
Traffic Impact and Access Study

Proposed Geoffrey Park

***Indian Ridge Road South
Holliston, Massachusetts***

Prepared for
Indian Ridge Realty Trust

July 2020

Prepared by



GREEN INTERNATIONAL AFFILIATES, INC.
TRANSPORTATION | STRUCTURAL | WATER RESOURCES | CIVIL/SITE

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Green International Affiliates, Inc.
239 Littleton Road
Westford, MA 01886
978-923-0400

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1.0 INTRODUCTION AND EXECUTIVE SUMMARY

This report describes the potential traffic impacts on the adjacent roadways and nearby intersections as a result of the proposed 24 lot development located on Indian Ridge Road South in Holliston, Massachusetts. The proposed development covers 12.67 acres and consists of 24 single family homes. Access to the proposed development will be provided via Indian Ridge Road South. The project is approximately 0.10 miles west of Pond Street (Route 126) and 2 miles southeast of Union Street (Route 135). Land use in the surrounding area of the proposed project includes Agricultural, Residential and Industrial. Intersection capacity analyses were completed at the study intersections for the existing, future No-Build, and future Build conditions.

1.1 Future Conditions

The future year analysis horizon year 2027 was chosen based on the current MassDOT analysis guidelines. The evaluation of the future conditions involved comparing No-Build and Build conditions.

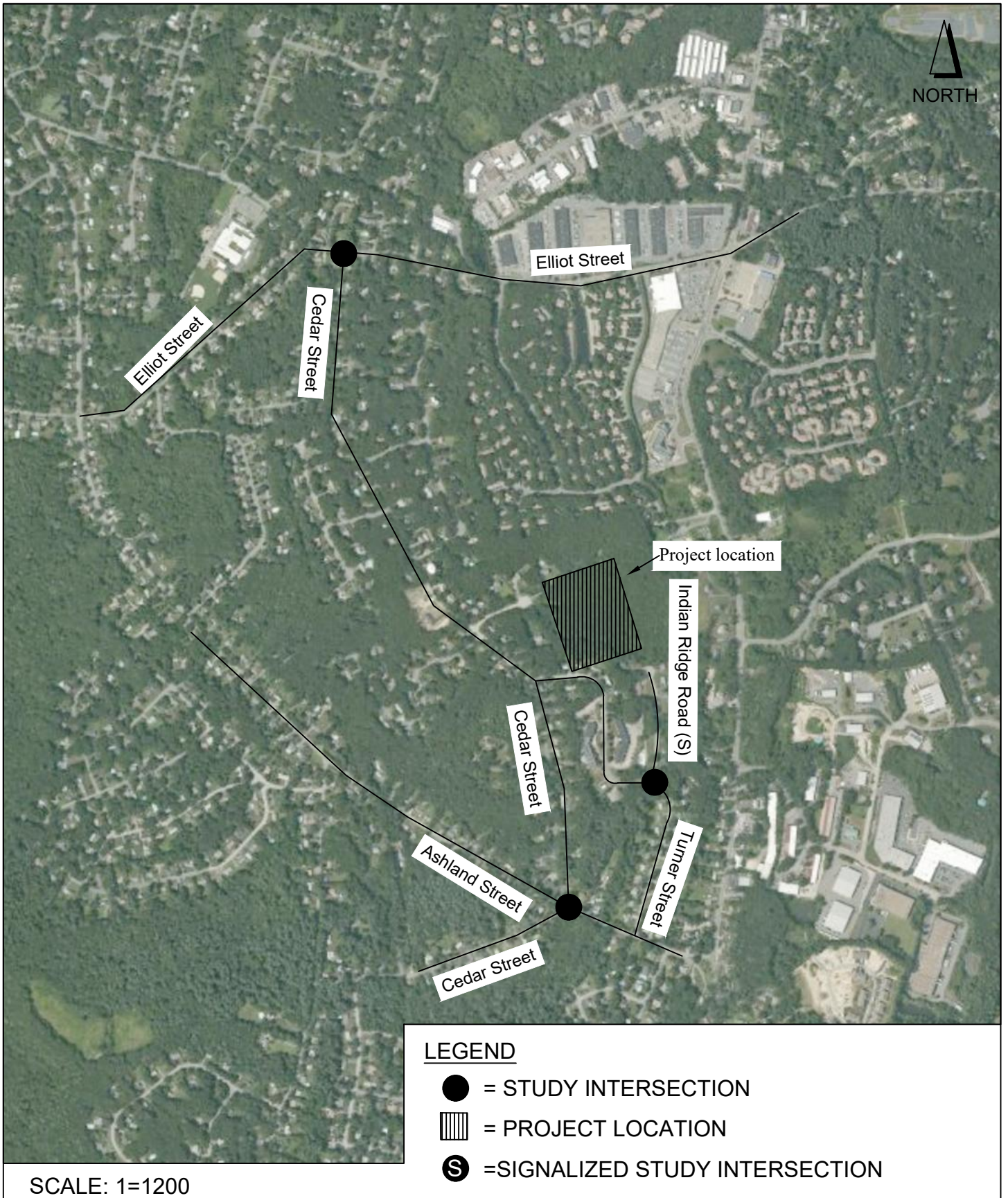
The proposed development project is estimated to generate approximately 230 vehicle trips (entering and exiting) per day with 14 and 9 during the AM and PM peak hours. The trips were distributed across the study area network based on the existing traffic patterns of the area and a review of the census journey to work data.

1.2 Conclusions and Recommendations

- The proposed project is a low generator of trips with a conservative estimate of 18 and 24 vehicular trips during the AM and PM peak hours, and 230 trips through the course of a weekday.
- The three study intersections have crash rates well below the District 5 average of 0.57 for unsignalized intersections. The intersection at Cedar Street and Elliot Street has a crash rate of 0.22. The intersection of Cedar Street and Ashland Street has a crash rate of 0.28. The Indian Ridge Road and Turner Road intersection crash rate is 0.
- The analysis showed that the proposed Indian Ridge Road South site drive, traffic can effectively enter and exit the proposed site. Level of service is expected to be an 'A' during both the weekday morning and afternoon peak hours.
- Safe stopping sight distance at the proposed site drive intersection with Indian Ridge Road South are satisfied.

1.2.1 Recommendations

- Any proposed landscaping should be low enough and/or set back sufficiently as to not create any sight distance constraints at the proposed site drives.
- Roadside vegetation within the right-of-way should be selectively cleared and trimmed to improve sight distance at proposed site drives.
- Appropriate pavement markings and associated STOP bars should be provided at the site access driveways.



2.0 EXISTING TRAFFIC CONDITIONS

The following sections describe the existing transportation system in terms of physical and operational characteristics. The selection of the study area took into account the location and type of project and focused on the evaluation of the roadways and intersections in the vicinity of the site that are anticipated to be most impacted by the proposed commercial development project.

2.1 Study Roadway Network

The study focused on the roadway network in the vicinity of the proposed project with an emphasis on the following 3 intersections:

- Cedar Street at Ashland Street
- Cedar Street at Elliot Street
- Indian Ridge Road South at Turner Street

As part of this study, a field reconnaissance was conducted to verify the physical and geometric layout of the study intersections and roadways and to observe traffic operations in the study area. A description of the study roadways serving the project site is as follows:

2.1.1 Cedar Street

Cedar Street is a town-owned road classified as a local road. The road is connected to Ashland and Elliot Street and runs north-south. Located on the roadway is residential housing and Adventures in Learning pre-school. Cedar Street has a total width of 20 feet and accommodates two-way traffic flow. There is signage posted stating a 30 miles per hour (MPH) speed limit, there are no markings on this roadway. There are no bicycle or pedestrian accommodations along Cedar street.



Cedar Street looking North

2.1.2 Ashland Street

Ashland Street is classified as an urban minor arterial or rural major collector road. This roadway includes residential housing and small businesses. Ashland Street has 11-foot lanes and 2-foot shoulders on both sides. Markings include a double yellow center line and white edge of pavement line. Ashland Street does have a sidewalk on the northside of the road for pedestrian and bicycle use.



Ashland Street looking West

2.1.3 Indian Ridge Road South

Indian Ridge Road is a town owned road classified as a local road. The road is connected to Turner Road and will be the outlet for the proposed development. Located on this road is residential housing. Indian Ridge Road South has a total width of 24 feet and accommodates two-way traffic. The lane configuration for this intersection includes one lane for all movements on each approach. There are no markings on this roadway. Indian Ridge Road South does not have pedestrian or bicycle accommodations.



Indian Ridge Road South looking

2.1.4 Cedar Street at Ashland Street

South of the project site, Cedar Street and Ashland Street meet to form a four-way intersection. Ashland Street forms the east-west legs, Cedar Street forms the north and south legs of the intersection. Markings include a double yellow line along Ashland Street and STOP bars at Cedar Street. The lane configuration for this intersection includes one lane for all movements on each approach. There are pedestrian and bicycle accommodations at this intersection along Ashland street.



Cedar Street at Ashland Street

2.1.5 Cedar Street at Elliot Street

North of the project site, Cedar Street and Elliot Street meet to form a four-way intersection. Cedar street forms the north and south legs, Elliot Street forms the east and west legs of the intersection. The lane configuration for this intersection includes one lane for all movements on each approach. Markings on this road include STOP bars along Cedar Street, single yellow center line along Cedar Street and a double yellow center line along Elliot Street. There is a crosswalk across the north side of Cedar Street at this intersection as well as sidewalks on both side of Elliot Street for pedestrian and bicyclist. The posted speed limit is 30 mph in the southbound direction and 25 mph westbound direction at this intersection.



Cedar Street at Elliot Street

2.1.6 Indian Ridge Road at Turner Street

South of the project site, Indian Ridge Road South and Turner Road meet to form a "T" shape intersection. Indian Ridge Road South forms the north leg, Turner Road forms the east and west legs of this intersection. The lane configuration for this intersection includes one lane for all movements on each approach. There are no pedestrian or bicycle accommodations at this intersection. There are no markings along Indian Ridge Road South or Turner Road.



Indian Ridge Road South at Turner

2.2 Traffic Volumes

As part of this study, traffic volume data were obtained and used to form the basis of the traffic analysis. The data was collected during the weekday peak periods (7:00-9:00 AM and 4:00-6:00 PM) including manual turning movement counts (TMC) at the study intersections. The TMC data were collected on Wednesday July 8, 2020. The count program also included 48-hour counts on Cedar Street north of Indian Ridge Road using Automatic Traffic Recorders (ATR) conducted from July 8th to July 9th, 2020. The complete TMC and ATR count data collected as part of this study are included in Appendix.

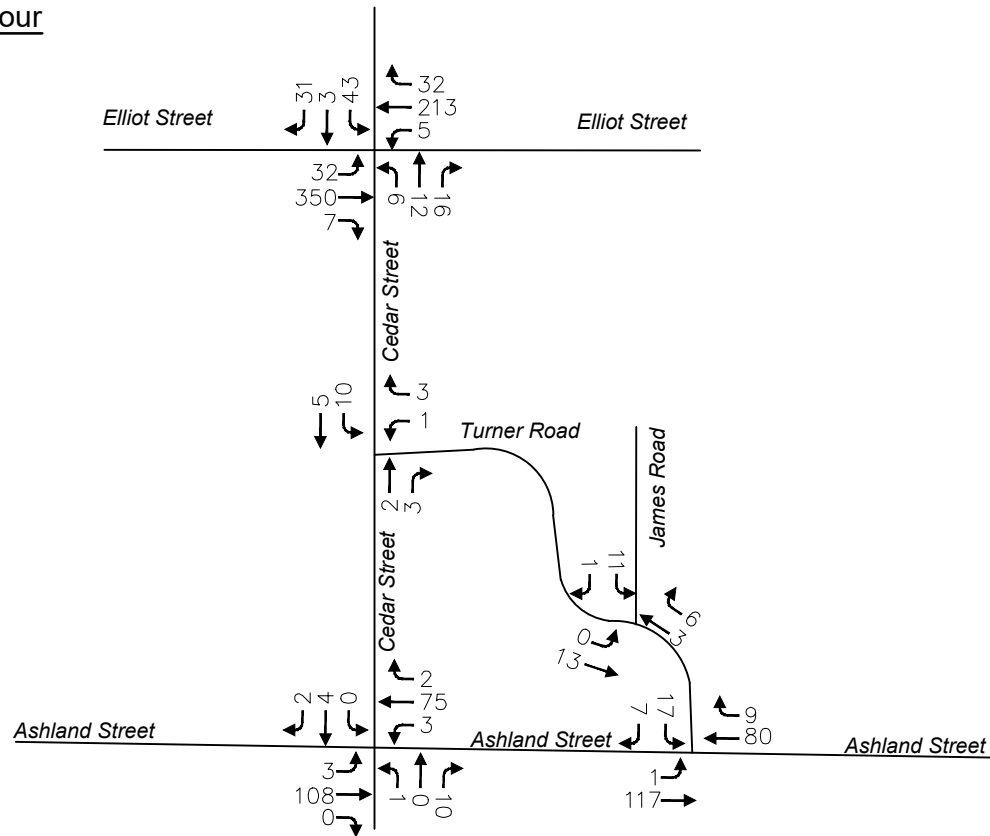
Table 1 summarizes the 2020 ATR data that were collected as part of this study. As indicated, the weekday average daily traffic (ADT) volumes on Cedar Street was approximately 2,804 vehicles per day (vpd). On Cedar Street the peak hour traffic volumes represent approximately 5% of daily traffic in the morning peak hour and 10% in the afternoon peak hour. During the morning peak hour approximately 56% of traffic on Cedar Street travels northbound. During the afternoon peak hour approximately 73% of traffic travels in the southbound direction. These high directional splits are indicative of the study roadways lying within the predominantly residential neighborhoods, where traffic patterns during the peak hours would be predominantly commuter traffic.

To develop the estimated average or typical volume conditions for analysis purposes, a review of permanent traffic count station data maintained by the Massachusetts Department of Transportation (MassDOT) was completed. Data from the MassDOT permanent count stations 725 (on Interstate 495) and 6090 (on Interstate 95) were used to determine seasonal variation of one (1.13%) percent. The statewide seasonal variation adjustment for an urban minor arterial road or street in July is one (.95%) percent. Zero percent (0%) was used for the seasonal adjustment factor since the roadway was already experiencing higher than average seasonal variation. Figure 2 illustrates the seasonally adjusted 2020 existing weekday morning and afternoon peak hour traffic volumes.

