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PRINCIPALS
Robert J. Michaud, P.E.
Daniel J. Mills, P.E., PTOE

M E M O R A N D U M

DATE: March 11, 2022

TO: Robert W. Lally
Old Exit 14, Inc.
c/o Cultivate Holdings, Inc.
38 Rice Street
Wellesley, MA 02481

FROM: Robert J. Michaud, P.E. – Managing Principal
Daniel A. Dumais, P.E. – Senior Project Manager

RE: **Proposed Marijuana Establishment**
1015 Hingham Street, Rockland MA

MDM Transportation Consultants, Inc. (MDM) has prepared this traffic impact assessment (TIA) for the proposed Marijuana Establishment to be located at 1015 Hingham Street in Rockland, MA. The project location and surrounding roadway network is shown in **Figure 1**. This memorandum describes baseline traffic volumes for the adjacent roadway, summarizes baseline traffic volumes at the study intersections, summarizes the projected trip generation, provides an operational analysis of project impact, and evaluates safety-related conditions at the study locations.

Key findings of the traffic assessment are as follows:

- *Baseline Traffic Volumes.* Hingham Street adjacent to the Site carries approximately 1,680 vehicles per hour (vph) during the morning peak hour, 1,785 vph during the evening peak hour, and 1,530 vph during the Saturday midday peak hour. Hingham Street carries approximately 23,905 vehicles per day (vpd) on a weekday and 21,975 vpd on a Saturday.

- *Safety Review.* Based on extensive review of MassDOT crash data, the Hingham Street at Commerce Road signalized intersection experienced a crash rate that is below the MassDOT District 5 average, and the intersection is not identified as a high crash location; therefore, no immediate safety countermeasures are warranted based on the crash history at the study intersection.

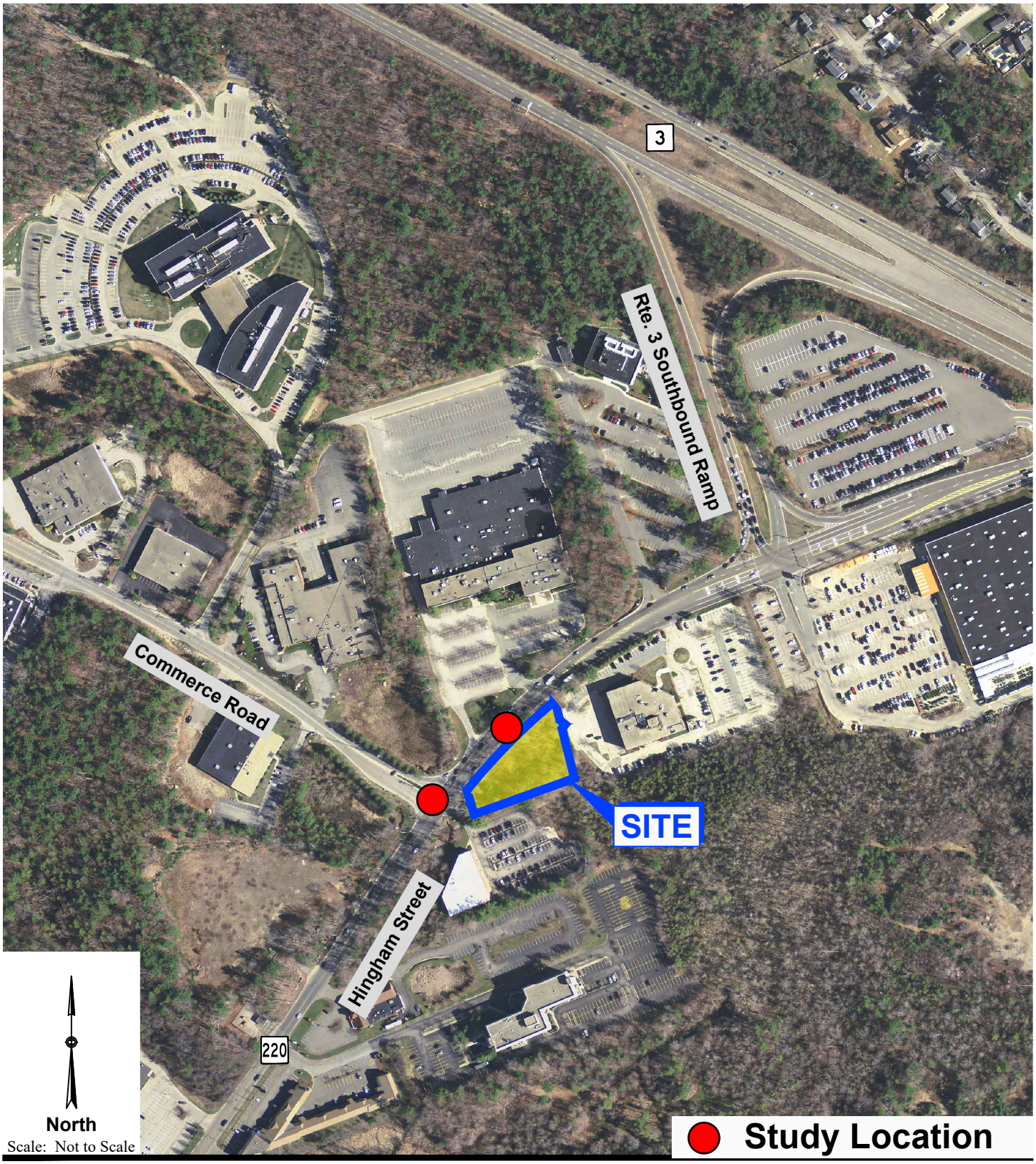

Figure 1

Site Location

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- *Moderate Traffic Generation*. Based on industry standard rates for the proposed 5,000± sf Marijuana Dispensary is estimated to result in approximately 53 trips during the weekday morning peak hour, 95 trips during the weekday evening peak hour, and 144 trips the Saturday midday peak hour. On a daily basis the project is projected to result in 1,056 trips on a weekday and 1,296 trips on a Saturday. While a significant percentage of the trips (50%) could be drawn from the existing traffic stream (i.e., pass-by trips) no reduction was taken for analysis purposes. Likewise, depending on specific morning hours of operation, vehicle trips generated may be overly conservative.

- *Adequate Capacity.* The proposed development is expected to have minimal impact on the study area intersection and will not result in any notable changes in traffic operations in the study area relative to Baseline conditions. Specifically, the adjacent signalized intersection of Hingham Street at Commerce Road/1001 Hingham Street. will continue to operate at an overall LOS B or better during the peak hours. Likewise, the site driveway approach to Hingham Street will operate well below capacity at LOS C or better during the peak hours. Mainline travel along Hingham Street will continue to operate unimpeded with minimal delay.

- *Adequate Parking Supply.* On-site parking is proposed to include approximately 23 marked spaces with an additional 10 spaces within the adjacent 1001 Hingham Street lot to accommodate the staff parking needs. The proposed parking supply will satisfy the zoning parking requirements of 15 spaces. A parking assessment included in this report indicates an average peak parking demand of 16 vehicles (10 employee and 6 patrons) with a maximum demand of 20 vehicles (10 employees and 10 patrons). This level of parking impact is also supported by empirical data from observations at two (2) standalone dispensaries in the Commonwealth which were both had a peak parking demand including employees of 18 spaces. The Proponent will also have a parking management plan in place to monitor parking operations.

In summary, MDM finds that incremental traffic associated with the proposed development is not expected to materially impact operating conditions in the study area. The implementation of access/site improvements, pedestrian and bicycle improvements, and the opening day/events plan as outlined under *Recommendations and Conclusions* will establish a framework of minimizing Site traffic impacts.

PROJECT DESCRIPTION

The Site consists of approximately 0.85± acre of undeveloped land located along the southern side of Hingham Street between Commerce Road and Route 3 in Rockland. The property is comprised of undeveloped/ wooded land.

Under the proposed development program, the Site will be developed to include 5,000± sf proposed Marijuana Dispensary. The site will be supported by approximately (23) on-site parking spaces with an additional 10 spaces to be leased on the adjacent 1001 Hingham Street property. Access/egress to the Site shall be via an unsignalized curb cut on Hingham Street to the west of the Prime Auto dealership driveway and rear property access to the signalized driveway serving 1001 Hingham Street. A preliminary site plan prepared by Tricarico Architecture and Design PC is presented in **Figure 2**.

BASELINE TRAFFIC & SAFETY CHARACTERISTICS

An overview of baseline roadway conditions, traffic volumes, safety characteristics of area roadways is provided below.

Hingham Street

Adjacent to the Site, Hingham Street is a four-lane roadway under local (Town) jurisdiction and is classified by the Massachusetts Department of Transportation (MassDOT) as an Urban Minor Arterial roadway. The roadway connects Pond Street (Route 228) in Norwell to the northeast with Webster Street (Route 123) to the southwest. Pavement markings include a double yellow centerline, broken white lane lines and single white edge lines. Land use along Hingham Street in the study area is includes a mix of land uses which includes office buildings, commercial space, a Home Improvement superstore, restaurants, car dealerships and several hotels.

Baseline Traffic Data

This traffic memorandum includes the following intersections:

- Hingham Street at Commerce Road (Signalized)
- Hingham Street at Site Driveway (Unsignalized)
- Hingham Street at Prime Volvo Driveway (Unsignalized)

Traffic volume data were collected at the primary study area intersections during the weekday morning (7:00 AM - 9:00 AM), weekday evening (4:00 PM – 6:00 PM), and Saturday midday (11:00 AM – 1:00 PM) periods to coincide with peak traffic activity of the proposed uses and the adjacent streets. Review of MassDOT permanent count station data indicates that January is a below average traffic month (approximately 12 percent below average. Thus, the January traffic counts were adjusted by 12% (increase) to represent average conditions. The permanent count station data also indicated flat growth in the area; therefore, no yearly adjustment factor was required. Traffic count data and MassDOT permanent count station data are provided in the **Attachments.**

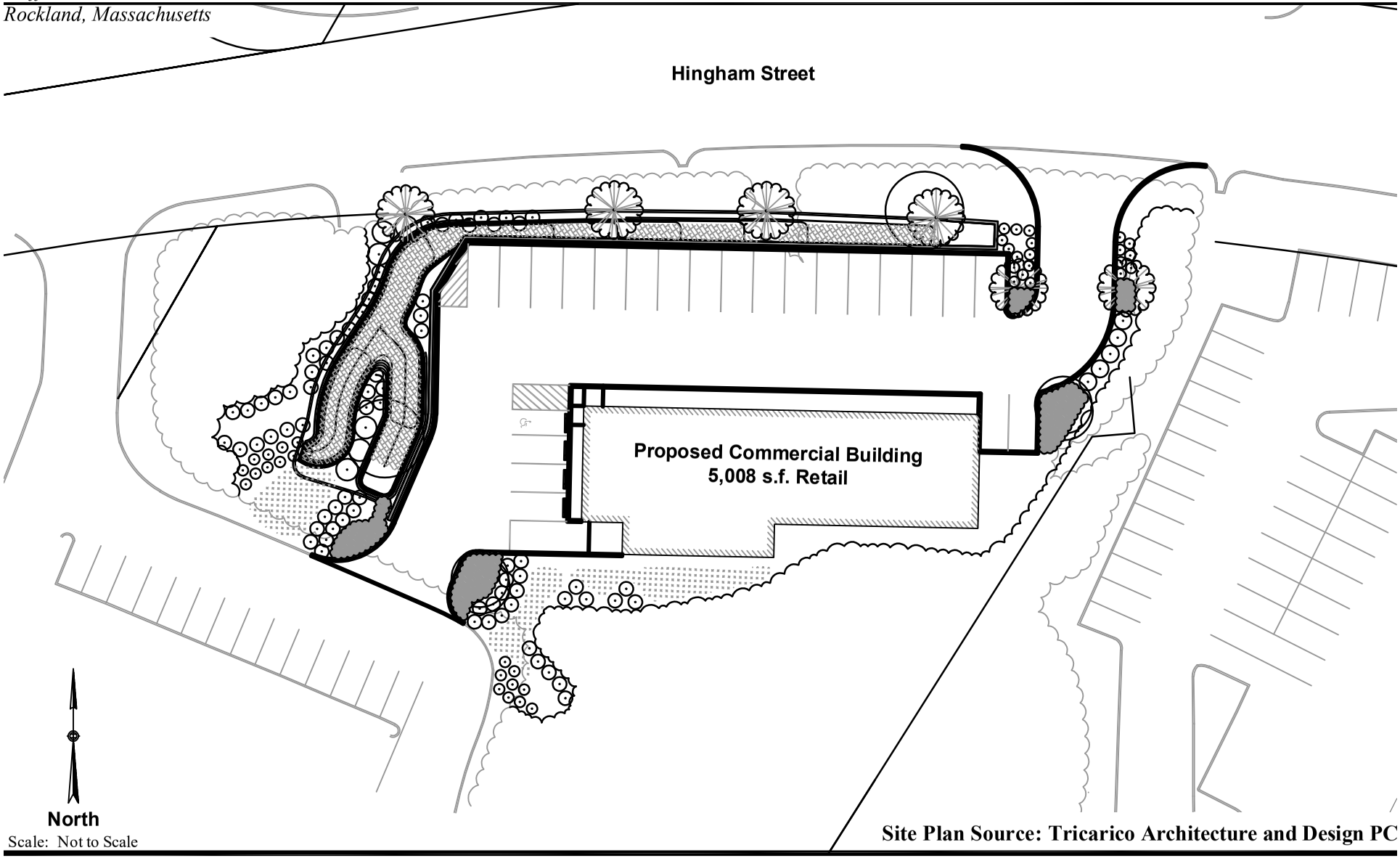

Figure 2

Preliminary Site Plan

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Additionally, other specific area developments that have been completed or have been permitted in the immediate area since the traffic counts were conducted. Trip generation for the following site-specific developments were added to the 2022 Baseline traffic volumes:

- *Wendy's Restaurant.* A 2,305± sf Wendy's with a drive-thru lane was built at 1111 Hingham Street Access/egress for the restaurant will be provided via the signalized Home Depot access/egress driveway at Hingham Street/Route 3 southbound on/off ramps (Exit 14). Trips associated with this development are based on the TIA prepared by MDM dated February 5, 2018[1]. The site-specific trip tracings are provided in the **Attachments**.

- *Prime Volvo.* A 24,100± sf Prime Volvo was built at 1022 Hingham Street. Site access is provided via a one-way driveway along Hingham Street just west of its intersection with the Route 3 southbound ramps. Egress is provided via connection to Commerce Road. Trips associated with this development are included as background growth based on the TIA prepared by MDM dated February 5, 2018[1]. The site-specific trip tracings are provided in the **Attachments**.

The 2022 Baseline weekday morning, weekday evening, and Saturday midday 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 **Attachments.**

Daily Traffic Volumes

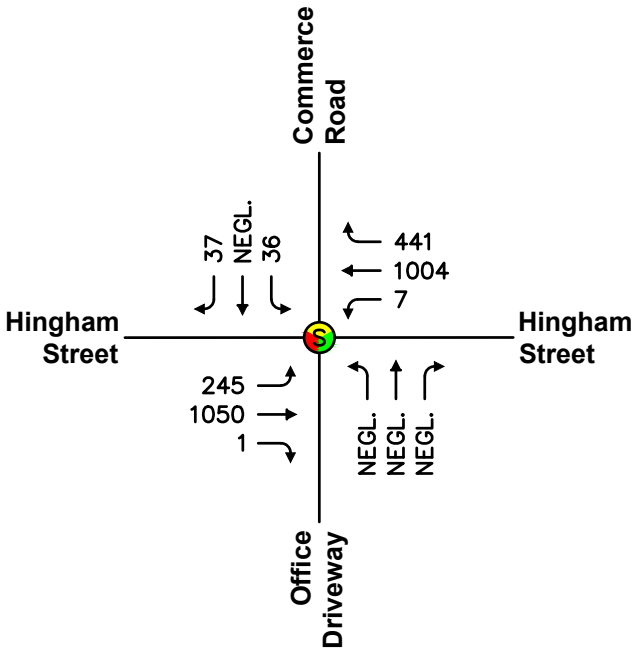
Historical daily traffic volumes along Hingham Street in the site vicinity were obtained using a radar-based automatic traffic recorder (ATR). Traffic volume data was collected in May and June 2015. The results of the counts are summarized in **Table 1** and are discussed below. Traffic volume data is provided in the **Attachments.**

TABLE 1
HISTORICAL TRAFFIC VOLUME SUMMARY
HINGHAM STREET WEST OF COMMERCE ROAD

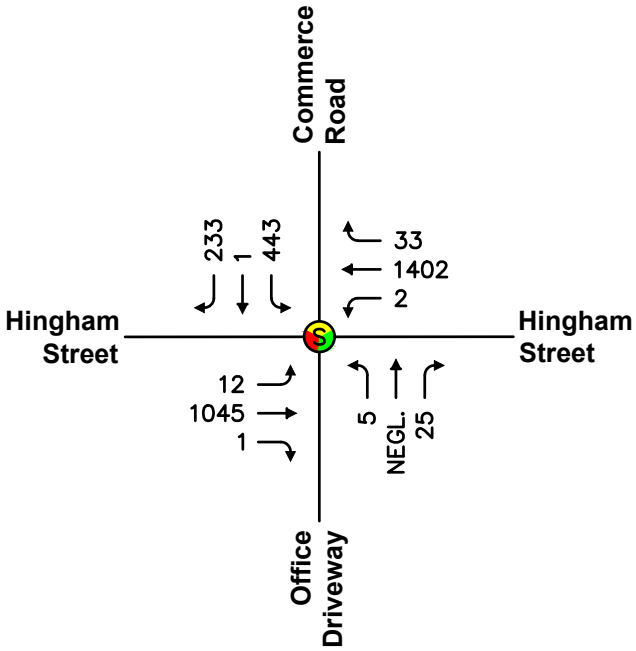
Time Period	Daily Volume (vpd)[1]	Percent Daily Traffic[2]	Peak Hour Volume (vph)[3]	Peak Flow Direction[4]	Peak Hour Directional Volume (vph)[4]
Weekday Morning Peak Hour	23,905	7%	1,680	54% EB	910
Weekday Evening Peak Hour	23,905	7%	1,785	57% WB	1,016
Saturday Midday Peak Hour	21,975	7%	1,530	54% EB	831

[1]Two-way daily traffic expressed in vehicles per day without seasonal adjustment.
[2]The percent of daily traffic that occurs during the peak hour.
[3]Two-way peak-hour volume expressed in vehicles per hour.
[4]EB = Eastbound, WB = Westbound

[1]*Traffic Impact Assessment, Proposed Wendy's Restaurant with Drive-Thru*, prepared by MDM Transportation Consultants, Inc. Dated February 5, 2018 (Updated November 20, 2018)



Weekday Morning Peak Hour



North
Scale: Not to Scale

NOTES:
NEGL. = Negligible
S = Signalized Intersection

Weekday Evening Peak Hour

Figure 3

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Baseline Conditions
Weekday Peak Hour Traffic Volumes

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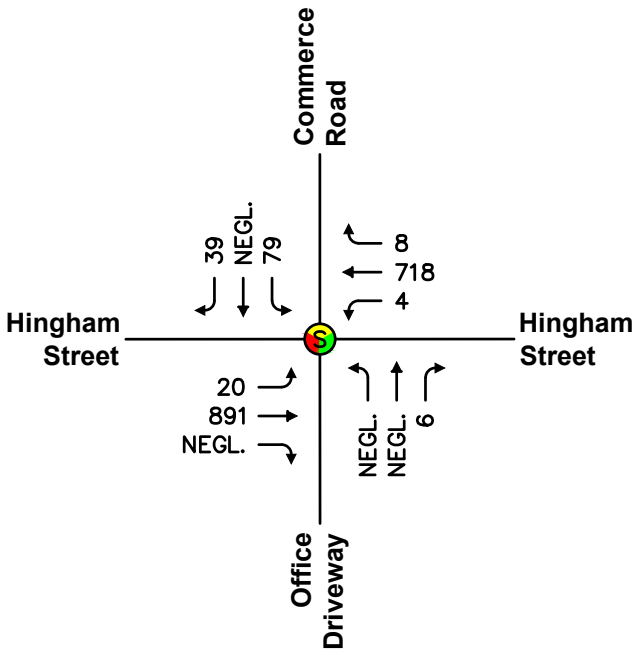

North
Scale: Not to Scale

NOTES:
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Saturday Midday Peak Hour

Figure 4

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Baseline Conditions
Saturday Peak Hour Traffic Volumes

Date: March 2022
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As summarized in **Table 1,** the weekday daily traffic volume on Hingham Street to the west of Commerce Road is approximately 23,905 vehicles per day (vpd) on a weekday and 21,975 vehicles per day (vpd) on a Saturday. Peak hour traffic flow on Hingham Street ranges from approximately 1,530 to 1,785 vehicles per hour (vph) representing approximately 7 percent of daily traffic flow.

Measured Travel Speeds

Vehicle speeds were obtained for Hingham Street using a radar recorder device. These measured travel speeds provide a basis for determining sight line requirements at the site driveway intersection with Hingham Street. **Table 2** presents a summary of the travel speed data collected for Hingham Street in the site vicinity. Collected speed data are provided in the **Attachments**.

