T = 41.60$   
 $T = 42$  vehicle trips  
with 50% ( 21 vph) entering and 50% ( 21 vph) exiting.

□ Trip Distribution Calculations

**Journey-to-Work Distribution**

US Census Journey-to-Work Data

Residence Town Name	Workplace Town Name	All Workers	% of Total	% of Total Rounded
North Attleborough town	North Attleborough Town	1,698	15.5%	15.5%
North Attleborough town	Attleboro city (Bristol, M	1,103	10.1%	10.1%
North Attleborough town	Pawtucket city (Provide	557	5.1%	5.1%
North Attleborough town	Providence city (Provid	308	2.8%	2.8%
North Attleborough town	Cumberland town (Prov	296	2.7%	2.7%
North Attleborough town	Mansfield town (Bristol,	283	2.6%	2.6%
North Attleborough town	Taunton city (Bristol, M	232	2.1%	2.1%
North Attleborough town	Boston city (Suffolk, M	207	1.9%	1.9%
North Attleborough town	Plainville town (Norfolk,	201	1.8%	1.8%
North Attleborough town	Norton town (Bristol, M	178	1.6%	1.6%
North Attleborough town	East Providence city (P	168	1.5%	1.5%
North Attleborough town	Franklin Town city (Nor	164	1.5%	1.5%
North Attleborough town	Woonsocket city (Provi	162	1.5%	1.5%
North Attleborough town	Foxborough town (Norf	149	1.4%	1.4%
North Attleborough town	Cranston city (Providen	139	1.3%	1.3%
North Attleborough town	Central Falls city (Provi	133	1.2%	1.2%
North Attleborough town	Fall River city (Bristol, M	132	1.2%	1.2%
North Attleborough town	Seekonk town (Bristol, I	129	1.2%	1.2%
North Attleborough town	Worcester city (Worces	121	1.1%	1.1%
North Attleborough town	Wrentham town (Norfol	114	1.0%	1.0%
North Attleborough town	Brockton city (Plymouth	112	1.0%	1.0%
North Attleborough town	North Providence town	109	1.0%	1.0%
North Attleborough town	Rehoboth town (Bristol,	109	1.0%	1.0%
North Attleborough town	Bellingham town (Norfo	106	1.0%	1.0%
North Attleborough town	Warwick city (Kent, RI)	106	1.0%	1.0%
North Attleborough town	Lincoln town (Providen	104	1.0%	1.0%
North Attleborough town	New Bedford city (Brist	96	0.9%	0.9%
North Attleborough town	Plymouth town (Plymou	91	0.8%	0.8%
North Attleborough town	Walpole town (Norfolk,	90	0.8%	0.8%
North Attleborough town	Milford town (Worceste	80	0.7%	0.7%
North Attleborough town	Norwood town (Norfolk,	69	0.6%	0.6%
North Attleborough town	Springfield city (Hampd	66	0.6%	0.6%
North Attleborough town	Bridgewater Town city (	65	0.6%	0.6%
North Attleborough town	Easton town (Bristol, M	64	0.6%	0.6%
North Attleborough town	Swansea town (Bristol,	58	0.5%	0.5%
North Attleborough town	Johnston town (Provide	56	0.5%	0.5%
North Attleborough town	Middleborough town (P	53	0.5%	0.5%
North Attleborough town	Smithfield town (Provid	52	0.5%	0.5%
North Attleborough town	Quincy city (Norfolk, M	47	0.4%	0.4%
North Attleborough town	Sharon town (Norfolk, M	44	0.4%	0.4%
North Attleborough town	Blackstone town (Worc	39	0.4%	0.4%
North Attleborough town	East Bridgewater town	39	0.4%	0.4%
North Attleborough town	Raynham town (Bristol,	37	0.3%	0.3%
North Attleborough town	Coventry town (Kent, R	36	0.3%	0.3%
North Attleborough town	Medway town (Norfolk,	35	0.3%	0.3%
North Attleborough town	Norfolk town (Norfolk, M	35	0.3%	0.3%
North Attleborough town	North Smithfield town (I	35	0.3%	0.3%
North Attleborough town	Wareham town (Plymou	35	0.3%	0.3%
North Attleborough town	Braintree Town city (Nc	34	0.3%	0.3%
North Attleborough town	Framingham city (Middl	34	0.3%	0.3%
	Sub-Total	<b>7,908</b>	<b>72.32%</b>	<b>72%</b>
	Other	3,026	27.68%	28%
	<b>Total</b>	<b>10,934</b>	<b>100.00%</b>	<b>100%</b>

Workplace	To/From Routes					Total				
	Taunton Street (Route 152)	Kelley Boulevard (Route 152)	Messenger Street (Route 106)	Messenger Street (Route 106)	Total					
	(To/From North)	(To/From South)	(To/From East)	(To/From West)						
North Attleborough Town city (Bristol, MA)	0.0%	50%	7.8%	0.0%	50%	7.8%	15.5%			
Attleboro city (Bristol, MA)	0.0%	100%	10.1%	0.0%		0.0%	10.1%			
Pawtucket city (Providence, RI)	0.0%	100%	5.1%	0.0%		0.0%	5.1%			
Providence city (Providence, RI)	0.0%	100%	2.8%	0.0%		0.0%	2.8%			
Cumberland town (Providence, RI)	0.0%	100%	2.7%	0.0%		0.0%	2.7%			
Mansfield town (Bristol, MA)	0.0%		0.0%	100%	2.6%	0.0%	2.6%			
Taunton city (Bristol, MA)	90%	1.9%	10%	0.2%		0.0%	2.1%			
Boston city (Suffolk, MA)	100%	1.9%		0.0%		0.0%	1.9%			
Plainville town (Norfolk, MA)		0.0%	0.0%		100%	1.8%	1.8%			
Norton town (Bristol, MA)	50%	0.8%	50%	0.8%		0.0%	1.6%			
East Providence city (Providence, RI)		0.0%	100%	1.5%		0.0%	1.5%			
Franklin Town city (Norfolk, MA)	100%	1.5%		0.0%		0.0%	1.5%			
Woonsocket city (Providence, RI)		0.0%	100%	1.5%		0.0%	1.5%			
Foxborough town (Norfolk, MA)	40%	0.5%	10%	0.1%	50%	0.7%	1.4%			
Cranston city (Providence, RI)		0.0%	100%	1.3%		0.0%	1.3%			
Central Falls city (Providence, RI)		0.0%	100%	1.2%		0.0%	1.2%			
Fall River city (Bristol, MA)	50%	0.6%	50%	0.6%		0.0%	1.2%			
Seekonk town (Bristol, MA)		0.0%	100%	1.2%		0.0%	1.2%			
Worcester city (Worcester, MA)	100%	1.1%		0.0%		0.0%	1.1%			
Wrentham town (Norfolk, MA)	100%	1.0%		0.0%		0.0%	1.0%			
Brockton city (Plymouth, MA)		0.0%	0.0%	100%	1.0%		1.0%			
North Providence town (Providence, RI)		0.0%	100%	1.0%		0.0%	1.0%			
Rehoboth town (Bristol, MA)		0.0%	100%	1.0%		0.0%	1.0%			
Bellingham town (Norfolk, MA)	75%	0.7%		0.0%	25%	0.2%	1.0%			
Warwick city (Kent, RI)		0.0%	100%	1.0%		0.0%	1.0%			
Lincoln town (Providence, RI)		0.0%	100%	1.0%		0.0%	1.0%			
New Bedford city (Bristol, MA)	100%	0.9%		0.0%		0.0%	0.9%			
Plymouth town (Plymouth, MA)	50%	0.4%	50%	0.4%		0.0%	0.8%			
Walpole town (Norfolk, MA)	100%	0.8%		0.0%		0.0%	0.8%			
Milford town (Worcester, MA)	100%	0.7%		0.0%		0.0%	0.7%			
Norwood town (Norfolk, MA)	45%	0.3%	10%	0.1%	45%	0.3%	0.6%			
Springfield city (Hampden, MA)	75%	0.5%	25%	0.2%		0.0%	0.6%			
Bridgewater Town city (Plymouth, MA)	33%	0.2%	33%	0.2%	34%	0.2%	0.6%			
Easton town (Bristol, MA)	33%	0.2%	33%	0.2%	34%	0.2%	0.6%			
Swansea town (Bristol, MA)		0.0%	100%	0.5%		0.0%	0.5%			
Johnston town (Providence, RI)	10%	0.1%	90%	0.5%		0.0%	0.5%			
Middleborough town (Plymouth, MA)	75%	0.4%	25%	0.1%		0.0%	0.5%			
Smithfield town (Providence, RI)		0.0%	100%	0.5%		0.0%	0.5%			
Quincy city (Norfolk, MA)	50%	0.2%		0.0%	50%	0.2%	0.4%			
Sharon town (Norfolk, MA)	33%	0.1%	33%	0.1%	34%	0.1%	0.4%			
Blackstone town (Worcester, MA)	75%	0.3%	25%	0.1%		0.0%	0.4%			
East Bridgewater town (Plymouth, MA)	75%	0.3%		0.0%	25%	0.1%	0.4%			
Raynham town (Bristol, MA)	50%	0.2%	25%	0.1%	25%	0.1%	0.3%			
Coventry town (Kent, RI)	25%	0.1%	75%	0.2%		0.0%	0.3%			
Medway town (Norfolk, MA)	75%	0.2%		0.0%		25%	0.3%			
Norfolk town (Norfolk, MA)	75%	0.2%		0.0%	25%	0.1%	0.3%			
North Smithfield town (Providence, RI)		0.0%	100%	0.3%		0.0%	0.3%			
Wareham town (Plymouth, MA)	75%	0.2%	25%	0.1%		0.0%	0.3%			
Braintree Town city (Norfolk, MA)	75%	0.2%		0.0%	25%	0.1%	0.3%			
Framingham city (Middlesex, MA)	100%	0.3%		0.0%		0.0%	0.3%			
Sub-Total		14.5%	43.0%		5.0%	9.8%	72.3%			
Other		5.6%	16.4%		1.9%	3.8%	27.7%			
<b>Total</b>		<b>20.1%</b>	<b>59.4%</b>		<b>6.9%</b>	<b>13.6%</b>	<b>100.0%</b>			
	SAY		20%		60%		5%		15%	100%

□ Capacity Analysis

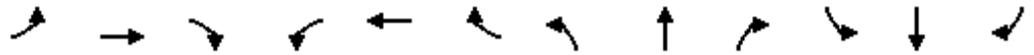
Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2024 Baseline Conditions  
 Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	283	89	182	174	92	129	426	154	71	290	57
Future Volume (vph)	110	283	89	182	174	92	129	426	154	71	290	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	450		0	200		200	200		0
Storage Lanes	1		0	1		0	1		1	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		0.964			0.948				0.850		0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1793	0	1703	1783	0	1736	1863	1524	1805	1773	0
Flt Permitted	0.476			0.238			0.269			0.265		
Satd. Flow (perm)	878	1793	0	427	1783	0	491	1863	1524	504	1773	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			26				150			9
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		500			500			1000			500	
Travel Time (s)		9.7			9.7			22.7			11.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	0%	9%	6%	1%	1%	4%	2%	6%	0%	5%	2%
Adj. Flow (vph)	115	295	93	190	181	96	134	444	160	74	302	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	115	388	0	190	277	0	134	444	160	74	361	0
Enter Blocked Intersection	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												
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	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	
Detector 1 Type	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	
Detector 1 Queue (s)	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	
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	Prot	pm+pt	NA	
Protected Phases	7	4		3	8		5	2	2	1	6	

Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2024 Baseline Conditions  
 Weekday Morning Peak Hour



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	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	10.0	10.0	7.0	10.0	
Minimum Split (s)	12.0	15.0		12.0	15.0		12.0	15.0	15.0	12.0	15.0	
Total Split (s)	15.0	45.0		15.0	45.0		15.0	40.0	40.0	15.0	40.0	
Total Split (%)	13.0%	39.1%		13.0%	39.1%		13.0%	34.8%	34.8%	13.0%	34.8%	
Maximum Green (s)	10.0	40.0		10.0	40.0		10.0	35.0	35.0	10.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-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	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	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	
Recall Mode	None	None		None	None		None	Min	Min	None	Min	
Act Effct Green (s)	37.7	26.6		39.7	30.7		40.1	31.4	31.4	37.0	26.7	
Actuated g/C Ratio	0.42	0.30		0.45	0.34		0.45	0.35	0.35	0.42	0.30	
v/c Ratio	0.24	0.71		0.53	0.44		0.35	0.68	0.25	0.21	0.67	
Control Delay	16.4	35.3		21.4	25.7		18.1	33.6	6.3	16.5	34.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	16.4	35.3		21.4	25.7		18.1	33.6	6.3	16.5	34.5	
LOS	B	D		C	C		B	C	A	B	C	
Approach Delay		31.0			23.9			24.8			31.4	
Approach LOS		C			C			C			C	
90th %ile Green (s)	10.0	37.9		10.0	37.9		10.0	35.0	35.0	10.0	35.0	
90th %ile Term Code	Max	Gap		Max	Hold		Max	Max	Max	Max	Max	
70th %ile Green (s)	10.0	29.9		10.0	29.9		10.0	34.2	34.2	8.5	32.7	
70th %ile Term Code	Max	Gap		Max	Hold		Max	Gap	Gap	Gap	Hold	
50th %ile Green (s)	9.3	24.8		10.0	25.5		10.0	27.3	27.3	7.5	24.8	
50th %ile Term Code	Gap	Gap		Max	Hold		Max	Gap	Gap	Gap	Hold	
30th %ile Green (s)	8.0	19.9		9.5	21.4		8.5	22.4	22.4	7.0	20.9	
30th %ile Term Code	Gap	Gap		Gap	Hold		Gap	Gap	Gap	Min	Hold	
10th %ile Green (s)	0.0	13.6		7.3	25.9		7.1	25.2	25.2	0.0	13.1	
10th %ile Term Code	Skip	Gap		Gap	Hold		Gap	Hold	Hold	Skip	Gap	
Queue Length 50th (ft)	36	187		62	115		42	220	4	22	174	
Queue Length 95th (ft)	79	324		124	215		95	405	51	57	316	
Internal Link Dist (ft)		420			420			920			420	
Turn Bay Length (ft)	250			450			200		200	200		
Base Capacity (vph)	510	894		370	894		399	810	748	406	777	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.23	0.43		0.51	0.31		0.34	0.55	0.21	0.18	0.46	

Intersection Summary

Area Type: Other

Cycle Length: 115

Actuated Cycle Length: 89

Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2024 Baseline Conditions  
 Weekday Morning Peak Hour

Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 27.4	Intersection LOS: C
Intersection Capacity Utilization 72.0%	ICU Level of Service C
Analysis Period (min) 15	
90th %ile Actuated Cycle: 112.9	
70th %ile Actuated Cycle: 102.6	
50th %ile Actuated Cycle: 89.6	
30th %ile Actuated Cycle: 78.8	
10th %ile Actuated Cycle: 61.1	

Splits and Phases: 1: Kelley Boulevard/Taunton Street & Messenger Street

 Ø1 15 s	 Ø2 40 s	 Ø3 15 s	 Ø4 45 s
 Ø5 15 s	 Ø6 40 s	 Ø7 15 s	 Ø8 45 s

HCM 6th TWSC  
2: Kelley Boulevard & Plain Street

2024 Baseline Conditions  
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	3.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↗	↖		↙	↗
Traffic Vol, veh/h	23	181	607	34	114	491
Future Vol, veh/h	23	181	607	34	114	491
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	52	4	3	15	11	4
Mvmt Flow	24	193	646	36	121	522

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1428	664	0	0	682	0
Stage 1	664	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Critical Hdwy	6.92	6.24	-	-	4.21	-
Critical Hdwy Stg 1	5.92	-	-	-	-	-
Critical Hdwy Stg 2	5.92	-	-	-	-	-
Follow-up Hdwy	3.968	3.336	-	-	2.299	-
Pot Cap-1 Maneuver	116	457	-	-	870	-
Stage 1	429	-	-	-	-	-
Stage 2	382	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	100	457	-	-	870	-
Mov Cap-2 Maneuver	100	-	-	-	-	-
Stage 1	429	-	-	-	-	-
Stage 2	329	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.3	0	1.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	100	457	870	-
HCM Lane V/C Ratio	-	-	0.245	0.421	0.139	-
HCM Control Delay (s)	-	-	52.3	18.5	9.8	-
HCM Lane LOS	-	-	F	C	A	-
HCM 95th %tile Q(veh)	-	-	0.9	2.1	0.5	-

HCM 6th TWSC  
3: Kelley Boulevard & Site Driveway

2024 Baseline Conditions  
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Traffic Vol, veh/h	0	1	5	642	467	8
Future Vol, veh/h	0	1	5	642	467	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	3	5	0
Mvmt Flow	0	1	5	669	486	8

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1169	490	494	0	-	0
Stage 1	490	-	-	-	-	-
Stage 2	679	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	215	582	1080	-	-	-
Stage 1	620	-	-	-	-	-
Stage 2	507	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	214	582	1080	-	-	-
Mov Cap-2 Maneuver	416	-	-	-	-	-
Stage 1	617	-	-	-	-	-
Stage 2	507	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1080	-	582	-	-
HCM Lane V/C Ratio	0.005	-	0.002	-	-
HCM Control Delay (s)	8.3	-	11.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC  
4: Kelley Boulevard & George Leven Drive

2024 Baseline Conditions  
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	41	22	36	617	433	36
Future Vol, veh/h	41	22	36	617	433	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	14	6	5	6	6
Mvmt Flow	44	24	39	663	466	39

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1227	486	505	0	-	0
Stage 1	486	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Critical Hdwy	6.4	6.34	4.16	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.426	2.254	-	-	-
Pot Cap-1 Maneuver	199	558	1039	-	-	-
Stage 1	623	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	191	558	1039	-	-	-
Mov Cap-2 Maneuver	327	-	-	-	-	-
Stage 1	599	-	-	-	-	-
Stage 2	475	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.6	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1039	-	327	558	-	-
HCM Lane V/C Ratio	0.037	-	0.135	0.042	-	-
HCM Control Delay (s)	8.6	-	17.7	11.7	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	0.1	-	-

HCM 6th TWSC  
 5: George Leven Drive & Site Driveway

2024 Baseline Conditions  
 Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	46	49	1	0	0
Future Vol, veh/h	0	46	49	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	9	6	0	0	0
Mvmt Flow	0	58	61	1	0	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	62	0	-	0	120
Stage 1	-	-	-	-	62
Stage 2	-	-	-	-	58
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1554	-	-	-	880
Stage 1	-	-	-	-	966
Stage 2	-	-	-	-	970
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1554	-	-	-	880
Mov Cap-2 Maneuver	-	-	-	-	880
Stage 1	-	-	-	-	966
Stage 2	-	-	-	-	970

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1554	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

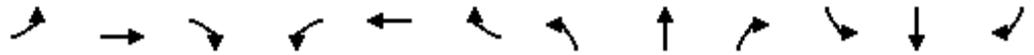
Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2024 Baseline Conditions  
 Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	195	170	245	404	86	149	353	151	84	492	68
Future Volume (vph)	103	195	170	245	404	86	149	353	151	84	492	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	450		0	200		200	200		0
Storage Lanes	1		0	1		0	1		1	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		0.930			0.974				0.850		0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1758	0	1787	1851	0	1787	1900	1599	1805	1827	0
Flt Permitted	0.148			0.281			0.105			0.361		
Satd. Flow (perm)	278	1758	0	529	1851	0	198	1900	1599	686	1827	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		36			9				149			5
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		500			500			1000			500	
Travel Time (s)		9.7			9.7			22.7			11.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	0%	1%	0%	0%	1%	0%	1%	0%	2%	3%
Adj. Flow (vph)	107	203	177	255	421	90	155	368	157	88	513	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	380	0	255	511	0	155	368	157	88	584	0
Enter Blocked Intersection	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												
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	1		2
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100	20	20		100
Trailing Detector (ft)	0	0		0	0		0	0	0	0		0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0		0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20		6
Detector 1 Type	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
Detector 1 Queue (s)	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
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	Prot	pm+pt		NA
Protected Phases	7	4		3	8		5	2	2	1		6

Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2024 Baseline Conditions  
 Weekday Evening Peak Hour



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	2	1	6			
Switch Phase												
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	10.0	10.0	7.0	10.0			
Minimum Split (s)	12.0	15.0	12.0	15.0	12.0	15.0	15.0	12.0	15.0			
Total Split (s)	15.0	60.0	15.0	60.0	15.0	55.0	55.0	15.0	55.0			
Total Split (%)	10.3%	41.4%	10.3%	41.4%	10.3%	37.9%	37.9%	10.3%	37.9%			
Maximum Green (s)	10.0	55.0	10.0	55.0	10.0	50.0	50.0	10.0	50.0			
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0			
Lost Time Adjust (s)	-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			
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag			
Lead-Lag Optimize?	Yes											
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			
Recall Mode	None	None	None	None	None	Min	Min	None	Min			
Act Effct Green (s)	51.9	40.5	53.9	41.5	58.4	46.3	46.3	55.6	44.9			
Actuated g/C Ratio	0.42	0.33	0.44	0.34	0.48	0.38	0.38	0.45	0.37			
v/c Ratio	0.41	0.63	0.71	0.81	0.62	0.51	0.23	0.21	0.87			
Control Delay	25.0	36.1	34.8	47.4	33.0	34.0	6.2	20.3	51.4			
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total Delay	25.0	36.1	34.8	47.4	33.0	34.0	6.2	20.3	51.4			
LOS	C	D	C	D	C	C	A	C	D			
Approach Delay	33.7		43.2		27.4		47.3					
Approach LOS	C		D		C		D					
90th %ile Green (s)	10.0	55.0	10.0	55.0	10.0	50.0	50.0	10.0	50.0			
90th %ile Term Code	Max	Hold	Max	Max	Max	Hold	Hold	Max	Max			
70th %ile Green (s)	10.0	47.0	10.0	47.0	10.0	50.0	50.0	10.0	50.0			
70th %ile Term Code	Max	Hold	Max	Gap	Max	Hold	Hold	Max	Max			
50th %ile Green (s)	10.0	41.1	10.0	41.1	10.0	49.4	49.4	8.7	48.1			
50th %ile Term Code	Max	Hold	Max	Gap	Max	Hold	Hold	Gap	Gap			
30th %ile Green (s)	9.2	32.8	10.0	33.6	10.0	41.5	41.5	7.5	39.0			
30th %ile Term Code	Gap	Hold	Max	Gap	Max	Hold	Hold	Gap	Gap			
10th %ile Green (s)	7.0	20.9	10.0	23.9	9.2	30.4	30.4	7.0	28.2			
10th %ile Term Code	Min	Hold	Max	Gap	Gap	Hold	Hold	Min	Gap			
Queue Length 50th (ft)	52	242	135	385	68	228	4	37	432			
Queue Length 95th (ft)	89	352	200	530	#167	381	54	81	#732			
Internal Link Dist (ft)	420		420		920		420					
Turn Bay Length (ft)	250		450		200		200					
Base Capacity (vph)	272	864	360	895	255	833	785	434	804			
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0			
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0			
Storage Cap Reductn	0	0	0	0	0	0	0	0	0			
Reduced v/c Ratio	0.39	0.44	0.71	0.57	0.61	0.44	0.20	0.20	0.73			