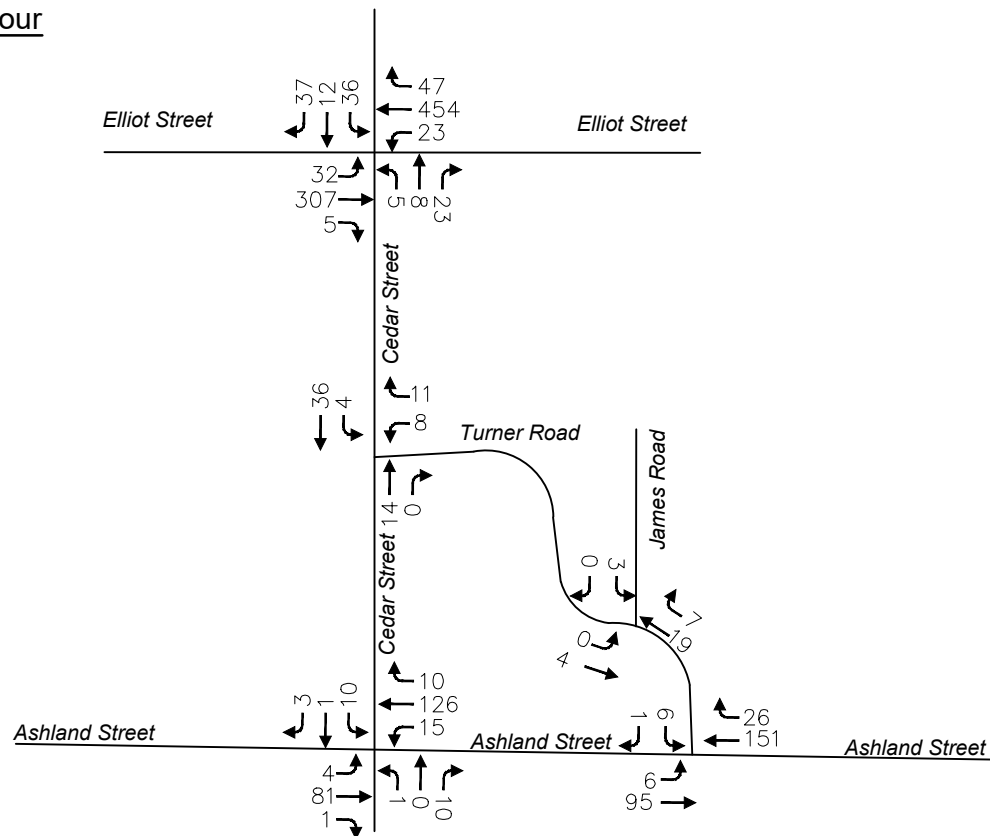
Table 1 – Summary of Cedar Street Traffic Volumes

	Weekday Average	AM Peak Hour	PM Peak Hour
Time Period	Daily	10:30-11:30	4:30-5:30
Traffic Volume	2,804	140	284
K-Factor	-	5.1%	10.4%
Directional Distribution	55.3% SB	56.1% NB	73.5% SB
Average Speed	24 MPH NB / 28 MPH SB		
85th % Speed	30 MPH NB / 33 MPH SB		
<u>Abbreviations:</u> vpd = volume per day vph = volume per hour EB = Eastbound WB = Westbound	<u>Notes:</u> K-Factor = Percent of daily traffic that occurs during the peak hour 85th % Speed = 85th percentile speed Volumes are rounded, based on ATR data (July 8-9), unadjusted		

Weekday AM Peak Hour



Weekday PM Peak Hour



2.3 Crash Experience

Recent crash history for the study intersections for the most recent three-year period available (2017-2019) were reviewed as part of this study. Crash data presented in this report were obtained from the MassDOT Crash Record System (CRS). As part of this safety review, the “crash rate”, measured in crashes per million entering vehicles (MEV) for the study intersection, was also determined. The standard MassDOT Crash Rate Worksheet was used to determine the crash rate at the study intersection. The calculation of the crash rate relates the number of accidents at a location to the amount of traffic that passes through the location. It is a more comprehensive measure for identifying potentially hazardous locations compared to simple averages as it takes into account volume, although crash rates can skew higher due to low volumes. The calculated rate is compared to the MassDOT District -wide averages. Intersections experiencing crash rates greater than the above averages are potentially experiencing an unusually high number or higher than expected number of crashes relative to traffic volumes at that particular location and may warrant further investigation or improvements. MassDOT District 5, which includes the Geoffrey Park, has an average crash rate of 0.75 and 0.57 crashes per MEV for signalized and unsignalized intersections, respectively.

Table 2 provides a summary of the crash history at the study intersections. The following summarizes the key aspects of the review:

- There was three (3) reported crashes at the intersection of Cedar Street and Elliot Street, one (1) reported crash at the intersection of Cedar Street and Ashland Street and no crashes were reported at the intersection of Indian Ridge Road and Turner Street.
- There was an even number of angle and single vehicle crashes, 50% of the crashes were angle and 50% were single vehicle.
- 50% of the reported crashes at the study intersections occurred during daylight, 50% of reported crashes occurred in dark conditions with street lighting.
- The unsignalized intersection at Cedar Street and Elliot Street has a crash rate of 0.22 MEV (3 crashes), well below the 0.57 MEV average rate for District 5.
- The unsignalized intersection at Cedar Street and Ashland Street has a crash rate of 0.28 MEV (1 crash), well below the 0.57 MEV average rate for District 5.
- The unsignalized intersection at Indian Ridge Road and Turner Road has a crash rate of 0 MEV (0 crashes), well below the 0.57 MEV average rate for District 5.

Table 2 – Summary of Reported Crash Data

	Cedar Street at Ashland Street			Cedar Street at Elliot Street			Indian Ridge Road (S) at Turner Road		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Severity									
Property Damage	1				1	2			
Injury									
Fatality									
No Injury									
Unknown									
Collision Type									
Rear End									
Angle						2			
Side Swipe									
Head On									
Single Vehicle	1				1				
Time of Day									
6:01 AM – 10:00 AM						1			
10:01 AM – 4:00 PM						1			
4:01 PM – 7:00 PM									
7:01 PM – 6:00 AM	1				1				
Roadway Conditions									
Dry	1					2			
Wet									
Snow/Ice					1				
Other/Unknown									
Season									
Dec-Feb						1			
Mar-May	1				1	1			
June-Aug									
Sept-Nov									
Light Conditions									
Daylight						2			
Dawn/Dusk									
Dark (Unlit)									
Dark (Lit)	1				1				
Unknown									
Totals	1	0	0	0	1	2	0	0	0
Annual Ave. Crashes	0.33			1.00			0.00		
Intersection Crash Rate	0.28			0.22			0		
MassDOT District 3 Average Crash Rate	0.57			0.57			0.57		

2.4 Public Transportation Network

As part of the inventory, the presence of nearby public transit systems was identified to better understand the potential interaction among multiple modes of travel as well as the impact that commuters driving from/to transit stations will have on the roadway network.

Holliston is part of the MetroWest Regional Transit Authority that offers transportation to senior citizens during the week. This system is door-to-door for medical appointments and local errands.

3.0 PROBABLE IMPACTS OF THE PROJECT

The impact of the proposed residential development project on the roadway network within the study area was evaluated and the results are described in this section. This study used the year 2027 for the future analysis year, which represents a seven-year permitting and build-out timeframe from the present condition and is consistent with current MassDOT guidelines for traffic studies.

3.1 No-Build Traffic Volumes

A year 2027 No-Build traffic volume network was developed by identifying potential area-wide background traffic volume growth and known specific nearby development projects that could contribute to traffic flow on the 2027 study network.

3.1.1 Background Traffic Growth

Traffic growth and historical traffic count trends for the project's analysis area have been reviewed. Based upon a review of local count stations and other recently completed studies for projects in the Holliston area, an annual growth rate of one percent (1%) per year for seven years was used to forecast future roadway volumes. The count station used was MassDOT Permanent Count Station 254037 (on central Street south of cross street) and station RPA05-039-1524 (on school street at Shrewsbury). These rates would presumably account for some of the more remote growth in the region as well as potential nearby smaller residential and business growth that could result in added traffic through the study area. The count station data can be found in the Appendix.

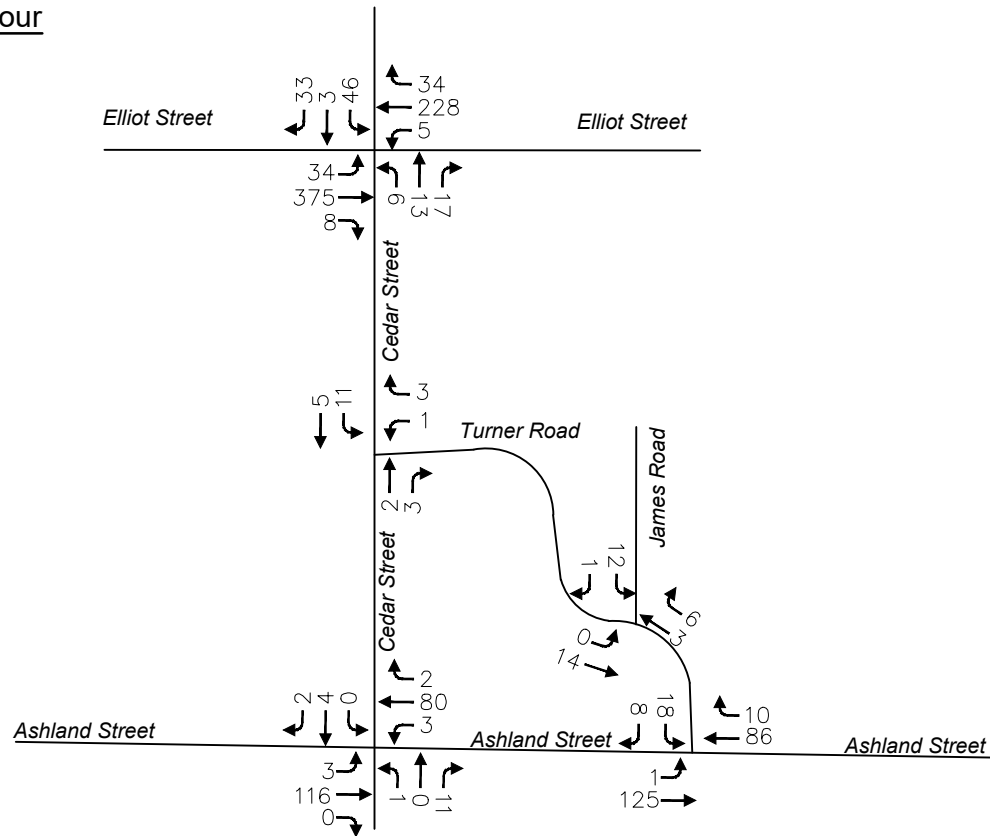
3.1.2 Specific Development Projects

In addition to the application of general background growth rate, traffic generated by other specific development projects was also taken into consideration. Through contact with the town of Holliston, Green International Affiliates, Inc. (Green) was notified that there were no new developments being planned besides Geoffrey Park.

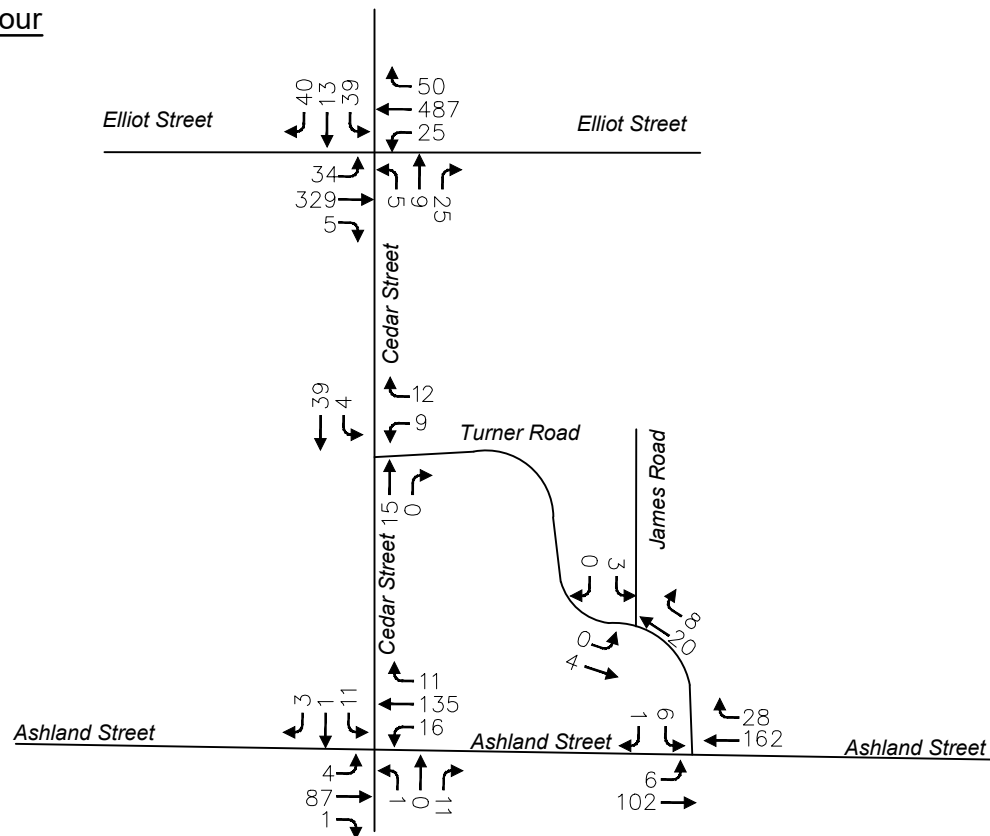
3.1.3 No-Build Traffic Volumes

Based on the above noted research, the year 2027 No-Build peak hour traffic volume projections were developed by adding seven (7) years' background traffic growth of one percent (1%) annually plus the volumes projected to result from the proposed Geoffrey Park development to the existing traffic volumes in the study area. The projected year 2027 No-Build traffic volumes projected for the weekday morning and weekday afternoon and are shown in Figure 3.

Weekday AM Peak Hour



Weekday PM Peak Hour



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Figure 3
2027 No-Build Traffic Volumes
GEOFFERY PARK
HOLLISTON, MA

3.2 Proposed Project Description

The proposed residential development evaluated in this study is located in Holliston, Massachusetts along Indian Ridge Road South. The project consists of 24 single-family homes spanning from 0.23 to 1.4 acres. Access to the housing is provided via the site driveway at Indian Ridge Road South. The surrounding area of the proposed development is Agricultural, Residential and Industrial.

3.3 Site Generated Traffic Volumes

In this section, the traffic forecasts related to the development project are described. An estimate of traffic to be generated by the Geoffrey Park project was completed and assigned to roadways/intersections within the study area to develop the Build traffic condition, based upon the year 2027 No-Build traffic volume network.

3.3.1 Site Trip Generation

In order to estimate the number of trips that could be generated by the proposed development, statistics published by the Institute of Transportation Engineers (ITE) in Trip Generation Manual¹ for similar land uses were examined. The ITE trip generation statistics represent compilations of data from studies/projects throughout the United States collected over the past 40+ years on trip generation characteristics for different types of land uses. The data have been compiled to provide transportation analysts with guidelines in forecasting daily and peak hour volumes for the specified use. The ITE report is based on observations of actual developments located in both general urban / suburban and dense multi-use urban setting. Based on a review of the ITE database, Land Use Code (LUC) 210 – Single-Family Detached Housing has been selected as the most similar to the project type.

Table 3 – Summary of Estimated Site Trip Generation

Land Use	Weekday						Daily
	AM Peak Hour			PM Peak Hour			
	Enter	Exit	Total	Enter	Exit	Total	
Single Family Dethatched Housing (24 units)	4	14	18	15	9	24	230

As seen in Table 3, the proposed project of 24 single family homes are expected to generate a total of approximately 230 net new vehicle trips over the course of an average weekday including 115 entering trips and 115 exiting trips. The weekday morning peak hour is estimated to generate approximately 18 new trips with 4 trips entering and 14 trips exiting the project site. The weekday afternoon peak hour is expected to generate approximately 24 new vehicles trips with 15 trips entering and 9 exiting the project site.