TABLE 2
SPEED STUDY RESULTS – Hingham Street (Site Vicinity)

Travel Direction	Posted Speed Limit[1]	Travel Speed	
		Mean[2]	85th Percentile[3]
Eastbound	45	35	39
Westbound	40	34	39

[1]Regulatory speed limit in mph
[2]Arithmetic mean in mph
[3]The speed at or below which 85 percent of the vehicles are traveling in mph

As summarized in **Table 2**, the mean (average) travel speed on Hingham Street was observed to be 35 mph for the eastbound direction and 34 mph in the westbound direction; the 85th percentile travel speed was observed to be 39 mph for both the eastbound direction and westbound directions. The speed data are appropriate for use in the sight line evaluations presented in a subsequent section of this report.

Intersection Crash History

In order to identify crash trends and safety characteristics for study area intersections, crash data were obtained from MassDOT for the Town of Rockland for the five-year period covering 2017 through 2021 (the most recent full year of data currently available from MassDOT). In addition, review of the MassDOT high crash cluster mapping was conducted to determine locations listed as eligible for Highway Safety Improvement Program (HSIP) evaluation and funding. Crash data for the study intersections is summarized in **Table 3** with detailed data provided in the **Attachments.**

Crash rates were calculated for the study area intersections 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 Rockland) average crash rate to be 0.57 for unsignalized intersections and 0.75 for signalized intersections. This rate represents MassDOT's "average" crash experience for study area and serve 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.

TABLE 3
INTERSECTION CRASH SUMMARY[1]
2017 THROUGH 2021

Data Category	Hingham Street at Commerce Road
Traffic Control	Signalized
Crash Rate[2]	**0.11**
MHD District 5 Avg[3]	0.75
Year:	
2017	1
2018	2
2019	5
2020	0
2021	1
Total	**9**
Type:	
Angle	0
Rear-End	3
Head-On	2
Sideswipe	1
Single-Vehicle	3
Severity:	
P. Damage Only	3
Personal Injury	6
Fatality	0
Conditions:	
Dry	8
Wet	0
Ice/Snow	1
Time:	
7:00 to 9:00 AM	2
4:00 to 6:00 PM	1
Rest of Day	6

[1] Source: MassDOT Crash Database
[2] Crashes per million entering vehicles
[3] District 5 Average Crash Rate

As summarized in **Table 3**:

- *Hingham Street at Commerce Road:* Nine (9) crashes were reported at or near the Hingham Street signalized intersection with Commerce Road over the five-year study period resulting crash rate of 0.11, which is well below the MassDOT District 5 average of 0.75. The reported crashes included one (1) angle/sideswipe type collisions, three (3) rear-end type collision, two (2) head-on type collisions and three (3) single vehicle type collision. Six of the nine (67%) of the crashes resulted in personal injury type collision with the majority (89%) of the crashes under dry roadway conditions during off-peak travel periods (67%). No fatalities were reported during the study period.

In summary, based on extensive review of MassDOT crash data, the Hingham Street at Commerce Road signalized intersection experienced a crash rate that is below the MassDOT District 5 average and the intersection is not identified as a high crash location; therefore, no immediate safety countermeasures are warranted based on the crash history at the study intersection.

Sight Line Evaluation

An evaluation of sight lines was conducted at the proposed site driveway location to ensure that minimum recommended sight lines are available to safely exit onto Hingham Street. The evaluation documents existing sight lines for vehicles as they relate to Hingham Street with comparison to recommended guidelines for the regulatory speed limit.

The American Association of State Highway and Transportation Officials' (AASHTO) standards[2] reference two types of sight distance which are relevant at the proposed site driveway intersection on Hingham Street: stopping sight distance (SSD) and intersection sight distance (ISD). Sight lines for critical vehicle movements at the proposed site driveway intersection with Hingham Street were compared to minimum SSD and ISD for the regulatory and observed travel speeds along Hingham Street in the Site vicinity.

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 the site driveways onto Hingham Street. 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 pavement. Adjustment factors are applied to account for roadway grades where applicable.

[2] *A policy on Geometric Design of Highways and Streets*, American Association of State Highway and Transportation Officials (AASHTO), 2018.

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 eastbound and westbound Hingham Street approaches to the intersection. **Table 4** presents a summary of the available SSD for the Hingham Street segment approaches to the proposed site driveway and AASHTO's recommended SSD for the regulatory speed limits.

TABLE 4
STOPPING SIGHT DISTANCE SUMMARY
HINGHAM STREET APPROACH TO PROPOSED SITE DRIVEWAY

Approach/ Travel Direction	Available SSD	AASHTO Recommended[1] Regulatory Speed Limit[2]	Criteria Satisfied
Eastbound	500+ Feet	360	Yes
Westbound	500+ Feet	305	Yes

[1]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.
[2]Regulatory Speed Limit is 45 mph EB and 40 mph WB.

As summarized in **Table 4** analysis results indicate that the existing available sight lines exceed AASHTO's recommended SSD criteria for the proposed site driveway based on the regulatory travel speeds along Hingham Street.

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". For the proposed unsignalized site driveway location, which is proposed to be under STOP sign control with left and right egress movements, the ISD in question relates to the ability to turn left or right from the proposed driveway at its intersection with Hingham Street.

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 (between 8 and 14.5 feet from the edge of the travel way). **Table 5** presents a summary of the available ISD for the departure from the proposed site driveways and AASHTO's minimum and ideal ISD recommendations.

TABLE 5
INTERSECTION SIGHT DISTANCE SUMMARY
PROPOSED SITE DRIVEWAY DEPARTURE TO HINGHAM STREET

View Direction	Available ISD	AASHTO Minimum[1] Regulatory Speed Limit[2]	AASHTO Ideal[2] Regulatory Speed Limit[2]
Looking East	500+ Feet	305 Feet	445 Feet
Looking West	500+ Feet	360 Feet	430 Feet

[1]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. Adjustments for driveway grade have been made as needed.
[2]Regulatory Speed Limit is 45 mph EB and 40 mph WB.

The results of the ISD analysis presented in **Table 5** indicate that with clearing and re-grading as part of construction of said driveway the available sight lines looking east and west from the proposed driveway onto Hingham Street will exceed the recommended sight line criteria from AASHTO. 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.

DESIGN YEAR TRAFFIC VOLUMES

This section provides a summary of trip generation characteristics of the Site, trip distribution patterns, Design Year traffic volume projections, and a qualitative assessment of operations under Design Year conditions.

Trip Generation

The trip generation estimates for the Site are provided for the weekday morning, weekday evening and Saturday midday periods, which correspond to the critical analysis periods for the proposed uses and adjacent street traffic flow. In accordance with EEA/MassDOT guidelines, traffic generated by the site was estimated using trip rates published in ITE's *Trip Generation*[3] for the Land Use Code (LUC) 882 – Marijuana Dispensary (represents medical and adult use retail sales use). Trip generation worksheets are provided in the **Attachments**. MDM notes that while a significant percentage of the trips (50%) could be drawn from the existing traffic stream (i.e., pass-by trips) no reduction was taken for analysis purposes. **Table 6** presents the trip generation for proposed dispensary use of the Site based on ITE trip generation methodology.

TABLE 6
TRIP-GENERATION

Period	Proposed Dispensary[1]
Weekday Morning Peak-Hour:	
Enter	28
Exit	25
Total	53
Weekday Evening Peak-Hour:	
Enter	48
Exit	47
Total	95
Saturday Midday Peak-Hour:	
Enter	72
Exit	72
Total	144
Daily	1,056
Saturday	1,296

[1]Based on ITE LUC 882 (Marijuana Dispensary) applied to 5,000 sf.

[3]*Trip Generation*, 11th Edition; Institute of Transportation Engineers; Washington, DC; 2021.

As summarized in **Table 6**, based on industry standard rates for the proposed 5,000± sf Marijuana Dispensary is estimated to result in approximately 53 trips during the weekday morning peak hour (28 entering and 25 exiting), 95 trips during the weekday evening peak hour (48 entering and 47 exiting), and 144 trips the Saturday midday peak hour (72 entering and 72 exiting). On a daily basis the project is projected to result in 1,056 trips on a weekday and 1,296 trips on a Saturday. Depending on specific morning hours of operation, vehicle trips generated may be overly conservative.

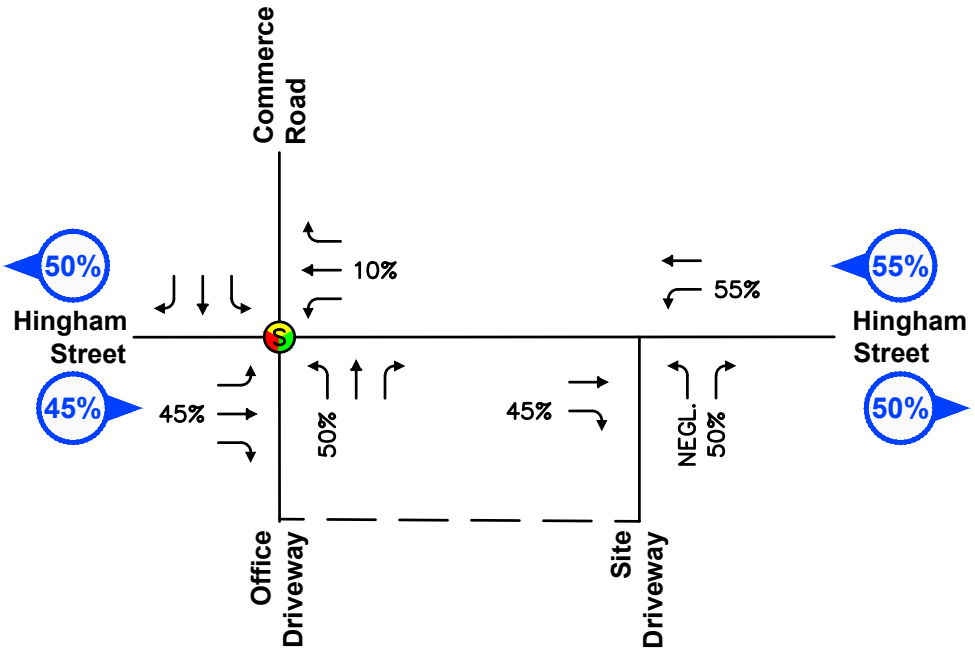
Trip Distribution

The distribution for Site uses is based primarily on existing travel patterns and volumes of the adjacent roadway system. The resulting trip distribution for new trips is presented in **Figure 5**. Trip distribution calculations are provided in the **Attachments.**

Development-related trips for the proposed development are assigned to the roadway network using the trip-generation estimates shown in **Table 6**. Development-related trips at each intersection approach for the weekday morning, weekday evening, and Saturday midday peak hours are quantified in **Figure 6** and **Figure 7**.

Design Year Traffic Conditions

Design Year conditions for the weekday morning, weekday evening, and Saturday midday peak hours include Baseline traffic volumes and site-generated trips. The resulting 2022 Design Year traffic volumes are quantified in **Figure 8** and **Figure 9**.



North
Scale: Not to Scale

NOTES:
NEGL. = Negligible
S = Signalized Intersection

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Figure 5

Trip Distribution

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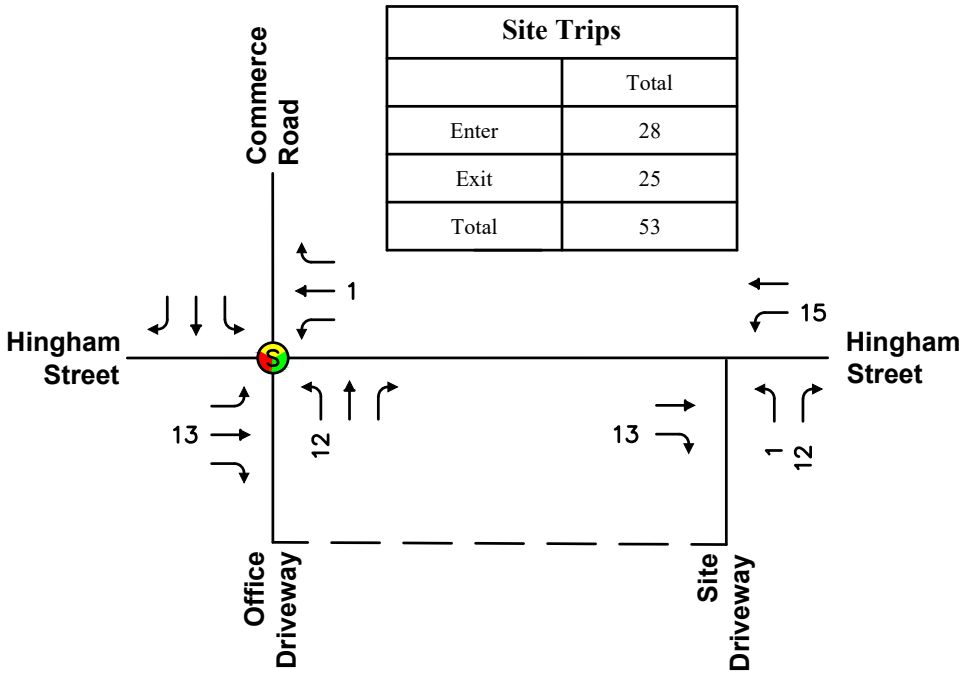
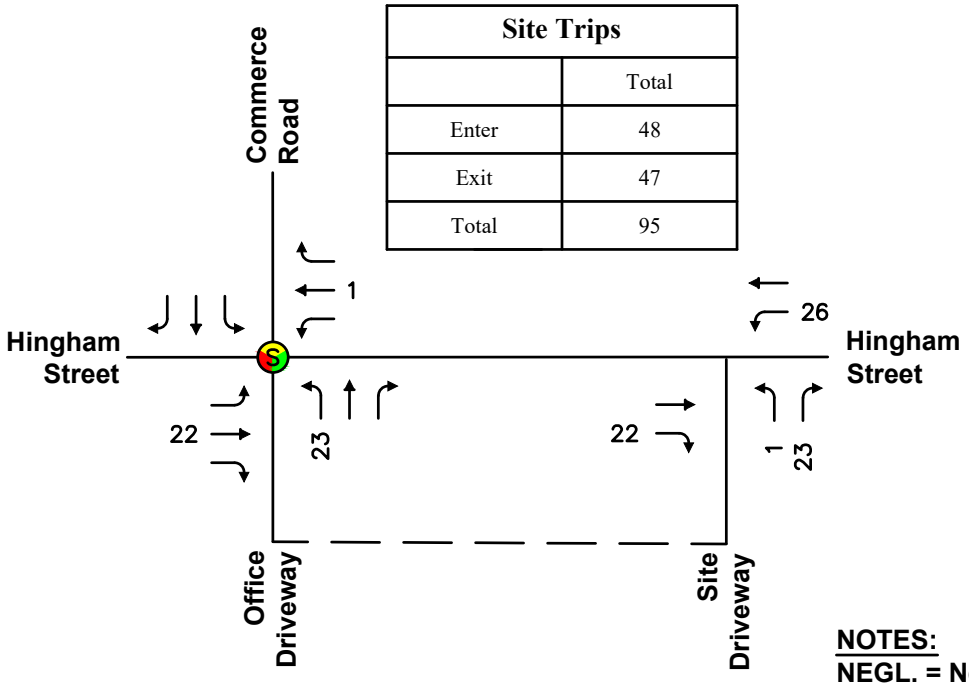


Weekday Morning Peak Hour



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Scale: Not to Scale

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Weekday Evening Peak Hour

Figure 6

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Site Generated Trips
Weekday Peak Hour Traffic Volumes

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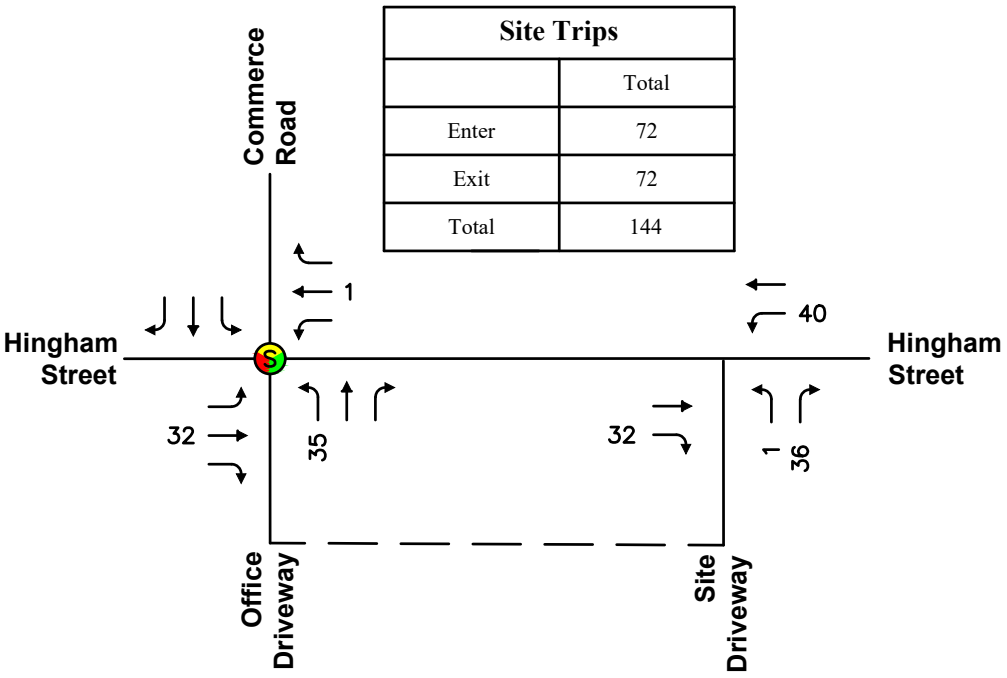

Site Trips	
	Total
Enter	72
Exit	72
Total	144

North
Scale: Not to Scale

NOTES:
NEGL. = Negligible
S = Signalized Intersection

Saturday Midday Peak Hour

Figure 7

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Site Generated Trips
Weekday Peak Hour Traffic Volumes

Date: March 2022
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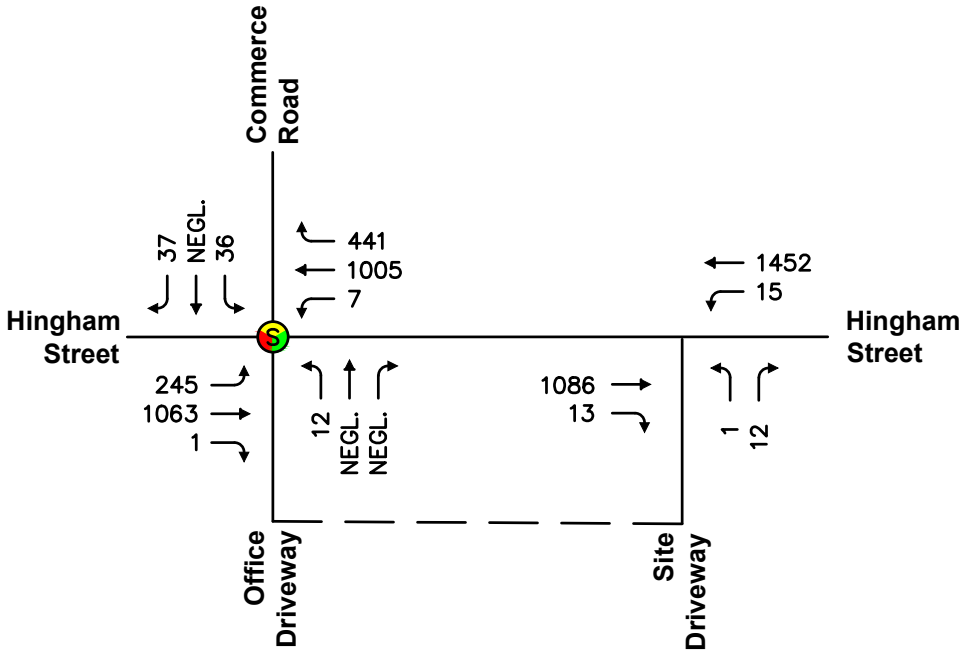
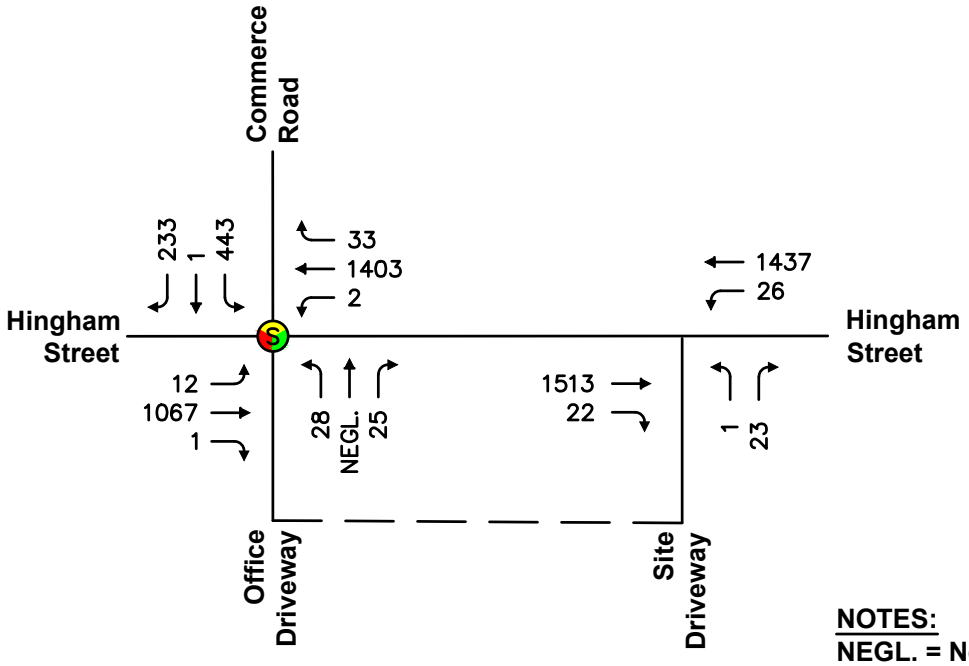