Intersection Summary

Area Type: Other

Cycle Length: 145

Actuated Cycle Length: 122.3

Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2024 Baseline Conditions  
 Weekday Evening Peak Hour

Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 38.4	Intersection LOS: D
Intersection Capacity Utilization 85.8%	ICU Level of Service E
Analysis Period (min) 15	
90th %ile Actuated Cycle: 145	
70th %ile Actuated Cycle: 137	
50th %ile Actuated Cycle: 129.2	
30th %ile Actuated Cycle: 111.8	
10th %ile Actuated Cycle: 88.3	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Kelley Boulevard/Taunton Street & Messenger Street

 Ø1	 Ø2	 Ø3	 Ø4
15 s	55 s	15 s	60 s
 Ø5	 Ø6	 Ø7	 Ø8
15 s	55 s	15 s	60 s

HCM 6th TWSC  
 2: Kelley Boulevard & Plain Street

2024 Baseline Conditions  
 Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↗	↖		↙	↗
Traffic Vol, veh/h	26	153	531	52	152	875
Future Vol, veh/h	26	153	531	52	152	875
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	2	0	10	3	0
Mvmt Flow	28	165	571	56	163	941

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1866	599	0	0	627	0
Stage 1	599	-	-	-	-	-
Stage 2	1267	-	-	-	-	-
Critical Hdwy	6.44	6.22	-	-	4.13	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.318	-	-	2.227	-
Pot Cap-1 Maneuver	79	502	-	-	950	-
Stage 1	545	-	-	-	-	-
Stage 2	262	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	65	502	-	-	950	-
Mov Cap-2 Maneuver	65	-	-	-	-	-
Stage 1	545	-	-	-	-	-
Stage 2	217	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.4	0	1.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	65	502	950	-
HCM Lane V/C Ratio	-	-	0.43	0.328	0.172	-
HCM Control Delay (s)	-	-	97	15.6	9.6	-
HCM Lane LOS	-	-	F	C	A	-
HCM 95th %tile Q(veh)	-	-	1.7	1.4	0.6	-

HCM 6th TWSC  
3: Kelley Boulevard & Site Driveway

2024 Baseline Conditions  
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	17	13	556	875	20
Future Vol, veh/h	18	17	13	556	875	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	8	1	1	0
Mvmt Flow	19	18	14	585	921	21

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1545	932	942	0	0
Stage 1	932	-	-	-	-
Stage 2	613	-	-	-	-
Critical Hdwy	6.4	6.2	4.18	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.272	-	-
Pot Cap-1 Maneuver	127	326	704	-	-
Stage 1	386	-	-	-	-
Stage 2	544	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	124	326	704	-	-
Mov Cap-2 Maneuver	314	-	-	-	-
Stage 1	378	-	-	-	-
Stage 2	544	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.7	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	704	-	320	-	-
HCM Lane V/C Ratio	0.019	-	0.115	-	-
HCM Control Delay (s)	10.2	-	17.7	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

HCM 6th TWSC  
4: Kelley Boulevard & George Leven Drive

2024 Baseline Conditions  
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	43	24	19	524	857	23
Future Vol, veh/h	43	24	19	524	857	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	2	1	0
Mvmt Flow	45	25	20	546	893	24

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1491	905	917	0	-	0
Stage 1	905	-	-	-	-	-
Stage 2	586	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	138	338	752	-	-	-
Stage 1	398	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	134	338	752	-	-	-
Mov Cap-2 Maneuver	267	-	-	-	-	-
Stage 1	387	-	-	-	-	-
Stage 2	560	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.5	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	752	-	267	338	-	-
HCM Lane V/C Ratio	0.026	-	0.168	0.074	-	-
HCM Control Delay (s)	9.9	-	21.2	16.5	-	-
HCM Lane LOS	A	-	C	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	0.2	-	-

HCM 6th TWSC  
5: George Leven Drive & Site Driveway

2024 Baseline Conditions  
Weekday Evening Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	1	35	9	1	0	1
Future Vol, veh/h	1	35	9	1	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	48	12	1	0	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	13	0	-	0	63
Stage 1	-	-	-	-	13
Stage 2	-	-	-	-	50
Critical Hdwy	4.1	-	-	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1619	-	-	-	948
Stage 1	-	-	-	-	1015
Stage 2	-	-	-	-	978
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1619	-	-	-	947
Mov Cap-2 Maneuver	-	-	-	-	947
Stage 1	-	-	-	-	1014
Stage 2	-	-	-	-	978

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	8.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1619	-	-	-	1073
HCM Lane V/C Ratio	0.001	-	-	-	0.001
HCM Control Delay (s)	7.2	0	-	-	8.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2031 No-Build Conditions  
 Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	303	95	195	187	99	138	458	165	76	312	61
Future Volume (vph)	118	303	95	195	187	99	138	458	165	76	312	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	450		450	200		200	200		200
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.964			0.948			0.960			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3407	0	1703	3388	0	1736	3363	0	1805	3368	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1752	3407	0	1703	3388	0	1736	3363	0	1805	3368	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		44			103			58			24	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		500			500			1000			500	
Travel Time (s)		9.7			9.7			22.7			11.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	0%	9%	6%	1%	1%	4%	2%	6%	0%	5%	2%
Adj. Flow (vph)	123	316	99	203	195	103	144	477	172	79	325	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	123	415	0	203	298	0	144	649	0	79	389	0
Enter Blocked Intersection	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												
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	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2031 No-Build Conditions  
 Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	15.0		12.0	15.0		12.0	15.0		12.0	15.0	
Total Split (s)	15.0	25.0		20.0	30.0		20.0	30.0		15.0	25.0	
Total Split (%)	16.7%	27.8%		22.2%	33.3%		22.2%	33.3%		16.7%	27.8%	
Maximum Green (s)	10.0	20.0		15.0	25.0		15.0	25.0		10.0	20.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.5	-2.5		-2.5	-2.5		-2.5	-2.5		-2.5	-2.5	
Total Lost Time (s)	2.5	2.5		2.5	2.5		2.5	2.5		2.5	2.5	
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	Min		None	Min	
Act Effct Green (s)	12.1	17.2		15.7	24.8		14.2	21.8		11.6	19.2	
Actuated g/C Ratio	0.17	0.24		0.22	0.34		0.19	0.30		0.16	0.26	
v/c Ratio	0.42	0.50		0.55	0.24		0.43	0.62		0.28	0.43	
Control Delay	37.7	26.0		35.9	15.2		34.2	24.2		35.2	24.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.7	26.0		35.9	15.2		34.2	24.2		35.2	24.9	
LOS	D	C		D	B		C	C		D	C	
Approach Delay		28.7			23.6			26.0			26.6	
Approach LOS		C			C			C			C	
90th %ile Green (s)	10.0	20.0		15.0	25.0		15.0	25.0		10.0	20.0	
90th %ile Term Code	Max	Max		Max	Hold		Max	Max		Max	Max	
70th %ile Green (s)	10.0	16.3		15.0	21.3		14.2	23.9		10.0	19.7	
70th %ile Term Code	Max	Gap		Max	Hold		Gap	Gap		Max	Hold	
50th %ile Green (s)	10.0	14.0		14.7	18.7		11.8	20.8		8.8	17.8	
50th %ile Term Code	Max	Gap		Gap	Hold		Gap	Gap		Gap	Hold	
30th %ile Green (s)	8.8	11.6		11.7	14.5		9.6	16.6		7.3	14.3	
30th %ile Term Code	Gap	Gap		Gap	Hold		Gap	Gap		Gap	Hold	
10th %ile Green (s)	0.0	10.0		8.2	23.2		0.0	10.4		0.0	10.4	
10th %ile Term Code	Skip	Min		Gap	Hold		Skip	Gap		Skip	Hold	
Queue Length 50th (ft)	55	85		88	38		63	129		35	77	
Queue Length 95th (ft)	121	138		179	74		130	207		84	135	
Internal Link Dist (ft)		420			420			920			420	
Turn Bay Length (ft)	250			450			200			200		
Base Capacity (vph)	321	1155		437	1429		446	1392		331	1129	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.38	0.36		0.46	0.21		0.32	0.47		0.24	0.34	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 72.9

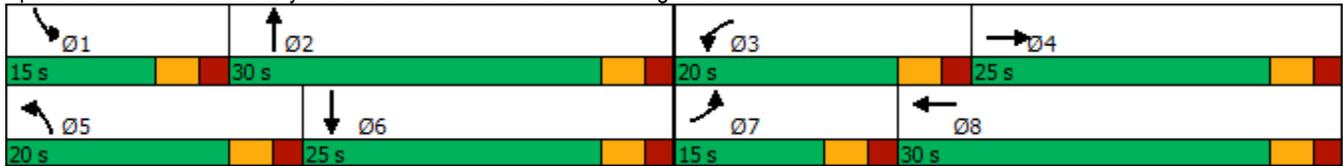
Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2031 No-Build Conditions  
 Weekday Morning Peak Hour

Natural Cycle: 55  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.62  
 Intersection Signal Delay: 26.2  
 Intersection Capacity Utilization 59.3%  
 Analysis Period (min) 15  
 90th %ile Actuated Cycle: 90  
 70th %ile Actuated Cycle: 85.2  
 50th %ile Actuated Cycle: 78.3  
 30th %ile Actuated Cycle: 67.2  
 10th %ile Actuated Cycle: 43.6