3.3.2 Site Trip Distribution/Assignment

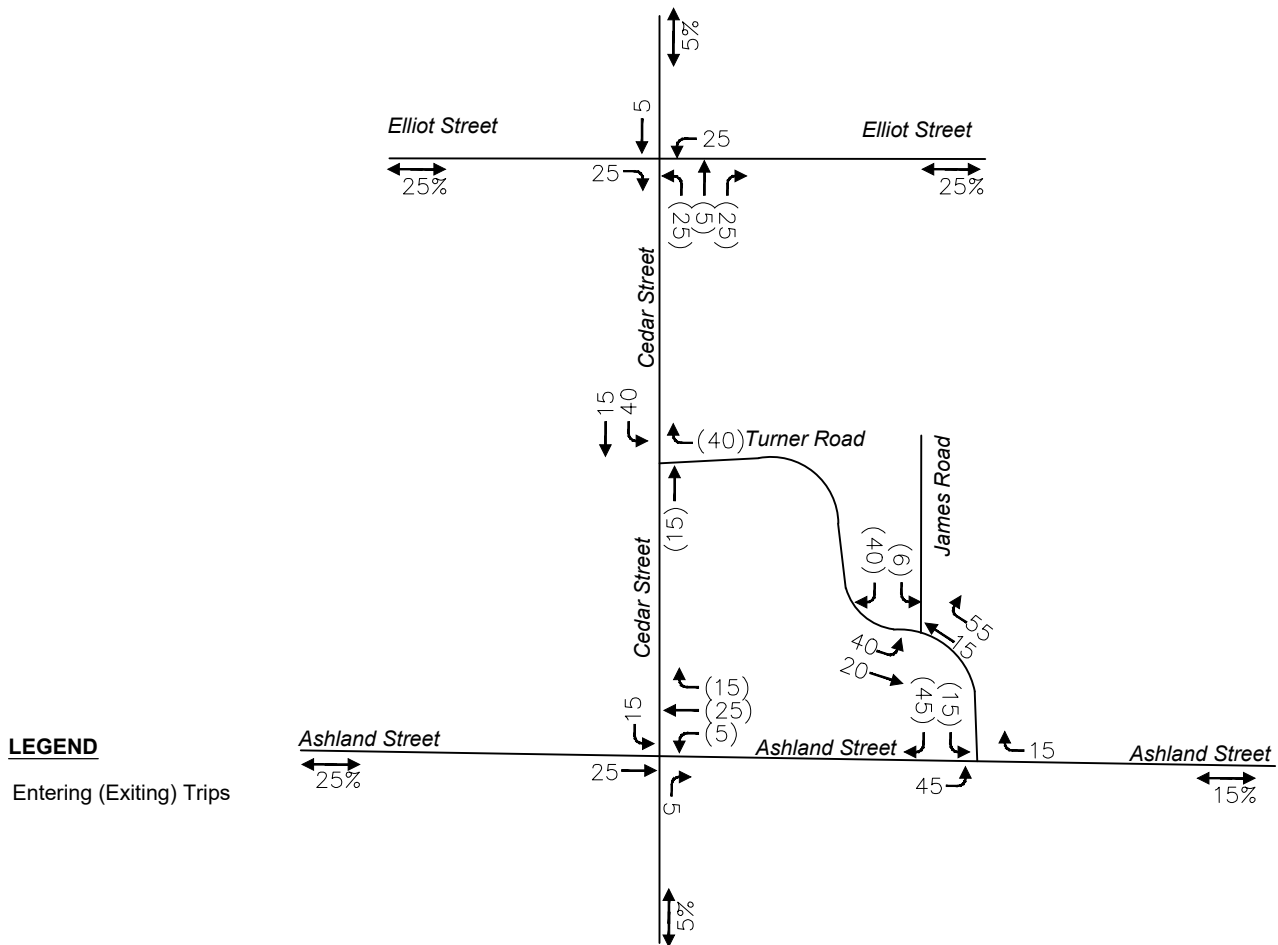
The project trips are assigned to the site driveway and study area roadways based on census journey to work data as well as the existing travel patterns in the area. The vehicle trips generated by the proposed development were than distributed onto the roadway network to develop future build peak hour volumes.

¹ Institute of Transportation Engineers, *Trip Generation Manual*, 10th Edition, Washington, D.C., September 2017.

Figure 4 shows the trip distribution percentages within the study area. The census data is included in the appendix.

3.3.3 Build Traffic Volumes

The vehicle-trips estimated for the proposed development were assigned to the study intersections using the trip distribution percentages described above. Figure 5 shows the additional traffic during the weekday AM and PM peak hours expected to be generated by the proposed development. The No-Build traffic volumes were added to the projected trips in order to establish 2027 Build condition traffic volumes networks. Figure 6 presents the Build traffic volumes for the weekday AM and PM peak hours.



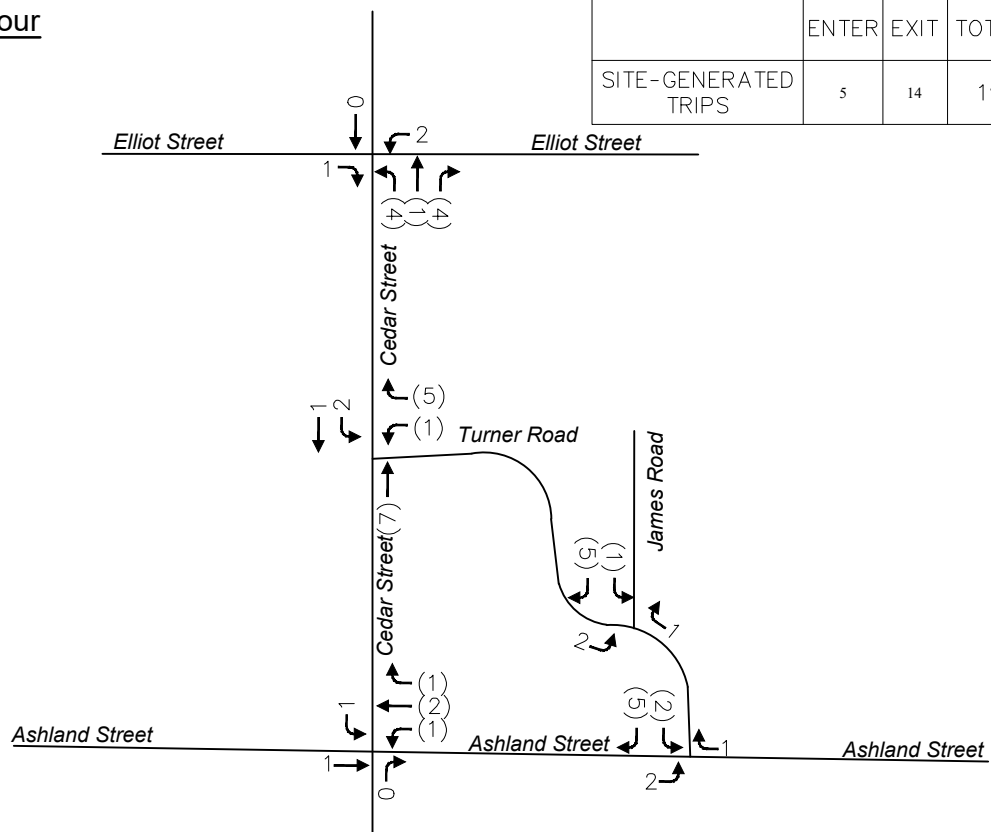
Weekday AM Peak Hour

	ENTER	EXIT	TOTAL
SITE-GENERATED TRIPS	5	14	19



LEGEND

Entering (Exiting) Trips



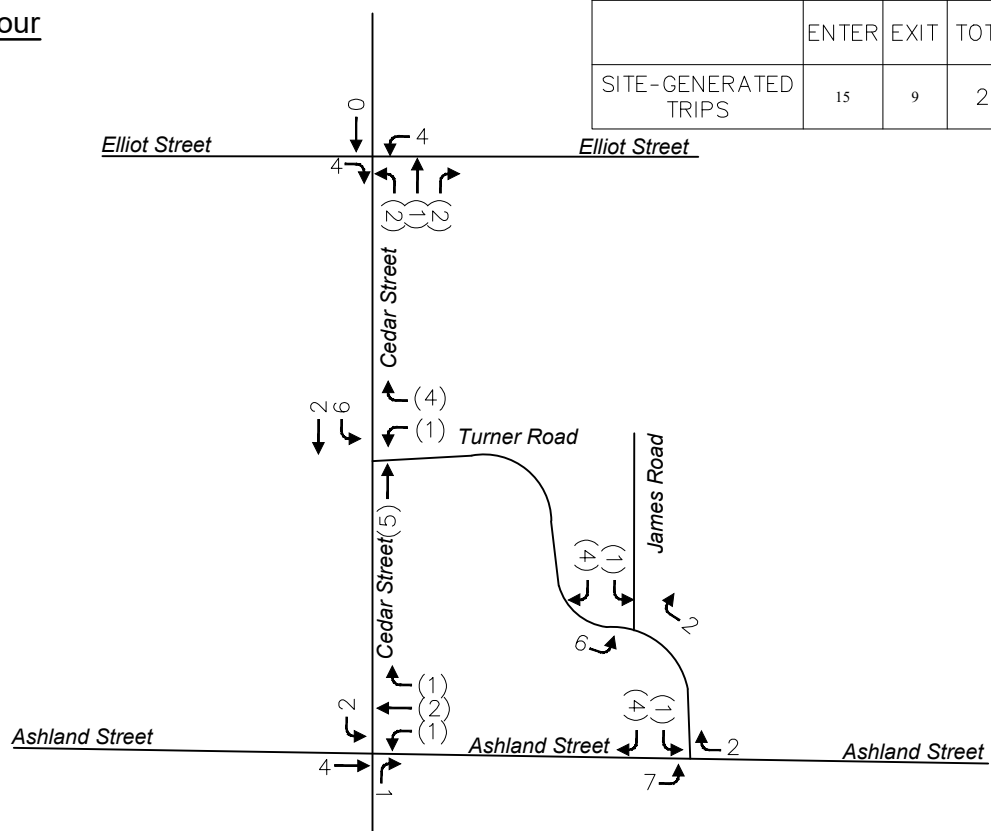
Weekday PM Peak Hour

	ENTER	EXIT	TOTAL
SITE-GENERATED TRIPS	15	9	24

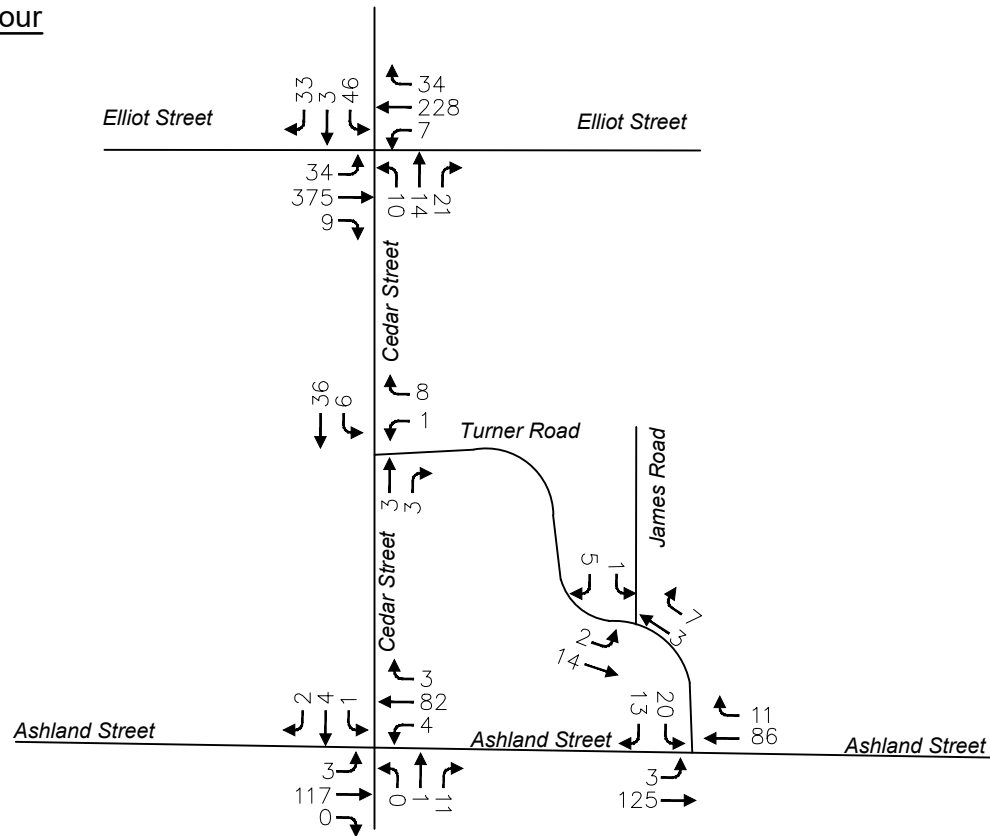


LEGEND

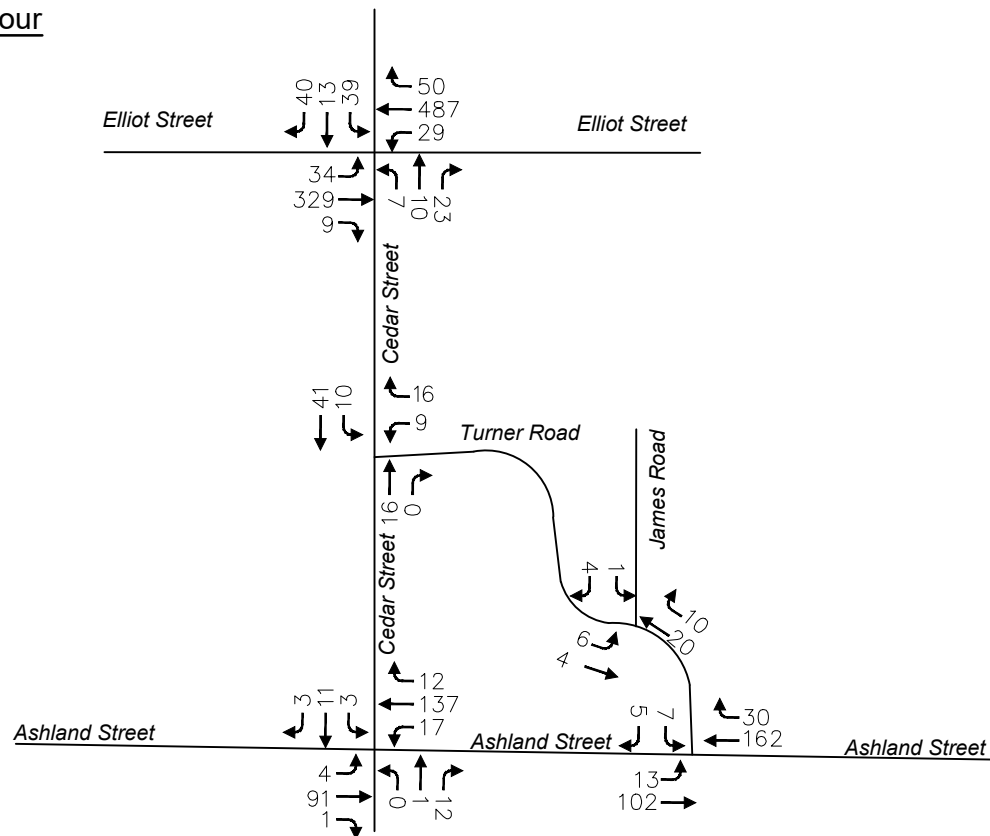
Entering (Exiting) Trips



Weekday AM Peak Hour



Weekday PM Peak Hour



4.0 ANALYSIS

Previous sections of this report described the current conditions of the study intersections and the development of the 2027 No-Build and 2027 Build traffic volume networks, including the site-generated trip forecasts. Included in this section is an examination of the volume changes, intersection capacity analyses for the study intersections and an analysis of available sight distances at the proposed site driveway.

4.1.1 Intersection Capacity Analysis

The study intersections were examined with regard to flow rates, capacity and delay characteristics to determine the Level of Service (LOS), using the methodology defined in the Highway Capacity Manual (HCM)² for the existing and future (No-Build and Build) traffic conditions. Level of Service is an indicator of operating conditions which occur on a given roadway feature while accommodating varying levels of traffic volumes. It is a qualitative measure that accounts for a number of operational factors including roadway geometry, speed, traffic composition, peak hour factors, travel delay, freedom to maneuver and driver expectation. When all of these measures are assessed, and a Level of Service is assigned to a roadway or intersection, it is equivalent to presenting an “index” to the operational qualities of the section under study. Level of Service is classified into six levels that are designated ‘A’ through ‘F’ based on the control delay ranges they fall under. Additionally, a movement with a volume-to-capacity (v/c) ratio of over 1.00 also has a LOS of ‘F’, regardless of delay. These are presented in Table 4 for both signalized and unsignalized intersections.

In practice, any given roadway/intersection may operate at a wide LOS range depending upon time of day, day of week or period of year. It should be noted that for unsignalized intersections, the LOS is not computed for the intersection as a whole. Instead, the level of service is determined by the computed or measured control delay for each individual critical movement (typically the side street movements).