Weekday Morning Peak Hour



North
Scale: Not to Scale

NOTES:
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S = Signalized Intersection

Weekday Evening Peak Hour

Figure 8

MDM TRANSPORTATION CONSULTANTS, INC.
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Design Year Conditions
Weekday Peak Hour Traffic Volumes

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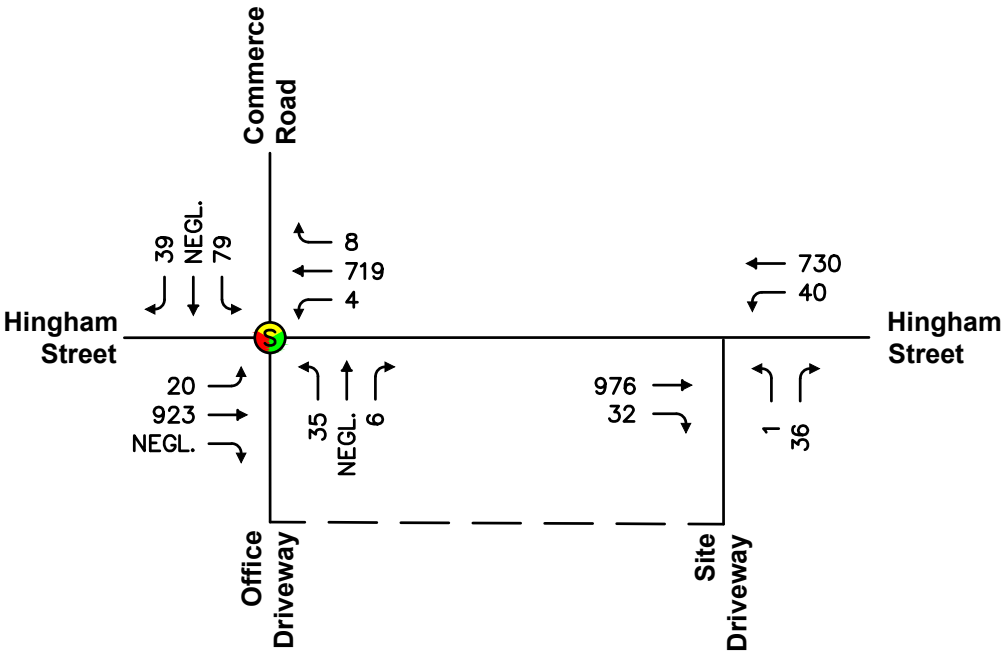

North
Scale: Not to Scale

NOTES:
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S = Signalized Intersection

Saturday Midday Peak Hour

Figure 9

MDM TRANSPORTATION CONSULTANTS, INC.
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Design Year Conditions
Saturday Peak Hour Traffic Volumes

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OPERATIONS ANALYSIS

This section provides an overview of operational analysis methodology, and an assessment of intersection operations under Baseline and projected Design Year conditions.

Analysis Methodology

Intersection capacity analyses are presented in this section for the Baseline and Design Year 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.

Capacity analysis of intersections is developed using the Synchro® computer software, which implements the methods of the Highway Capacity Manual 6th 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 and delays greater than 80 seconds for signalized movements). The specific control delays and associated LOS designations are presented in the **Attachments**.

Intersection Capacity Analysis Results

Level-of-Service (LOS) analyses were conducted for the Baseline and Design Year conditions for the study intersections. The results of the intersection capacity are summarized below in **Table 7**, **Table 8**, and **Table 9**. Detailed analysis results are presented in the **Attachments**.

TABLE 7
INTERSECTION CAPACITY ANALYSIS RESULTS
WEEKDAY MORNING PEAK HOUR

		2022 Baseline			2022 Design Year		
Period	Approach	v/c[1]	Delay[2]	LOS[3]	v/c	Delay	LOS
Hingham Street at	Eastbound	0.81	13	B	0.82	14	B
Commerce Road/ 1001	Westbound	0.39	<5	A	0.39	<5	A
Hingham Street	Northbound	0.01	38	D	0.09	39	D
	Southbound	0.16	20	B	0.16	20	B
	Overall	**0.81**	**9**	**A**	**0.82**	**9**	**A**
Hingham Street at	Eastbound	n/a[4]	n/a	n/a	0.00	<5	A
Proposed Site Driveway	Westbound	n/a	n/a	n/a	0.03	<5	A
	Northbound	n/a	n/a	n/a	0.05	20	C

[1]Volume-to-capacity ratio
[2]Average control delay per vehicle (in seconds)
[3]Level of service
[4]n/a = not applicable

TABLE 8
INTERSECTION CAPACITY ANALYSIS RESULTS
WEEKDAY EVENING PEAK HOUR

		2022 Baseline			2022 Design Year		
Period	Approach	v/c[1]	Delay[2]	LOS[3]	v/c	Delay	LOS
Hingham Street at	Eastbound	0.59	13	B	0.61	15	B
Commerce Road/ 1001	Westbound	0.77	17	B	0.79	18	B
Hingham Street	Northbound	0.14	<5	A	0.26	<5	A
	Southbound	0.63	28	C	0.65	30	C
	Overall	**0.77**	**18**	**B**	**0.79**	**19**	**B**
Hingham Street at	Eastbound	n/a[4]	n/a	n/a	0.00	<5	A
Proposed Site Driveway	Westbound	n/a	n/a	n/a	0.06	<5	A
	Northbound	n/a	n/a	n/a	0.12	25	C

[1]Volume-to-capacity ratio
[2]Average control delay per vehicle (in seconds)
[3]Level of service
[4]n/a = not applicable

TABLE 9
INTERSECTION CAPACITY ANALYSIS RESULTS
SATURDAY MIDDAY PEAK HOUR

		2022 Baseline			2022 Design Year		
Period	Approach	v/c[1]	Delay[2]	LOS[3]	v/c	Delay	LOS
Hingham Street at	Eastbound	0.47	7	A	0.52	10	B
Commerce Road/ 1001	Westbound	0.37	7	A	0.40	9	A
Hingham Street	Northbound	0.02	<5	A	0.13	<5	A
	Southbound	0.14	13	B	0.15	16	B
	Overall	**0.47**	**7**	**A**	**0.52**	**10**	**A**
Hingham Street at	Eastbound	n/a[4]	n/a	n/a	0.00	<5	A
Proposed Site Driveway	Westbound	n/a	n/a	n/a	0.07	<5	A
	Northbound	n/a	n/a	n/a	0.10	14	B

[1]Volume-to-capacity ratio
[2]Average control delay per vehicle (in seconds)
[3]Level of service
[4]n/a = not applicable

As summarized in **Table 7**, **Table 8**, and **Table 9**:

- *Hingham Street at Commerce Road/1001 Hingham Street.* Under future Design Year conditions, the adjacent signalized intersection will continue to operate at an overall LOS B or better during the peak hours.

- *Hingham Street at Proposed Site Driveway.* Under future Design Year conditions, the site driveway approach to Hingham Street will operate well below capacity at LOS C or better during the peak hours. Mainline travel along Hingham Street will continue to operate unimpeded with minimal delay.

In summary, the proposed development is expected to have minimal impact on the study area intersection and will not result in any notable changes in traffic operations in the study area relative to Baseline conditions.

Signal Queue Impacts

The estimated average and 95th percentile vehicle queue lengths for signalized study intersection for Baseline and Design Year conditions is presented in **Table 10**. The estimated queue lengths are based on the capacity analysis results provided using Synchro® computer software.

TABLE 10
VEHICLE QUEUE ANALYSIS SUMMARY
HINGHAM STREET AT COMMERCE ROAD

Approach	Available Queue Storage Length (feet)	2022 Baseline		2022 Design Year	
		Average Queue Length[1]	Maximum Queue Length[1]	Average Queue Length[1]	Maximum Queue Length[1]
Weekday Morning Peak Hour					
Eastbound L/T & T/R	>1000	175	552	179	578
Westbound L/T & T	>1000	67	171	67	184
Westbound R	75±	28	101	28	109
Northbound L/T/R	100±	<25	<25	<25	25
Southbound L	>1000	<25	33	<25	34
Southbound L/T	225±	<25	33	<25	34
Southbound R	175±	<25	<25	<25	<25
Weekday Evening Peak Hour					
Eastbound L/T & T/R	>1000	212	277	218	286
Westbound L/T & T	>1000	332	432	333	433
Westbound R	75±	<25	<25	<25	<25
Northbound L/T/R	100±	<25	<25	<25	<25
Southbound L	>1000	128	210	128	211
Southbound L/T	225±	129	211	129	212
Southbound R	175±	<25	59	<25	79
Saturday Midday Peak Hour					
Eastbound L/T & T/R	>1000	63	178	126	187
Westbound L/T & T	>1000	45	131	87	132
Westbound R	75±	<25	<25	<25	<25
Northbound L/T/R	100±	<25	<25	<25	<25
Southbound L	>1000	<25	42	<25	43
Southbound L/T	225±	<25	42	<25	44
Southbound R	175±	<25	<25	<25	<25

[1]Average and 95th percentile queue lengths are reported in feet per lane.

As summarized in **Table 9**, under Design Year conditions the average and 95th percentile queue lengths will generally remain within the available storage lengths. The project will result in a change in queue lengths of 1 vehicle or less during the peak hours.

PARKING ASSESSMENT

On-site parking is proposed to include approximately 23 marked spaces with an additional 10 spaces within the adjacent 1001 Hingham Street lot to accommodate the staff parking needs. The proposed parking supply will satisfy the zoning parking requirements of 15 spaces. The on-site parking will be actively managed by a parking attendant if required. The peak parking demand of the facility was calculated based on a theoretical maximum with 72 transactions per hour (see Trip Generation **Table 6**) and average total customer dwell time on-site of (transaction and parking) of approximately 5 minutes. For this assessment, a queue stacking algorithm was applied using the stated parameters (see **Attachments**). The parking assessment result in an average peak parking demand of 16 vehicles (10 employee and 6 patrons) with a maximum demand of 20 vehicles (10 employees and 10 patrons). As shown the parking supply will accommodate the peak parking demands of the Site. This level of parking impact is also supported by empirical data from observations at two (2) stand alone dispensaries in the Commonwealth which both had a peak parking demand of 18 spaces including employees (see **Attachments**). The Proponent will also have a parking management plan in place to monitor parking operations.

SITE CIRCULATION

The Site has been designed to accommodate trash removal operations, delivery operations, and ladder truck vehicle types. AutoTurn® analysis has been conducted for a single unit (SU-30) delivery truck, garbage truck, and the Town's aerial ladder truck. The analysis indicates that Site access/egress, circulation aisles and parking layout provide adequate maneuvering area for these design vehicle types. Supporting AutoTurn® analysis and exhibits are provided to confirm this finding (refer to the **Attachments**).

CONCLUSIONS

In summary, the proposed marijuana dispensary is expected to result in a moderate increase in traffic of 124 vehicle trips or less during the peak hours. Given the cross-connection to the adjacent traffic signal, relative traffic increases that represent an inconsequential change in area roadway volumes that are immaterial to traffic operations along Hingham Street. The parking analysis indicates that proposed parking (23 on-site patron spaces and 10 off-site employee spaces) satisfy the zoning requirement and will be sufficient to support the project.

Recommended improvements include (a) access/site-related improvements; (b)pedestrian and bicycle accommodations, and (c) an opening day plan as follows:

Access/Site Improvements

- *Driveway Design*. The driveway design along Hingham Street includes standard commercial driveway 25-foot curb radii to facilitate delivery vehicle and emergency response vehicle maneuverability to/from the Site. Likewise, appropriate STOP signs (R1-1) and STOP line pavement markings that are compliant with the Manual on Uniform Traffic Control Devices (MUTCD) should be installed on both the Hingham Street approach and interconnection to 1001 Hingham Street

- *Wayfinding Sign*. The project will include an internal connection to the office building property at 1001 Hingham Street which will allow access/egress to the site via the nearby traffic signal. This will allow for left turn movements from the Site to utilize the traffic signal during peak travel periods. A guidance sign such as "Traffic Signal Use Rear Exit" or similar should be place on-site to enhance the recognition of the connection to the traffic signal.

- *Sight Line Maintenance.* The sight lines should be cleared and graded with the construction of the proposed site driveway approach to Hingham Street. Any new plantings (shrubs, bushes) or physical landscape features to be located within the project driveway sight lines should also be maintained at a height of 2 feet or less above the adjacent roadway grade to ensure unobstructed lines of sight.

Pedestrian and Bicycle Accommodations

- *Pedestrian Accommodations.* The on-site sidewalk will connect the parking areas to the building entranceways.

- *Bicycle Accommodations.* A secure bike parking area shall be provided on-site near the building entrance for employees and patrons.

Opening Day/Events Plan

- The Proponent will implement a customer opening day plan documented in more detail in the application materials (see **Attachments**).

- *Customer Processing Time.* Increase facility staff as needed to minimize customer wait times. Also, consider advance/on-line ordering to facilitate in-store processing times through dedicated reservation stations.

- Implementation of online ordering system, dedicated reservation stations, and a highly efficient check-in process will be used to ensure that customer queues are minimal.

- *Traffic Management.* Establish a Traffic Management Plan, including Police Details, in preparation for "Grand Opening" conditions.

In summary, MDM finds that incremental traffic associated with the proposed development is not expected to materially impact operating conditions in the study area. The implementation of access/site improvements, pedestrian and bicycle improvements, and the opening day/events plan as outlined under *Recommendations and Conclusions* will establish a framework of minimizing Site traffic impacts.

ATTACHMENTS

- □ Traffic Volume Data
- □ Seasonal/Yearly Growth Data
- □ Speed Data
- □ Crash Data
- □ Sight Distance Calculations
- □ Trip Generation
- □ Trip Distribution Calculations
- □ Capacity Analysis
- □ AutoTURN® Analysis

□ Traffic Volume Data

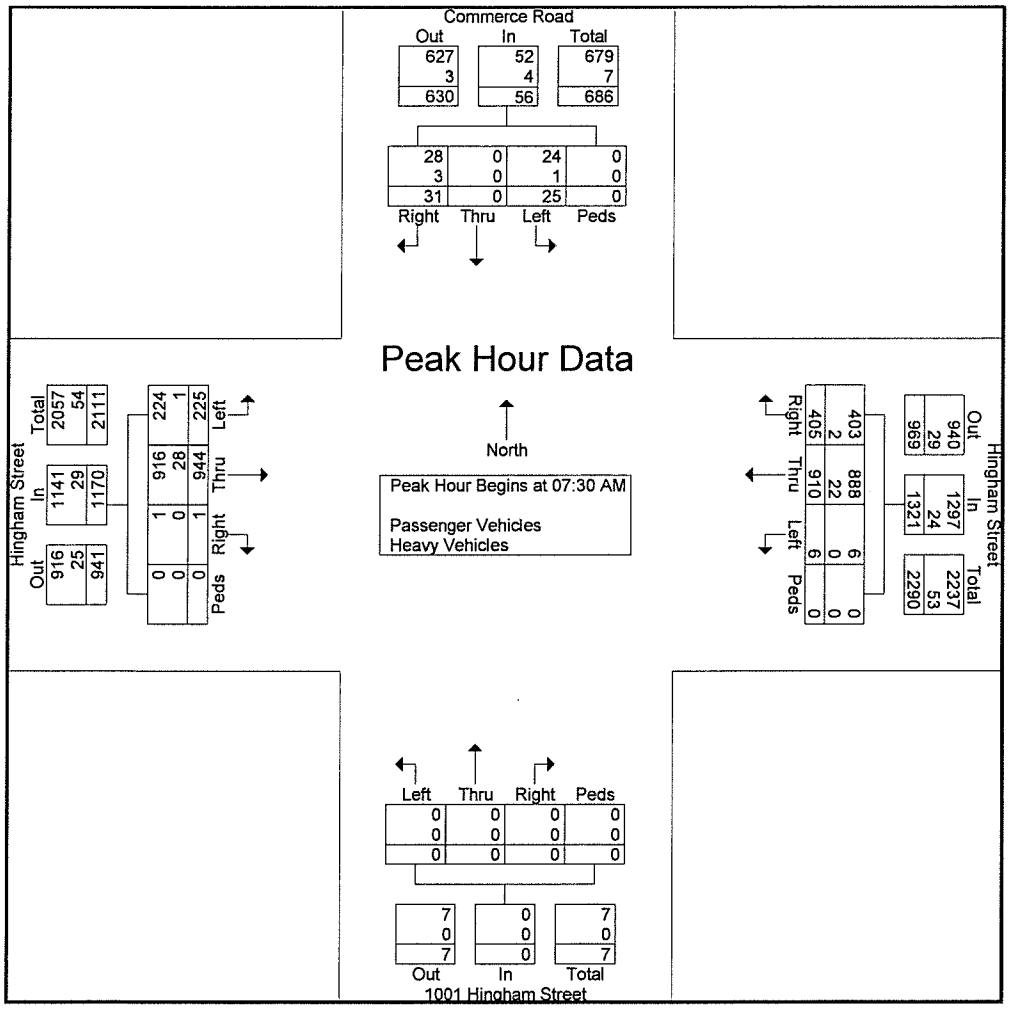
MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA

N/S: Commerce Road
E/W: Hingham Street
Rockland, MA

File Name : Higham St at Commerce Way AM
Site Code : 905
Start Date : 1/5/2017
Page No : 2

	Commerce Road From North					Hingham Street From East					1001 Hingham Street From South					Hingham Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	**16**	0	6	0	**22**	84	221	2	0	307	0	0	0	0	0	0	241	54	0	295	624
07:45 AM	4	0	7	0	11	100	236	0	0	336	0	0	0	0	0	0	**267**	52	0	**319**	**666**
08:00 AM	5	0	4	0	9	**119**	212	**3**	0	334	0	0	0	0	0	0	242	**65**	0	307	650
08:15 AM	6	0	**8**	0	14	102	**241**	1	0	**344**	0	0	0	0	0	**1**	194	54	0	249	607
Total Volume	31	0	25	0	56	405	910	6	0	1321	0	0	0	0	0	1	944	225	0	1170	2547
% App. Total	55.4	0	44.6	0		30.7	68.9	0.5	0		0	0	0	0		0.1	80.7	19.2	0		
PHF	.484	.000	.781	.000	.636	.851	.944	.500	.000	.960	.000	.000	.000	.000	.000	.250	.884	.865	.000	.917	.956
Passenger Vehicles	28	0	24	0	52	403	888	6	0	1297	0	0	0	0	0	1	916	224	0	1141	2490
% Passenger Vehicles																					
Heavy Vehicles	3	0	1	0	4	2	22	0	0	24	0	0	0	0	0	0	28	1	0	29	57
% Heavy Vehicles	9.7	0	4.0	0	7.1	0.5	2.4	0	0	1.8	0	0	0	0	0	0	3.0	0.4	0	2.5	2.2



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Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Commerce Road From North					Hingham Street From East					1001 Hingham Street From South					Hingham Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	2	0	6	0	8	35	143	1	0	179	0	0	0	0	0	1	207	16	0	224	411
07:15 AM	2	0	4	0	6	52	176	0	0	228	0	0	0	0	0	0	199	25	0	224	458
07:30 AM	16	0	6	0	22	84	221	2	0	307	0	0	0	0	0	0	241	54	0	295	624
07:45 AM	4	0	7	0	11	100	236	0	0	336	0	0	0	0	0	0	267	52	0	319	666
Total	24	0	23	0	47	271	776	3	0	1050	0	0	0	0	0	1	914	147	0	1062	2159
08:00 AM	5	0	4	0	9	119	212	3	0	334	0	0	0	0	0	0	242	65	0	307	650
08:15 AM	6	0	8	0	14	102	241	1	0	344	0	0	0	0	0	1	194	54	0	249	607
08:30 AM	6	0	13	0	19	81	184	5	0	270	0	0	0	0	0	0	238	38	0	276	565
08:45 AM	8	0	16	0	24	77	196	5	0	278	0	0	0	0	0	2	220	28	0	250	552
Total	25	0	41	0	66	379	833	14	0	1226	0	0	0	0	0	3	894	185	0	1082	2374
Grand Total	49	0	64	0	113	650	1609	17	0	2276	0	0	0	0	0	4	1808	332	0	2144	4533
Apprch %	43.4	0	56.6	0		28.6	70.7	0.7	0		0	0	0	0		0.2	84.3	15.5	0		
Total %	1.1	0	1.4	0	2.5	14.3	35.5	0.4	0	50.2	0	0	0	0	0	0.1	39.9	7.3	0	47.3	
Passenger Vehicles	44	0	62	0	106	642	1555	17	0	2214	0	0	0	0	0	4	1751	331	0	2086	4406
% Passenger Vehicles	89.8	0	96.9	0	93.8	98.8	96.6	100	0	97.3	0	0	0	0	0	100	96.8	99.7	0	97.3	97.2
Heavy Vehicles	5	0	2	0	7	8	54	0	0	62	0	0	0	0	0	0	57	1	0	58	127
% Heavy Vehicles	10.2	0	3.1	0	6.2	1.2	3.4	0	0	2.7	0	0	0	0	0	0	3.2	0.3	0	2.7	2.8