Intersection LOS: C  
 ICU Level of Service B

Splits and Phases: 1: Kelley Boulevard/Taunton Street & Messenger Street



Lanes, Volumes, Timings  
4: Kelley Boulevard & George Leven Drive

2031 No-Build Conditions  
Weekday Morning Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	0	24	1	0	4	44	656	2	5	465	39
Future Volume (vph)	44	0	24	1	0	4	44	656	2	5	465	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	100		0	100		0
Storage Lanes	0		1	0		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			0.850		0.892						0.988	
Flt Protected		0.950			0.990		0.950			0.950		
Satd. Flow (prot)	0	1805	1417	0	1678	0	1703	1810	0	1805	1771	0
Flt Permitted		0.784			0.918		0.355			0.335		
Satd. Flow (perm)	0	1490	1417	0	1556	0	636	1810	0	636	1771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			31		109						9	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		350			232			329			900	
Travel Time (s)		8.0			5.3			7.5			20.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	14%	0%	0%	0%	6%	5%	0%	0%	6%	6%
Adj. Flow (vph)	47	0	26	1	0	4	47	705	2	5	500	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	26	0	5	0	47	707	0	5	542	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
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	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	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	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	
Detector 1 Queue (s)	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	
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	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	

Lanes, Volumes, Timings  
4: Kelley Boulevard & George Leven Drive

2031 No-Build Conditions  
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	15.0		12.0	15.0	
Total Split (s)	15.0	15.0	15.0	15.0	15.0		15.0	40.0		15.0	40.0	
Total Split (%)	21.4%	21.4%	21.4%	21.4%	21.4%		21.4%	57.1%		21.4%	57.1%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0		10.0	35.0		10.0	35.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.5	-2.5		-2.5		-2.5	-2.5		-2.5	-2.5	
Total Lost Time (s)		2.5	2.5		2.5		2.5	2.5		2.5	2.5	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			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	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effct Green (s)		11.1	14.6		11.1		36.8	37.6		35.8	32.3	
Actuated g/C Ratio		0.25	0.33		0.25		0.84	0.85		0.81	0.73	
v/c Ratio		0.12	0.05		0.01		0.06	0.46		0.01	0.42	
Control Delay		19.6	5.3		0.0		2.0	5.8		2.2	7.7	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		19.6	5.3		0.0		2.0	5.8		2.2	7.7	
LOS		B	A		A		A	A		A	A	
Approach Delay		14.5						5.5			7.6	
Approach LOS		B						A			A	
90th %ile Green (s)	10.0	10.0	7.0	10.0	10.0		7.0	35.0		7.0	35.0	
90th %ile Term Code	Max	Max	Min	Hold	Hold		Min	Max		Min	Hold	
70th %ile Green (s)	8.2	8.2	7.0	8.2	8.2		7.0	36.6		0.0	24.6	
70th %ile Term Code	Gap	Gap	Min	Hold	Hold		Min	Hold		Skip	Gap	
50th %ile Green (s)	0.0	0.0	7.0	0.0	0.0		7.0	32.4		0.0	20.4	
50th %ile Term Code	Skip	Skip	Min	Skip	Skip		Min	Hold		Skip	Gap	
30th %ile Green (s)	0.0	0.0	0.0	0.0	0.0		0.0	25.7		0.0	25.7	
30th %ile Term Code	Skip	Skip	Skip	Skip	Skip		Skip	Dwell		Skip	Dwell	
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0		0.0	25.0		0.0	25.0	
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip		Skip	Dwell		Skip	Dwell	
Queue Length 50th (ft)		7	0		0		1	0		0	45	
Queue Length 95th (ft)		43	12		0		10	309		2	205	
Internal Link Dist (ft)		270			152			249			820	
Turn Bay Length (ft)							100			100		
Base Capacity (vph)		468	595		564		872	1547		904	1504	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.10	0.04		0.01		0.05	0.46		0.01	0.36	

Intersection Summary

Area Type: Other  
Cycle Length: 70  
Actuated Cycle Length: 44

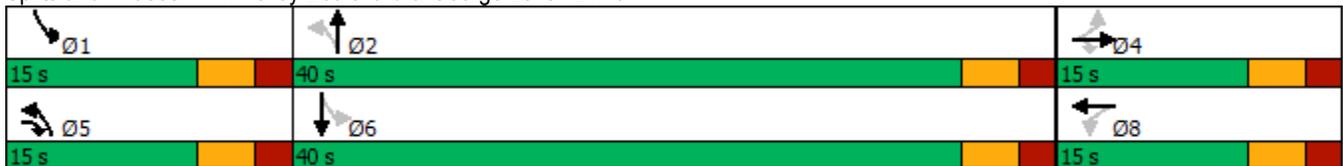
Lanes, Volumes, Timings  
 4: Kelley Boulevard & George Leven Drive

2031 No-Build Conditions  
 Weekday Morning Peak Hour

Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.46  
 Intersection Signal Delay: 6.8  
 Intersection Capacity Utilization 52.3%  
 Analysis Period (min) 15  
 90th %ile Actuated Cycle: 67  
 70th %ile Actuated Cycle: 54.8  
 50th %ile Actuated Cycle: 37.4  
 30th %ile Actuated Cycle: 30.7  
 10th %ile Actuated Cycle: 30

Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 4: Kelley Boulevard & George Leven Drive



Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2031 No-Build Conditions  
 Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	209	182	263	433	92	157	378	162	90	528	73
Future Volume (vph)	110	209	182	263	433	92	157	378	162	90	528	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	450		450	200		200	200		200
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.930			0.974			0.955			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3339	0	1787	3516	0	1787	3437	0	1805	3471	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1787	3339	0	1787	3516	0	1787	3437	0	1805	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		190			27			77			16	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		500			500			1000			500	
Travel Time (s)		9.7			9.7			22.7			11.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	0%	1%	0%	0%	1%	0%	1%	0%	2%	3%
Adj. Flow (vph)	115	218	190	274	451	96	164	394	169	94	550	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	115	408	0	274	547	0	164	563	0	94	626	0
Enter Blocked Intersection	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												
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	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2031 No-Build Conditions  
 Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	15.0		12.0	15.0		12.0	15.0		12.0	15.0	
Total Split (s)	15.0	20.0		25.0	30.0		20.0	35.0		15.0	30.0	
Total Split (%)	15.8%	21.1%		26.3%	31.6%		21.1%	36.8%		15.8%	31.6%	
Maximum Green (s)	10.0	15.0		20.0	25.0		15.0	30.0		10.0	25.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.5	-2.5		-2.5	-2.5		-2.5	-2.5		-2.5	-2.5	
Total Lost Time (s)	2.5	2.5		2.5	2.5		2.5	2.5		2.5	2.5	
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	Min		None	Min	
Act Effct Green (s)	11.8	14.6		18.9	25.0		14.7	28.8		11.6	22.5	
Actuated g/C Ratio	0.15	0.18		0.23	0.31		0.18	0.36		0.14	0.28	
v/c Ratio	0.44	0.54		0.66	0.50		0.51	0.44		0.36	0.64	
Control Delay	41.3	20.0		38.1	26.0		38.3	19.9		39.8	29.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.3	20.0		38.1	26.0		38.3	19.9		39.8	29.2	
LOS	D	C		D	C		D	B		D	C	
Approach Delay		24.7			30.0			24.1			30.6	
Approach LOS		C			C			C			C	
90th %ile Green (s)	10.0	15.0		20.0	25.0		15.0	30.0		10.0	25.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Hold		Max	Max	
70th %ile Green (s)	10.0	13.6		20.0	23.6		15.0	30.0		10.0	25.0	
70th %ile Term Code	Max	Gap		Max	Hold		Max	Hold		Max	Max	
50th %ile Green (s)	10.0	11.2		18.1	19.3		13.1	24.2		9.8	20.9	
50th %ile Term Code	Max	Gap		Gap	Hold		Gap	Hold		Gap	Gap	
30th %ile Green (s)	8.7	10.0		14.4	15.7		10.5	19.9		8.0	17.4	
30th %ile Term Code	Gap	Min		Gap	Hold		Gap	Hold		Gap	Gap	
10th %ile Green (s)	0.0	10.0		10.3	25.3		7.6	25.3		0.0	12.7	
10th %ile Term Code	Skip	Min		Gap	Hold		Gap	Hold		Skip	Gap	
Queue Length 50th (ft)	55	54		127	124		77	105		45	146	
Queue Length 95th (ft)	121	108		236	190		154	166		102	225	
Internal Link Dist (ft)		420			420			920			420	
Turn Bay Length (ft)	250			450			200			200		
Base Capacity (vph)	283	890		511	1249		397	1464		286	1223	
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	0.41	0.46		0.54	0.44		0.41	0.38		0.33	0.51	

Intersection Summary

Area Type: Other  
 Cycle Length: 95  
 Actuated Cycle Length: 81

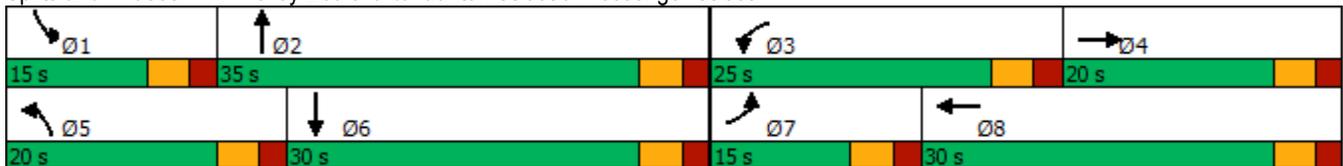
Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2031 No-Build Conditions  
 Weekday Evening Peak Hour

Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 27.6  
 Intersection Capacity Utilization 65.1%  
 Analysis Period (min) 15  
 90th %ile Actuated Cycle: 95  
 70th %ile Actuated Cycle: 93.6  
 50th %ile Actuated Cycle: 83.3  
 30th %ile Actuated Cycle: 72.3  
 10th %ile Actuated Cycle: 60.6

Intersection LOS: C  
 ICU Level of Service C

Splits and Phases: 1: Kelley Boulevard/Taunton Street & Messenger Street



HCM 6th TWSC  
2: Kelley Boulevard & Plain Street

2031 No-Build Conditions  
Weekday Morning Peak Hour

Intersection

Int Delay, s/veh 4.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	194	652	36	122	527
Future Vol, veh/h	25	194	652	36	122	527
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	52	4	3	15	11	4
Mvmt Flow	27	206	694	38	130	561

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1534	713	0
Stage 1	713	-	-
Stage 2	821	-	-
Critical Hdwy	6.92	6.24	-
Critical Hdwy Stg 1	5.92	-	-
Critical Hdwy Stg 2	5.92	-	-
Follow-up Hdwy	3.968	3.336	-
Pot Cap-1 Maneuver	99	428	-
Stage 1	406	-	-
Stage 2	357	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	84	428	-
Mov Cap-2 Maneuver	84	-	-
Stage 1	406	-	-
Stage 2	301	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.2	0	1.9
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	84	428	833	-
HCM Lane V/C Ratio	-	-	0.317	0.482	0.156	-
HCM Control Delay (s)	-	-	66.6	21	10.1	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	1.2	2.6	0.6	-

HCM 6th TWSC  
 3: Kelley Boulevard & Site Driveway

2031 No-Build Conditions  
 Weekday Morning Peak Hour

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	689	502	8
Future Vol, veh/h	0	1	0	689	502	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	3	5	0
Mvmt Flow	0	1	0	718	523	8