Table 4 – Level of Service Criteria for Unsignalized and Signalized Intersections

LOS	Unsignalized Intersection (S)	Signalized Intersection (S)
A	≤10	≤10
B	>10 and ≤15	>10 and ≤20
C	>15 and ≤25	>20 and ≤35
D	>25 and ≤35	>35 and ≤55
E	>35 and ≤50	>55 and ≤80
F	>50 or v/c ≥1.00	>80 or v/c ≥1.00
Abbreviations: S = Seconds, v/c = Volume-to-Capacity Ratio, LOS = Level of Service		

The study intersections were evaluated using the Synchro 10 computer software to complete the analysis for the unsignalized study intersection. Using existing roadway features and the intersection controls, traffic operations at the study intersection were evaluated for existing as well as predicted 2027 conditions. Analysis results are presented in Tables 5, and 6 for the weekday AM and weekday PM at the study intersections, respectively.

² Transportation Research Board, of the National Academies, Highway Capacity Manual 6th Edition, Washington, D.C., 2017.

The Level of Service analysis indicated the following:

- The proposed development project does not result in significant changes from the 2027 No-Build Condition and the 2027 Build condition for all approaches at the study intersections.
- The analysis below indicates that traffic entering and exiting Geoffrey Park will experience short delays at the driveway located on Indian Ridge Road South.

Table 5 – Summary of Level of Service Analysis Period: Weekday AM Peak Hour

	2020 Existing Conditions				2027 No-Build Conditions				2027 Build Conditions			
	Delay (S)	LOS	V/C	95th Q (FT)	Delay (S)	LOS	V/C	95th Q (FT)	Delay (S)	LOS	V/C	95th Q (FT)
Cedar Street at Elliot Street												
EB L	8	A	0	0.1	8	A	0	0.1	8	A	0	0.1
WBL	8	A	0	0	8	A	0	0	8	A	0	0
Indian Ridge Road South at Turner Street												
EB L	0	A	0	0	0	A	0	0	7	A	0	0
SB L	9	A	0	0	9	A	0	0	8	A	0	0
Ashland Street at Cedar Street												
NB L	9	A	0	0	9	A	0	0	9	A	0	0
EB L	7	A	0	0	7	A	0	0	7	A	0	0
Ashland Street at Turner Road												
EB L	7	A	0	0	7	A	0	0	7	A	0	0
SB L	9	A	0	0.1	9	A	0	0.1	9	A	0	0.1
Abbreviations: EB = Eastbound L = Left S = Seconds WB = Westbound T = Through FT = Feet NB = Northbound R = Right LOS = Level of Service SB = Southbound v/c = Volume-to-Capacity Ratio												
Notes: Delay = Average delay per vehicle (measured in seconds) 50th Q = 50th percentile queue length (measured in feet), assumes 25 feet per vehicle 95th Q = 95th percentile queue length (measured in feet), assumes 25 feet per vehicle												

Table 6 – Summary of Level of Service Analysis Period: Weekday PM Peak Hour

	2020 Existing Conditions				2027 No-Build Conditions				2027 Build Conditions			
	Delay (S)	LOS	V/C	95th Q (FT)	Delay (S)	LOS	V/C	95th Q (FT)	Delay (S)	LOS	V/C	95th Q (FT)
Cedar Street at Elliot Street												
EB L	9	A	0	0.1	9	A	0	0.1	9	A	0	0
WBL	8	A	0	0.1	8	A	0	0.1	8	A	0	0.1
Indian Ridge Road South at Turner Street												
EB L	0	A	0	0	0	A	0	-	7	A	0	0
SB L	9	A	0	0	9	A	0	0	9	A	0	0
Ashland Street at Cedar Street												
NB L	9	A	0	0	9	A	0	0	9	A	0	0
EB L	8	A	0	0	8	A	0	0	8	A	0	0
Ashland Street at Turner Road												
EB L	8	A	0	0	8	A	0	0	8	A	0	0
SB L	10	A	0	0	10	A	0	0	10	A	0	0
Abbreviations: EB = Eastbound L = Left S = Seconds WB = Westbound T = Through FT = Feet NB = Northbound R = Right LOS = Level of Service SB = Southbound v/c = Volume-to-Capacity Ratio												
Notes: Delay = Average delay per vehicle (measured in seconds) 50th Q = 50th percentile queue length (measured in feet), assumes 25 feet per vehicle 95th Q = 95th percentile queue length (measured in feet), assumes 25 feet per vehicle												

4.1.2 Sight Distance Analysis

Adequate sight distance is an important safety consideration at intersections and driveways. Sight distances were reviewed at Geoffrey Park site drive location. Stopping sight distance (SSD) is the distance required for an approaching driver (with an eye height of 3.5 feet) to perceive and stop in time to avoid a collision with an object 2 feet high in the roadway. The values are based on a perception and reaction time of 2.5 seconds and braking distance required under wet, level pavements. Corner or intersection sight distance (ISD) is based upon the time required to perceive, react, and complete a desired exiting maneuver from a driveway once the driver decides to execute the maneuver. Adjustments for the grade of the roadway are applied to both SSD and ISD.

Values for ISD represent the time to (1) turn left or right, in addition to accelerating to the operating speed of the roadway, without causing approaching vehicles to reduce speed to less than 70 percent of their initial speed, and (2) upon turning left, to clear the near half of the intersection without conflicting with the vehicles approaching from the left. ISD is more related to operations and to some degree, the convenience or inconvenience of oncoming motorists. The minimum criteria are defined by the American Association of

State and Highway and Transportation Officials (AASHTO)³. SSD relates specifically to safety. As indicated by AASHTO, if the available ISD meets or exceeds the minimum SSD criteria, then there is adequate safe sight distance available for motorists to avoid collisions. A criterion for calculating minimum required sight distances can be established based on operating speed, the speed at or under which most motorists (85th-percentile) actually travel along a particular portion of roadway.

The posted speed along Cedar Street is 25mph, however travel speeds of 30mph were measured in the field. Both values were used in the sight distance analysis for the proposed site driveway intersection with Turner Road. As indicated in Table 7, the available SSD and ISD for the site drive along Indian Ridge Road does meet the minimum sight distance in both directions as well as the desirable sight distance from the west. The site distance to the east is limited by foliage across from the Indian Ridge Road South approach, however as the minimum sight distance is met this should not pose any safety issues.

Table 7 – Summary of Sight Distance Analysis

Location	Sight Distance				
	Available	Posted Speed Limit (25 mph)		85th %-ile Speed (30 mph)	
	Measured (ft)	Minimum Required (ft)	Desirable (ft)	Minimum Required (ft)	Desirable (ft)
Stopping Sight Distance					
Indian Ridge Road (South) approaching from West	350	155	-	200	-
Indian Ridge Road (South) approaching from East	200	155	-	200	-
Intersection Sight Distance					
Indian Ridge Road (South) approaching from West	360	155	280	200	335
Indian Ridge Road (South) approaching from East	205	150	280	200	335

³ American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets, (Green Book) Washington, D.C., 2011.

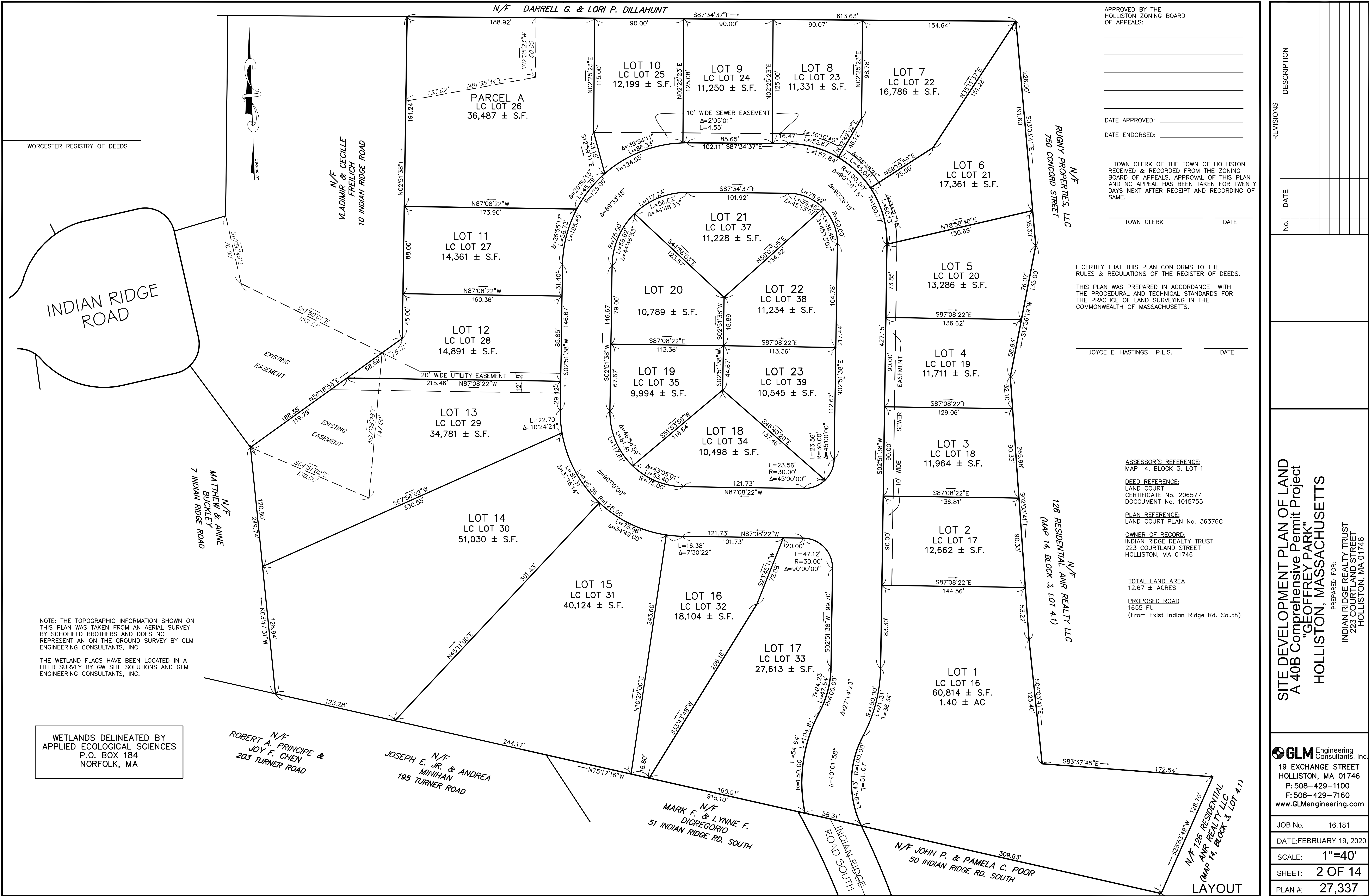
5.0 CONCLUSIONS AND RECOMMENDATIONS

- The proposed project is a low generator of trips with a conservative estimate of 18 and 24 vehicular trips during the AM and PM peak hours, and 230 trips through the course of a weekday.
- The three study intersections have crash rates well below the District 5 0.57 for unsignalized intersections. The intersection at Cedar Street and Elliot Street has a crash rate of 0.22. The intersection of Cedar Street and Ashland Street has a crash rate of 0.28. The Indian Ridge Road and Turner Road intersection crash rate is 0.
- The analysis showed that the proposed Indian Ridge Road South site drive, traffic can effectively enter and exit the proposed site. Level of service is expected to be an 'A' during both the weekday morning and afternoon peak hours.
- Safe stopping sight distance at the proposed site drive intersection with Indian Ridge Road South are satisfied.

5.1.1 Recommendations

- Any proposed landscaping should be low enough and/or set back sufficiently as to not create any sight distance constraints at the proposed site drives.
- Roadside vegetation within the right-of-way should be selectively cleared and trimmed to improve sight distance at proposed site drives.
- Appropriate pavement markings and associated STOP bars should be provided at the site access driveways.

PROPOSED SITE PLAN



APPROVED BY THE
HOLLISTON ZONING BOARD
OF APPEALS:

DATE APPROVED: _____

DATE ENDORSED: _____

I TOWN CLERK OF THE TOWN OF HOLLISTON
RECEIVED & RECORDED FROM THE ZONING
BOARD OF APPEALS, APPROVAL OF THIS PLAN
AND NO APPEAL HAS BEEN TAKEN FOR TWENTY
DAYS NEXT AFTER RECEIPT AND RECORDING OF
SAME.

TOWN CLERK

DATE

I CERTIFY THAT THIS PLAN CONFORMS TO THE
RULES & REGULATIONS OF THE REGISTER OF DEEDS.

THIS PLAN WAS PREPARED IN ACCORDANCE WITH
THE PROCEDURAL AND TECHNICAL STANDARDS FOR
THE PRACTICE OF LAND SURVEYING IN THE
COMMONWEALTH OF MASSACHUSETTS.

JOYCE E. HASTINGS P.L.S.

DATE

ASSESSOR'S REFERENCE:
MAP 14, BLOCK 3, LOT 1

DEED REFERENCE:
LAND COURT
CERTIFICATE No. 206577
DOCUMENT No. 1015755

PLAN REFERENCE:
LAND COURT PLAN No. 36376C

OWNER OF RECORD:
INDIAN RIDGE REALTY TRUST
223 COURTLAND STREET
HOLLISTON, MA 01746

TOTAL LAND AREA
12.67 ± ACRES

PROPOSED ROAD
1655 Ft.
(From Exist Indian Ridge Rd. South)

SITE DEVELOPMENT PLAN OF LAND
A 40B Comprehensive Permit Project
"GEOFFREY PARK"
HOLLISTON, MASSACHUSETTS

PREPARED FOR:
INDIAN RIDGE REALTY TRUST
223 COURTLAND STREET
HOLLISTON, MA 01746

GLM Engineering
Consultants, Inc.
19 EXCHANGE STREET
HOLLISTON, MA 01746
P: 508-429-1100
F: 508-429-7160
www.GLMengineering.com

JOB No. 16,181

DATE: FEBRUARY 19, 2020

SCALE: 1"=40'

SHEET: 2 OF 14

PLAN #: 27,337



TRAFFIC VOLUME DATA



PDI File #: **207558 A**
 Location: **N: James Road**
 Location: **E: Turner Road W: Turner Road**
 City, State: **Holliston, MA**
 Client: **Green Int'l/G.Clayboss**
 Site Code: **tbd**
 Count Date: **Wednesday, July 1, 2020**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



Cars and Heavy Vehicles (Combined)

	James Road				Turner Road				Turner Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:00 AM	0	2	0	2	0	2	0	2	6	0	0	6	10
7:15 AM	0	1	0	1	0	2	0	2	4	0	0	4	7
7:30 AM	1	0	0	1	2	0	1	3	3	0	0	3	7
7:45 AM	0	2	0	2	1	0	0	1	0	0	0	0	3
Total	1	5	0	6	3	4	1	8	13	0	0	13	27
8:00 AM	0	3	0	3	0	2	0	2	3	0	0	3	8
8:15 AM	0	1	0	1	1	0	0	1	4	0	0	4	6
8:30 AM	1	5	0	6	0	1	0	1	2	0	0	2	9
8:45 AM	0	2	0	2	5	0	0	5	4	0	0	4	11
Total	1	11	0	12	6	3	0	9	13	0	0	13	34
Grand Total	2	16	0	18	9	7	1	17	26	0	0	26	61
Approach %	11.1	88.9	0.0		52.9	41.2	5.9		100.0	0.0	0.0		
Total %	3.3	26.2	0.0	29.5	14.8	11.5	1.6	27.9	42.6	0.0	0.0	42.6	
Exiting Leg Total	9				43				9				61
Cars	2	15	0	17	9	6	1	16	24	0	0	24	57
% Cars	100.0	93.8	0.0	94.4	100.0	85.7	100.0	94.1	92.3	0.0	0.0	92.3	93.4
Exiting Leg Total	9				40				8				57
Heavy Vehicles	0	1	0	1	0	1	0	1	2	0	0	2	4
% Heavy Vehicles	0.0	6.3	0.0	5.6	0.0	14.3	0.0	5.9	7.7	0.0	0.0	7.7	6.6
Exiting Leg Total	0				3				1				4