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28 Lord Road, Suite 280
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N/S: Prime Hyundai
E/W: Hingham Street
Rockland, MA

File Name : Higham St at Prime AM
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Start Date : 1/5/2017
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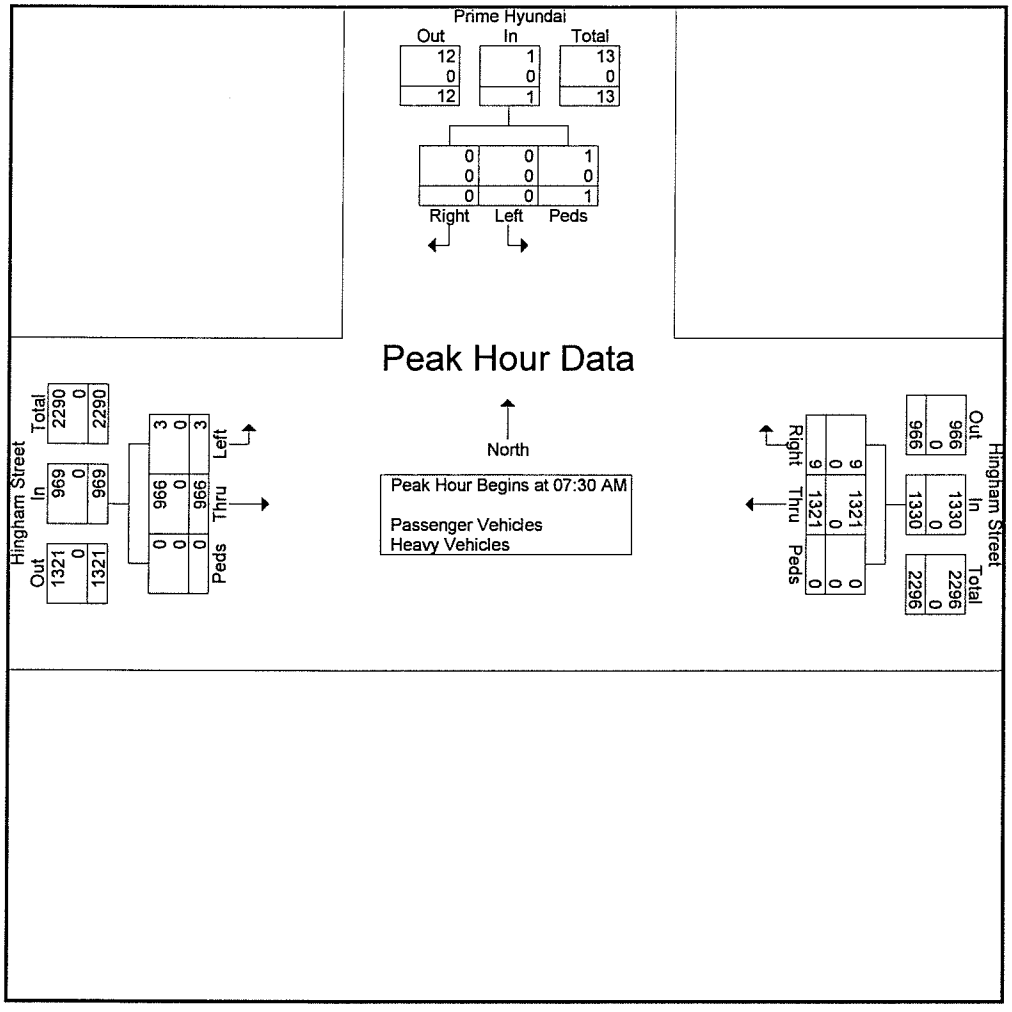
	Prime Hyundai From North				Hingham Street From East				Hingham Street From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	0	0	0	0	0	307	0	307	247	0	0	247	554
07:45 AM	0	0	0	0	**8**	336	0	344	**272**	**2**	0	**274**	**618**
08:00 AM	0	0	**1**	**1**	0	334	0	334	245	1	0	246	581
08:15 AM	0	0	0	0	1	**344**	0	**345**	202	0	0	202	547
Total Volume	0	0	1	1	9	1321	0	1330	966	3	0	969	2300
% App. Total	0	0	100		0.7	99.3	0		99.7	0.3	0		
PHF	.000	.000	.250	.250	.281	.960	.000	.964	.888	.375	.000	.884	.930
Passenger Vehicles	0	0	1	1	9	1321	0	1330	966	3	0	969	2300
% Passenger Vehicles	0	0	100	100	100	100	0	100	100	100	0	100	100
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0



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Groups Printed- Passenger Vehicles - Heavy Vehicles

	Prime Hyundai From North				Hingham Street From East				Hingham Street From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
07:30 AM	0	0	0	0	0	307	0	307	247	0	0	247	554
07:45 AM	0	0	0	0	8	336	0	344	272	2	0	274	618
Total	0	0	0	0	8	643	0	651	519	2	0	521	1172
08:00 AM	0	0	1	1	0	334	0	334	245	1	0	246	581
08:15 AM	0	0	0	0	1	344	0	345	202	0	0	202	547
Grand Total	0	0	1	1	9	1321	0	1330	966	3	0	969	2300
Apprch %	0	0	100		0.7	99.3	0		99.7	0.3	0		
Total %	0	0	0	0	0.4	57.4	0	57.8	42	0.1	0	42.1	
Passenger Vehicles	0	0	1	1	9	1321	0	1330	966	3	0	969	2300
% Passenger Vehicles	0	0	100	100	100	100	0	100	100	100	0	100	100
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0

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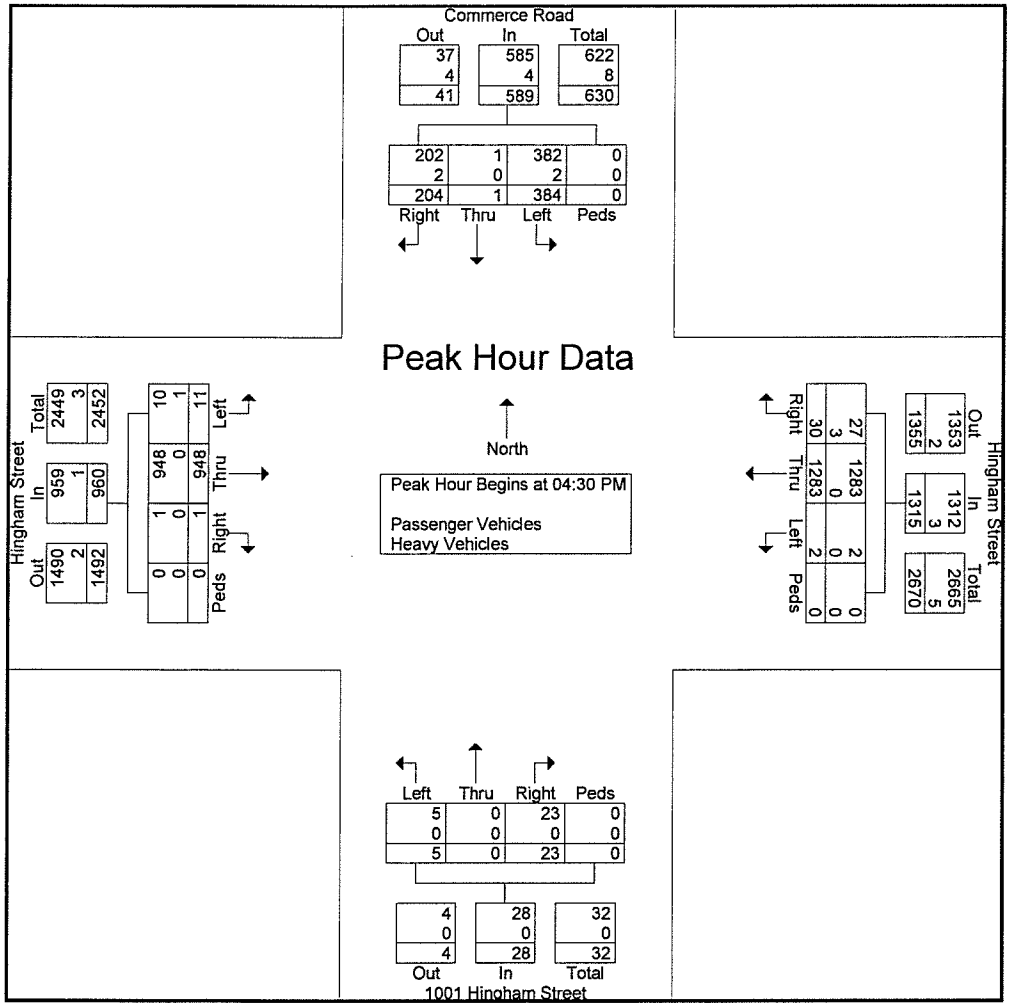
	Commerce Road From North					Hingham Street From East					1001 Hingham Street From South					Hingham Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	**81**	0	108	0	**189**	6	313	0	0	319	4	0	0	0	4	0	246	**4**	0	250	**762**
04:45 PM	49	0	84	0	133	8	**334**	0	0	**342**	4	0	**2**	0	6	0	218	3	0	221	702
05:00 PM	46	0	**112**	0	158	**9**	307	**2**	0	318	**13**	0	1	0	**14**	**1**	233	0	0	234	724
05:15 PM	28	**1**	80	0	109	7	329	0	0	336	2	0	2	0	4	0	**251**	4	0	**255**	704
Total Volume	204	1	384	0	589	30	1283	2	0	1315	23	0	5	0	28	1	948	11	0	960	2892
% App. Total	34.6	0.2	65.2	0		2.3	97.6	0.2	0		82.1	0	17.9	0		0.1	98.8	1.1	0		
PHF	.630	.250	.857	.000	.779	.833	.960	.250	.000	.961	.442	.000	.625	.000	.500	.250	.944	.688	.000	.941	.949
Passenger Vehicles	202	1	382	0	585	27	1283														
% Passenger Vehicles	99.0	100	99.5	0	99.3	90.0	100	100	0	99.8	100	0	100	0	100	100	100	90.9	0	99.9	99.7
Heavy Vehicles	2	0	2	0	4	3	0	0	0	3	0	0	0	0	0	0	0	1	0	1	8
% Heavy Vehicles	1.0	0	0.5	0	0.7	10.0	0	0	0	0.2	0	0	0	0	0	0	0	9.1	0	0.1	0.3



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File Name : Higham St at Commerce Way PM
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Groups Printed- Passenger Vehicles - Heavy Vehicles

	Commerce Road From North					Hingham Street From East					1001 Hingham Street From South					Hingham Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:30 PM	81	0	108	0	189	6	313	0	0	319	4	0	0	0	4	0	246	4	0	250	762
04:45 PM	49	0	84	0	133	8	334	0	0	342	4	0	2	0	6	0	218	3	0	221	702
Total	130	0	192	0	322	14	647	0	0	661	8	0	2	0	10	0	464	7	0	471	1464
05:00 PM	46	0	112	0	158	9	307	2	0	318	13	0	1	0	14	1	233	0	0	234	724
05:15 PM	28	1	80	0	109	7	329	0	0	336	2	0	2	0	4	0	251	4	0	255	704
Grand Total	204	1	384	0	589	30	1283	2	0	1315	23	0	5	0	28	1	948	11	0	960	2892
Apprch %	34.6	0.2	65.2	0		2.3	97.6	0.2	0		82.1	0	17.9	0		0.1	98.8	1.1	0		
Total %	7.1	0	13.3	0	20.4	1	44.4	0.1	0	45.5	0.8	0	0.2	0	1	0	32.8	0.4	0	33.2	
Passenger Vehicles	202	1	382	0	585	27	1283	2	0	1312	23	0	5	0	28	1	948	10	0	959	2884
% Passenger Vehicles	99	100	99.5	0	99.3	90	100	100	0	99.8	100	0	100	0	100	100	100	90.9	0	99.9	99.7
Heavy Vehicles	2	0	2	0	4	3	0	0	0	3	0	0	0	0	0	0	0	1	0	1	8
% Heavy Vehicles	1	0	0.5	0	0.7	10	0	0	0	0.2	0	0	0	0	0	0	0	9.1	0	0.1	0.3

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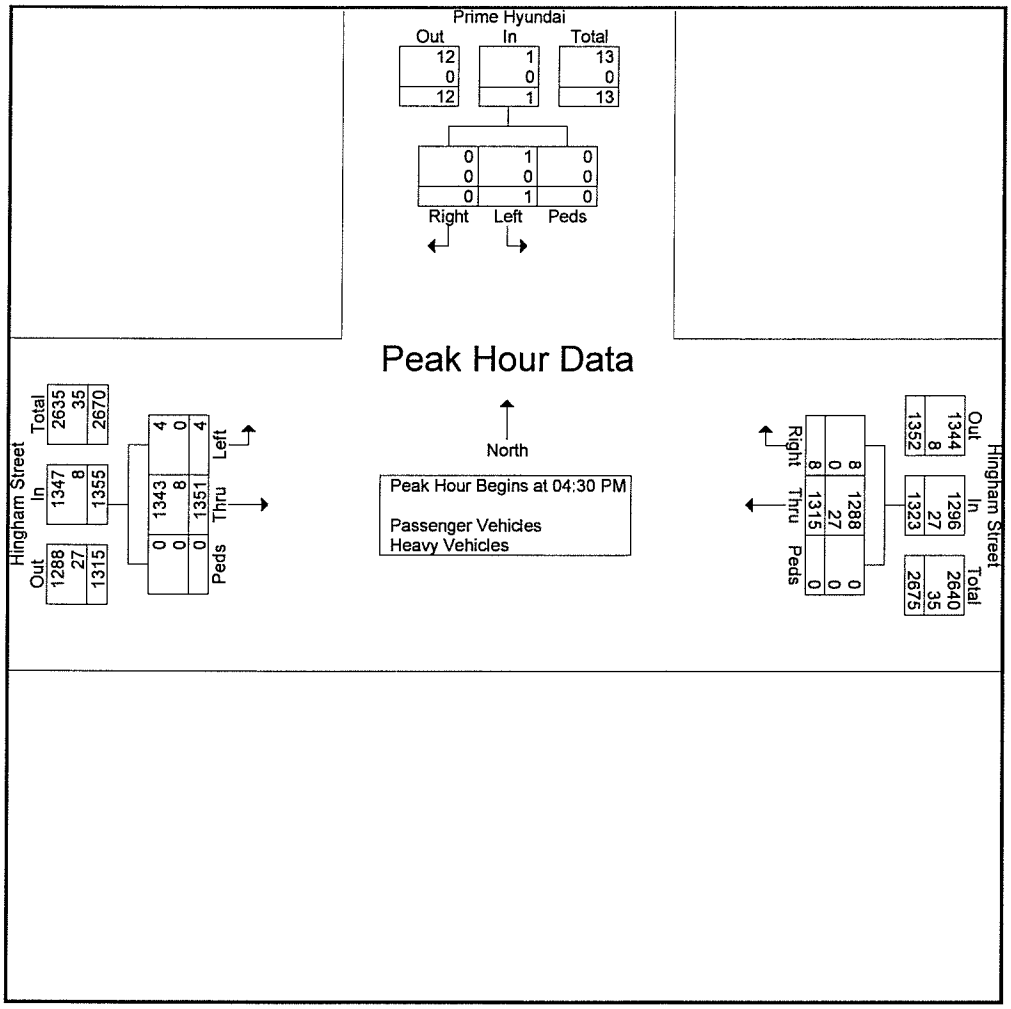
	Prime Hyundai From North				Hingham Street From East				Hingham Street From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	0	**1**	0	**1**	**3**	319	0	322	**358**	0	0	**358**	**681**
04:45 PM	0	0	0	0	2	**342**	0	**344**	306	0	0	306	650
05:00 PM	0	0	0	0	1	318	0	319	356	**2**	0	358	677
05:15 PM	0	0	0	0	2	336	0	338	331	2	0	333	671
Total Volume	0	1	0	1	8	1315	0	1323	1351	4	0	1355	2679
% App. Total	0	100	0		0.6	99.4	0		99.7	0.3	0		
PHF	.000	.250	.000	.250	.667	.961	.000	.961	.943	.500	.000	.946	.983
Passenger Vehicles	0	1	0	1	8	1288	0	1296	1343	4	0	1347	2644
% Passenger Vehicles	0	100	0	100	100	97.9	0	98.0	99.4	100	0	99.4	98.7
Heavy Vehicles	0	0	0	0	0	27	0	27	8	0	0	8	35
% Heavy Vehicles	0	0	0	0	0	2.1	0	2.0	0.6	0	0	0.6	1.3



MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA

N/S: Prime Hyundai
E/W: Hingham Street
Rockland, MA

File Name : Higham St at Prime PM
Site Code : 905
Start Date : 1/5/2017
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Prime Hyundai From North				Hingham Street From East				Hingham Street From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	2	329	0	331	292	0	0	292	623
04:15 PM	0	0	0	0	0	303	0	303	292	0	0	292	595
04:30 PM	0	1	0	1	3	319	0	322	358	0	0	358	681
04:45 PM	0	0	0	0	2	342	0	344	306	0	0	306	650
Total	0	1	0	1	7	1293	0	1300	1248	0	0	1248	2549
05:00 PM	0	0	0	0	1	318	0	319	356	2	0	358	677
05:15 PM	0	0	0	0	2	336	0	338	331	2	0	333	671
05:30 PM	0	0	0	0	1	306	0	307	278	0	0	278	585
05:45 PM	0	1	0	1	0	301	0	301	256	0	0	256	558
Total	0	1	0	1	4	1261	0	1265	1221	4	0	1225	2491
Grand Total	0	2	0	2	11	2554	0	2565	2469	4	0	2473	5040
Apprch %	0	100	0		0.4	99.6	0		99.8	0.2	0		
Total %	0	0	0	0	0.2	50.7	0	50.9	49	0.1	0	49.1	
Passenger Vehicles	0	2	0	2	11	2499	0	2510	2451	4	0	2455	4967
% Passenger Vehicles	0	100	0	100	100	97.8	0	97.9	99.3	100	0	99.3	98.6
Heavy Vehicles	0	0	0	0	0	55	0	55	18	0	0	18	73
% Heavy Vehicles	0	0	0	0	0	2.2	0	2.1	0.7	0	0	0.7	1.4

MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA

N/S: Commerce Road
E/W: Hingham Street
Rockland, MA

File Name : 835 Hingham St at Commerce Rd 11-1
Site Code : 83500000
Start Date : 5/30/2015
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

	Commerce Road From North					Hingham Street From East					Commerce Road From South					Hingham Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
11:00 AM	4	0	10	0	14	3	194	1	1	199	1	0	0	0	1	1	247	2	0	250	464
11:15 AM	2	0	9	0	11	1	172	3	0	176	4	0	0	0	4	0	239	2	0	241	432
11:30 AM	4	0	9	0	13	3	175	0	0	178	0	0	0	0	0	0	197	16	0	213	404
11:45 AM	12	0	10	0	22	1	177	0	0	178	1	0	0	0	1	0	190	0	0	190	391
Total	22	0	38	0	60	8	718	4	1	731	6	0	0	0	6	1	873	20	0	894	1691
12:00 PM	7	1	7	0	15	3	174	0	1	178	0	0	0	0	0	0	218	5	0	223	416
12:15 PM	7	0	8	0	15	2	171	0	0	173	0	0	0	0	0	0	185	6	0	191	379
12:30 PM	4	0	13	0	17	3	187	0	0	190	0	0	0	0	0	0	196	5	1	202	409
12:45 PM	4	0	9	0	13	2	196	0	0	198	0	0	0	0	0	0	211	2	0	213	424
Total	22	1	37	0	60	10	728	0	1	739	0	0	0	0	0	0	810	18	1	829	1628
Grand Total	44	1	75	0	120	18	1446	4	2	1470	6	0	0	0	6	1	1683	38	1	1723	3319
Apprch %	36.7	0.8	62.5	0		1.2	98.4	0.3	0.1		100	0	0	0		0.1	97.7	2.2	0.1		
Total %	1.3	0	2.3	0	3.6	0.5	43.6	0.1	0.1	44.3	0.2	0	0	0	0.2	0	50.7	1.1	0	51.9	
Passenger Vehicles	42	1	75	0	118	18	1403	4	0	1425	6	0	0	0	6	1	1652	36	0	1689	3238
% Passenger Vehicles	95.5	100	100	0	98.3	100	97	100	0	96.9	100	0	0	0	100	100	98.2	94.7	0	98	97.6
Heavy Vehicles	2	0	0	0	2	0	43	0	2	45	0	0	0	0	0	0	31	2	1	34	81
% Heavy Vehicles	4.5	0	0	0	1.7	0	3	0	100	3.1	0	0	0	0	0	0	1.8	5.3	100	2	2.4