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1245	527	531	0	-	0
Stage 1	527	-	-	-	-	-
Stage 2	718	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	194	555	1047	-	-	-
Stage 1	596	-	-	-	-	-
Stage 2	487	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	194	555	1047	-	-	-
Mov Cap-2 Maneuver	397	-	-	-	-	-
Stage 1	596	-	-	-	-	-
Stage 2	487	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1047	-	555	-	-
HCM Lane V/C Ratio	-	-	0.002	-	-
HCM Control Delay (s)	0	-	11.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM 6th TWSC  
 5: George Leven Drive & Site Driveway

2031 No-Build Conditions  
 Weekday Morning Peak Hour

Intersection

Int Delay, s/veh 0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
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Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	0	49	53	1	0	0
Future Vol, veh/h	0	49	53	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	9	6	0	0	0
Mvmt Flow	0	61	66	1	0	0

Major/Minor	Major1	Major2	Minor2
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Conflicting Flow All	67	0	0	128	67
Stage 1	-	-	-	67	-
Stage 2	-	-	-	61	-
Critical Hdwy	4.1	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	3.5	3.3
Pot Cap-1 Maneuver	1547	-	-	871	1002
Stage 1	-	-	-	961	-
Stage 2	-	-	-	967	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1547	-	-	871	1002
Mov Cap-2 Maneuver	-	-	-	871	-
Stage 1	-	-	-	961	-
Stage 2	-	-	-	967	-

Approach	EB	WB	SB
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HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
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Capacity (veh/h)	1547	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Lanes, Volumes, Timings  
4: Kelley Boulevard & George Leven Drive

2031 No-Build Conditions  
Weekday Evening Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	0	26	4	0	3	34	548	1	2	920	25
Future Volume (vph)	65	0	26	4	0	3	34	548	1	2	920	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	100		0	100		0
Storage Lanes	0		1	0		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			0.850		0.942						0.996	
Flt Protected		0.950			0.972		0.950			0.950		
Satd. Flow (prot)	0	1805	1615	0	1740	0	1805	1863	0	1805	1874	0
Flt Permitted		0.753			0.835		0.136			0.411		
Satd. Flow (perm)	0	1431	1615	0	1494	0	258	1863	0	781	1874	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			31		109						3	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		350			238			329			900	
Travel Time (s)		8.0			5.4			7.5			20.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	1%	0%
Adj. Flow (vph)	68	0	27	4	0	3	35	571	1	2	958	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	68	27	0	7	0	35	572	0	2	984	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
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	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	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	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	
Detector 1 Queue (s)	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	
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	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	

Lanes, Volumes, Timings  
4: Kelley Boulevard & George Leven Drive

2031 No-Build Conditions  
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	15.0		12.0	15.0	
Total Split (s)	15.0	15.0	15.0	15.0	15.0		15.0	40.0		15.0	40.0	
Total Split (%)	21.4%	21.4%	21.4%	21.4%	21.4%		21.4%	57.1%		21.4%	57.1%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0		10.0	35.0		10.0	35.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.5	-2.5		-2.5		-2.5	-2.5		-2.5	-2.5	
Total Lost Time (s)		2.5	2.5		2.5		2.5	2.5		2.5	2.5	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			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	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effct Green (s)		11.1	17.4		11.1		47.7	47.3		46.8	43.1	
Actuated g/C Ratio		0.19	0.30		0.19		0.82	0.81		0.80	0.74	
v/c Ratio		0.25	0.05		0.02		0.07	0.38		0.00	0.71	
Control Delay		25.7	5.7		0.1		2.6	5.4		2.5	15.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		25.7	5.7		0.1		2.6	5.4		2.5	15.5	
LOS		C	A		A		A	A		A	B	
Approach Delay		20.0			0.1			5.2			15.5	
Approach LOS		B			A			A			B	
90th %ile Green (s)	10.0	10.0	7.0	10.0	10.0		7.0	35.0		7.0	35.0	
90th %ile Term Code	Max	Max	Min	Hold	Hold		Min	Hold		Min	Max	
70th %ile Green (s)	9.9	9.9	7.0	9.9	9.9		7.0	47.0		0.0	35.0	
70th %ile Term Code	Gap	Gap	Min	Hold	Hold		Min	Hold		Skip	Max	
50th %ile Green (s)	8.4	8.4	7.0	8.4	8.4		7.0	47.0		0.0	35.0	
50th %ile Term Code	Gap	Gap	Min	Hold	Hold		Min	Hold		Skip	Max	
30th %ile Green (s)	0.0	0.0	0.0	0.0	0.0		0.0	42.6		0.0	42.6	
30th %ile Term Code	Skip	Skip	Skip	Skip	Skip		Skip	Dwell		Skip	Dwell	
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0		0.0	39.6		0.0	39.6	
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip		Skip	Dwell		Skip	Dwell	
Queue Length 50th (ft)		24	0		0		2	57		0	314	
Queue Length 95th (ft)		56	13		0		8	216		1	#618	
Internal Link Dist (ft)		270			158			249			820	
Turn Bay Length (ft)							100			100		
Base Capacity (vph)		316	588		415		555	1511		871	1385	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.22	0.05		0.02		0.06	0.38		0.00	0.71	

Intersection Summary

Area Type: Other  
Cycle Length: 70  
Actuated Cycle Length: 58.3

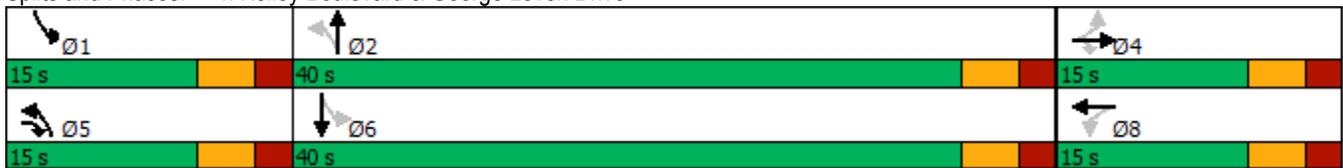
Lanes, Volumes, Timings  
 4: Kelley Boulevard & George Leven Drive

2031 No-Build Conditions  
 Weekday Evening Peak Hour

Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 12.0  
 Intersection Capacity Utilization 71.6%  
 Analysis Period (min) 15  
 90th %ile Actuated Cycle: 67  
 70th %ile Actuated Cycle: 66.9  
 50th %ile Actuated Cycle: 65.4  
 30th %ile Actuated Cycle: 47.6  
 10th %ile Actuated Cycle: 44.6  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Intersection LOS: B  
 ICU Level of Service C

Splits and Phases: 4: Kelley Boulevard & George Leven Drive



HCM 6th TWSC  
 2: Kelley Boulevard & Plain Street

2031 No-Build Conditions  
 Weekday Evening Peak Hour

Intersection

Int Delay, s/veh	4.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	164	569	56	163	939
Future Vol, veh/h	28	164	569	56	163	939
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	2	0	10	3	0
Mvmt Flow	30	176	612	60	175	1010

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2002	642	0	0	672
Stage 1	642	-	-	-	-
Stage 2	1360	-	-	-	-
Critical Hdwy	6.44	6.22	-	-	4.13
Critical Hdwy Stg 1	5.44	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-
Follow-up Hdwy	3.536	3.318	-	-	2.227
Pot Cap-1 Maneuver	65	474	-	-	914
Stage 1	520	-	-	-	-
Stage 2	236	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	53	474	-	-	914
Mov Cap-2 Maneuver	53	-	-	-	-
Stage 1	520	-	-	-	-
Stage 2	191	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	34.9	0	1.5
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	53	474	914
HCM Lane V/C Ratio	-	-	0.568	0.372	0.192
HCM Control Delay (s)	-	-	139.5	17	9.9
HCM Lane LOS	-	-	F	C	A
HCM 95th %tile Q(veh)	-	-	2.2	1.7	0.7

HCM 6th TWSC  
3: Kelley Boulevard & Site Driveway

2031 No-Build Conditions  
Weekday Evening Peak Hour

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
----------	-----	-----	-----	-----	-----	-----

Lane Configurations						
Traffic Vol, veh/h	0	18	0	615	938	22
Future Vol, veh/h	0	18	0	615	938	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	8	1	1	0
Mvmt Flow	0	19	0	647	987	23

Major/Minor	Minor2	Major1	Major2
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Conflicting Flow All	1646	999	1010	0	-	0
Stage 1	999	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.18	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.272	-	-	-
Pot Cap-1 Maneuver	111	298	663	-	-	-
Stage 1	359	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	111	298	663	-	-	-
Mov Cap-2 Maneuver	298	-	-	-	-	-
Stage 1	359	-	-	-	-	-
Stage 2	525	-	-	-	-	-

Approach	EB	NB	SB
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HCM Control Delay, s	17.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
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Capacity (veh/h)	663	-	298	-	-
HCM Lane V/C Ratio	-	-	0.064	-	-
HCM Control Delay (s)	0	-	17.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 6th TWSC  
 5: George Leven Drive & Site Driveway

2031 No-Build Conditions  
 Weekday Evening Peak Hour

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
----------	-----	-----	-----	-----	-----	-----

Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	1	38	10	1	0	1
Future Vol, veh/h	1	38	10	1	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	52	14	1	0	1

Major/Minor	Major1	Major2	Minor2
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Conflicting Flow All	15	0	0	69	15
Stage 1	-	-	-	15	-
Stage 2	-	-	-	54	-
Critical Hdwy	4.1	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	3.5	3.3
Pot Cap-1 Maneuver	1616	-	-	941	1070
Stage 1	-	-	-	1013	-
Stage 2	-	-	-	974	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1616	-	-	940	1070
Mov Cap-2 Maneuver	-	-	-	940	-
Stage 1	-	-	-	1012	-
Stage 2	-	-	-	974	-