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	James Road					Turner Road				Turner Road				Total	
	from North					from East				from West					
	Right	Left	U-Turn	Total		Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total		
8:00 AM	0	3	0	3		0	2	0	2	3	0	0	3	8	
8:15 AM	0	1	0	1		1	0	0	1	4	0	0	4	6	
8:30 AM	1	5	0	6		0	1	0	1	2	0	0	2	9	
8:45 AM	0	2	0	2		5	0	0	5	4	0	0	4	11	
Total Volume	1	11	0	12		6	3	0	9	13	0	0	13	34	
% Approach Total	8.3	91.7	0.0			66.7	33.3	0.0		100.0	0.0	0.0			
PHF	0.250	0.550	0.000	0.500		0.300	0.375	0.000	0.450	0.813	0.000	0.000	0.813	0.773	
Cars	1	10	0	11		6	2	0	8	12	0	0	12	31	
Cars %	100.0	90.9	0.0	91.7		100.0	66.7	0.0	88.9	92.3	0.0	0.0	92.3	91.2	
Heavy Vehicles	0	1	0	1		0	1	0	1	1	0	0	1	3	
Heavy Vehicles %	0.0	9.1	0.0	8.3		0.0	33.3	0.0	11.1	7.7	0.0	0.0	7.7	8.8	
Cars Enter Leg	1	10	0	11		6	2	0	8	12	0	0	12	31	
Heavy Enter Leg	0	1	0	1		0	1	0	1	1	0	0	1	3	
Total Entering Leg	1	11	0	12		6	3	0	9	13	0	0	13	34	
Cars Exiting Leg						6								3	31
Heavy Exiting Leg						0								1	3
Total Exiting Leg						6								4	34

PDI File #: **207558 A**
 Location: **N: James Road**
 Location: **E: Turner Road W: Turner Road**
 City, State: **Holliston, MA**
 Client: **Green Int'l/G.Clayboss**
 Site Code: **tbd**
 Count Date: **Wednesday, July 1, 2020**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**



Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	James Road				Turner Road				Turner Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	1	1
8:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	1	0	1	0	0	0	0	1	0	0	1	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	1	0	1	1	0	0	1	3
Grand Total	0	1	0	1	0	1	0	1	2	0	0	2	4
Approach %	0.0	100.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	0.0	25.0	0.0	25.0	0.0	25.0	0.0	25.0	50.0	0.0	0.0	50.0	
Exiting Leg Total	0				3				1				4
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total	0				0				0				0
Single-Unit Trucks	0	0	0	0	0	1	0	1	1	0	0	1	2
% Single-Unit	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	50.0	0.0	0.0	50.0	50.0
Exiting Leg Total	0				1				1				2
Articulated Trucks	0	1	0	1	0	0	0	0	1	0	0	1	2
% Articulated	0.0	100.0	0.0	100.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	50.0
Exiting Leg Total	0				2				0				2

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	James Road				Turner Road				Turner Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	1	0	1	0	0	0	0	1	0	0	1	2
Total Volume	0	1	0	1	0	1	0	1	1	0	0	1	3
% Approach Total	0.0	100.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.250	0.000	0.250	0.000	0.250	0.250	0.000	0.000	0.250	0.375
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	0	0	0	0	0	1	0	1	0	0	0	0	1
Single-Unit %	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	0.0	0.0	0.0	0.0	33.3
Articulated Trucks	0	1	0	1	0	0	0	0	1	0	0	1	2
Articulated %	0.0	100.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0	66.7
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	0	0	0	0	0	1	0	1	0	0	0	0	1
Articulated Trucks	0	1	0	1	0	0	0	0	1	0	0	1	2
Total Entering Leg	0	1	0	1	0	1	0	1	1	0	0	1	3
Buses				0				0				0	0
Single-Unit Trucks				0				0				1	1
Articulated Trucks				0				2				0	2
Total Exiting Leg				0				2				1	3

PDI File #: **207558 AA**
 Location: **N: James Road**
 Location: **E: Turner Road W: Turner Road**
 City, State: **Holliston, MA**
 Client: **Green Int'l/G.Clayboss**
 Site Code: **tbd**
 Count Date: **Wednesday, July 1, 2020**
 Start Time: **4:00 PM**
 End Time: **6:00 PM**
 Class:



Cars and Heavy Vehicles (Combined)

	James Road				Turner Road				Turner Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
4:00 PM	0	1	0	1	2	4	0	6	1	0	0	1	8
4:15 PM	0	1	0	1	3	5	0	8	0	0	0	0	9
4:30 PM	0	0	0	0	1	6	0	7	3	0	0	3	10
4:45 PM	0	1	0	1	1	4	0	5	0	0	0	0	6
Total	0	3	0	3	7	19	0	26	4	0	0	4	33
5:00 PM	0	0	0	0	0	1	1	2	2	0	0	2	4
5:15 PM	0	1	0	1	0	2	0	2	5	0	0	5	8
5:30 PM	0	1	0	1	2	4	0	6	3	0	0	3	10
5:45 PM	0	1	0	1	0	2	0	2	2	0	0	2	5
Total	0	3	0	3	2	9	1	12	12	0	0	12	27
Grand Total	0	6	0	6	9	28	1	38	16	0	0	16	60
Approach %	0.0	100.0	0.0		23.7	73.7	2.6		100.0	0.0	0.0		
Total %	0.0	10.0	0.0	10.0	15.0	46.7	1.7	63.3	26.7	0.0	0.0	26.7	
Exiting Leg Total	9				23				28				60
Cars	0	6	0	6	9	27	1	37	14	0	0	14	57
% Cars	0.0	100.0	0.0	100.0	100.0	96.4	100.0	97.4	87.5	0.0	0.0	87.5	95.0
Exiting Leg Total	9				21				27				57
Heavy Vehicles	0	0	0	0	0	1	0	1	2	0	0	2	3
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	3.6	0.0	2.6	12.5	0.0	0.0	12.5	5.0
Exiting Leg Total	0				2				1				3

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	James Road					Turner Road					Turner Road					Total			
	from North					from East					from West								
	Right	Left	U-Turn	Total		Right	Thru	U-Turn	Total		Thru	Left	U-Turn	Total					
4:00 PM	0	1	0	1		2	4	0	6		1	0	0	1		8			
4:15 PM	0	1	0	1		3	5	0	8		0	0	0	0		9			
4:30 PM	0	0	0	0		1	6	0	7		3	0	0	3		10			
4:45 PM	0	1	0	1		1	4	0	5		0	0	0	0		6			
Total Volume	0	3	0	3		7	19	0	26		4	0	0	4		33			
% Approach Total	0.0	100.0	0.0			26.9	73.1	0.0			100.0	0.0	0.0						
PHF	0.000	0.750	0.000	0.750		0.583	0.792	0.000	0.813		0.333	0.000	0.000	0.333		0.825			
Cars	0	3	0	3		7	18	0	25		4	0	0	4		32			
Cars %	0.0	100.0	0.0	100.0		100.0	94.7	0.0	96.2		100.0	0.0	0.0	100.0		97.0			
Heavy Vehicles	0	0	0	0		0	1	0	1		0	0	0	0		1			
Heavy Vehicles %	0.0	0.0	0.0	0.0		0.0	5.3	0.0	3.8		0.0	0.0	0.0	0.0		3.0			
Cars Enter Leg	0	3	0	3		7	18	0	25		4	0	0	4		32			
Heavy Enter Leg	0	0	0	0		0	1	0	1		0	0	0	0		1			
Total Entering Leg	0	3	0	3		7	19	0	26		4	0	0	4		33			
Cars Exiting Leg						7						7						18	32
Heavy Exiting Leg						0						0						1	1
Total Exiting Leg						7						7						19	33

PDI File #: **207558 AA**
 Location: **N: James Road**
 Location: **E: Turner Road W: Turner Road**
 City, State: **Holliston, MA**
 Client: **Green Int'l/G.Clayboss**
 Site Code: **tbd**
 Count Date: **Wednesday, July 1, 2020**
 Start Time: **4:00 PM**
 End Time: **6:00 PM**



Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	James Road				Turner Road				Turner Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	2	0	0	2	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	2	0	0	2	2
Grand Total	0	0	0	0	0	1	0	1	2	0	0	2	3
Approach %	0.0	0.0	0.0		0.0	100.0	0.0		100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	33.3	0.0	33.3	66.7	0.0	0.0	66.7	
Exiting Leg Total	0				2				1				3
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total	0				0				0				0
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Single-Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total	0				0				0				0
Articulated Trucks	0	0	0	0	0	1	0	1	2	0	0	2	3
% Articulated	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	100.0	0.0	0.0	100.0	100.0
Exiting Leg Total	0				2				1				3

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	James Road				Turner Road				Turner Road				Total
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	1
% Approach Total	0.0	0.0	0.0		0.0	100.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.250
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Articulated Trucks	0	0	0	0	0	1	0	1	0	0	0	0	1
Articulated %	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Articulated Trucks	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Entering Leg	0	0	0	0	0	1	0	1	0	0	0	0	1
Buses				0				0				0	0
Single-Unit Trucks				0				0				0	0
Articulated Trucks				0				0				1	1
Total Exiting Leg				0				0				1	1

PDI File #: **207558 B**
 Location: **N: Cedar Street S: Maple Street**
 Location: **E: Ashland Street W: Ashland Street**
 City, State: **Holliston, MA**
 Client: **Green Int'l/G.Clayboss**
 Site Code: **tbd**
 Count Date: **Wednesday, July 1, 2020**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



Cars and Heavy Vehicles (Combined)

	Cedar Street					Ashland Street					Maple Street					Ashland Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	0	0	3	0	3	1	13	0	0	14	2	1	0	0	3	0	20	1	0	21	41
7:15 AM	2	0	0	0	2	1	11	1	0	13	3	0	1	0	4	0	24	0	0	24	43
7:30 AM	1	0	0	0	1	0	16	1	0	17	3	0	0	0	3	0	27	0	0	27	48
7:45 AM	0	0	1	0	1	1	17	1	0	19	3	0	0	0	3	0	44	0	0	44	67
Total	3	0	4	0	7	3	57	3	0	63	11	1	1	0	13	0	115	1	0	116	199
8:00 AM	1	0	1	0	2	0	24	1	0	25	2	0	1	0	3	0	18	1	0	19	49
8:15 AM	0	0	2	0	2	1	18	0	0	19	2	0	0	0	2	0	19	2	0	21	44
8:30 AM	1	0	1	0	2	0	9	1	0	10	5	0	0	0	5	0	19	1	0	20	37
8:45 AM	0	1	1	0	2	0	26	0	0	26	2	1	0	0	3	1	15	0	0	16	47
Total	2	1	5	0	8	1	77	2	0	80	11	1	1	0	13	1	71	4	0	76	177
Grand Total	5	1	9	0	15	4	134	5	0	143	22	2	2	0	26	1	186	5	0	192	376
Approach %	33.3	6.7	60.0	0.0		2.8	93.7	3.5	0.0		84.6	7.7	7.7	0.0		0.5	96.9	2.6	0.0		
Total %	1.3	0.3	2.4	0.0	4.0	1.1	35.6	1.3	0.0	38.0	5.9	0.5	0.5	0.0	6.9	0.3	49.5	1.3	0.0	51.1	
Exiting Leg Total	11					217					7					141					376
Cars	4	1	9	0	14	3	116	4	0	123	19	2	2	0	23	1	170	4	0	175	335
% Cars	80.0	100.0	100.0	0.0	93.3	75.0	86.6	80.0	0.0	86.0	86.4	100.0	100.0	0.0	88.5	100.0	91.4	80.0	0.0	91.1	89.1
Exiting Leg Total	9					198					6					122					335
Heavy Vehicles	1	0	0	0	1	1	18	1	0	20	3	0	0	0	3	0	16	1	0	17	41
% Heavy Vehicles	20.0	0.0	0.0	0.0	6.7	25.0	13.4	20.0	0.0	14.0	13.6	0.0	0.0	0.0	11.5	0.0	8.6	20.0	0.0	8.9	10.9
Exiting Leg Total	2					19					1					19					41

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Cedar Street					Ashland Street					Maple Street					Ashland Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	1	0	0	0	1	0	16	1	0	17	3	0	0	0	3	0	27	0	0	27	48
7:45 AM	0	0	1	0	1	1	17	1	0	19	3	0	0	0	3	0	44	0	0	44	67
8:00 AM	1	0	1	0	2	0	24	1	0	25	2	0	1	0	3	0	18	1	0	19	49
8:15 AM	0	0	2	0	2	1	18	0	0	19	2	0	0	0	2	0	19	2	0	21	44
Total Volume	2	0	4	0	6	2	75	3	0	80	10	0	1	0	11	0	108	3	0	111	208
% Approach Total	33.3	0.0	66.7	0.0		2.5	93.8	3.8	0.0		90.9	0.0	9.1	0.0		0.0	97.3	2.7	0.0		
PHF	0.500	0.000	0.500	0.000	0.750	0.500	0.781	0.750	0.000	0.800	0.833	0.000	0.250	0.000	0.917	0.000	0.614	0.375	0.000	0.631	0.776
Cars	2	0	4	0	6	1	68	2	0	71	10	0	1	0	11	0	99	3	0	102	190
Cars %	100.0	0.0	100.0	0.0	100.0	50.0	90.7	66.7	0.0	88.8	100.0	0.0	100.0	0.0	100.0	0.0	91.7	100.0	0.0	91.9	91.3
Heavy Vehicles	0	0	0	0	0	1	7	1	0	9	0	0	0	0	0	0	9	0	0	9	18
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	50.0	9.3	33.3	0.0	11.3	0.0	0.0	0.0	0.0	0.0	0.0	8.3	0.0	0.0	8.1	8.7
Cars Enter Leg	2	0	4	0	6	1	68	2	0	71	10	0	1	0	11	0	99	3	0	102	190
Heavy Enter Leg	0	0	0	0	0	1	7	1	0	9	0	0	0	0	0	0	9	0	0	9	18
Total Entering Leg	2	0	4	0	6	2	75	3	0	80	10	0	1	0	11	0	108	3	0	111	208
Cars Exiting Leg	4					113					2					71					190
Heavy Exiting Leg	1					9					1					7					18
Total Exiting Leg	5					122					3					78					208

PDI File #: **207558 B**
 Location: **N: Cedar Street S: Maple Street**
 Location: **E: Ashland Street W: Ashland Street**
 City, State: **Holliston, MA**
 Client: **Green Int'l/G.Clayboss**
 Site Code: **tbd**
 Count Date: **Wednesday, July 1, 2020**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**



	Cedar Street					Ashland Street					Maple Street					Ashland Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	1	0	1	4
7:15 AM	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	6
7:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
7:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
Total	1	0	0	0	1	0	8	0	0	8	0	0	0	0	0	0	6	1	0	7	16
8:00 AM	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	0	2	0	0	2	6
8:15 AM	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	3	0	0	3	6
8:30 AM	0	0	0	0	0	0	1	0	0	1	2	0	0	0	2	0	5	0	0	5	8
8:45 AM	0	0	0	0	0	0	4	0	0	4	1	0	0	0	1	0	0	0	0	0	5
Total	0	0	0	0	0	1	10	1	0	12	3	0	0	0	3	0	10	0	0	10	25
Grand Total	1	0	0	0	1	1	18	1	0	20	3	0	0	0	3	0	16	1	0	17	41
Approach %	100.0	0.0	0.0	0.0		5.0	90.0	5.0	0.0		100.0	0.0	0.0	0.0		0.0	94.1	5.9	0.0		
Total %	2.4	0.0	0.0	0.0	2.4	2.4	43.9	2.4	0.0	48.8	7.3	0.0	0.0	0.0	7.3	0.0	39.0	2.4	0.0	41.5	
Exiting Leg Total	2					19					1					19					41
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total	0					0					0					0					0
Single-Unit Trucks	1	0	0	0	1	1	12	1	0	14	2	0	0	0	2	0	13	1	0	14	31
% Single-Unit	100.0	0.0	0.0	0.0	100.0	100.0	66.7	100.0	0.0	70.0	66.7	0.0	0.0	0.0	66.7	0.0	81.3	100.0	0.0	82.4	75.6
Exiting Leg Total	2					15					1					13					31
Articulated Trucks	0	0	0	0	0	0	6	0	0	6	1	0	0	0	1	0	3	0	0	3	10
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	30.0	33.3	0.0	0.0	0.0	33.3	0.0	18.8	0.0	0.0	17.6	24.4
Exiting Leg Total	0					4					0					6					10