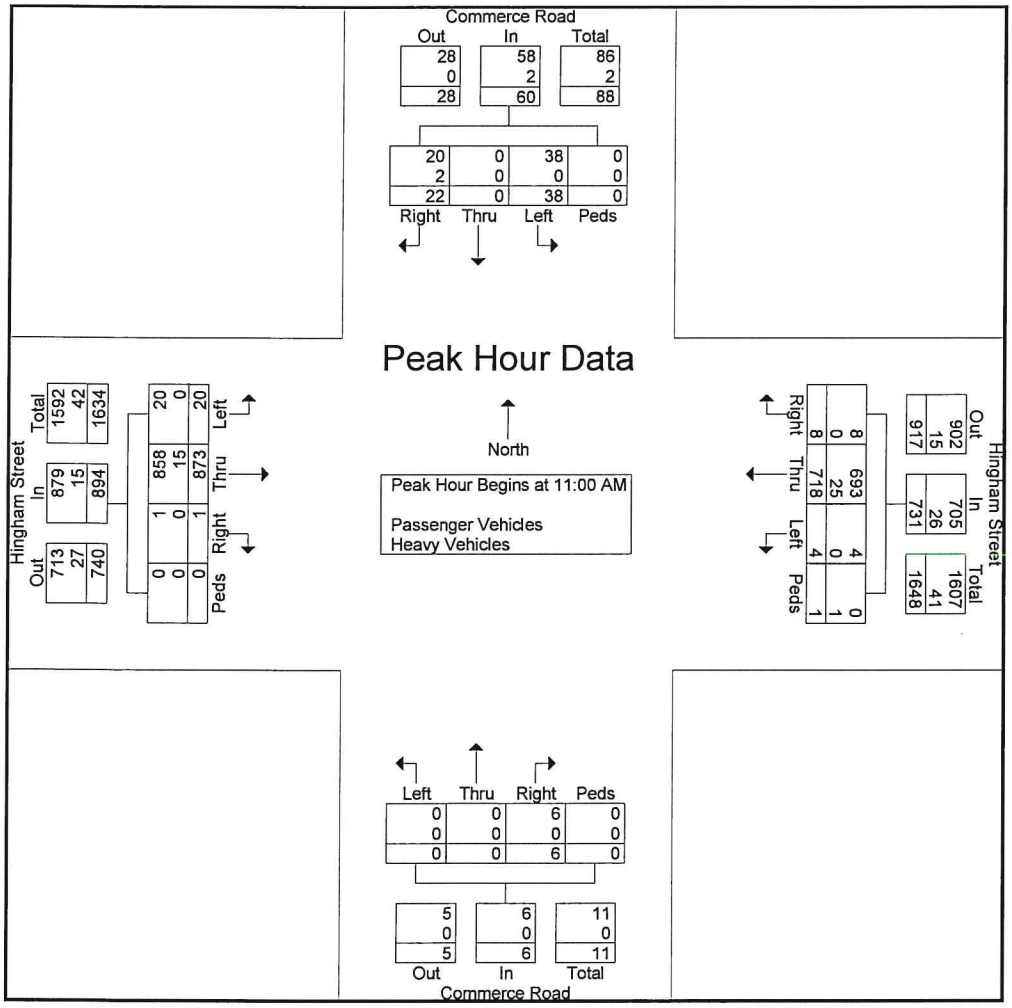
MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA

N/S: Commerce Road
E/W: Hingham Street
Rockland, MA

File Name : 835 Hingham St at Commerce Rd 11-1
Site Code : 83500000
Start Date : 5/30/2015
Page No : 2

	Commerce Road From North					Hingham Street From East					Commerce Road From South					Hingham Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	4	0	**10**	0	14	**3**	**194**	1	**1**	**199**	1	0	0	0	1	**1**	**247**	2	0	**250**	**464**
11:15 AM	2	0	9	0	11	1	172	**3**	0	176	**4**	0	0	0	**4**	0	239	2	0	241	432
11:30 AM	4	0	9	0	13	3	175	0	0	178	0	0	0	0	0	0	197	**16**	0	213	404
11:45 AM	**12**	0	10	0	**22**	1	177	0	0	178	1	0	0	0	1	0	190	0	0	190	391
Total Volume	22	0	38	0	60	8	718	4	1	731	6	0	0	0	6	1	873	20	0	894	1691
% App. Total	36.7	0	63.3	0		1.1	98.2	0.5	0.1		100	0	0	0		0.1	97.7	2.2	0		
PHF	.458	.000	.950	.000	.682	.667	.925	.333	.250	.918	.375	.000	.000	.000	.375	.250	.884	.313	.000	.894	.911
Passenger Vehicles	20	0	38	0	58	8	693	4	0	705	6	0	0	0	6	1	858	20	0	879	1648
% Passenger Vehicles																					
Heavy Vehicles	2	0	0	0	2	0	25	0	1	26	0	0	0	0	0	0	15	0	0	15	43
% Heavy Vehicles	9.1	0	0	0	3.3	0	3.5	0	100	3.6	0	0	0	0	0	0	1.7	0	0	1.7	2.5



□ Seasonal/Yearly Growth Data

STATION 7318 - HINGHAM - RTE.3 - BETWEEN EXITS 14 AND 15

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
12	83333	85862	89210	91559	93160.4	97816	102745	102494	89916	89234	89711	88831	91989
	1%	-8%	-3%	-2%	3%	0%	-1%	-5%	7%	6%	0%	-1%	0%
13	84386	78650	86436	89331	96366	98194	101862	97143	96539	94175	89347	88298	91727
	-4%	3%	-1%	-15%	0%	2%	2%	6%	0%	-1%	7%	9%	1%
14	81215	80850	85260	76073	96449	99766	104326	102869	96138	93583	95538	96423	92374
	23%	-12%	-1%	22%	1%	1%	-2%	-1%	-1%	0%	-5%	-5%	1%
15	99906	71446	84719	92960	97583	100859	102391	102048	95577	93821	90845	91395	93629
	-15%	20%	6%	-2%	0%	2%	1%	2%	1%	1%	1%	2%	1%
16	84967	85632	90030	91534	97559	102746	102972	104431	96386	94948	91570	93286	94672
	5%	3%	4%	4%	1%	0%	-2%	-2%	-1%	-1%	1%	3%	1%
17	88883	87881	93852	95381	98390	102289	100769	102516	95311	94437	92532	95974	95685
	3%	1%	-4%	-1%	0%	0%	3%	0%	0%	0%	-1%	-3%	0%
18	91440	89198	90306	94041	98635	101865	104120	102221	95693	94697	91796	93546	95630
Seasonal Adjustment Factor (to average month)	1.07	1.14	1.06	1.04	0.97	0.93	0.91	0.92	0.99	1.00	1.02	1.01	
												Growth	**0.65%**

STATION 6255 - WEYMOUTH - RTE.3 - NORTH OF RTE.18

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
10	124682	127558	132607	132335	137070	141389	141525	143034	135247	133953	137105	125692	134350
	-3%	-2%	-2%	-5%	-1%	-1%	-1%	-1%	-1%	-4%	-6%	1%	-1%
12	121356	125492	129664	125423	135823	140595	140021	141557	133706	129259	129209	126662	131564
	2%	-9%	-4%	5%	1%	-1%	0%	0%	1%	3%	-1%	-1%	0%
13	123406	114801	124822	131401	136582	139737	139578	141869	135080	133711	128561	125568	131260
	-8%	3%	2%	0%	-1%	0%	6%	4%	1%	-1%	-1%	4%	1%
14	113701	118439	127037	131150	135571	139606	147749	147593	136789	132227	127797	130710	132364
	9%	2%	2%	1%	2%	2%	-5%	-3%	-1%	1%	2%	-1%	1%
16	123413	121003	128951	132915	138071	142406	140685	142991	135630	134163	129976	128837	133734
	-43%	3%	0%	1%	0%	0%	-1%	-1%	-1%	-1%	1%	0%	-4%
17	70435	124154	129045	134625	137743	142253	139660	141524	134110	133079	131317	128775	128893
	74%	2%	-1%	-1%	0%	-1%	0%	-1%	1%	1%	-1%	1%	3%
18	122806	126589	128111	133381	137626	141165	140281	140241	134984	133927	129694	130112	133243
	-4%	-2%	0%	1%	0%	0%	-2%	1%	2%	1%	2%	-1%	0%
19	117728	124480	127851	134503	136962	140888	136831	141317	137183	135523	132072	129194	132878
Seasonal Adjustment Factor (to average month)	1.19	1.08	1.03	1.00	0.97	0.94	0.94	0.93	0.98	0.99	1.01	1.03	
												Growth	**-0.06%**

STATION 703 - ABINGTON - RTE.123 - AT THE BROCKTON C.L.

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
10	12356	13142	13629	13942	14001	13859	13299	13442	13874	13868	13350	12989	13479
	-5%	-4%	-2%	-3%	-3%	-2%	-2%	-3%	-1%	-1%	0%	3%	-2%
11	11690	12662	13410	13515	13585	13612	12975	13016	13668	13685	13377	13350	13212
	6%	4%	0%	0%	-2%	-1%	-6%	0%	1%	0%	0%	0%	0%
12	12382	13150	13430	13546	13366	13534	12225	13018	13740	13653	13399	13378	13235
	-1%	-6%	-3%	0%	0%	0%	5%	0%	-1%	0%	-1%	-1%	-1%
13	12301	12335	13001	13557	13321	13558	12876	13055	13640	13635	13199	13188	13139
	-3%	3%	2%	-1%	0%	0%	-1%	-1%	-2%	-2%	-2%	1%	-1%
14	11894	12651	13252	13385	13345	13524	12759	12893	13376	13379	12882	13315	13055
	1%	-5%	-5%	-2%	0%	-1%	1%	0%	-1%	-1%	0%	-2%	-1%
15	11974	11975	12649	13151	13378	13433	12829	12941	13230	13222	12868	12985	12886
	1%	3%	3%	-1%	-2%	1%	-1%	0%	-1%	-1%	-1%	0%	0%
16	12035	12304	13075	13076	13171	13574	12742	12986	13061	13140	12743	12940	12904
	-4%	-2%	-6%	-2%	-3%	-5%	-3%	-5%	-2%	-4%	-3%	-1%	-1%
19	11582	12046	12326	12811	12826	12897	12375	12393	12763	12602	12347	12748	12476
Seasonal Adjustment Factor (to average month)	1.09	1.04	1.00	0.98	0.98	0.97	1.02	1.01	0.97	0.97	1.00	1.00	
												Growth	**-0.78%**
Average Seasonal Adjustment Factor (to average month)	1.12	1.09	1.03	1.01	0.97	0.95	0.96	0.95	0.98	0.99	1.01	1.01	

- □ Speed Data

MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA 01752

E/W: Hingham Street (Route 228)
West of Commerce Road
Rockland, MA

Site Code: 000008835

335 Hingham Street (Speed)

Eastbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
05/30/15	0	1	5	21	36	34	13	4	0	0	0	0	0	0	114
01:00	0	0	1	5	26	38	6	0	0	0	0	0	0	0	76
02:00	0	0	0	9	6	17	5	3	0	0	0	0	0	0	40
03:00	0	0	0	0	7	22	7	0	0	0	0	0	0	0	36
04:00	0	0	0	2	19	33	17	4	0	0	0	0	0	0	75
05:00	0	0	3	12	37	96	61	6	1	0	0	0	0	0	216
06:00	0	0	3	23	91	159	69	14	1	0	0	0	0	0	360
07:00	0	1	5	36	148	232	96	16	1	0	0	0	0	0	535
08:00	2	0	11	48	196	317	93	10	0	0	0	0	0	0	677
09:00	1	3	38	101	281	306	68	2	0	0	0	0	0	0	800
10:00	5	11	49	155	292	277	45	5	1	0	0	0	0	0	840
11:00	3	3	36	156	325	252	54	2	0	0	0	0	0	0	831
12 PM	3	3	26	139	312	240	64	4	1	0	0	0	0	0	792
13:00	10	6	21	130	225	275	53	2	0	0	0	0	0	0	722
14:00	8	2	7	105	282	241	59	10	0	0	0	0	0	0	714
15:00	7	5	31	97	207	261	70	5	1	0	0	0	0	0	684
16:00	7	5	17	52	197	264	58	11	0	0	0	0	0	0	611
17:00	2	0	9	61	210	237	64	5	0	0	0	0	0	0	588
18:00	5	2	5	45	149	229	77	11	2	0	0	0	0	0	525
19:00	3	0	6	47	155	263	76	10	1	1	0	0	0	0	562
20:00	0	0	13	41	137	201	40	4	1	0	0	0	0	0	437
21:00	3	1	6	22	115	91	23	2	1	1	0	0	0	0	265
22:00	1	0	7	31	81	64	22	2	0	0	0	0	0	0	208
23:00	0	0	9	12	67	59	16	1	0	0	0	0	0	0	164
Total	60	43	308	1350	3601	4208	1156	133	11	2	0	0	0	0	10872

MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA 01752

E/W: Hingham Street (Route 228)
West of Commerce Road
Rockland, MA

Site Code: 000008835

335 Hingham Street (Speed)

Eastbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
05/31/15	0	0	6	15	24	39	11	4	0	2	0	0	0	0	101
01:00	1	0	2	6	28	35	8	2	0	0	0	0	0	0	82
02:00	0	0	0	0	4	13	3	1	1	0	0	0	0	0	22
03:00	0	0	0	0	2	9	7	1	1	0	0	0	0	0	20
04:00	0	0	0	2	10	11	8	1	1	0	0	0	0	0	33
05:00	0	1	0	6	17	37	27	11	3	0	1	0	0	0	103
06:00	1	0	0	4	28	84	56	8	1	0	0	0	0	0	182
07:00	1	2	2	6	47	151	80	17	1	0	0	0	0	0	307
08:00	1	0	0	11	92	199	74	9	0	0	0	0	0	0	386
09:00	0	0	4	37	188	265	96	8	0	0	0	0	0	0	598
10:00	3	0	10	39	197	320	71	5	0	0	0	0	0	0	645
11:00	4	0	10	43	187	321	91	5	1	0	0	0	0	0	662
12 PM	4	1	11	47	172	314	100	8	1	0	0	0	0	0	658
13:00	0	1	2	55	204	265	65	9	1	0	0	0	0	0	602
14:00	4	0	15	56	182	228	74	8	0	0	0	0	0	0	567
15:00	1	1	6	53	224	239	54	2	0	0	0	0	0	0	580
16:00	2	0	3	50	170	167	50	4	0	0	0	0	0	0	446
17:00	8	22	30	71	146	108	30	5	0	0	0	0	0	0	420
18:00	1	1	9	58	145	136	45	8	1	1	0	0	0	0	405
19:00	3	3	6	31	117	128	25	4	0	0	0	0	0	0	317
20:00	1	0	5	28	92	81	24	1	0	0	0	0	0	0	232
21:00	2	2	11	33	110	70	15	4	0	0	0	0	0	0	247
22:00	0	0	3	17	50	49	10	0	1	1	1	0	0	0	132
23:00	0	1	0	5	25	29	6	1	0	0	0	0	0	0	67
Total	37	35	135	673	2461	3298	1030	126	13	4	2	0	0	0	7814

MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA 01752

E/W: Hingham Street (Route 228)
West of Commerce Road
Rockland, MA

Site Code: 000008835

335 Hingham Street (Speed)

Eastbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
06/01/15	0	0	2	3	10	11	7	2	0	0	0	0	0	0	35
01:00	0	0	0	3	8	11	7	0	0	0	0	0	0	0	29
02:00	0	0	0	3	6	8	1	0	0	0	0	0	0	0	18
03:00	0	0	0	3	10	7	13	1	0	0	0	0	0	0	34
04:00	1	0	1	5	35	84	26	1	1	0	0	0	0	0	154
05:00	0	1	6	22	125	261	81	11	0	1	0	0	0	0	508
06:00	0	2	23	68	301	310	59	4	0	0	0	0	0	0	767
07:00	12	16	40	129	371	291	40	6	1	0	0	0	0	0	906
08:00	8	9	42	186	383	248	33	1	0	0	0	0	0	0	910
09:00	5	4	29	127	241	219	44	2	0	0	0	0	0	0	671
10:00	3	10	23	111	232	218	51	2	0	0	0	0	0	0	650
11:00	1	4	16	115	235	230	34	4	1	0	0	0	0	0	640
12 PM	3	15	57	197	273	146	17	2	0	0	0	0	0	0	710
13:00	4	7	47	161	267	176	41	1	0	0	0	0	0	0	704
14:00	7	11	56	138	259	164	32	3	0	0	0	0	0	0	670
15:00	8	23	66	189	269	137	27	1	0	0	0	0	0	0	720
16:00	2	9	66	189	301	166	32	2	0	0	0	0	0	0	767
17:00	11	19	78	212	278	166	17	3	1	0	0	0	0	0	785
18:00	5	3	35	136	225	147	24	2	0	0	0	0	0	0	577
19:00	1	4	20	44	176	163	46	2	0	0	0	0	0	0	456
20:00	1	1	6	41	120	113	16	1	0	0	0	0	0	0	299
21:00	1	1	7	52	159	98	21	3	0	0	0	0	0	0	342
22:00	0	0	6	20	57	42	13	2	0	0	0	0	0	0	140
23:00	3	3	8	9	24	26	7	1	0	0	0	0	0	0	81
Total	76	142	634	2163	4365	3442	689	57	4	1	0	0	0	0	11573
Grand Total	173	220	1077	4186	10427	10948	2875	316	28	7	2	0	0	0	30259

	15th Percentile :	28 MPH
	50th Percentile :	34 MPH
	85th Percentile :	39 MPH
	95th Percentile :	42 MPH
Statistics	Mean Speed(Average) :	35 MPH
	10 MPH Pace Speed :	31-40 MPH
	Number in Pace :	21375
	Percent in Pace :	70.6%
	Number of Vehicles > 40 MPH :	3228
	Percent of Vehicles > 40 MPH :	10.7%

MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA 01752

E/W: Hingham Street (Route 228)
West of Commerce Road
Rockland, MA

Site Code: 000008835

335 Hingham Street (Speed)

Westbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
05/30/15	2	0	0	17	57	77	38	2	1	0	0	0	0	0	194
01:00	0	0	0	10	58	93	36	1	0	0	0	0	0	0	198
02:00	0	0	0	6	18	32	14	2	0	0	0	0	0	0	72
03:00	0	0	1	1	13	13	6	3	0	0	0	0	0	0	37
04:00	0	0	0	2	12	10	16	0	0	0	0	0	0	0	40
05:00	0	0	1	3	22	31	47	5	4	0	0	0	0	0	113
06:00	0	0	0	8	38	85	48	16	1	0	0	0	0	0	196
07:00	0	0	0	11	58	156	79	11	3	0	0	0	0	0	318
08:00	2	0	0	40	144	223	85	9	1	0	0	0	0	0	504
09:00	0	1	6	72	199	205	64	10	0	0	0	0	0	0	557
10:00	15	11	20	110	234	188	48	3	0	0	0	0	0	0	629
11:00	5	2	31	113	265	228	40	9	2	2	0	0	0	0	697
12 PM	5	12	53	115	225	205	51	2	1	0	0	0	0	0	669
13:00	5	6	42	134	262	201	47	4	1	0	0	0	0	0	702
14:00	2	2	16	126	313	236	69	10	2	0	0	0	0	0	776
15:00	9	12	29	144	276	231	63	7	1	0	0	0	0	0	772
16:00	10	15	42	110	229	213	61	4	2	0	0	0	0	0	686
17:00	1	4	47	126	288	215	66	7	0	0	0	0	0	0	754
18:00	2	2	8	86	237	217	79	9	2	0	0	0	0	0	642
19:00	5	16	30	80	231	253	99	11	4	0	1	0	0	0	730
20:00	2	0	7	74	223	256	72	3	0	0	0	0	0	0	637
21:00	2	0	9	63	171	167	43	3	1	0	0	0	0	0	459
22:00	1	2	6	51	127	186	35	1	1	0	0	0	0	0	410
23:00	2	0	0	25	101	138	41	0	2	0	0	0	0	0	309
Total	70	85	348	1527	3801	3859	1247	132	29	2	1	0	0	0	11101

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335 Hingham Street (Speed)

Westbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
05/31/15	0	0	1	6	38	99	30	9	0	0	0	0	0	0	183
01:00	1	0	0	9	53	65	22	7	0	0	0	0	0	0	157
02:00	0	0	1	2	10	26	12	2	0	0	0	0	0	0	53
03:00	2	0	2	0	7	20	6	1	0	0	0	0	0	0	38
04:00	0	0	0	1	4	7	5	2	0	0	0	0	0	0	19
05:00	0	0	0	2	13	25	16	5	1	0	0	0	0	0	62
06:00	1	0	0	4	16	40	28	4	0	1	0	0	0	0	94
07:00	2	0	0	6	34	91	57	10	2	0	0	0	0	0	202
08:00	1	0	2	9	74	128	54	9	4	0	0	0	0	0	281
09:00	0	0	4	31	118	214	66	5	3	0	0	0	0	0	441
10:00	3	0	1	25	134	243	87	15	2	0	0	0	0	0	510
11:00	6	0	1	28	186	265	92	12	2	0	0	0	0	0	592
12 PM	5	1	10	60	229	283	78	18	0	0	0	0	0	0	684
13:00	2	3	23	82	310	258	73	8	1	0	0	0	0	0	760
14:00	4	3	15	94	313	249	79	6	1	0	0	0	0	0	764
15:00	12	6	36	119	296	216	50	3	1	0	0	0	0	0	739
16:00	27	12	25	122	252	196	27	4	1	0	0	0	0	0	666
17:00	117	20	40	92	204	137	29	4	0	0	0	0	0	0	643
18:00	1	0	4	57	218	216	46	4	1	0	0	0	0	0	547
19:00	30	3	7	50	145	194	31	7	1	0	0	0	0	0	468
20:00	1	0	5	24	119	157	53	2	1	0	0	0	0	0	362
21:00	2	2	1	40	111	123	23	2	0	0	0	0	0	0	304
22:00	2	0	3	17	54	75	11	1	0	0	0	0	0	0	163
23:00	0	0	0	3	38	59	17	1	0	0	0	0	0	0	118
Total	219	50	181	883	2976	3386	992	141	21	1	0	0	0	0	8850