Approach	EB	WB	SB
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HCM Control Delay, s	0.2	0	8.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
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Capacity (veh/h)	1616	-	-	-	1070
HCM Lane V/C Ratio	0.001	-	-	-	0.001
HCM Control Delay (s)	7.2	0	-	-	8.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2031 Build Conditions  
 Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	303	99	196	187	99	151	475	169	76	317	61
Future Volume (vph)	118	303	99	196	187	99	151	475	169	76	317	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	450		450	200		200	200		200
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.963			0.948			0.961			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3401	0	1703	3388	0	1736	3367	0	1805	3371	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1752	3401	0	1703	3388	0	1736	3367	0	1805	3371	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		47			103			57			24	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		500			500			1000			500	
Travel Time (s)		9.7			9.7			22.7			11.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	3%	0%	9%	6%	1%	1%	4%	2%	6%	0%	5%	2%
Adj. Flow (vph)	123	316	103	204	195	103	157	495	176	79	330	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	123	419	0	204	298	0	157	671	0	79	394	0
Enter Blocked Intersection	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												
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	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2031 Build Conditions  
 Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		7.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	9.5	15.0		12.0	15.0		12.0	15.0		12.0	15.0	
Total Split (s)	15.0	25.0		20.0	30.0		20.0	30.0		15.0	25.0	
Total Split (%)	16.7%	27.8%		22.2%	33.3%		22.2%	33.3%		16.7%	27.8%	
Maximum Green (s)	10.5	20.0		15.0	25.0		15.0	25.0		10.0	20.0	
Yellow Time (s)	3.5	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.5	-2.5		-2.5	-2.5		-2.5	-2.5		-2.5	-2.5	
Total Lost Time (s)	2.0	2.5		2.5	2.5		2.5	2.5		2.5	2.5	
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	Min		None	Min	
Act Effct Green (s)	12.0	16.9		15.4	23.9		14.3	25.1		11.3	18.7	
Actuated g/C Ratio	0.16	0.22		0.20	0.32		0.19	0.33		0.15	0.25	
v/c Ratio	0.45	0.53		0.59	0.26		0.48	0.58		0.29	0.46	
Control Delay	38.0	26.8		37.4	15.3		35.1	23.5		35.8	25.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	38.0	26.8		37.4	15.3		35.1	23.5		35.8	25.8	
LOS	D	C		D	B		D	C		D	C	
Approach Delay		29.3			24.3			25.7			27.5	
Approach LOS		C			C			C			C	
90th %ile Green (s)	10.5	20.0		15.0	25.0		15.0	25.0		10.0	20.0	
90th %ile Term Code	Max	Max		Max	Hold		Max	Max		Max	Max	
70th %ile Green (s)	10.5	16.4		15.0	21.4		15.0	24.6		10.0	19.6	
70th %ile Term Code	Max	Gap		Max	Hold		Max	Gap		Max	Hold	
50th %ile Green (s)	10.5	14.1		14.8	18.9		12.5	21.4		8.9	17.8	
50th %ile Term Code	Max	Gap		Gap	Hold		Gap	Gap		Gap	Hold	
30th %ile Green (s)	8.9	11.7		11.8	15.1		10.0	17.1		7.3	14.4	
30th %ile Term Code	Gap	Gap		Gap	Hold		Gap	Gap		Gap	Hold	
10th %ile Green (s)	0.0	10.0		8.2	23.2		7.2	22.2		0.0	10.0	
10th %ile Term Code	Skip	Min		Gap	Hold		Gap	Hold		Skip	Min	
Queue Length 50th (ft)	55	86		90	38		70	136		35	80	
Queue Length 95th (ft)	120	139		181	74		140	215		84	137	
Internal Link Dist (ft)		420			420			920			420	
Turn Bay Length (ft)	250			450			200			200		
Base Capacity (vph)	310	1075		406	1334		414	1297		307	1050	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.40	0.39		0.50	0.22		0.38	0.52		0.26	0.38	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 75.7

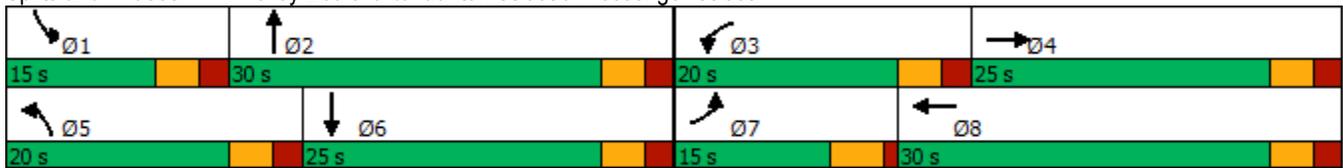
Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2031 Build Conditions  
 Weekday Morning Peak Hour

Natural Cycle: 55  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.59  
 Intersection Signal Delay: 26.6  
 Intersection Capacity Utilization 60.1%  
 Analysis Period (min) 15  
 90th %ile Actuated Cycle: 90  
 70th %ile Actuated Cycle: 86  
 50th %ile Actuated Cycle: 79.2  
 30th %ile Actuated Cycle: 67.9  
 10th %ile Actuated Cycle: 55.4

Intersection LOS: C  
 ICU Level of Service B

Splits and Phases: 1: Kelley Boulevard/Taunton Street & Messenger Street



Lanes, Volumes, Timings  
4: Kelley Boulevard & George Leven Drive

2031 Build Conditions  
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	0	50	1	0	4	60	656	2	5	465	39
Future Volume (vph)	78	0	50	1	0	4	60	656	2	5	465	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	100		0	100		0
Storage Lanes	0		1	0		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			0.850		0.892						0.988	
Flt Protected		0.950			0.990		0.950			0.950		
Satd. Flow (prot)	0	1805	1417	0	1678	0	1703	1810	0	1805	1771	0
Flt Permitted		0.754			0.933		0.334			0.336		
Satd. Flow (perm)	0	1433	1417	0	1581	0	599	1810	0	638	1771	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			54		109						9	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		350			287			329			900	
Travel Time (s)		8.0			6.5			7.5			20.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	14%	0%	0%	0%	6%	5%	0%	0%	6%	6%
Adj. Flow (vph)	84	0	54	1	0	4	65	705	2	5	500	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	84	54	0	5	0	65	707	0	5	542	0
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
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	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	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	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	
Detector 1 Queue (s)	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	
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	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	

Lanes, Volumes, Timings  
4: Kelley Boulevard & George Leven Drive

2031 Build Conditions  
Weekday Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0		12.0	15.0		12.0	15.0	
Total Split (s)	15.0	15.0	15.0	15.0	15.0		15.0	40.0		15.0	40.0	
Total Split (%)	21.4%	21.4%	21.4%	21.4%	21.4%		21.4%	57.1%		21.4%	57.1%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0		10.0	35.0		10.0	35.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.5	-2.5		-2.5		-2.5	-2.5		-2.5	-2.5	
Total Lost Time (s)		2.5	2.5		2.5		2.5	2.5		2.5	2.5	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			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	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effct Green (s)		11.6	17.7		11.6		38.3	38.4		36.8	30.5	
Actuated g/C Ratio		0.24	0.36		0.24		0.79	0.79		0.76	0.63	
v/c Ratio		0.25	0.10		0.01		0.09	0.50		0.01	0.49	
Control Delay		22.2	4.9		0.0		2.7	7.0		2.6	10.4	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		22.2	4.9		0.0		2.7	7.0		2.6	10.4	
LOS		C	A		A		A	A		A	B	
Approach Delay		15.4						6.7			10.3	
Approach LOS		B						A			B	
90th %ile Green (s)	10.0	10.0	7.0	10.0	10.0		7.0	35.0		7.0	35.0	
90th %ile Term Code	Max	Max	Min	Hold	Hold		Min	Max		Min	Hold	
70th %ile Green (s)	10.0	10.0	7.2	10.0	10.0		7.2	37.4		0.0	25.2	
70th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Hold		Skip	Gap	
50th %ile Green (s)	8.4	8.4	7.0	8.4	8.4		7.0	33.1		0.0	21.1	
50th %ile Term Code	Gap	Gap	Min	Hold	Hold		Min	Hold		Skip	Gap	
30th %ile Green (s)	0.0	0.0	7.0	0.0	0.0		7.0	34.4		0.0	22.4	
30th %ile Term Code	Skip	Skip	Min	Skip	Skip		Min	Dwell		Skip	Dwell	
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0		0.0	23.4		0.0	23.4	
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip		Skip	Dwell		Skip	Dwell	
Queue Length 50th (ft)		21	0		0		5	80		1	116	
Queue Length 95th (ft)		68	20		0		13	309		2	205	
Internal Link Dist (ft)		270			207			249			820	
Turn Bay Length (ft)							100			100		
Base Capacity (vph)		402	640		522		786	1424		834	1381	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.21	0.08		0.01		0.08	0.50		0.01	0.39	

Intersection Summary

Area Type: Other  
Cycle Length: 70  
Actuated Cycle Length: 48.7

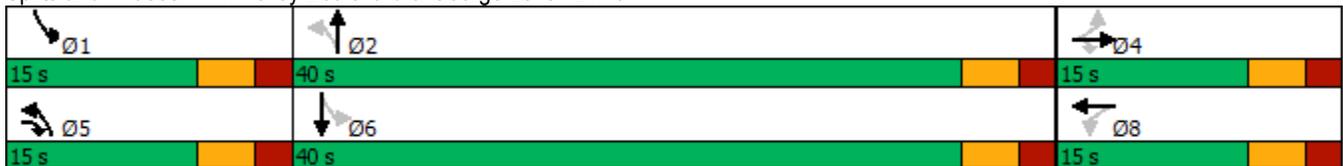
Lanes, Volumes, Timings  
 4: Kelley Boulevard & George Leven Drive

2031 Build Conditions  
 Weekday Morning Peak Hour

Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.50  
 Intersection Signal Delay: 8.8  
 Intersection Capacity Utilization 61.5%  
 Analysis Period (min) 15  
 90th %ile Actuated Cycle: 67  
 70th %ile Actuated Cycle: 57.4  
 50th %ile Actuated Cycle: 51.5  
 30th %ile Actuated Cycle: 39.4  
 10th %ile Actuated Cycle: 28.4

Intersection LOS: A  
 ICU Level of Service B

Splits and Phases: 4: Kelley Boulevard & George Leven Drive



HCM 6th TWSC  
2: Kelley Boulevard & Plain Street

2031 Build Conditions  
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	4.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	25	194	686	36	122	537
Future Vol, veh/h	25	194	686	36	122	537
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	52	4	3	15	11	4
Mvmt Flow	27	206	730	38	130	571

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1580	749	0	0	768
Stage 1	749	-	-	-	-
Stage 2	831	-	-	-	-
Critical Hdwy	6.92	6.24	-	-	4.21
Critical Hdwy Stg 1	5.92	-	-	-	-
Critical Hdwy Stg 2	5.92	-	-	-	-
Follow-up Hdwy	3.968	3.336	-	-	2.299
Pot Cap-1 Maneuver	92	409	-	-	807
Stage 1	389	-	-	-	-
Stage 2	353	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	77	409	-	-	807
Mov Cap-2 Maneuver	77	-	-	-	-
Stage 1	389	-	-	-	-
Stage 2	296	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.4	0	1.9
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	77	409	807	-
HCM Lane V/C Ratio	-	-	0.345	0.505	0.161	-
HCM Control Delay (s)	-	-	74.6	22.4	10.3	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	1.3	2.8	0.6	-

HCM 6th TWSC  
 3: Kelley Boulevard & Site Driveway

2031 Build Conditions  
 Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Traffic Vol, veh/h	0	27	0	723	502	18
Future Vol, veh/h	0	27	0	723	502	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	3	5	0
Mvmt Flow	0	28	0	753	523	19

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1286	533	542	0	-	0
Stage 1	533	-	-	-	-	-
Stage 2	753	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	183	551	1037	-	-	-
Stage 1	593	-	-	-	-	-
Stage 2	469	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	183	551	1037	-	-	-
Mov Cap-2 Maneuver	385	-	-	-	-	-
Stage 1	593	-	-	-	-	-
Stage 2	469	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1037	-	551	-	-
HCM Lane V/C Ratio	-	-	0.051	-	-
HCM Control Delay (s)	0	-	11.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM 6th TWSC  
5: George Leven Drive & Site Driveway