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Cedar Street					Ashland Street					Maple Street					Ashland Street					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
8:00 AM	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	0	2	0	0	0	2	6
8:15 AM	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	0	3	0	0	3	6
8:30 AM	0	0	0	0	0	0	1	0	0	1	2	0	0	0	0	2	0	5	0	0	5	8
8:45 AM	0	0	0	0	0	0	4	0	0	4	1	0	0	0	0	1	0	0	0	0	0	5
Total Volume	0	0	0	0	0	1	10	1	0	12	3	0	0	0	0	3	0	10	0	0	10	25
% Approach Total	0.0	0.0	0.0	0.0		8.3	83.3	8.3	0.0		100.0	0.0	0.0	0.0			0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.250	0.625	0.250	0.000	0.750	0.375	0.000	0.000	0.000	0.375		0.000	0.500	0.000	0.000	0.500	0.781
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	0	0	0	0	0	1	6	1	0	8	2	0	0	0	2	0	9	0	0	9	19	
Single-Unit %	0.0	0.0	0.0	0.0	0.0	100.0	60.0	100.0	0.0	66.7	66.7	0.0	0.0	0.0	66.7	0.0	90.0	0.0	0.0	90.0	76.0	
Articulated Trucks	0	0	0	0	0	0	4	0	0	4	1	0	0	0	1	0	1	0	0	1	6	
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	40.0	0.0	0.0	33.3	33.3	0.0	0.0	0.0	33.3	0.0	10.0	0.0	0.0	10.0	24.0	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Single-Unit Trucks	0	0	0	0	0	1	6	1	0	8	2	0	0	0	2	0	9	0	0	9	19	
Articulated Trucks	0	0	0	0	0	0	4	0	0	4	1	0	0	0	1	0	1	0	0	1	6	
Total Entering Leg	0	0	0	0	0	1	10	1	0	12	3	0	0	0	3	0	10	0	0	10	25	
Buses	0					0					0					0					0	
Single-Unit Trucks	1					11					1					6					19	
Articulated Trucks	0					2					0					4					6	
Total Exiting Leg	1					13					1					10					25	

PDI File #: **207558 BB**
 Location: **N: Cedar Street S: Maple Street**
 Location: **E: Ashland Street W: Ashland Street**
 City, State: **Holliston, MA**
 Client: **Green Int'l/G.Clayboss**
 Site Code: **tbd**
 Count Date: **Wednesday, July 1, 2020**
 Start Time: **4:00 PM**
 End Time: **6:00 PM**
 Class:



Cars and Heavy Vehicles (Combined)

	Cedar Street					Ashland Street					Maple Street					Ashland Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	1	1	1	0	3	4	28	2	0	34	0	0	0	0	0	1	15	0	0	16	53
4:15 PM	1	0	3	0	4	1	29	3	0	33	2	0	0	0	2	0	22	1	0	23	62
4:30 PM	0	1	4	0	5	0	35	6	0	41	3	0	0	0	3	0	23	0	0	23	72
4:45 PM	0	0	1	0	1	3	27	5	0	35	3	0	0	0	3	0	26	1	0	27	66
Total	2	2	9	0	13	8	119	16	0	143	8	0	0	0	8	1	86	2	0	89	253
5:00 PM	2	0	2	0	4	6	35	1	0	42	2	0	1	0	3	1	10	2	0	13	62
5:15 PM	1	0	0	0	1	2	29	2	0	33	4	0	0	0	4	0	23	1	0	24	62
5:30 PM	0	0	1	0	1	1	20	6	0	27	6	0	0	0	6	0	21	0	0	21	55
5:45 PM	1	0	2	0	3	2	24	3	0	29	3	1	0	0	4	0	24	1	0	25	61
Total	4	0	5	0	9	11	108	12	0	131	15	1	1	0	17	1	78	4	0	83	240
Grand Total	6	2	14	0	22	19	227	28	0	274	23	1	1	0	25	2	164	6	0	172	493
Approach %	27.3	9.1	63.6	0.0		6.9	82.8	10.2	0.0		92.0	4.0	4.0	0.0		1.2	95.3	3.5	0.0		
Total %	1.2	0.4	2.8	0.0	4.5	3.9	46.0	5.7	0.0	55.6	4.7	0.2	0.2	0.0	5.1	0.4	33.3	1.2	0.0	34.9	
Exiting Leg Total	26					201					32					234					493
Cars	5	2	13	0	20	18	221	28	0	267	23	1	1	0	25	2	158	6	0	166	478
% Cars	83.3	100.0	92.9	0.0	90.9	94.7	97.4	100.0	0.0	97.4	100.0	100.0	100.0	0.0	100.0	100.0	96.3	100.0	0.0	96.5	97.0
Exiting Leg Total	25					194					32					227					478
Heavy Vehicles	1	0	1	0	2	1	6	0	0	7	0	0	0	0	0	0	6	0	0	6	15
% Heavy Vehicles	16.7	0.0	7.1	0.0	9.1	5.3	2.6	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	3.5	3.0
Exiting Leg Total	1					7					0					7					15

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Cedar Street					Ashland Street					Maple Street					Ashland Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:15 PM	1	0	3	0	4	1	29	3	0	33	2	0	0	0	2	0	22	1	0	23	62
4:30 PM	0	1	4	0	5	0	35	6	0	41	3	0	0	0	3	0	23	0	0	23	72
4:45 PM	0	0	1	0	1	3	27	5	0	35	3	0	0	0	3	0	26	1	0	27	66
5:00 PM	2	0	2	0	4	6	35	1	0	42	2	0	1	0	3	1	10	2	0	13	62
Total Volume	3	1	10	0	14	10	126	15	0	151	10	0	1	0	11	1	81	4	0	86	262
% Approach Total	21.4	7.1	71.4	0.0		6.6	83.4	9.9	0.0		90.9	0.0	9.1	0.0		1.2	94.2	4.7	0.0		
PHF	0.375	0.250	0.625	0.000	0.700	0.417	0.900	0.625	0.000	0.899	0.833	0.000	0.250	0.000	0.917	0.250	0.779	0.500	0.000	0.796	0.910
Cars	3	1	9	0	13	9	123	15	0	147	10	0	1	0	11	1	78	4	0	83	254
Cars %	100.0	100.0	90.0	0.0	92.9	90.0	97.6	100.0	0.0	97.4	100.0	0.0	100.0	0.0	100.0	100.0	96.3	100.0	0.0	96.5	96.9
Heavy Vehicles	0	0	1	0	1	1	3	0	0	4	0	0	0	0	0	0	3	0	0	3	8
Heavy Vehicles %	0.0	0.0	10.0	0.0	7.1	10.0	2.4	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	3.5	3.1
Cars Enter Leg	3	1	9	0	13	9	123	15	0	147	10	0	1	0	11	1	78	4	0	83	254
Heavy Enter Leg	0	0	1	0	1	1	3	0	0	4	0	0	0	0	0	0	3	0	0	3	8
Total Entering Leg	3	1	10	0	14	10	126	15	0	151	10	0	1	0	11	1	81	4	0	86	262
Cars Exiting Leg	13					97					17					127					254
Heavy Exiting Leg	1					4					0					3					8
Total Exiting Leg	14					101					17					130					262

PDI File #: **207558 BB**
 Location: **N: Cedar Street S: Maple Street**
 Location: **E: Ashland Street W: Ashland Street**
 City, State: **Holliston, MA**
 Client: **Green Int'l/G.Clayboss**
 Site Code: **tbd**
 Count Date: **Wednesday, July 1, 2020**
 Start Time: **4:00 PM**
 End Time: **6:00 PM**
 Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**



	Cedar Street					Ashland Street					Maple Street					Ashland Street					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
4:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	1	2
4:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	4	0	0	4	6
5:00 PM	0	0	1	0	1	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	4
5:15 PM	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
5:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	1	0	0	1	3
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	1	0	2	1	4	0	0	5	0	0	0	0	0	0	0	2	0	0	2	9
Grand Total	1	0	1	0	2	1	6	0	0	7	0	0	0	0	0	0	0	6	0	0	6	15
Approach %	50.0	0.0	50.0	0.0		14.3	85.7	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0			
Total %	6.7	0.0	6.7	0.0	13.3	6.7	40.0	0.0	0.0	46.7	0.0	0.0	0.0	0.0	0.0	0.0	40.0	0.0	0.0	40.0		
Exiting Leg Total	1					7					0					7					15	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exiting Leg Total	0					0					0					0					0	
Single-Unit Trucks	1	0	1	0	2	1	6	0	0	7	0	0	0	0	0	0	5	0	0	5	14	
% Single-Unit	100.0	0.0	100.0	0.0	100.0	100.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	83.3	0.0	0.0	83.3	93.3	
Exiting Leg Total	1					6					0					7					14	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0	0.0	16.7	6.7	
Exiting Leg Total	0					1					0					0					1	

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	Cedar Street					Ashland Street					Maple Street					Ashland Street						
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
5:00 PM	0	0	1	0	1	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	4
5:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
5:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	1	3
Total Volume	1	0	1	0	2	1	4	0	0	5	0	0	0	0	0	0	3	0	0	0	3	10
% Approach Total	50.0	0.0	50.0	0.0		20.0	80.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0			
PHF	0.250	0.000	0.250	0.000	0.500	0.250	0.500	0.000	0.000	0.417	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.750	0.625	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Single-Unit Trucks	1	0	1	0	2	1	4	0	0	5	0	0	0	0	0	0	2	0	0	0	2	9
Single-Unit %	100.0	0.0	100.0	0.0	100.0	100.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7	0.0	0.0	66.7	90.0	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	33.3	10.0	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Single-Unit Trucks	1	0	1	0	2	1	4	0	0	5	0	0	0	0	0	0	2	0	0	0	2	9
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total Entering Leg	1	0	1	0	2	1	4	0	0	5	0	0	0	0	0	0	3	0	0	0	3	10
Buses	0					0					0					0					0	
Single-Unit Trucks	1					3					0					5					9	
Articulated Trucks	0					1					0					0					1	
Total Exiting Leg	1					4					0					5					10	

PDI File #: 207558 C
 Location: N: Cedar Street S: Cedar Street
 Location: E: Eliot Street W: Eliot Street SE: Driveway
 City, State: Holliston, MA
 Client: Green Int'l/G.Clayboss
 Site Code: tbd
 Count Date: Wednesday, July 1, 2020
 Start Time: 7:00 AM
 End Time: 9:00 AM
 Class:



Cars and Heavy Vehicles (Combined)

	Cedar Street						Eliot Street						Driveway						Cedar Street						Eliot Street						Total	
	from North						from East						from Southeast						from South						from West							
	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total		
7:00 AM	6	0	0	7	0	13	5	45	2	0	0	52	0	0	0	0	0	0	0	2	1	2	0	5	0	0	63	12	0	75	145	
7:15 AM	3	1	0	9	0	13	2	46	2	0	0	50	0	0	0	0	0	0	0	4	2	0	0	6	0	0	71	9	0	80	149	
7:30 AM	9	0	0	3	0	12	5	46	1	0	0	52	0	0	0	0	0	0	0	4	3	5	0	12	0	0	79	7	0	86	162	
7:45 AM	10	0	0	6	0	16	7	51	4	0	0	62	0	0	0	0	0	0	0	2	0	3	0	5	0	0	91	6	0	97	180	
Total	28	1	0	25	0	54	19	188	9	0	0	216	0	0	0	0	0	0	0	12	6	10	0	28	0	0	304	34	0	338	636	
8:00 AM	2	1	0	8	0	11	8	41	1	0	0	50	0	0	0	0	0	0	0	6	1	2	0	9	0	0	78	10	0	88	158	
8:15 AM	9	0	0	8	0	17	6	44	2	0	0	52	0	0	0	0	0	0	0	3	6	1	0	10	5	0	78	11	0	94	173	
8:30 AM	9	2	0	20	0	31	8	65	0	0	0	73	0	0	0	0	0	0	0	3	4	2	0	9	0	0	101	5	0	106	219	
8:45 AM	11	0	0	7	0	18	10	63	2	0	0	75	0	0	0	0	0	0	0	4	1	1	0	6	2	0	93	6	0	101	200	
Total	31	3	0	43	0	77	32	213	5	0	0	250	0	0	0	0	0	0	0	16	12	6	0	34	7	0	350	32	0	389	750	
Grand Total	59	4	0	68	0	131	51	401	14	0	0	466	0	0	0	0	0	0	0	28	18	16	0	62	7	0	654	66	0	727	1386	
Approach %	45.0	3.1	0.0	51.9	0.0		10.9	86.1	3.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	45.2	29.0	25.8	0.0		1.0	0.0	90.0	9.1	0.0			
Total %	4.3	0.3	0.0	4.9	0.0	9.5	3.7	28.9	1.0	0.0	0.0	33.6	0.0	0.0	0.0	0.0	0.0	0.0		0.0	2.0	1.3	1.2	0.0	4.5	0.5	0.0	47.2	4.8	0.0	52.5	
Exiting Leg Total	135						750						0						25						476						1386	
Cars	57	3	0	67	0	127	50	368	13	0	0	431	0	0	0	0	0	0	0	27	17	16	0	60	7	0	634	66	0	707	1325	
% Cars	96.6	75.0	0.0	98.5	0.0	96.9	98.0	91.8	92.9	0.0	0.0	92.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96.4	94.4	100.0	0.0	96.8	100.0	0.0	96.9	100.0	0.0	97.2	95.6	
Exiting Leg Total	133						728						0						23						441						1325	
Heavy Vehicles	2	1	0	1	0	4	1	33	1	0	0	35	0	0	0	0	0	0	0	1	1	0	0	2	0	0	20	0	0	20	61	
% Heavy Vehicles	3.4	25.0	0.0	1.5	0.0	3.1	2.0	8.2	7.1	0.0	0.0	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	5.6	0.0	0.0	3.2	0.0	0.0	3.1	0.0	0.0	2.8	4.4	
Exiting Leg Total	2						22						0						2						35						61	