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335 Hingham Street (Speed)

Westbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
06/01/15	0	0	0	3	13	30	10	4	0	0	0	0	0	0	60
01:00	0	0	0	3	12	14	10	2	0	0	0	0	0	0	41
02:00	0	0	0	1	10	3	1	1	0	0	0	0	0	0	16
03:00	0	0	0	1	7	6	3	1	0	0	0	0	0	0	18
04:00	0	0	0	0	8	25	13	2	0	0	0	0	0	0	48
05:00	0	0	0	13	29	113	39	4	1	0	0	0	0	0	199
06:00	0	1	2	26	147	235	84	8	1	0	0	0	0	0	504
07:00	4	6	32	121	279	225	57	7	1	0	0	0	0	0	732
08:00	4	5	16	136	352	213	39	3	0	0	0	0	0	0	768
09:00	10	16	11	91	217	185	46	9	0	0	0	0	0	0	585
10:00	2	1	9	91	239	194	45	14	0	0	0	0	0	0	595
11:00	1	5	27	105	244	219	54	3	0	0	0	0	0	0	658
12 PM	11	14	74	226	296	147	10	2	0	0	0	0	0	0	780
13:00	4	17	99	205	288	181	28	2	1	0	0	0	0	0	825
14:00	19	28	107	212	286	154	26	2	0	0	0	0	0	0	834
15:00	16	27	71	261	350	150	23	3	0	0	0	0	0	0	901
16:00	50	61	142	289	342	116	14	1	1	0	0	0	0	0	1016
17:00	53	94	169	279	228	118	22	2	0	0	0	0	0	0	965
18:00	13	17	66	204	319	168	15	5	0	0	0	0	0	0	807
19:00	3	0	4	88	271	206	66	5	0	0	0	0	0	0	643
20:00	3	3	8	101	228	147	26	0	0	0	0	0	0	0	516
21:00	1	0	6	76	214	161	32	5	0	0	1	0	0	0	496
22:00	0	0	5	19	91	67	12	0	0	0	0	0	0	0	194
23:00	1	0	2	14	71	65	15	2	1	0	0	0	0	0	171
Total	195	295	850	2565	4541	3142	690	87	6	0	1	0	0	0	12372
Grand Total	484	430	1379	4975	11318	10387	2929	360	56	3	2	0	0	0	32323

15th Percentile :	27 MPH
50th Percentile :	33 MPH
85th Percentile :	39 MPH
95th Percentile :	42 MPH

Statistics

Mean Speed(Average) :	34 MPH
10 MPH Pace Speed :	31-40 MPH
Number in Pace :	21705
Percent in Pace :	67.2%
Number of Vehicles > 40 MPH :	3350
Percent of Vehicles > 40 MPH :	10.4%

- Crash Data

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Rockland, MA COUNT DATE : Jan

DISTRICT : 5 UNSIGNALIZED : [ ] SIGNALIZED : [X]

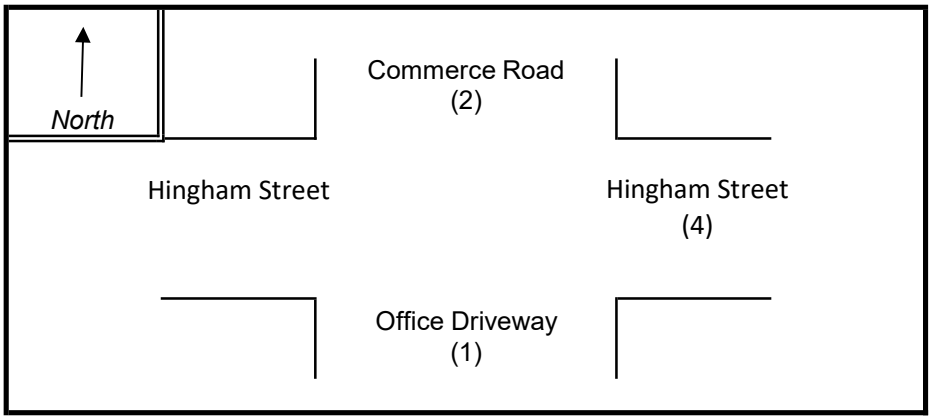
~ INTERSECTION DATA ~

MAJOR STREET : Hingham Street

MINOR STREET(S) : Commerce Way

Office Driveway

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) :	30	677	1,058	1,437		3,202

" K " FACTOR : **0.072**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **44,472**

TOTAL # OF CRASHES : 9

OF YEARS : 5

AVERAGE # OF CRASHES PER YEAR (**A**) : **1.80**

CRASH RATE CALCULATION : **0.11**

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

Comments : MassDOT District 5 Avg: Signalized = 0.75; Unsignalized = 0.57

Project Title & Date: 1192 - Rockland

Crash Number	City Town Name	Crash Date	Crash Severity	Crash Time	Crash Year	First Harmful Event	Manner of Collision	Road Surface Condition	Total Fatalities	Total Non-Fatal Injuries	X	Y
4404689	ROCKLAND	02/03/2017	Non-fatal injury	7:54 PM	2017	Collision with embankment	Single vehicle crash	Dry	0	1	249600.0939	879374.6254
4511860	ROCKLAND	01/30/2018	Property damage only (none injured)	10:17 AM	2018	Collision with utility pole	Single vehicle crash	Snow	0	0	249600.0937	879374.625
4603831	ROCKLAND	08/27/2018	Non-fatal injury	7:07 AM	2018	Collision with motor vehicle in traffic	Head-on	Dry	0	1	249581.3437	879346.0001
4646876	ROCKLAND	01/03/2019	Non-fatal injury	5:21 PM	2019	Collision with motor vehicle in traffic	Rear-end	Dry	0	1	249581.3437	879346.0001
4681593	ROCKLAND	03/15/2019	Property damage only (none injured)	3:34 PM	2019	Collision with parked motor vehicle	Rear-end	Dry	0	0	249581.3437	879346.0001
4772013	ROCKLAND	10/29/2019	Non-fatal injury	1:20 PM	2019	Collision with parked motor vehicle	Rear-end	Dry	0	0	249581.3437	879346.0001
4776577	ROCKLAND	11/11/2019	Non-fatal injury	3:12 PM	2019	Collision with other light pole or other post/support	Single vehicle crash	Dry	0	0	249581.3437	879346.0001
4793905	ROCKLAND	11/19/2019	Property damage only (none injured)	3:55 PM	2019	Collision with motor vehicle in traffic	Sideswipe, opposite direction	Dry	0	0	249581.3437	879346.0001
4918967	ROCKLAND	01/07/2021	Non-fatal injury	7:33 AM	2021	Collision with motor vehicle in traffic	Head-on	Dry	0	0	249506.1453	879416.9498

Data Level: CRASH
Query Type: Spatial
Criteria: If you conducted an Advanced Query your SQL statement will be listed here

□ Sight Distance Calculations

Stopping Sight Distance - Regulatory

Hingham Street approaches to Site Driveway

		SPEED (MPH)	BRAKE REACTION DISTANCE (FT)	BRAKING DISTANCE (FT)	CALCULATED STOPPING SIGHT DISTANCE (FT)
Direction 1	EB	45	165.375	194.1	359.4
Direction 2	WB	40	147	153.3	300.3

INPUTS	Direction 1	Direction 2
Travel Direction	EB	WB
Speed	45	40
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 x ((a/32.2)+G))

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

Intersection Sight Distance Calculations

Source: *A Policy on Geometric Design of Highways and Street, 6th Edition;* AASHTO; 2011.

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

Hingham Street

ISD = 1.47 * 40 * 7.5 = 441 ft **SAY 445 ft**
(left-turn from a stop)

ISD = 1.47 * 45 * 6.5 = 429 ft **SAY 430 ft**
(right-turn from a stop)

- Trip Generation

Institute of Transportation Engineers (ITE) 11th Edition
Land Use Code (LUC) 882 - Marijuana Dispensary

Average Vehicle Trips Ends vs: 1,000 Sq. Feet Gross Leasable Area
Independent Variable (X): 5.000

AVERAGE WEEKDAY DAILY

T = 211.12*(X)
T = 211.12* 5.00
T = 1,055.60
T = 1,056 vehicle trips
with 50% (528 vpd) entering and 50% (528 vpd) exiting.

WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 10.54 * (X)
T = 10.54 * 5.00
T = 52.70
T = 53 vehicle trips
with 52% (28 vph) entering and 48% (25 vph) exiting.

WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC

T = 18.92 *(X)
T = 18.92* 5.00
T = 94.60
T = 95 vehicle trips
with 50% (48 vph) entering and 50% (47 vph) exiting.

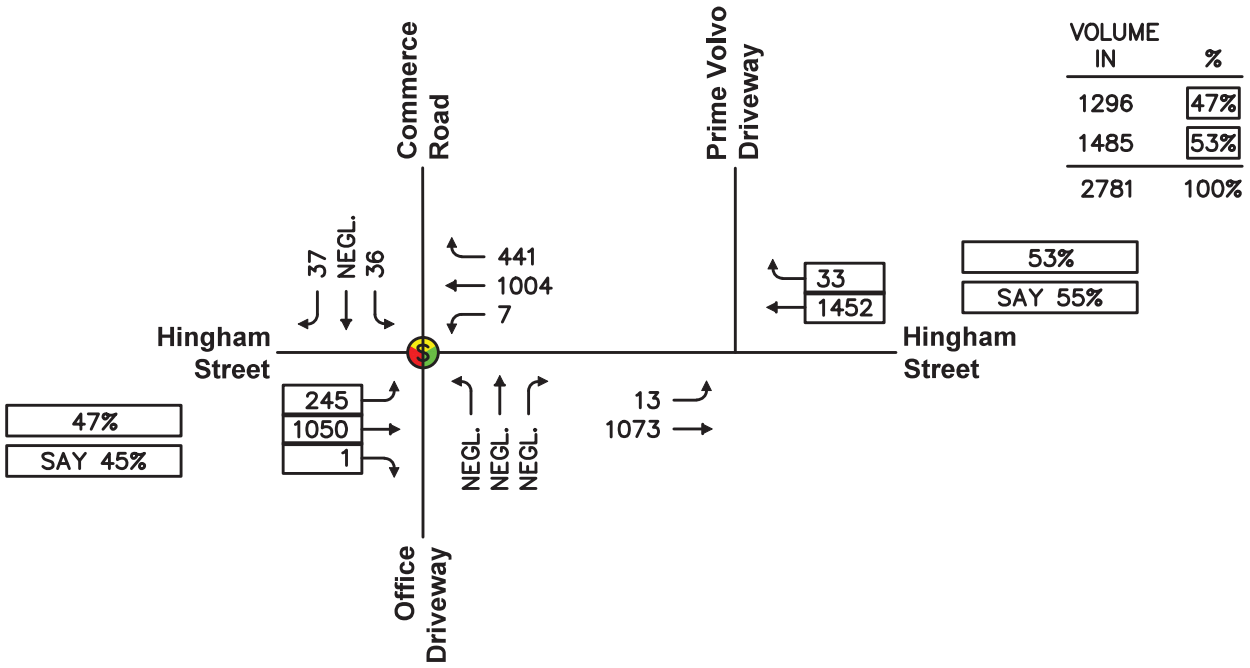
SATURDAY DAILY

T = 259.31 *(X)
T = 259.31* 5.00
T = 1,296.55
T = 1,296 vehicle trips
with 50% (648 vpd) entering and 50% (648 vpd) exiting.

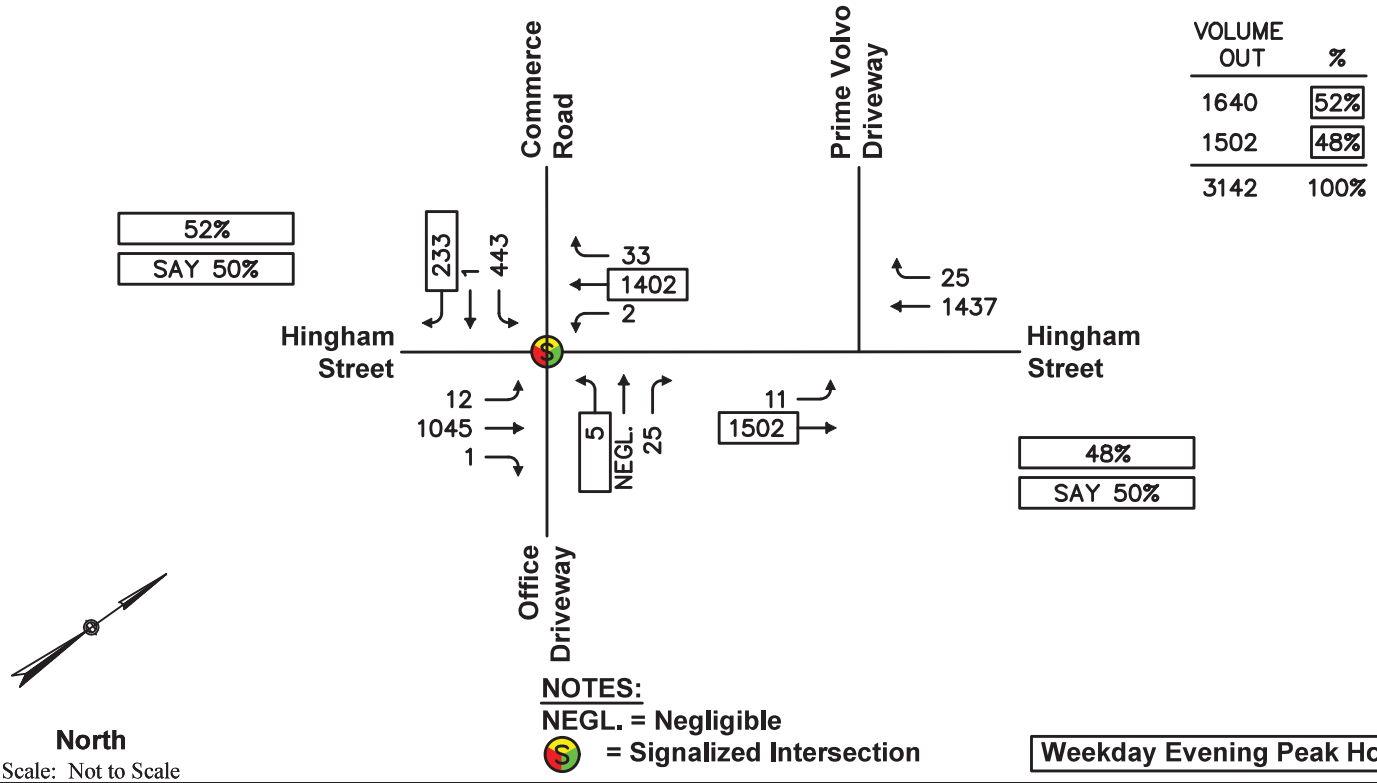
SATURDAY MIDDAY PEAK HOUR OF GENERATOR

T = 28.85 *(X)
T = 28.85* 5.00
T = 144.25
T = 144 vehicle trips
with 50% (72 vph) entering and 50% (72 vph) exiting.

□ Trip Distribution Calculations



Weekday Morning Peak Hour



Weekday Evening Peak Hour

Attachment

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Trip Distribution Calculations

Date: May 2020
Dwg No. 1086 TIAS.dwg

- [ ] Capacity Analysis

LEVEL OF SERVICE METHODOLOGY

Capacity analysis of intersections is developed using the Synchro® computer software, which implements the methods of the Highway Capacity Manual 6th Edition (HCM). The resulting analysis presents a level-of-service (LOS) designation for individual intersection movements and (for signalized intersections) for the entire intersection. 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, and greater than 80 seconds for signalized movements).

Signalized Intersection Performance Measures

The six LOS designations for signalized intersections may be described as follows:

- *LOS A* describes operations with low control delay; most vehicles do not stop at all.
- *LOS B* describes operations with relatively low control delay. However, more vehicles stop than LOS A.
- *LOS C* describes operations with higher control delays. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
- *LOS D* describes operations with control delay in the range where the influence of congestion becomes more noticeable. Many vehicles stop and individual cycle failures are noticeable.
- *LOS E* describes operations with high control delay values. Individual cycle failures are frequent occurrences.
- *LOS F* describes operations with high control delay values that often occur with over-saturation. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

The LOS for signalized intersections are calculated using the operational analysis methodology of the *Highway Capacity Manual 6th Edition*.[1] This method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on delay. LOS designations are based on the criterion of control or signal delay per vehicle. Control or signal delay is a measure of driver discomfort, frustration, and fuel consumption, and includes initial deceleration delay approaching the traffic signal, queue move-up time, stopped delay and final acceleration delay. **Table A1** summarizes the relationship between LOS and control delay. The tabulated control delay criterion may be applied in assigning LOS designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table A1
LEVEL-OF-SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS[1]

Control (Signal) Delay per Vehicle (seconds per vehicle)	Level of Service	
	v/c ≤ 1	v/c > 1
≤10.0	A	F
10.1 to 20.0	B	F
20.1 to 35.0	C	F
35.1 to 55.0	D	F
55.1 to 80.0	E	F
>80.0	F	F

[1]Source: *Highway Capacity Manual 6th Edition*, Transportation Research Board; Washington, DC; 2016.

[1]*Highway Capacity Manual* 6th Edition; Transportation Research Board; Washington, DC; 2016.

Unsignalized Intersection Performance Measures

The six LOS designations for unsignalized intersections may be described as follows:

- *LOS A* represents a condition with little or no control delay to minor street traffic.
- *LOS B* represents a condition with short control delays to minor street traffic.
- *LOS C* represents a condition with average control delays to minor street traffic.
- *LOS D* represents a condition with long control delays to minor street traffic.
- *LOS E* represents operating conditions at or near capacity level, with very long control delays to minor street traffic.
- *LOS F* represents a condition where minor street demand volume exceeds capacity of an approach lane, with extreme control delays resulting.

The LOS designations of unsignalized intersections are determined by application of a procedure described in the *Highway Capacity Manual 6th Edition.*[2] LOS is measured in terms of average control delay. Mathematically, control delay is a function of the capacity and degree of saturation of the lane group and/or approach under study and is a quantification of motorist delay associated with traffic control devices such as traffic signals and STOP signs. Control delay includes the effects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. Definitions for LOS at unsignalized intersections are also given in the *Highway Capacity Manual 6th Edition*. **Table A2** summarizes the relationship between LOS and average control delay.

Table A2
LEVEL-OF-SERVICE CRITERIA FOR
UNSIGNALIZED INTERSECTIONS[1]

Average Control Delay (seconds per vehicle)	Level of Service	
	v/c ≤ 1	v/c > 1
≤ 10.0	A	F
10.1 to 15.0	B	F
15.1 to 25.0	C	F
25.1 to 35.0	D	F
35.1 to 50.0	E	F
>50.0	F	F

[1]Source: *Highway Capacity Manual 6th Edition*, Transportation Research Board; Washington, DC; 2016.