2031 Build Conditions  
Weekday Morning Peak Hour

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	49	53	17	60	0
Future Vol, veh/h	0	49	53	17	60	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	0	9	6	0	0	0
Mvmt Flow	0	61	66	21	75	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	87	0	-	0	138 77
Stage 1	-	-	-	-	77 -
Stage 2	-	-	-	-	61 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1522	-	-	-	860 990
Stage 1	-	-	-	-	951 -
Stage 2	-	-	-	-	967 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1522	-	-	-	860 990
Mov Cap-2 Maneuver	-	-	-	-	860 -
Stage 1	-	-	-	-	951 -
Stage 2	-	-	-	-	967 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1522	-	-	-	860
HCM Lane V/C Ratio	-	-	-	-	0.087
HCM Control Delay (s)	0	-	-	-	9.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2031 Build Conditions  
 Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	209	193	266	433	92	164	387	164	90	543	73
Future Volume (vph)	110	209	193	266	433	92	164	387	164	90	543	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		250	450		450	200		200	200		200
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.928			0.974			0.955			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3333	0	1787	3516	0	1787	3437	0	1805	3471	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1787	3333	0	1787	3516	0	1787	3437	0	1805	3471	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		201			27			75			15	
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		500			500			1000			500	
Travel Time (s)		9.7			9.7			22.7			11.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	1%	0%	1%	0%	0%	1%	0%	1%	0%	2%	3%
Adj. Flow (vph)	115	218	201	277	451	96	171	403	171	94	566	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	115	419	0	277	547	0	171	574	0	94	642	0
Enter Blocked Intersection	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												
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	Prot	NA		Prot	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2031 Build Conditions  
 Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases												
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	12.0	15.0		12.0	15.0		12.0	15.0		12.0	15.0	
Total Split (s)	15.0	20.0		25.0	30.0		20.0	35.0		15.0	30.0	
Total Split (%)	15.8%	21.1%		26.3%	31.6%		21.1%	36.8%		15.8%	31.6%	
Maximum Green (s)	10.0	15.0		20.0	25.0		15.0	30.0		10.0	25.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.5	-2.5		-2.5	-2.5		-2.5	-2.5		-2.5	-2.5	
Total Lost Time (s)	2.5	2.5		2.5	2.5		2.5	2.5		2.5	2.5	
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	Min		None	Min	
Act Effct Green (s)	11.8	14.6		19.1	25.2		14.9	29.5		11.6	23.0	
Actuated g/C Ratio	0.14	0.18		0.23	0.31		0.18	0.36		0.14	0.28	
v/c Ratio	0.45	0.55		0.66	0.50		0.53	0.45		0.37	0.65	
Control Delay	41.8	19.9		38.8	26.3		39.1	20.1		40.3	29.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.8	19.9		38.8	26.3		39.1	20.1		40.3	29.6	
LOS	D	B		D	C		D	C		D	C	
Approach Delay		24.6			30.5			24.5			31.0	
Approach LOS		C			C			C			C	
90th %ile Green (s)	10.0	15.0		20.0	25.0		15.0	30.0		10.0	25.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Hold		Max	Max	
70th %ile Green (s)	10.0	13.7		20.0	23.7		15.0	30.0		10.0	25.0	
70th %ile Term Code	Max	Gap		Max	Hold		Max	Hold		Max	Max	
50th %ile Green (s)	10.0	11.4		18.6	20.0		13.6	26.2		9.9	22.5	
50th %ile Term Code	Max	Gap		Gap	Hold		Gap	Hold		Gap	Gap	
30th %ile Green (s)	8.8	10.0		14.6	15.8		10.8	20.6		8.1	17.9	
30th %ile Term Code	Gap	Min		Gap	Hold		Gap	Hold		Gap	Gap	
10th %ile Green (s)	0.0	10.0		10.5	25.5		7.8	25.8		0.0	13.0	
10th %ile Term Code	Skip	Min		Gap	Hold		Gap	Hold		Skip	Gap	
Queue Length 50th (ft)	58	56		134	128		84	110		47	154	
Queue Length 95th (ft)	121	108		239	190		160	171		102	232	
Internal Link Dist (ft)		420			420			920			420	
Turn Bay Length (ft)	250			450			200			200		
Base Capacity (vph)	280	888		504	1236		392	1446		283	1208	
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	0.41	0.47		0.55	0.44		0.44	0.40		0.33	0.53	

Intersection Summary

Area Type: Other  
 Cycle Length: 95  
 Actuated Cycle Length: 81.9

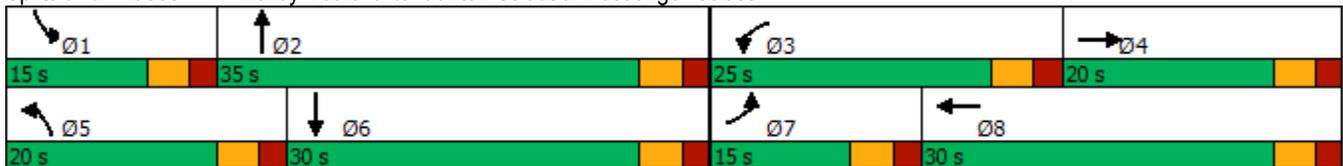
Lanes, Volumes, Timings  
 1: Kelley Boulevard/Taunton Street & Messenger Street

2031 Build Conditions  
 Weekday Evening Peak Hour

Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 27.9  
 Intersection Capacity Utilization 66.5%  
 Analysis Period (min) 15  
 90th %ile Actuated Cycle: 95  
 70th %ile Actuated Cycle: 93.7  
 50th %ile Actuated Cycle: 86.1  
 30th %ile Actuated Cycle: 73.3  
 10th %ile Actuated Cycle: 61.3

Intersection LOS: C  
 ICU Level of Service C

Splits and Phases: 1: Kelley Boulevard/Taunton Street & Messenger Street



Lanes, Volumes, Timings  
4: Kelley Boulevard & George Leven Drive

2031 Build Conditions  
Weekday Evening Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	0	40	4	0	3	78	548	1	2	920	25
Future Volume (vph)	83	0	40	4	0	3	78	548	1	2	920	25
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	100		0	100		0
Storage Lanes	0		1	0		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			0.850		0.942						0.996	
Flt Protected		0.950			0.972		0.950			0.950		
Satd. Flow (prot)	0	1805	1615	0	1740	0	1805	1863	0	1805	1874	0
Flt Permitted		0.753			0.855		0.100			0.420		
Satd. Flow (perm)	0	1431	1615	0	1530	0	190	1863	0	798	1874	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			42		109						3	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		350			297			329			900	
Travel Time (s)		8.0			6.8			7.5			20.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	1%	0%
Adj. Flow (vph)	86	0	42	4	0	3	81	571	1	2	958	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	86	42	0	7	0	81	572	0	2	984	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
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	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	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	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	
Detector 1 Queue (s)	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	
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	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	

Lanes, Volumes, Timings  
4: Kelley Boulevard & George Leven Drive

2031 Build Conditions  
Weekday Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	10.0	
Minimum Split (s)	12.0	12.0	12.5	12.5	12.5		12.5	15.0		12.5	15.0	
Total Split (s)	15.0	15.0	15.0	15.0	15.0		15.0	40.0		15.0	40.0	
Total Split (%)	21.4%	21.4%	21.4%	21.4%	21.4%		21.4%	57.1%		21.4%	57.1%	
Maximum Green (s)	10.0	10.0	10.0	10.0	10.0		10.0	35.0		10.0	35.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.5	-2.5		-2.5		-2.5	-2.5		-2.5	-2.5	
Total Lost Time (s)		2.5	2.5		2.5		2.5	2.5		2.5	2.5	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			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	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effct Green (s)		11.4	20.8		11.4		48.8	47.7		46.9	40.5	
Actuated g/C Ratio		0.18	0.33		0.18		0.78	0.76		0.75	0.65	
v/c Ratio		0.33	0.07		0.02		0.20	0.40		0.00	0.81	
Control Delay		28.2	5.4		0.1		3.5	5.9		2.5	20.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		28.2	5.4		0.1		3.5	5.9		2.5	20.8	
LOS		C	A		A		A	A		A	C	
Approach Delay		20.7			0.1			5.6			20.7	
Approach LOS		C			A			A			C	
90th %ile Green (s)	10.0	10.0	7.3	10.0	10.0		7.3	35.3		7.0	35.0	
90th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Hold		Min	Max	
70th %ile Green (s)	10.0	10.0	8.5	10.0	10.0		8.5	48.5		0.0	35.0	
70th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Hold		Skip	Max	
50th %ile Green (s)	9.3	9.3	7.7	9.3	9.3		7.7	47.7		0.0	35.0	
50th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Gap	Hold		Skip	Max	
30th %ile Green (s)	7.6	7.6	7.0	7.6	7.6		7.0	47.0		0.0	35.0	
30th %ile Term Code	Gap	Gap	Min	Hold	Hold		Min	Hold		Skip	Max	
10th %ile Green (s)	0.0	0.0	0.0	0.0	0.0		0.0	39.6		0.0	39.6	
10th %ile Term Code	Skip	Skip	Skip	Skip	Skip		Skip	Dwell		Skip	Dwell	
Queue Length 50th (ft)		31	0		0		6	62		0	337	
Queue Length 95th (ft)		69	17		0		15	216		1	#622	
Internal Link Dist (ft)		270			217			249			820	
Turn Bay Length (ft)							100			100		
Base Capacity (vph)		294	633		401		482	1424		833	1217	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.29	0.07		0.02		0.17	0.40		0.00	0.81	

Intersection Summary

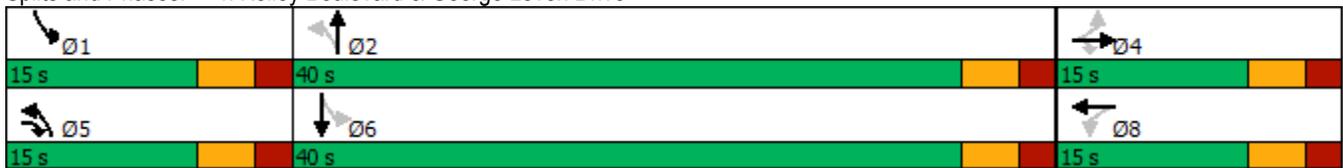
Area Type: Other  
Cycle Length: 70  
Actuated Cycle Length: 62.4

Lanes, Volumes, Timings  
 4: Kelley Boulevard & George Leven Drive

2031 Build Conditions  
 Weekday Evening Peak Hour

Natural Cycle: 70  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 15.1  
 Intersection Capacity Utilization 73.0%  
 Analysis Period (min) 15  
 90th %ile Actuated Cycle: 67.3  
 70th %ile Actuated Cycle: 68.5  
 50th %ile Actuated Cycle: 67  
 30th %ile Actuated Cycle: 64.6  
 10th %ile Actuated Cycle: 44.6  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 4: Kelley Boulevard & George Leven Drive



HCM 6th TWSC  
2: Kelley Boulevard & Plain Street

2031 Build Conditions  
Weekday Evening Peak Hour

Intersection

Int Delay, s/veh	4.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	164	587	56	163	968
Future Vol, veh/h	28	164	587	56	163	968
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	4	2	0	10	3	0
Mvmt Flow	30	176	631	60	175	1041