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Cedar Street						Eliot Street						Driveway						Cedar Street						Eliot Street						Total
	from North						from East						from Southeast						from South						from West						
	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	
8:00 AM	2	1	0	8	0	11	8	41	1	0	0	50	0	0	0	0	0	0	0	6	1	2	0	9	0	0	78	10	0	88	158
8:15 AM	9	0	0	8	0	17	6	44	2	0	0	52	0	0	0	0	0	0	0	3	6	1	0	10	5	0	78	11	0	94	173
8:30 AM	9	2	0	20	0	31	8	65	0	0	0	73	0	0	0	0	0	0	0	3	4	2	0	9	0	0	101	5	0	106	219
8:45 AM	11	0	0	7	0	18	10	63	2	0	0	75	0	0	0	0	0	0	0	4	1	1	0	6	2	0	93	6	0	101	200
Total Volume	31	3	0	43	0	77	32	213	5	0	0	250	0	0	0	0	0	0	0	16	12	6	0	34	7	0	350	32	0	389	750
% Approach Total	40.3	3.9	0.0	55.8	0.0		12.8	85.2	2.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	47.1	35.3	17.6	0.0		1.8	0.0	90.0	8.2	0.0		
PHF	0.705	0.375	0.000	0.538	0.000	0.621	0.800	0.819	0.625	0.000	0.000	0.833	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.500	0.750	0.000	0.850	0.350	0.000	0.866	0.727	0.000	0.917	0.856
Cars	29	2	0	42	0	73	31	198	5	0	0	234	0	0	0	0	0	0	0	15	11	6	0	32	7	0	343	32	0	382	721
Cars %	93.5	66.7	0.0	97.7	0.0	94.8	96.9	93.0	100.0	0.0	0.0	93.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	93.8	91.7	100.0	0.0	94.1	100.0	0.0	98.0	100.0	0.0	98.2	96.1
Heavy Vehicles	2	1	0	1	0	4	1	15	0	0	0	16	0	0	0	0	0	0	0	1	1	0	0	2	0	0	7	0	0	7	29
Heavy Vehicles %	6.5	33.3	0.0	2.3	0.0	5.2	3.1	7.0	0.0	0.0	0.0	6.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	8.3	0.0	0.0	5.9	0.0	0.0	2.0	0.0	0.0	1.8	3.9
Cars Enter Leg	29	2	0	42	0	73	31	198	5	0	0	234	0	0	0	0	0	0	0	15	11	6	0	32	7	0	343	32	0	382	721
Heavy Enter Leg	2	1	0	1	0	4	1	15	0	0	0	16	0	0	0	0	0	0	0	1	1	0	0	2	0	0	7	0	0	7	29
Total Entering Leg	31	3	0	43	0	77	32	213	5	0	0	250	0	0	0	0	0	0	0	16	12	6	0	34	7	0	350	32	0	389	750
Cars Exiting Leg	74						400						0						14						233						721
Heavy Exiting Leg	2						9						0						1						17						29
Total Exiting Leg	76						409						0						15						250						750

PDI File #: 207558 C
 Location: N: Cedar Street S: Cedar Street
 Location: E: Eliot Street W: Eliot Street SE: Driveway
 City, State: Holliston, MA
 Client: Green Int'l/G.Clayboss
 Site Code: tbd
 Count Date: Wednesday, July 1, 2020
 Start Time: 7:00 AM
 End Time: 9:00 AM
 Class:



Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)

	Cedar Street						Eliot Street						Driveway						Cedar Street						Eliot Street							
	from North						from East						from Southeast						from South						from West							
	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total		
7:00 AM	0	0	0	0	0	0	0	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	10
7:15 AM	0	0	0	0	0	0	0	7	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	10	
7:30 AM	0	0	0	0	0	0	0	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	6	
7:45 AM	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	6	
Total	0	0	0	0	0	0	0	18	1	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13	32	
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	2	
8:15 AM	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3	
8:30 AM	0	1	0	1	0	2	1	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	7	
8:45 AM	2	0	0	0	0	2	0	11	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	17	
Total	2	1	0	1	0	4	1	15	0	0	0	16	0	0	0	0	0	0	0	1	1	0	0	2	0	0	7	0	0	7	29	
Grand Total	2	1	0	1	0	4	1	33	1	0	0	35	0	0	0	0	0	0	0	1	1	0	0	2	0	0	20	0	0	20	61	
Approach %	50.0	25.0	0.0	25.0	0.0		2.9	94.3	2.9	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	50.0	50.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0			
Total %	3.3	1.6	0.0	1.6	0.0	6.6	1.6	54.1	1.6	0.0	0.0	57.4	0.0	0.0	0.0	0.0	0.0	0.0		0.0	1.6	1.6	0.0	0.0	3.3	0.0	0.0	32.8	0.0	0.0	32.8	
Exiting Leg Total	2						22						0						2						35						61	
Buses	0	0	0	0	0	0	1	2	0	0	0	3	0	0	0	0	0	0	0	1	1	0	0	2	0	0	1	0	0	1	6	
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	100.0	6.1	0.0	0.0	0.0	8.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0	0.0	0.0	5.0	0.0	0.0	5.0	9.8	
Exiting Leg Total	2						2						0						0						2						6	
Single-Unit Trucks	1	0	0	0	0	1	0	28	1	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	16	46	
% Single-Unit	50.0	0.0	0.0	0.0	0.0	25.0	0.0	84.8	100.0	0.0	0.0	82.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.0	0.0	0.0	80.0	75.4	
Exiting Leg Total	0						16						0						1						29						46	
Articulated Trucks	1	1	0	1	0	3	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	9	
% Articulated	50.0	100.0	0.0	100.0	0.0	75.0	0.0	9.1	0.0	0.0	0.0	8.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0	0.0	0.0	15.0	14.8	
Exiting Leg Total	0						4						0						1						4						9	

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Cedar Street						Eliot Street						Driveway						Cedar Street						Eliot Street						Total
	from North						from East						from Southeast						from South						from West						
	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	0	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	10
7:15 AM	0	0	0	0	0	0	0	7	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	10
7:30 AM	0	0	0	0	0	0	0	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	6
7:45 AM	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	6
Total Volume	0	0	0	0	0	0	0	18	1	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13	32
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	94.7	5.3	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.643	0.250	0.000	0.000	0.679	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.542	0.000	0.000	0.542	0.800
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Single-Unit Trucks	0	0	0	0	0	0	0	15	1	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	10	26
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	83.3	100.0	0.0	0.0	84.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76.9	0.0	0.0	76.9	81.3
Articulated Trucks	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	6
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0	0.0	0.0	15.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.1	0.0	0.0	23.1	18.8
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Single-Unit Trucks	0	0	0	0	0	0	0	15	1	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	10	26
Articulated Trucks	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	6
Total Entering Leg	0	0	0	0	0	0	0	18	1	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13	32
Buses	0						0						0						0						0						0
Single-Unit Trucks	0						10						0						1						15						26
Articulated Trucks	0						3						0						3						3						6
Total Exiting Leg	0						13						0					1					18					32			

PDI File #: 207558 CC
 Location: N: Cedar Street S: Cedar Street
 Location: E: Eliot Street W: Eliot Street SE: Driveway
 City, State: Holliston, MA
 Client: Green Int'l/G.Clayboss
 Site Code: tbd
 Count Date: Wednesday, July 1, 2020
 Start Time: 4:00 PM
 End Time: 6:00 PM
 Class:



Cars and Heavy Vehicles (Combined)

	Cedar Street						Eliot Street						Driveway						Cedar Street						Eliot Street						Total
	from North						from East						from Southeast						from South						from West						
	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	
4:00 PM	14	5	0	15	0	34	10	111	3	0	0	124	0	0	0	0	0	0	1	1	2	0	0	4	4	0	69	6	0	79	241
4:15 PM	16	2	0	10	0	28	16	123	6	0	0	145	0	0	0	0	0	0	0	2	2	2	0	6	1	0	89	9	0	99	278
4:30 PM	10	3	0	9	0	22	9	116	2	0	1	128	1	0	0	0	0	1	0	9	2	1	0	12	1	0	67	7	0	75	238
4:45 PM	3	4	0	5	0	12	8	90	11	0	0	109	0	0	0	0	0	0	0	8	2	0	0	10	0	0	72	7	0	79	210
Total	43	14	0	39	0	96	43	440	22	0	1	506	1	0	0	0	0	1	1	20	8	3	0	32	6	0	297	29	0	332	967
5:00 PM	8	3	0	12	0	23	14	125	4	0	0	143	0	0	0	0	0	0	0	4	2	2	0	8	3	0	79	9	0	91	265
5:15 PM	15	2	0	12	0	29	11	106	3	0	0	120	0	0	0	0	0	0	0	2	0	1	0	3	0	0	76	6	0	82	234
5:30 PM	7	3	0	12	0	22	20	97	6	0	0	123	0	0	0	0	0	0	0	3	0	0	0	3	1	0	61	3	0	65	213
5:45 PM	16	6	0	13	0	35	10	82	4	0	1	97	0	0	0	0	0	0	0	5	2	2	0	9	0	0	70	8	0	78	219
Total	46	14	0	49	0	109	55	410	17	0	1	483	0	0	0	0	0	0	0	14	4	5	0	23	4	0	286	26	0	316	931
Grand Total	89	28	0	88	0	205	98	850	39	0	2	989	1	0	0	0	0	1	1	34	12	8	0	55	10	0	583	55	0	648	1898
Approach %	43.4	13.7	0.0	42.9	0.0		9.9	85.9	3.9	0.0	0.2		100.0	0.0	0.0	0.0	0.0		1.8	61.8	21.8	14.5	0.0		1.5	0.0	90.0	8.5	0.0		
Total %	4.7	1.5	0.0	4.6	0.0	10.8	5.2	44.8	2.1	0.0	0.1	52.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	1.8	0.6	0.4	0.0	2.9	0.5	0.0	30.7	2.9	0.0	34.1	
Exiting Leg Total	165						708						1						77						947						1898
Cars	88	28	0	87	0	203	98	835	38	0	1	972	1	0	0	0	0	1	1	33	12	8	0	54	10	0	558	55	0	623	1853
% Cars	98.9	100.0	0.0	98.9	0.0	99.0	100.0	98.2	97.4	0.0	50.0	98.3	100.0	0.0	0.0	0.0	0.0	100.0	100.0	97.1	100.0	100.0	0.0	98.2	100.0	0.0	95.7	100.0	0.0	96.1	97.6
Exiting Leg Total	165						680						1						76						931						1853
Heavy Vehicles	1	0	0	1	0	2	0	15	1	0	1	17	0	0	0	0	0	0	0	1	0	0	0	1	0	0	25	0	0	25	45
% Heavy Vehicles	1.1	0.0	0.0	1.1	0.0	1.0	0.0	1.8	2.6	0.0	50.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0	1.8	0.0	0.0	4.3	0.0	0.0	3.9	2.4
Exiting Leg Total	0						28						0						1						16						45

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Cedar Street						Eliot Street						Driveway						Cedar Street						Eliot Street						
	from North						from East						from Southeast						from South						from West						
	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	
4:15 PM	16	2	0	10	0	28	16	123	6	0	0	145	0	0	0	0	0	0	0	2	2	2	0	6	1	0	89	9	0	99	278
4:30 PM	10	3	0	9	0	22	9	116	2	0	1	128	1	0	0	0	0	1	0	9	2	1	0	12	1	0	67	7	0	75	238
4:45 PM	3	4	0	5	0	12	8	90	11	0	0	109	0	0	0	0	0	0	0	8	2	0	0	10	0	0	72	7	0	79	210
5:00 PM	8	3	0	12	0	23	14	125	4	0	0	143	0	0	0	0	0	0	0	4	2	2	0	8	3	0	79	9	0	91	265
Total Volume	37	12	0	36	0	85	47	454	23	0	1	525	1	0	0	0	0	1	0	23	8	5	0	36	5	0	307	32	0	344	991
% Approach Total	43.5	14.1	0.0	42.4	0.0		9.0	86.5	4.4	0.0	0.2		100.0	0.0	0.0	0.0	0.0		0.0	63.9	22.2	13.9	0.0		1.5	0.0	89.2	9.3	0.0		
PHF	0.578	0.750	0.000	0.750	0.000	0.759	0.734	0.908	0.523	0.000	0.250	0.905	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.639	1.000	0.625	0.000	0.750	0.417	0.000	0.862	0.889	0.000	0.869	0.891
Cars	36	12	0	35	0	83	47	444	22	0	0	513	1	0	0	0	0	1	0	22	8	5	0	35	5	0	289	32	0	326	958
Cars %	97.3	100.0	0.0	97.2	0.0	97.6	100.0	97.8	95.7	0.0	0.0	97.7	100.0	0.0	0.0	0.0	0.0	100.0	0.0	95.7	100.0	100.0	0.0	97.2	100.0	0.0	94.1	100.0	0.0	94.8	96.7
Heavy Vehicles	1	0	0	1	0	2	0	10	1	0	1	12	0	0	0	0	0	0	0	1	0	0	0	1	0	0	18	0	0	18	33
Heavy Vehicles %	2.7	0.0	0.0	2.8	0.0	2.4	0.0	2.2	4.3	0.0	100.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	2.8	0.0	0.0	5.9	0.0	0.0	5.2	3.3
Cars Enter Leg	36	12	0	35	0	83	47	444	22	0	0	513	1	0	0	0	0	1	0	22	8	5	0	35	5	0	289	32	0	326	958
Heavy Enter Leg	1	0	0	1	0	2	0	10	1	0	1	12	0	0	0	0	0	0	0	1	0	0	0	1	0	0	18	0	0	18	33
Total Entering Leg	37	12	0	36	0	85	47	454	23	0	1	525	1	0	0	0	0	1	0	23	8	5	0	36	5	0	307	32	0	344	991
Cars Exiting Leg	87						347						0						39						485						958
Heavy Exiting Leg	0						21						0						1						11						33
Total Exiting Leg	87						368						0						40						496						991

PDI File #: **207558 CC**
 Location: **N: Cedar Street S: Cedar Street**
 Location: **E: Eliot Street W: Eliot Street SE: Driveway**
 City, State: **Holliston, MA**
 Client: **Green Int'l/G.Clayboss**
 Site Code: **tbd**
 Count Date: **Wednesday, July 1, 2020**
 Start Time: **4:00 PM**
 End Time: **6:00 PM**
 Class:



Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)

	Cedar Street						Eliot Street						Driveway						Cedar Street						Eliot Street						Total	
	from North						from East						from Southeast						from South						from West							
	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total		
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	4
4:15 PM	0	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	11	15	
4:30 PM	0	0	0	1	0	1	0	2	0	0	1	3	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	4	0	0	4	9
4:45 PM	1	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
Total	1	0	0	1	0	2	0	8	0	0	1	9	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	18	0	0	18	30
5:00 PM	0	0	0	0	0	0	0	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	7	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	4	
5:45 PM	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
Total	0	0	0	0	0	0	0	7	1	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	15	
Grand Total	1	0	0	1	0	2	0	15	1	0	1	17	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	25	0	0	25	45
Approach %	50.0	0.0	0.0	50.0	0.0		0.0	88.2	5.9	0.0	5.9		0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0			
Total %	2.2	0.0	0.0	2.2	0.0	4.4	0.0	33.3	2.2	0.0	2.2	37.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	2.2	0.0	0.0	55.6	0.0	0.0	55.6		
Exiting Leg Total	0						28						0						1						16						45	
Buses	1	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	5	
% Buses	100.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	100.0	0.0	0.0	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	0.0	0.0	12.0	11.1	
Exiting Leg Total	0						3						0						1						1						5	
Single-Unit Trucks	0	0	0	1	0	1	0	11	0	0	1	12	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	20	0	0	20	34
% Single-Unit	0.0	0.0	0.0	100.0	0.0	50.0	0.0	73.3	0.0	0.0	100.0	70.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0	0.0	80.0	0.0	0.0	80.0	75.6
Exiting Leg Total	0						23						0						0						11						34	
Articulated Trucks	0	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	6	
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.7	0.0	0.0	0.0	23.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	0.0	0.0	8.0	13.3	
Exiting Leg Total	0						2						0						0						4						6	

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Cedar Street						Eliot Street						Driveway						Cedar Street						Eliot Street						Total	
	from North						from East						from Southeast						from South						from West							
	Right	Thru	Bear Left	Left	U-Turn	Total	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total		
4:15 PM	0	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	11	15
4:30 PM	0	0	0	1	0	1	0	2	0	0	1	3	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	4	0	0	4	9
4:45 PM	1	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
5:00 PM	0	0	0	0	0	0	0	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	7	
Total Volume	1	0	0	1	0	2	0	10	1	0	1	12	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	18	0	0	18	33
% Approach Total	50.0	0.0	0.0	50.0	0.0		0.0	83.3	8.3	0.0	8.3		0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0			
PHF	0.250	0.000	0.000	0.250	0.000	0.500	0.000	0.625	0.250	0.000	0.250	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.409	0.000	0.000	0.409	0.550	
Buses	1	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	4	
Buses %	100.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	100.0	0.0	0.0	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	0.0	0.0	11.1	12.1	
Single-Unit Trucks	0	0	0	1	0	1	0	7	0	0	1	8	0	0	0	0	0	0	0	1	0	0	0	1	0	0	14	0	0	14	24	
Single-Unit %	0.0	0.0	0.0	100.0	0.0	50.0	0.0	70.0	0.0	0.0	100.0	66.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0	0.0	77.8	0.0	0.0	77.8	72.7	
Articulated Trucks	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	5	
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	0.0	0.0	11.1	15.2	
Buses	1	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	4	
Single-Unit Trucks	0	0	0	1	0	1	0	7	0	0	1	8	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	14	0	0	14	24
Articulated Trucks	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	5	
Total Entering Leg	1	0	0	1	0	2	0	10	1	0	1	12	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	18	0	0	18	33
Buses	0						2						0						1						1						4	
Single-Unit Trucks	0						17						0						0						0						24	
Articulated Trucks	0						2						0						0						0						5	
Total Exiting Leg	0						21						0						1						11						33	