[2] ibid

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	1050	1	7	1004	441	1	0	0	36	0	37
Future Volume (vph)	245	1050	1	7	1004	441	1	0	0	36	0	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		60	0		0	250		200
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850						0.850
Flt Protected		0.991						0.950		0.950	0.950	
Satd. Flow (prot)	0	3486	0	0	3540	1599	0	1805	0	1649	1649	1468
Flt Permitted		0.581			0.946					0.950	0.950	
Satd. Flow (perm)	0	2044	0	0	3349	1599	0	1900	0	1649	1649	1468
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						184						125
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		435			380			500			500	
Travel Time (s)		9.9			8.6			11.4			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%	3%	0%	0%	2%	1%	0%	0%	0%	4%	0%	10%
Adj. Flow (vph)	255	1094	1	7	1046	459	1	0	0	38	0	39
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	1350	0	0	1053	459	0	1	0	19	19	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		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	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
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		Perm	NA	Perm	Perm	NA		Split	NA	Prot
Protected Phases	5	2			6			4		12	12	12

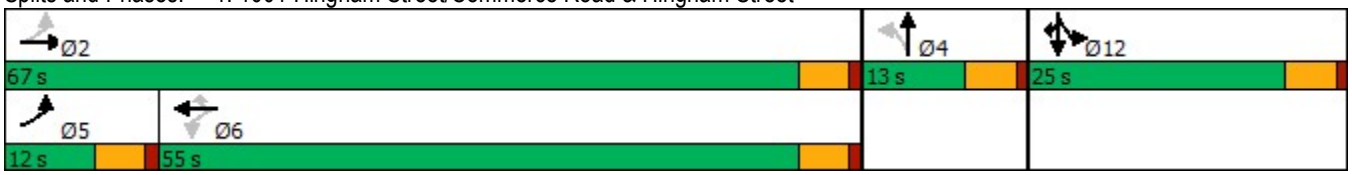
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6		6	4					
Detector Phase	5	2		6	6	6	4	4		12	12	12
Switch Phase												
Minimum Initial (s)	7.0	15.0		15.0	15.0	15.0	6.0	6.0		8.0	8.0	8.0
Minimum Split (s)	12.0	20.0		20.0	20.0	20.0	11.0	11.0		13.0	13.0	13.0
Total Split (s)	12.0	67.0		55.0	55.0	55.0	13.0	13.0		25.0	25.0	25.0
Total Split (%)	11.4%	63.8%		52.4%	52.4%	52.4%	12.4%	12.4%		23.8%	23.8%	23.8%
Maximum Green (s)	7.0	62.0		50.0	50.0	50.0	8.0	8.0		20.0	20.0	20.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		71.4			71.4	71.4		6.1		8.1	8.1	8.1
Actuated g/C Ratio		0.81			0.81	0.81		0.07		0.09	0.09	0.09
v/c Ratio		0.81			0.39	0.34		0.01		0.13	0.13	0.16
Control Delay		13.2			4.0	2.9		38.0		38.9	38.9	1.4
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		13.2			4.0	2.9		38.0		38.9	38.9	1.4
LOS		B			A	A		D		D	D	A
Approach Delay		13.2			3.7			38.0			19.9	
Approach LOS		B			A			D			B	
90th %ile Green (s)	0.0	62.0		62.0	62.0	62.0	6.3	6.3		8.2	8.2	8.2
90th %ile Term Code	Skip	Max		Hold	Hold	Hold	Gap	Gap		Gap	Gap	Gap
70th %ile Green (s)	0.0	62.0		62.0	62.0	62.0	0.0	0.0		8.0	8.0	8.0
70th %ile Term Code	Skip	Max		Hold	Hold	Hold	Skip	Skip		Min	Min	Min
50th %ile Green (s)	0.0	72.7		72.7	72.7	72.7	0.0	0.0		8.0	8.0	8.0
50th %ile Term Code	Skip	Dwell		Dwell	Dwell	Dwell	Skip	Skip		Min	Min	Min
30th %ile Green (s)	0.0	77.0		77.0	77.0	77.0	0.0	0.0		8.0	8.0	8.0
30th %ile Term Code	Skip	Dwell		Dwell	Dwell	Dwell	Skip	Skip		Min	Min	Min
10th %ile Green (s)	0.0	77.0		77.0	77.0	77.0	0.0	0.0		0.0	0.0	0.0
10th %ile Term Code	Skip	Dwell		Dwell	Dwell	Dwell	Skip	Skip		Skip	Skip	Skip
Queue Length 50th (ft)		175			67	28		1		10	10	0
Queue Length 95th (ft)		#552			171	101		6		33	33	0
Internal Link Dist (ft)		355			300			420			420	
Turn Bay Length (ft)						60				250		200
Base Capacity (vph)		1661			2722	1334		174		377	377	432
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		0.81			0.39	0.34		0.01		0.05	0.05	0.09

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 87.8

Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 8.5 Intersection LOS: A
Intersection Capacity Utilization 83.3% ICU Level of Service E
Analysis Period (min) 15
90th %ile Actuated Cycle: 91.5
70th %ile Actuated Cycle: 80
50th %ile Actuated Cycle: 90.7
30th %ile Actuated Cycle: 95
10th %ile Actuated Cycle: 82
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: 1001 Hingham Street/Commerce Road & Hingham Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1045	1	2	1402	33	5	0	25	443	1	233
Future Volume (vph)	12	1045	1	2	1402	33	5	0	25	443	1	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		60	0		0	250		200
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850		0.887				0.850
Flt Protected		0.999						0.992		0.950	0.953	
Satd. Flow (prot)	0	3571	0	0	3539	1615	0	1672	0	1698	1703	1599
Flt Permitted		0.929			0.954			0.774		0.950	0.953	
Satd. Flow (perm)	0	3321	0	0	3377	1615	0	1304	0	1698	1703	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						125		125				245
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		435			380			500			500	
Travel Time (s)		9.9			8.6			11.4			11.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	1%	0%	1%
Adj. Flow (vph)	13	1100	1	2	1476	35	5	0	26	466	1	245
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	1114	0	0	1478	35	0	31	0	233	234	245
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		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	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
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		Perm	NA	Perm	Perm	NA		Split	NA	Prot
Protected Phases	5	2			6			4		12	12	12

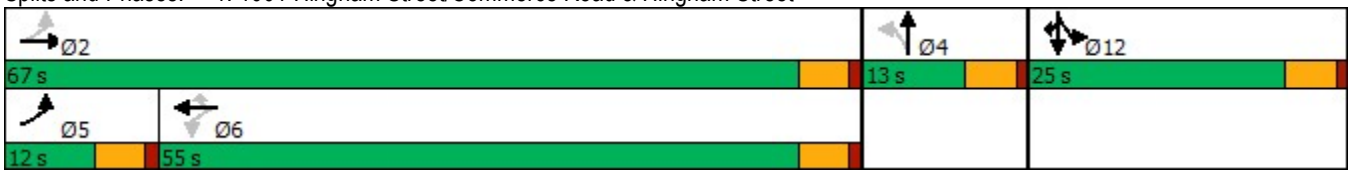
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6		6	4					
Detector Phase	5	2		6	6	6	4	4		12	12	12
Switch Phase												
Minimum Initial (s)	7.0	15.0		15.0	15.0	15.0	6.0	6.0		8.0	8.0	8.0
Minimum Split (s)	12.0	20.0		20.0	20.0	20.0	11.0	11.0		13.0	13.0	13.0
Total Split (s)	12.0	67.0		55.0	55.0	55.0	13.0	13.0		25.0	25.0	25.0
Total Split (%)	11.4%	63.8%		52.4%	52.4%	52.4%	12.4%	12.4%		23.8%	23.8%	23.8%
Maximum Green (s)	7.0	62.0		50.0	50.0	50.0	8.0	8.0		20.0	20.0	20.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		43.7			43.7	43.7		6.4		16.9	16.9	16.9
Actuated g/C Ratio		0.57			0.57	0.57		0.08		0.22	0.22	0.22
v/c Ratio		0.59			0.77	0.04		0.14		0.62	0.63	0.45
Control Delay		13.4			17.4	0.1		1.3		38.3	38.3	7.3
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		13.4			17.4	0.1		1.3		38.3	38.3	7.3
LOS		B			B	A		A		D	D	A
Approach Delay		13.4			17.0			1.3			27.6	
Approach LOS		B			B			A			C	
90th %ile Green (s)	0.0	50.0		50.0	50.0	50.0	6.0	6.0		20.0	20.0	20.0
90th %ile Term Code	Skip	Hold		Max	Max	Max	Min	Min		Max	Max	Max
70th %ile Green (s)	0.0	50.0		50.0	50.0	50.0	6.0	6.0		20.0	20.0	20.0
70th %ile Term Code	Skip	Hold		Max	Max	Max	Min	Min		Max	Max	Max
50th %ile Green (s)	0.0	50.0		50.0	50.0	50.0	6.0	6.0		19.6	19.6	19.6
50th %ile Term Code	Skip	Hold		Max	Max	Max	Min	Min		Gap	Gap	Gap
30th %ile Green (s)	0.0	38.4		38.4	38.4	38.4	0.0	0.0		14.6	14.6	14.6
30th %ile Term Code	Skip	Hold		Gap	Gap	Gap	Skip	Skip		Gap	Gap	Gap
10th %ile Green (s)	0.0	28.3		28.3	28.3	28.3	0.0	0.0		10.3	10.3	10.3
10th %ile Term Code	Skip	Hold		Gap	Gap	Gap	Skip	Skip		Gap	Gap	Gap
Queue Length 50th (ft)		212			332	0		0		128	129	0
Queue Length 95th (ft)		277			432	0		0		210	211	59
Internal Link Dist (ft)		355			300			420			420	
Turn Bay Length (ft)						60				250		200
Base Capacity (vph)		2677			2326	1151		256		471	473	621
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		0.42			0.64	0.03		0.12		0.49	0.49	0.39

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 76.8

Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 17.9
Intersection LOS: B
Intersection Capacity Utilization 70.7%
ICU Level of Service C
Analysis Period (min) 15
90th %ile Actuated Cycle: 91
70th %ile Actuated Cycle: 91
50th %ile Actuated Cycle: 90.6
30th %ile Actuated Cycle: 63
10th %ile Actuated Cycle: 48.6

Splits and Phases: 1: 1001 Hingham Street/Commerce Road & Hingham Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	891	0	4	718	8	0	0	6	79	0	39
Future Volume (vph)	20	891	0	4	718	8	0	0	6	79	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		60	0		0	250		200
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850		0.865				0.850
Flt Protected		0.999								0.950	0.950	
Satd. Flow (prot)	0	3537	0	0	3472	1615	0	1644	0	1715	1715	1482
Flt Permitted		0.931			0.951					0.950	0.950	
Satd. Flow (perm)	0	3296	0	0	3302	1615	0	1644	0	1715	1715	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						125		248				125
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		435			380			500			500	
Travel Time (s)		9.9			8.6			11.4			11.4	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	0%	0%	4%	0%	0%	0%	0%	0%	0%	9%
Adj. Flow (vph)	22	979	0	4	789	9	0	0	7	87	0	43
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	1001	0	0	793	9	0	7	0	43	44	43
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		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	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
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		Perm	NA	Perm		NA		Split	NA	Prot
Protected Phases	5	2			6			4		12	12	12

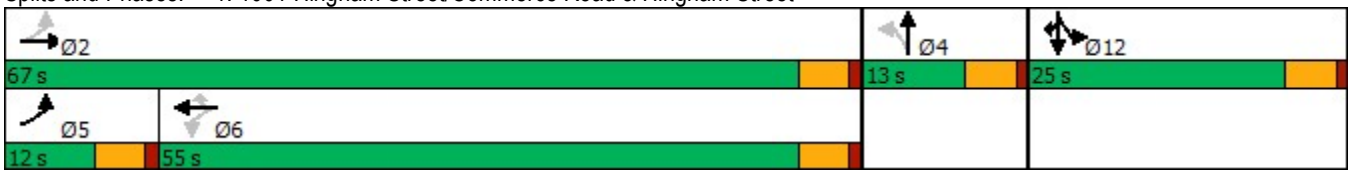
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6		6	4					
Detector Phase	5	2		6	6	6	4	4		12	12	12
Switch Phase												
Minimum Initial (s)	7.0	15.0		15.0	15.0	15.0	6.0	6.0		8.0	8.0	8.0
Minimum Split (s)	12.0	20.0		20.0	20.0	20.0	11.0	11.0		13.0	13.0	13.0
Total Split (s)	12.0	67.0		55.0	55.0	55.0	13.0	13.0		25.0	25.0	25.0
Total Split (%)	11.4%	63.8%		52.4%	52.4%	52.4%	12.4%	12.4%		23.8%	23.8%	23.8%
Maximum Green (s)	7.0	62.0		50.0	50.0	50.0	8.0	8.0		20.0	20.0	20.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		29.1			29.1	29.1		6.3		8.5	8.5	8.5
Actuated g/C Ratio		0.65			0.65	0.65		0.14		0.19	0.19	0.19
v/c Ratio		0.47			0.37	0.01		0.02		0.13	0.14	0.11
Control Delay		7.4			6.6	0.0		0.0		19.2	19.2	0.6
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		7.4			6.6	0.0		0.0		19.2	19.2	0.6
LOS		A			A	A		A		B	B	A
Approach Delay		7.4			6.5						13.0	
Approach LOS		A			A						B	
90th %ile Green (s)	0.0	32.9		32.9	32.9	32.9	6.0	6.0		9.1	9.1	9.1
90th %ile Term Code	Skip	Gap		Hold	Hold	Hold	Min	Min		Gap	Gap	Gap
70th %ile Green (s)	0.0	22.1		22.1	22.1	22.1	0.0	0.0		8.0	8.0	8.0
70th %ile Term Code	Skip	Gap		Hold	Hold	Hold	Skip	Skip		Min	Min	Min
50th %ile Green (s)	0.0	19.4		19.4	19.4	19.4	0.0	0.0		8.0	8.0	8.0
50th %ile Term Code	Skip	Gap		Hold	Hold	Hold	Skip	Skip		Min	Min	Min
30th %ile Green (s)	0.0	31.5		31.5	31.5	31.5	0.0	0.0		8.0	8.0	8.0
30th %ile Term Code	Skip	Dwell		Dwell	Dwell	Dwell	Skip	Skip		Min	Min	Min
10th %ile Green (s)	0.0	30.0		30.0	30.0	30.0	0.0	0.0		0.0	0.0	0.0
10th %ile Term Code	Skip	Dwell		Dwell	Dwell	Dwell	Skip	Skip		Skip	Skip	Skip
Queue Length 50th (ft)		63			45	0		0		7	7	0
Queue Length 95th (ft)		178			131	0		0		42	42	0
Internal Link Dist (ft)		355			300			420			420	
Turn Bay Length (ft)						60				250		200
Base Capacity (vph)		3285			3166	1553		507		798	798	756
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		0.30			0.25	0.01		0.01		0.05	0.06	0.06

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 45

Natural Cycle: 60
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.47
Intersection Signal Delay: 7.4
Intersection LOS: A
Intersection Capacity Utilization 56.1%
ICU Level of Service B
Analysis Period (min) 15
90th %ile Actuated Cycle: 63
70th %ile Actuated Cycle: 40.1
50th %ile Actuated Cycle: 37.4
30th %ile Actuated Cycle: 49.5
10th %ile Actuated Cycle: 35

Splits and Phases: 1: 1001 Hingham Street/Commerce Road & Hingham Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	1063	1	7	1005	441	12	0	0	36	0	37
Future Volume (vph)	245	1063	1	7	1005	441	12	0	0	36	0	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		60	0		0	250		200
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850						0.850
Flt Protected		0.991						0.950		0.950	0.950	
Satd. Flow (prot)	0	3486	0	0	3540	1599	0	1805	0	1649	1649	1468
Flt Permitted		0.582			0.945					0.950	0.950	
Satd. Flow (perm)	0	2047	0	0	3345	1599	0	1900	0	1649	1649	1468
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						184						125
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		435			295			500			500	
Travel Time (s)		9.9			6.7			11.4			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%	3%	0%	0%	2%	1%	0%	0%	0%	4%	0%	10%
Adj. Flow (vph)	255	1107	1	7	1047	459	13	0	0	38	0	39
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	1363	0	0	1054	459	0	13	0	19	19	39
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		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	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
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		Perm	NA	Perm	Perm	NA		Split	NA	Prot
Protected Phases	5	2			6			4		12	12	12

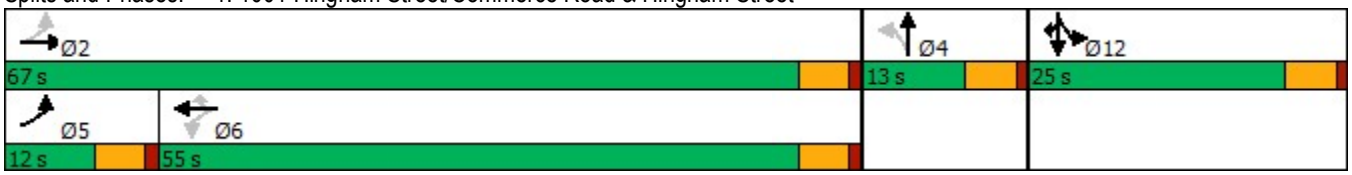
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6		6	4					
Detector Phase	5	2		6	6	6	4	4		12	12	12
Switch Phase												
Minimum Initial (s)	7.0	15.0		15.0	15.0	15.0	6.0	6.0		8.0	8.0	8.0
Minimum Split (s)	12.0	20.0		20.0	20.0	20.0	11.0	11.0		13.0	13.0	13.0
Total Split (s)	12.0	67.0		55.0	55.0	55.0	13.0	13.0		25.0	25.0	25.0
Total Split (%)	11.4%	63.8%		52.4%	52.4%	52.4%	12.4%	12.4%		23.8%	23.8%	23.8%
Maximum Green (s)	7.0	62.0		50.0	50.0	50.0	8.0	8.0		20.0	20.0	20.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		70.4			70.4	70.4		6.8		8.1	8.1	8.1
Actuated g/C Ratio		0.81			0.81	0.81		0.08		0.09	0.09	0.09
v/c Ratio		0.82			0.39	0.35		0.09		0.12	0.12	0.16
Control Delay		14.1			4.3	3.1		38.5		38.8	38.8	1.3
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		14.1			4.3	3.1		38.5		38.8	38.8	1.3
LOS		B			A	A		D		D	D	A
Approach Delay		14.1			3.9			38.5			19.8	
Approach LOS		B			A			D			B	
90th %ile Green (s)	0.0	62.0		62.0	62.0	62.0	8.0	8.0		8.3	8.3	8.3
90th %ile Term Code	Skip	Max		Hold	Hold	Hold	Max	Max		Gap	Gap	Gap
70th %ile Green (s)	0.0	62.0		62.0	62.0	62.0	0.0	0.0		8.0	8.0	8.0
70th %ile Term Code	Skip	Max		Hold	Hold	Hold	Skip	Skip		Min	Min	Min
50th %ile Green (s)	0.0	67.3		67.3	67.3	67.3	0.0	0.0		8.0	8.0	8.0
50th %ile Term Code	Skip	Dwell		Dwell	Dwell	Dwell	Skip	Skip		Min	Min	Min
30th %ile Green (s)	0.0	77.0		77.0	77.0	77.0	0.0	0.0		8.0	8.0	8.0
30th %ile Term Code	Skip	Dwell		Dwell	Dwell	Dwell	Skip	Skip		Min	Min	Min
10th %ile Green (s)	0.0	77.0		77.0	77.0	77.0	0.0	0.0		0.0	0.0	0.0
10th %ile Term Code	Skip	Dwell		Dwell	Dwell	Dwell	Skip	Skip		Skip	Skip	Skip
Queue Length 50th (ft)		179			67	28		7		10	10	0
Queue Length 95th (ft)		#578			184	109		25		34	34	0
Internal Link Dist (ft)		355			215			420			420	
Turn Bay Length (ft)						60				250		200
Base Capacity (vph)		1653			2702	1327		175		380	380	434
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		0.82			0.39	0.35		0.07		0.05	0.05	0.09

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 87.1

Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 9.2 Intersection LOS: A
Intersection Capacity Utilization 84.3% ICU Level of Service E
Analysis Period (min) 15
90th %ile Actuated Cycle: 93.3
70th %ile Actuated Cycle: 80
50th %ile Actuated Cycle: 85.3
30th %ile Actuated Cycle: 95
10th %ile Actuated Cycle: 82
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: 1001 Hingham Street/Commerce Road & Hingham Street



Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1086	13	15	1452	1	12
Future Vol, veh/h	1086	13	15	1452	1	12
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	93	93	93	93	93	93
Heavy Vehicles, %	3	0	0	2	0	0
Mvmt Flow	1168	14	16	1561	1	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1182	0	1988	591
Stage 1	-	-	-	-	1175	-
Stage 2	-	-	-	-	813	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	598	-	54	455
Stage 1	-	-	-	-	260	-
Stage 2	-	-	-	-	402	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	598	-	43	455
Mov Cap-2 Maneuver	-	-	-	-	43	-
Stage 1	-	-	-	-	260	-
Stage 2	-	-	-	-	321	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	19.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	262	-	-	598	-
HCM Lane V/C Ratio	0.053	-	-	0.027	-
HCM Control Delay (s)	19.5	-	-	11.2	1.1
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1067	1	2	1403	33	28	0	25	443	1	233
Future Volume (vph)	12	1067	1	2	1403	33	28	0	25	443	1	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		60	0		0	250		200
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850		0.936				0.850
Flt Protected		0.999						0.974		0.950	0.953	
Satd. Flow (prot)	0	3571	0	0	3539	1615	0	1732	0	1698	1703	1599
Flt Permitted		0.929			0.954			0.694		0.950	0.953	
Satd. Flow (perm)	0	3321	0	0	3377	1615	0	1234	0	1698	1703	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						125		125				212
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		435			295			500			500	
Travel Time (s)		9.9			6.7			11.4			11.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	1%	0%	1%
Adj. Flow (vph)	13	1123	1	2	1477	35	29	0	26	466	1	245
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	1137	0	0	1479	35	0	55	0	233	234	245
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		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	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
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		Perm	NA	Perm	Perm	NA		Split	NA	Prot
Protected Phases	5	2			6			4		12	12	12