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2052	661	0	0	691
Stage 1	661	-	-	-	-
Stage 2	1391	-	-	-	-
Critical Hdwy	6.44	6.22	-	-	4.13
Critical Hdwy Stg 1	5.44	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-
Follow-up Hdwy	3.536	3.318	-	-	2.227
Pot Cap-1 Maneuver	60	462	-	-	899
Stage 1	510	-	-	-	-
Stage 2	228	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	48	462	-	-	899
Mov Cap-2 Maneuver	48	-	-	-	-
Stage 1	510	-	-	-	-
Stage 2	184	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38.9	0	1.4
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	48	462	899
HCM Lane V/C Ratio	-	-	0.627	0.382	0.195
HCM Control Delay (s)	-	-	164.1	17.5	10
HCM Lane LOS	-	-	F	C	A
HCM 95th %tile Q(veh)	-	-	2.4	1.8	0.7

HCM 6th TWSC  
3: Kelley Boulevard & Site Driveway

2031 Build Conditions  
Weekday Evening Peak Hour

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
----------	-----	-----	-----	-----	-----	-----

Lane Configurations						
Traffic Vol, veh/h	0	32	0	633	938	51
Future Vol, veh/h	0	32	0	633	938	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	8	1	1	0
Mvmt Flow	0	34	0	666	987	54

Major/Minor	Minor2	Major1	Major2
-------------	--------	--------	--------

Conflicting Flow All	1680	1014	1041	0	-	0
Stage 1	1014	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.18	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.272	-	-	-
Pot Cap-1 Maneuver	105	292	645	-	-	-
Stage 1	353	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	105	292	645	-	-	-
Mov Cap-2 Maneuver	291	-	-	-	-	-
Stage 1	353	-	-	-	-	-
Stage 2	515	-	-	-	-	-

Approach	EB	NB	SB
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HCM Control Delay, s	18.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
-----------------------	-----	-----	-------	-----	-----

Capacity (veh/h)	645	-	292	-	-
HCM Lane V/C Ratio	-	-	0.115	-	-
HCM Control Delay (s)	0	-	18.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

HCM 6th TWSC  
 5: George Leven Drive & Site Driveway

2031 Build Conditions  
 Weekday Evening Peak Hour

Intersection

Int Delay, s/veh 2.5

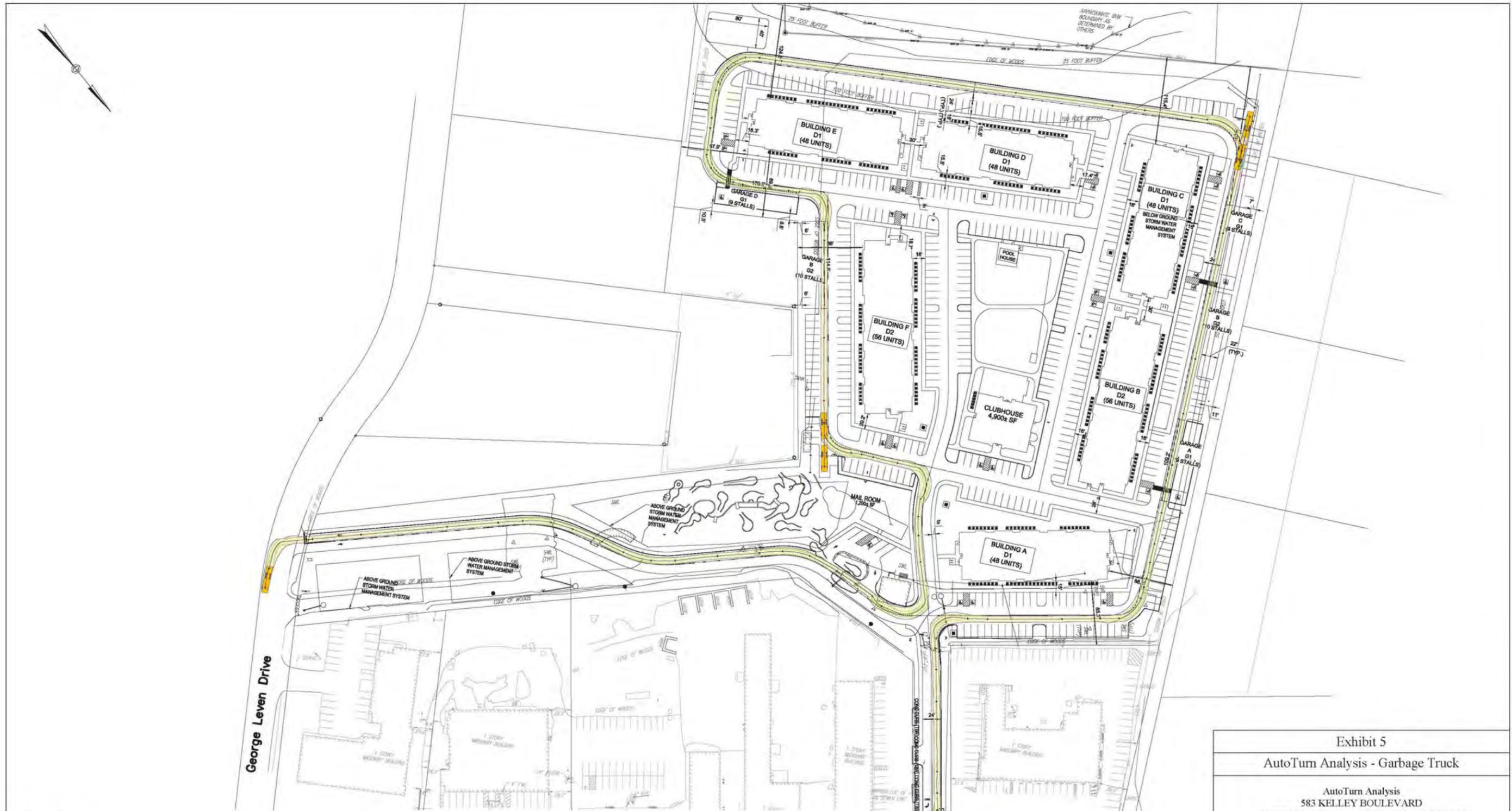
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	38	10	45	32	1
Future Vol, veh/h	1	38	10	45	32	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	52	14	62	44	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	76	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1536	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1536	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.2
HCM LOS			A

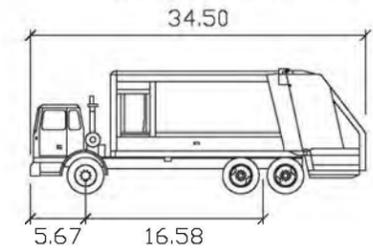
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1536	-	-	-	907
HCM Lane V/C Ratio	0.001	-	-	-	0.05
HCM Control Delay (s)	7.3	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

□ AutoTURN® Analysis



**NOTES**

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2. FINAL DESIGN IS SUBJECT TO FIELD SURVEY BY OTHERS.
3. PROPERTY LINES AND ACCESS LINE LOCATIONS ARE APPROXIMATE ONLY AND ARE SUBJECT TO DEED AND TITLE RECORDS.
4. BASE PLAN SOURCE: BOHLER ENGINEERING



Garbage Truck  
 Width : 8.0 Ft.  
 Track : 8.2 Ft.  
 Lock to Lock Time : 6.0 Sec.  
 Steering Angle : 33.9 Deg.



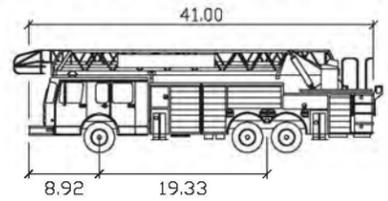
Exhibit 5		
AutoTurn Analysis - Garbage Truck		
AutoTurn Analysis 583 KELLEY BOULEVARD NORTH ATTLEBOROUGH, MASSACHUSETTS PREPARED FOR: Marcus Partners, Inc. ARLINGTON, VIRGINIA		
<b>MDM</b> TRANSPORTATION CONSULTANTS, INC. PLANNERS & ENGINEERS <small>28 Lord Road, Suite 280          Marlborough, MA 01752          Tel: (508) 303-0370          Fax: (508) 303-0371</small>		
DATE: August 2024	File: 1188 Autoturn (2024-8-26).dwg	
PROJECT No. 1188	Scale: As Noted	Sheet 1 of 1



North Attleboro Ladder 1 E-One Typhoon 100' RMA

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4. BASE PLAN SOURCE: BOHLER ENGINEERING



Width : 8.2 Ft.  
 Track : 8.2 Ft.  
 Lock to Lock Time : 6.0 Sec.  
 Steering Angle : 40.6 Deg.



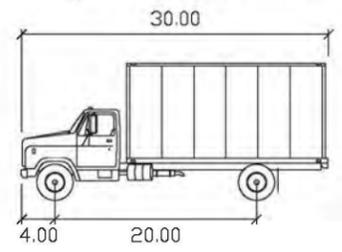
Exhibit I		
AutoTurn Analysis - Fire Truck		
AutoTurn Analysis 583 KELLEY BOULEVARD NORTH ATTLEBOROUGH, MASSACHUSETTS PREPARED FOR: Marcus Partners, Inc. ARLINGTON, VIRGINIA		
<b>MDM</b> TRANSPORTATION CONSULTANTS, INC. PLANNERS & ENGINEERS <small>28 Lord Road, Suite 280          Marlborough, MA 01752          Tel: (508) 303-0370          Fax: (508) 303-0371</small>		
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4. BASE PLAN SOURCE: BOHLER ENGINEERING



SU-30  
 Width : 8.0 Ft.  
 Track : 8.0 Ft.  
 Lock to Lock Time : 6.0 Sec.  
 Steering Angle : 31.8 Deg.

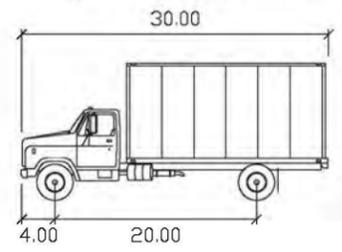


Exhibit 3		
AutoTurn Analysis - SU-30		
AutoTurn Analysis 583 KELLEY BOULEVARD NORTH ATTLEBOROUGH, MASSACHUSETTS PREPARED FOR: Marcus Partners, Inc. ARLINGTON, VIRGINIA		
<b>MDM</b> TRANSPORTATION CONSULTANTS, INC. PLANNERS & ENGINEERS <small>28 Lord Road, Suite 280          Marlborough, MA 01752          Tel: (508) 303-0370          Fax: (508) 303-0371</small>		
DATE: August 2024	File: 1188 Autoturn (2024-8-26).dwg	
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4. BASE PLAN SOURCE: BOHLER ENGINEERING



SU-30  
 Width : 8.0 Ft.  
 Track : 8.0 Ft.  
 Lock to Lock Time : 6.0 Sec.  
 Steering Angle : 31.8 Deg.



Exhibit 4		
AutoTurn Analysis - SU-30		
AutoTurn Analysis 583 KELLEY BOULEVARD NORTH ATTLEBOROUGH, MASSACHUSETTS PREPARED FOR: Marcus Partners, Inc. ARLINGTON, VIRGINIA		
<b>MDM</b> TRANSPORTATION CONSULTANTS, INC. PLANNERS & ENGINEERS <small>28 Lord Road, Suite 280          Marlborough, MA 01752          Tel: (508) 303-0370          Fax: (508) 303-0371</small>		
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PROJECT No. 1188	Scale: As Noted	Sheet 1 of 1