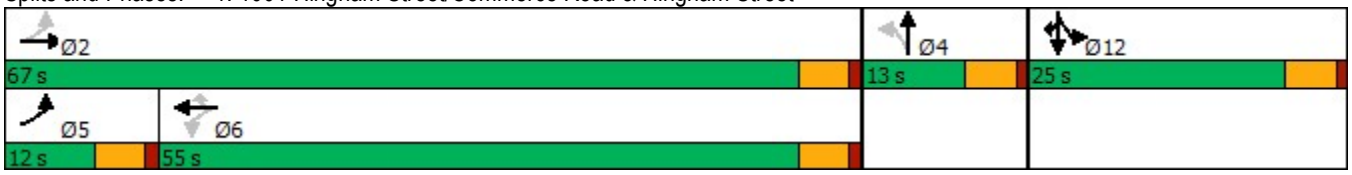
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6		6	4					
Detector Phase	5	2		6	6	6	4	4		12	12	12
Switch Phase												
Minimum Initial (s)	7.0	15.0		15.0	15.0	15.0	6.0	6.0		8.0	8.0	8.0
Minimum Split (s)	12.0	20.0		20.0	20.0	20.0	11.0	11.0		13.0	13.0	13.0
Total Split (s)	12.0	67.0		55.0	55.0	55.0	13.0	13.0		25.0	25.0	25.0
Total Split (%)	11.4%	63.8%		52.4%	52.4%	52.4%	12.4%	12.4%		23.8%	23.8%	23.8%
Maximum Green (s)	7.0	62.0		50.0	50.0	50.0	8.0	8.0		20.0	20.0	20.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		45.1			45.1	45.1		6.4		17.1	17.1	17.1
Actuated g/C Ratio		0.56			0.56	0.56		0.08		0.21	0.21	0.21
v/c Ratio		0.61			0.79	0.04		0.26		0.65	0.65	0.49
Control Delay		14.6			18.8	0.1		2.9		40.9	40.9	10.5
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		14.6			18.8	0.1		2.9		40.9	40.9	10.5
LOS		B			B	A		A		D	D	B
Approach Delay		14.6			18.4			2.9			30.4	
Approach LOS		B			B			A			C	
90th %ile Green (s)	0.0	50.1		50.1	50.1	50.1	6.0	6.0		20.0	20.0	20.0
90th %ile Term Code	Skip	Gap		Hold	Hold	Hold	Min	Min		Max	Max	Max
70th %ile Green (s)	0.0	50.0		50.0	50.0	50.0	6.0	6.0		20.0	20.0	20.0
70th %ile Term Code	Skip	Hold		Max	Max	Max	Min	Min		Max	Max	Max
50th %ile Green (s)	0.0	50.0		50.0	50.0	50.0	6.0	6.0		19.6	19.6	19.6
50th %ile Term Code	Skip	Hold		Max	Max	Max	Min	Min		Gap	Gap	Gap
30th %ile Green (s)	0.0	45.9		45.9	45.9	45.9	6.0	6.0		15.9	15.9	15.9
30th %ile Term Code	Skip	Hold		Gap	Gap	Gap	Min	Min		Gap	Gap	Gap
10th %ile Green (s)	0.0	28.4		28.4	28.4	28.4	0.0	0.0		10.3	10.3	10.3
10th %ile Term Code	Skip	Hold		Gap	Gap	Gap	Skip	Skip		Gap	Gap	Gap
Queue Length 50th (ft)		218			333	0		0		128	129	15
Queue Length 95th (ft)		286			433	0		0		211	211	79
Internal Link Dist (ft)		355			215			420			420	
Turn Bay Length (ft)						60				250		200
Base Capacity (vph)		2520			2198	1095		241		445	446	576
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		0.45			0.67	0.03		0.23		0.52	0.52	0.43

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 80.8

Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 19.4
Intersection LOS: B
Intersection Capacity Utilization 70.8%
ICU Level of Service C
Analysis Period (min) 15
90th %ile Actuated Cycle: 91.1
70th %ile Actuated Cycle: 91
50th %ile Actuated Cycle: 90.6
30th %ile Actuated Cycle: 82.8
10th %ile Actuated Cycle: 48.7

Splits and Phases: 1: 1001 Hingham Street/Commerce Road & Hingham Street



Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1513	22	26	1437	1	23
Future Vol, veh/h	1513	22	26	1437	1	23
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	98	98	98	98	98	92
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	1544	22	27	1466	1	25

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1566	0	2342	783
Stage 1	-	-	-	-	1555	-
Stage 2	-	-	-	-	787	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	427	-	31	341
Stage 1	-	-	-	-	163	-
Stage 2	-	-	-	-	414	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	427	-	20	341
Mov Cap-2 Maneuver	-	-	-	-	20	-
Stage 1	-	-	-	-	163	-
Stage 2	-	-	-	-	273	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	24.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	209	-	-	427	-
HCM Lane V/C Ratio	0.124	-	-	0.062	-
HCM Control Delay (s)	24.7	-	-	14	2.3
HCM Lane LOS	C	-	-	B	A
HCM 95th %tile Q(veh)	0.4	-	-	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	923	0	4	719	8	35	0	6	79	0	39
Future Volume (vph)	20	923	0	4	719	8	35	0	6	79	0	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		60	0		0	250		200
Storage Lanes	0		0	0		1	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt						0.850		0.979				0.850
Flt Protected		0.999						0.959		0.950	0.950	
Satd. Flow (prot)	0	3537	0	0	3472	1615	0	1784	0	1715	1715	1482
Flt Permitted		0.931			0.951					0.950	0.950	
Satd. Flow (perm)	0	3296	0	0	3302	1615	0	1860	0	1715	1715	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						125		125				125
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		435			295			500			500	
Travel Time (s)		9.9			6.7			11.4			11.4	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	2%	0%	0%	4%	0%	0%	0%	0%	0%	0%	9%
Adj. Flow (vph)	22	1014	0	4	790	9	38	0	7	87	0	43
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	1036	0	0	794	9	0	45	0	43	44	43
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		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	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
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		Perm	NA	Perm	Perm	NA		Split	NA	Prot
Protected Phases	5	2			6			4		12	12	12

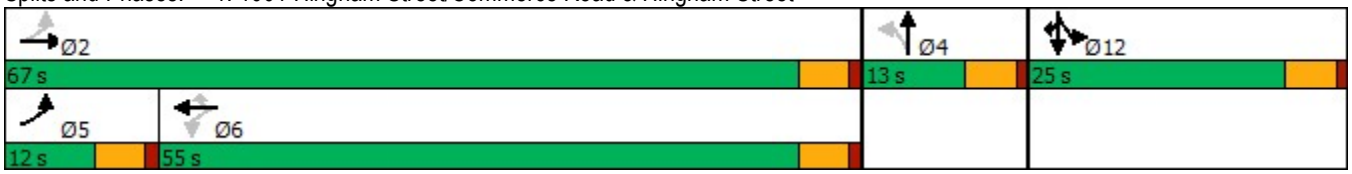
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6		6	4					
Detector Phase	5	2		6	6	6	4	4		12	12	12
Switch Phase												
Minimum Initial (s)	7.0	15.0		15.0	15.0	15.0	6.0	6.0		8.0	8.0	8.0
Minimum Split (s)	12.0	20.0		20.0	20.0	20.0	11.0	11.0		13.0	13.0	13.0
Total Split (s)	12.0	67.0		55.0	55.0	55.0	13.0	13.0		25.0	25.0	25.0
Total Split (%)	11.4%	63.8%		52.4%	52.4%	52.4%	12.4%	12.4%		23.8%	23.8%	23.8%
Maximum Green (s)	7.0	62.0		50.0	50.0	50.0	8.0	8.0		20.0	20.0	20.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		5.0			5.0	5.0		5.0		5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	Min		Min	Min	Min	None	None		None	None	None
Act Effct Green (s)		30.3			30.3	30.3		6.4		8.7	8.7	8.7
Actuated g/C Ratio		0.61			0.61	0.61		0.13		0.17	0.17	0.17
v/c Ratio		0.52			0.40	0.01		0.13		0.14	0.15	0.12
Control Delay		10.0			8.8	0.0		0.8		23.9	23.9	0.7
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay		10.0			8.8	0.0		0.8		23.9	23.9	0.7
LOS		B			A	A		A		C	C	A
Approach Delay		10.0			8.7			0.8			16.2	
Approach LOS		B			A			A			B	
90th %ile Green (s)	0.0	35.0		35.0	35.0	35.0	6.0	6.0		9.3	9.3	9.3
90th %ile Term Code	Skip	Gap		Hold	Hold	Hold	Min	Min		Gap	Gap	Gap
70th %ile Green (s)	0.0	28.4		28.4	28.4	28.4	6.0	6.0		8.0	8.0	8.0
70th %ile Term Code	Skip	Gap		Hold	Hold	Hold	Min	Min		Min	Min	Min
50th %ile Green (s)	0.0	24.9		24.9	24.9	24.9	6.0	6.0		8.0	8.0	8.0
50th %ile Term Code	Skip	Gap		Hold	Hold	Hold	Min	Min		Min	Min	Min
30th %ile Green (s)	0.0	20.5		20.5	20.5	20.5	0.0	0.0		8.0	8.0	8.0
30th %ile Term Code	Skip	Dwell		Dwell	Dwell	Dwell	Skip	Skip		Min	Min	Min
10th %ile Green (s)	0.0	30.0		30.0	30.0	30.0	0.0	0.0		0.0	0.0	0.0
10th %ile Term Code	Skip	Dwell		Dwell	Dwell	Dwell	Skip	Skip		Skip	Skip	Skip
Queue Length 50th (ft)		126			87	0		0		12	13	0
Queue Length 95th (ft)		187			132	0		0		43	44	0
Internal Link Dist (ft)		355			215			420			420	
Turn Bay Length (ft)						60				250		200
Base Capacity (vph)		3263			3014	1485		418		726	726	699
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		0.32			0.26	0.01		0.11		0.06	0.06	0.06

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 50

Natural Cycle: 60
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.52
Intersection Signal Delay: 9.7
Intersection LOS: A
Intersection Capacity Utilization 57.1%
ICU Level of Service B
Analysis Period (min) 15
90th %ile Actuated Cycle: 65.3
70th %ile Actuated Cycle: 57.4
50th %ile Actuated Cycle: 53.9
30th %ile Actuated Cycle: 38.5
10th %ile Actuated Cycle: 35

Splits and Phases: 1: 1001 Hingham Street/Commerce Road & Hingham Street



Intersection	
Int Delay, s/veh	0.8

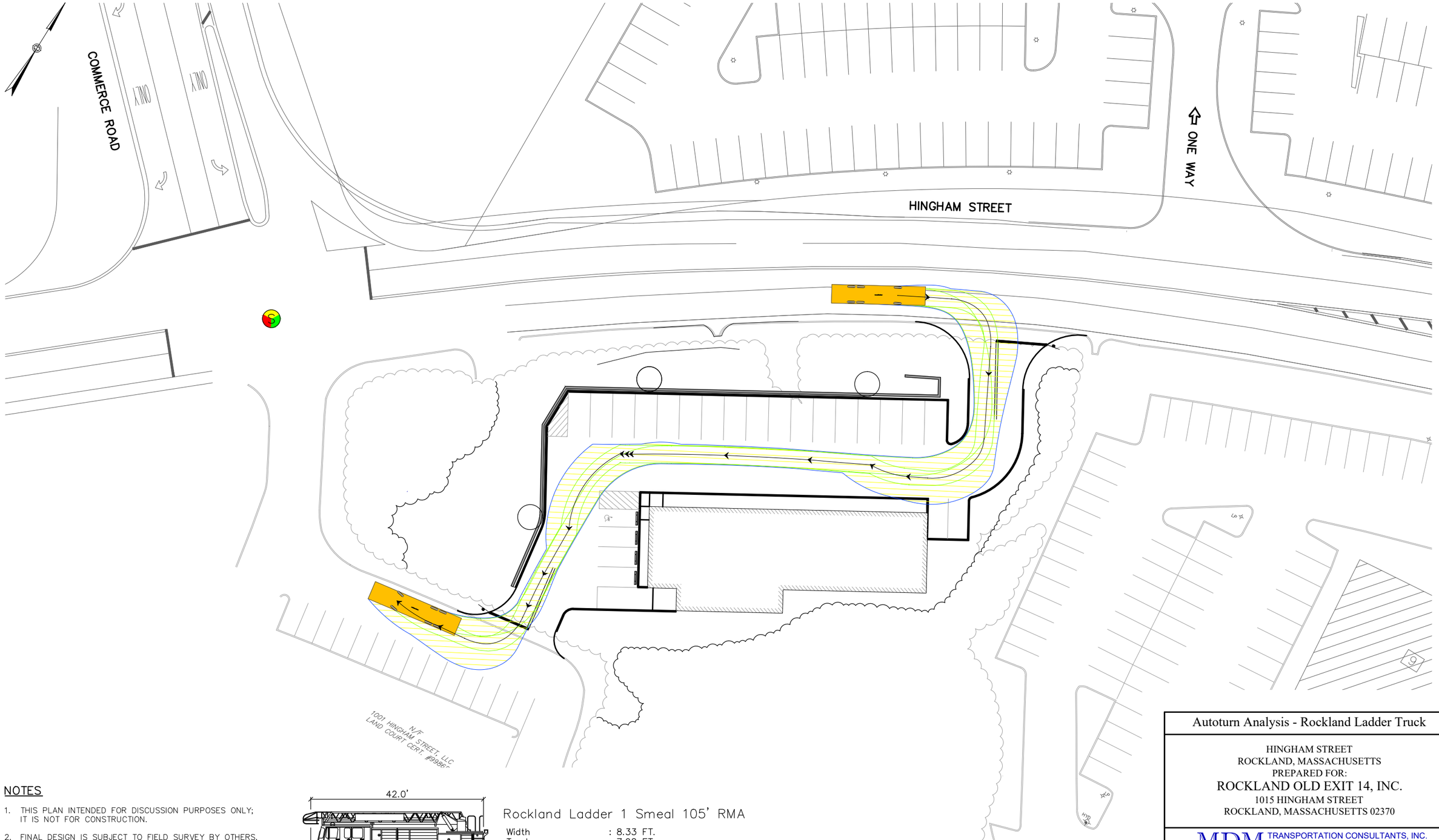
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	976	32	40	730	1	36
Future Vol, veh/h	976	32	40	730	1	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	4	0	0
Mvmt Flow	1073	35	44	802	1	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1108	0	1580	554
Stage 1	-	-	-	-	1091	-
Stage 2	-	-	-	-	489	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	638	-	102	481
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	588	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	638	-	89	481
Mov Cap-2 Maneuver	-	-	-	-	89	-
Stage 1	-	-	-	-	288	-
Stage 2	-	-	-	-	515	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	430	-	-	638	-
HCM Lane V/C Ratio	0.095	-	-	0.069	-
HCM Control Delay (s)	14.2	-	-	11.1	0.6
HCM Lane LOS	B	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-

□ AutoTURN® Analysis



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3. PROPERTY LINES AND ACCESS LINE LOCATIONS ARE APPROXIMATE ONLY AND ARE SUBJECT TO DEED AND TITLE RECORDS.
4. BASE PLAN SOURCE: BOHLER ENGINEERING.

Rockland Ladder 1 Smeal 105' RMA

Width	: 8.33 FT.
Track	: 7.92 FT.
Lock to Lock Time	: 6.0 SEC.
Steering Angle	: 45.0°

SCALE
0 10 20 40 80 FEET

Autoturn Analysis - Rockland Ladder Truck

HINGHAM STREET
ROCKLAND, MASSACHUSETTS
PREPARED FOR:
ROCKLAND OLD EXIT 14, INC.
1015 HINGHAM STREET
ROCKLAND, MASSACHUSETTS 02370

MDM TRANSPORTATION CONSULTANTS, INC.
PLANNERS & ENGINEERS
28 Lord Road, Suite 280
Marlborough, MA 01752
Tel: (508) 303-0370
Fax: (508) 303-0371

DATE: March 2022	SCALE: As Noted	
PROJECT No. 1192	File: 1192 Autoturn.dwg	Sheet 1 of 1

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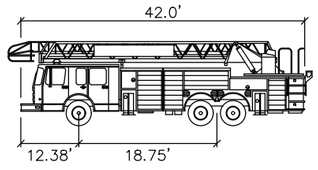
4. BASE PLAN SOURCE: BOHLER ENGINEERING.



Rockland Ladder 1 Smeal 105' RMA

Width	: 8.33 FT.
Track	: 7.92 FT.
Lock to Lock Time	: 6.0 SEC.
Steering Angle	: 45.0°

SCALE
0 10 20 40 80 FEET

Autoturn Analysis - Rockland Ladder Truck

HINGHAM STREET
ROCKLAND, MASSACHUSETTS
PREPARED FOR:
ROCKLAND OLD EXIT 14, INC.
1015 HINGHAM STREET
ROCKLAND, MASSACHUSETTS 02370

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Marlborough, MA 01752
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DATE: March 2022	SCALE: As Noted	
PROJECT No. 1192	File: 1192 Autoturn.dwg	Sheet 1 of 1

NOTES

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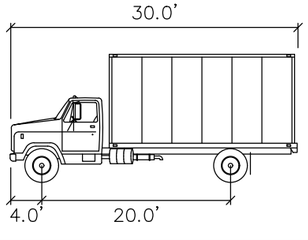

SU–30

Width	: 8.00 FT.
Track	: 8.00 FT.
Lock to Lock Time	: 6.0 SEC.
Steering Angle	: 31.8°

SCALE
0 10 20 40 80 FEET

Autoturn Analysis - Single Unit Truck

HINGHAM STREET
ROCKLAND, MASSACHUSETTS
PREPARED FOR:
ROCKLAND OLD EXIT 14, INC.
1015 HINGHAM STREET
ROCKLAND, MASSACHUSETTS 02370

MDM TRANSPORTATION CONSULTANTS, INC.
PLANNERS & ENGINEERS
28 Lord Road, Suite 280
Marlborough, MA 01752
Tel: (508) 303-0370
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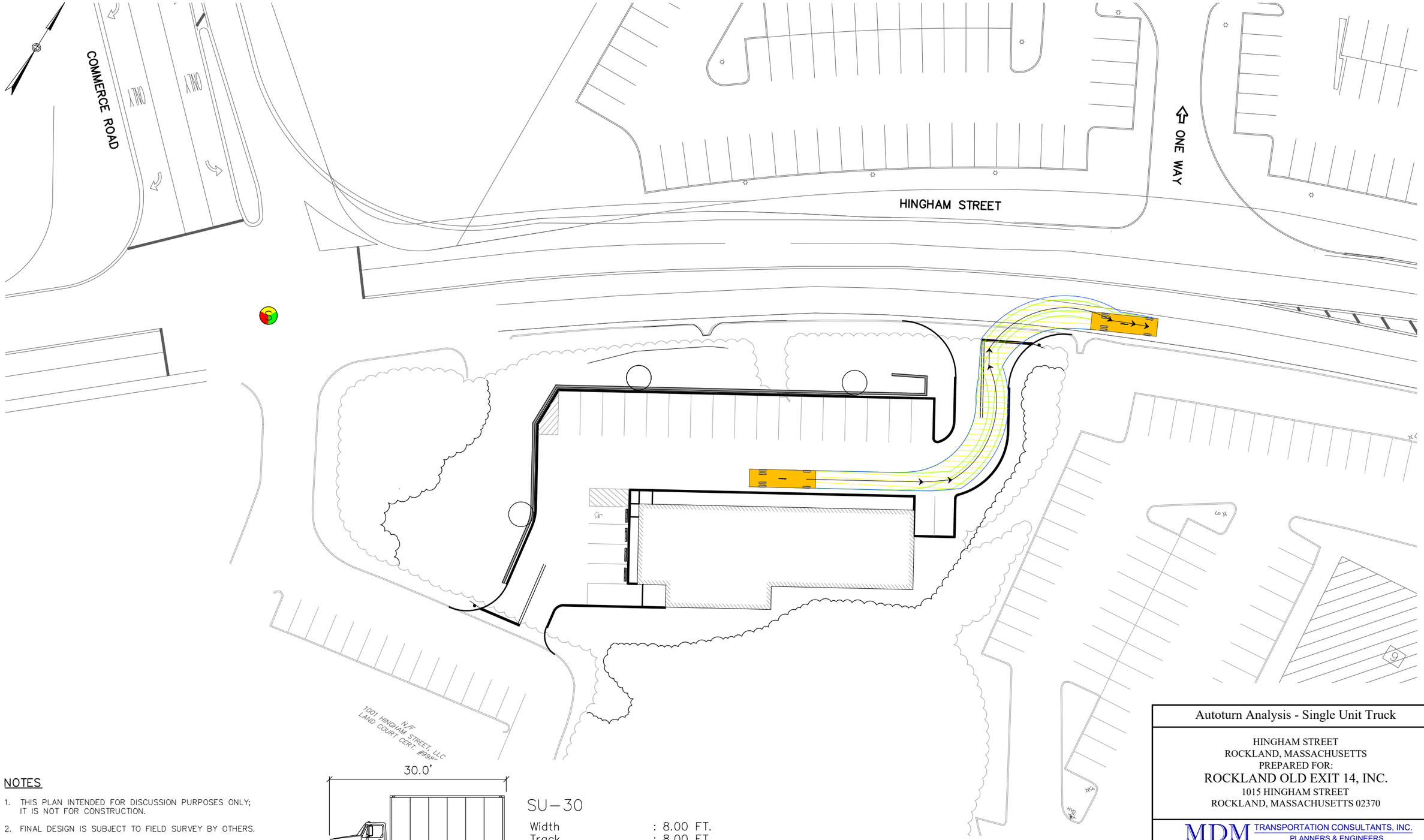
DATE: March 2022		SCALE: As Noted
PROJECT No. 1192	File: 1192 Autoturn.dwg	Sheet 1 of 1



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4. BASE PLAN SOURCE: BOHLER ENGINEERING.

SU–30

Width	: 8.00 FT.
Track	: 8.00 FT.
Lock to Lock Time	: 6.0 SEC.
Steering Angle	: 31.8°

Autoturn Analysis - Single Unit Truck

HINGHAM STREET
ROCKLAND, MASSACHUSETTS
PREPARED FOR:
ROCKLAND OLD EXIT 14, INC.
1015 HINGHAM STREET
ROCKLAND, MASSACHUSETTS 02370

MDM TRANSPORTATION CONSULTANTS, INC.
PLANNERS & ENGINEERS
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Marlborough, MA 01752
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DATE: March 2022	SCALE: As Noted	
PROJECT No. 1192	File: 1192 Autoturn.dwg	Sheet 1 of 1