***MASSDOT SEASONAL ADJUSTMENT FACTORS AND
HISTORICAL GROWTH***



GREEN INTERNATIONAL AFFILIATES, INC.
Civil and Structural Engineers
239 Littleton Road, Suite 3
WESTFORD, MA 01886

JOB	20049		
SHEET NO.	1	OF	2
CALCULATED BY	AC	DATE	5/29/2020
CHECKED BY		DATE	
DESCRIPTION	Seasonal Traffic Patterns		

Daily Avg. Counts on Weekdays

From MassDOT Interactive Transportation Data Management System

On Central St. South of Cross St.	MassDOT spot count, Location 254037	
year	2016	2017
Daily traffic volume	2,484	2,487
average annual growth rate		0.12%

On School St. at Shrewsbury	MassDOT spot count, Location RPA05-039- 1524,	
year	2017	2018
Daily traffic volume	2,622	2,637
average annual growth rate		0.57%

Average Annual Growth:	0.35%
Say:	1.0%

Seasonal Adjustment Factor

Route 90	MassDOT continous count, location 725 - On interstate 495												
Month (YEAR 2019)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Average Total Daily Traffic	50,133	49,582	52,538	56,595	63,348	69,149	74,344	75,083	64,567	60,538	55,656	51,342	60240
Seasonal Adjustment Factor	0.8322	0.8231	0.8722	0.9395	1.0516	1.1479	1.2341	1.2464	1.0718	1.0050	0.9239	0.8523	

Route 2	MassDOT continuous count, location 6090- On Interstate 95												
Month (YEAR 2019)	January	February	March	April	May	June	July	August	September	October	November	December	Average
Average Total Daily Traffic	90,808	91,827	94,792	100,710	101,989	102,660	102,526	105,601	101,598	102,847	99,396	94618	99114
Seasonal Adjustment Factor	0.9162	0.9265	0.9564	1.0161	1.0290	1.0358	1.0344	1.0654	1.0251	1.0377	1.0028	0.9546	

Average Seasonal Factor (July):	1.1343
Resulting Seasonal Adjustment Factor:	0.00

CRASH RATE CALCULATIONS

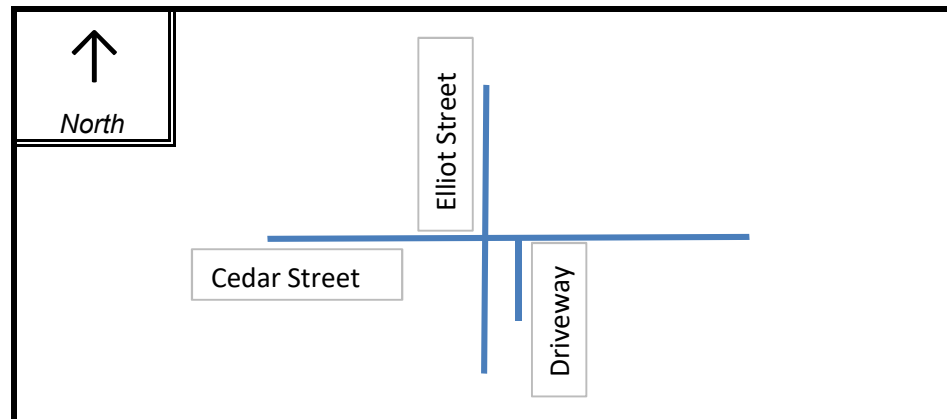
INTERSECTION CRASH RATE WORKSHEET

TOWN : Boylston COUNT DATE : 2/26/2020
 DISTRICT : 3 UNSIGNALIZED : ☐ SIGNALIZED : ☒

~ INTERSECTION DATA ~

MAJOR STREET : Main Street
 MINOR STREET(S) : Shrewsbury Street

INTERSECTION
DIAGRAM



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB	SWB	
PEAK HOURLY VOLUMES (PM) :	87	40	367	496	0	990

" K " FACTOR : 0.08 INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME : 12,375

TOTAL # OF CRASHES : 3 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (A) : 1.00

CRASH RATE CALCULATION :

0.22

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

Comments : The average crash rate for an unsignalized intersection in District 5 is 0.57

Project Title & Date: Geoffery Park 20082

INTERSECTION CRASH RATE WORKSHEET

TOWN : Holliston COUNT DATE : 6/24/2020

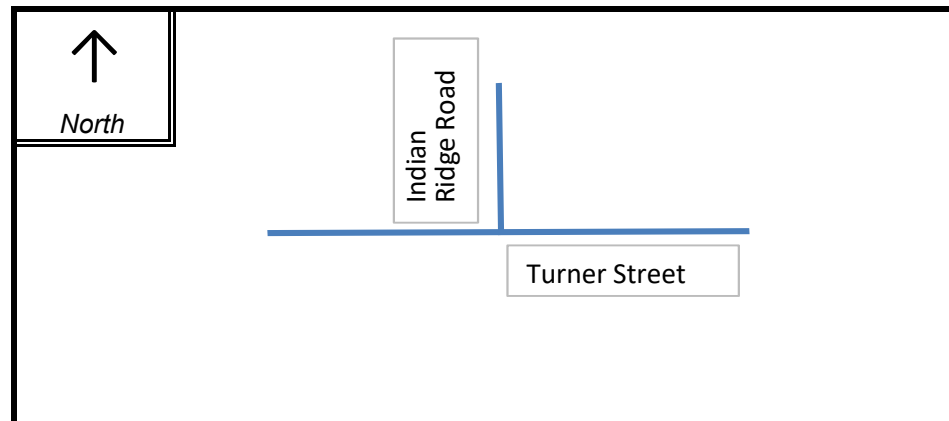
DISTRICT : 3 UNSIGNALIZED : ☒ SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Cedar Street

MINOR STREET(S) : Indian Ridge Road

INTERSECTION
DIAGRAM



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	WB	EB			
PEAK HOURLY VOLUMES (PM) :	7	19	7			33

" K " FACTOR :

0.08

INTERSECTION ADT (V) = TOTAL DAILY
APPROACH VOLUME :

413

TOTAL # OF CRASHES :

0

OF
YEARS :

3

AVERAGE # OF
CRASHES PER YEAR (A) :

0.00

CRASH RATE CALCULATION :

0.00

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

Comments : The average crash rate for an unsignalized intersection in District is 0.57

Project Title & Date: Geoffrey Park 20082

INTERSECTION CRASH RATE WORKSHEET

TOWN : Boylston COUNT DATE : 2/26/2020

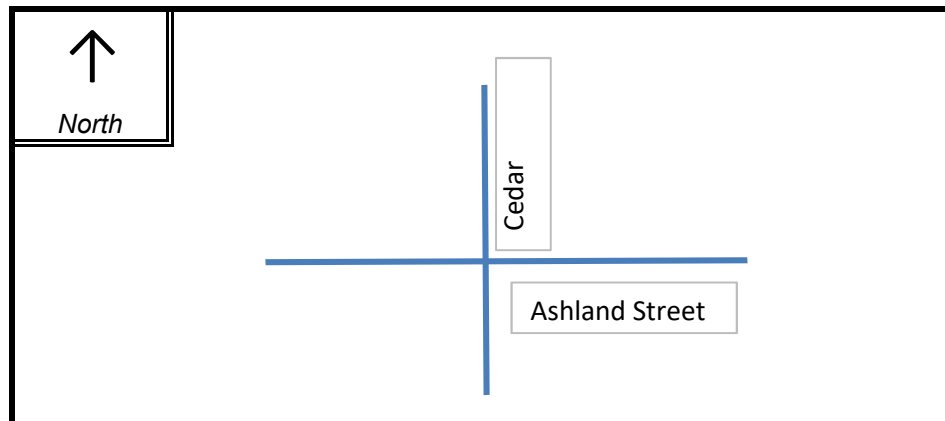
DISTRICT : 3 UNSIGNALIZED : ☒ SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Ashland Street

MINOR STREET(S) : Cedar Street

INTERSECTION
DIAGRAM



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	14	17	101	130		262

" K " FACTOR :

0.08

INTERSECTION ADT (V) = TOTAL DAILY
APPROACH VOLUME :

3,275

TOTAL # OF CRASHES :

1

OF
YEARS :

3

AVERAGE # OF
CRASHES PER YEAR (A) :

0.33

CRASH RATE CALCULATION :

0.28

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

Comments : The average crash rate for an unsignalized intersection in District is 0.57

Project Title & Date: Geoffery Park 20082

TRIP GENERATION CALCULATIONS

TRIP GENERATION WORKSHEET

LAND USE: *Single-Family Detatched Housing*
LAND USE CODE: 210 Independent Variable---Dwelling Units

PROJECT NAME: Geoffrey Park Apartments
PROJECT #: 20082 Number of Units: 24

WEEKDAY

RATES:	Total Trip Ends			Directional Dist.		Number of Studies
	Average	Low	High	Enter	Exit	
DAILY	9.44	4.81	19.39	50%	50%	159
AM PEAK	0.74	0.33	2.27	25%	75%	173
PM PEAK	0.99	0.44	2.98	63%	37%	190
PK GEN AM	0.76	0.36	2.27	26%	74%	157
PK GEN PM	1.00	0.49	2.98	64%	36%	165

	BY AVERAGE			BY REGRESSION			
	Total	Enter	Exit	Total	Enter	Exit	R ²
DAILY	230	115	115	25	13	13	0.95
AM PEAK	18	5	14	1160	290	870	0.89
PM PEAK	24	15	9	26	16	10	0.92
PK GEN AM	18	5	13	22	6	16	0.89
PK GEN PM	24	15	9	28	18	10	0.92

SATURDAY

RATES:	Total Trip Ends			Directional Dist.		Number of Studies
	Average	Low	High	Enter	Exit	
DAILY	9.54	5.32	15.25	50%	50%	52
PEAK HR	0.93	0.64	1.75	54%	46%	31

	BY AVERAGE			BY REGRESSION			
	Total	Enter	Exit	Total	Enter	Exit	R ²
DAILY	229	115	115	25	13	13	0.91
PEAK HR	22	-	-	38	21	17	0.87

SUNDAY

RATES:	Total Trip Ends			Directional Dist.		Number of Studies
	Average	Low	High	Enter	Exit	
DAILY	8.55	4.47	11.82	50%	50%	51
PEAK HR	0.85	0.6	1.45	53%	47%	31

	BY AVERAGE			BY REGRESSION			
	Total	Enter	Exit	Total	Enter	Exit	R ²
DAILY	205	103	103	148	74	74	0.94
PEAK HR	20	10	10	30	16	14	0.91

SOURCE: Trip Generation, 10th Edition, Institute of Transportation Engineers, 2017.



INTERSECTION CAPACITY ANALYSIS WORKSHEETS



Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	32	350	7	5	213	32	6	12	16	43	3	31
Future Vol, veh/h	32	350	7	5	213	32	6	12	16	43	3	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	380	8	5	232	35	7	13	17	47	3	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	267	0	0	388	0	0	732	731	384	729	718	250
Stage 1	-	-	-	-	-	-	454	454	-	260	260	-
Stage 2	-	-	-	-	-	-	278	277	-	469	458	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1297	-	-	1170	-	-	337	349	664	338	355	789
Stage 1	-	-	-	-	-	-	586	569	-	745	693	-
Stage 2	-	-	-	-	-	-	728	681	-	575	567	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1297	-	-	1170	-	-	311	335	664	310	341	789
Mov Cap-2 Maneuver	-	-	-	-	-	-	311	335	-	310	341	-
Stage 1	-	-	-	-	-	-	566	550	-	720	690	-
Stage 2	-	-	-	-	-	-	690	678	-	528	548	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.2	14.2	16
HCM LOS			B	C




Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	429	1297	-	-	1170	-	-	412
HCM Lane V/C Ratio	0.086	0.027	-	-	0.005	-	-	0.203
HCM Control Delay (s)	14.2	7.9	0	-	8.1	0	-	16
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.8

HCM 6th TWSC
3: Turner Road & Indian Ridge Road (S)

AM Peak Existing
07/13/2020

Intersection

Int Delay, s/veh 3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	3	6	11	1
Future Vol, veh/h	0	13	3	6	11	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	14	3	7	12	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	10	0	21
Stage 1	-	-	7
Stage 2	-	-	14
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1610	-	996
Stage 1	-	-	1016
Stage 2	-	-	1009
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1610	-	996
Mov Cap-2 Maneuver	-	-	996
Stage 1	-	-	1016
Stage 2	-	-	1009




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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1610	-	-	-	1002
HCM Lane V/C Ratio	-	-	-	-	0.013
HCM Control Delay (s)	0	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 6th TWSC
4: Ashland Street & Cedar Street

AM Peak Existing
07/13/2020

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	3	108	0	3	75	2	1	0	10	0	4	2
Future Vol, veh/h	3	108	0	3	75	2	1	0	10	0	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	117	0	3	82	2	1	0	11	0	4	2
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	84	0	0	117	0	0	215	213	117	218	212	83
Stage 1	-	-	-	-	-	-	123	123	-	89	89	-
Stage 2	-	-	-	-	-	-	92	90	-	129	123	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1513	-	-	1471	-	-	742	684	935	738	685	976
Stage 1	-	-	-	-	-	-	881	794	-	918	821	-
Stage 2	-	-	-	-	-	-	915	820	-	875	794	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1513	-	-	1471	-	-	735	681	935	727	682	976
Mov Cap-2 Maneuver	-	-	-	-	-	-	735	681	-	727	682	-
Stage 1	-	-	-	-	-	-	879	792	-	916	819	-
Stage 2	-	-	-	-	-	-	906	818	-	863	792	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			9			9.8		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	912	1513	-	-	1471	-	-	758				
HCM Lane V/C Ratio	0.013	0.002	-	-	0.002	-	-	0.009				
HCM Control Delay (s)	9	7.4	0	-	7.5	0	-	9.8				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0				

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	117	80	9	17	7
Future Vol, veh/h	1	117	80	9	17	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	127	87	10	18	8
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	97	0	-	0	221	92
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	129	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1496	-	-	-	767	965
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	897	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1496	-	-	-	766	965
Mov Cap-2 Maneuver	-	-	-	-	766	-
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	897	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		9.6		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1496	-	-	-	815	
HCM Lane V/C Ratio	0.001	-	-	-	0.032	
HCM Control Delay (s)	7.4	0	-	-	9.6	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	32	307	5	23	454	47	5	8	23	36	12	37
Future Vol, veh/h	32	307	5	23	454	47	5	8	23	36	12	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	334	5	25	493	51	5	9	25	39	13	40




Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	544	0	0	339	0	0	1002	1001	337	993	978	519
Stage 1	-	-	-	-	-	-	407	407	-	569	569	-
Stage 2	-	-	-	-	-	-	595	594	-	424	409	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1025	-	-	1220	-	-	221	243	705	224	250	557
Stage 1	-	-	-	-	-	-	621	597	-	507	506	-
Stage 2	-	-	-	-	-	-	491	493	-	608	596	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1025	-	-	1220	-	-	186	226	705	198	232	557
Mov Cap-2 Maneuver	-	-	-	-	-	-	186	226	-	198	232	-
Stage 1	-	-	-	-	-	-	595	572	-	486	491	-
Stage 2	-	-	-	-	-	-	430	478	-	553	571	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.4	15.6	23.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	379	1025	-	-	1220	-	-	283
HCM Lane V/C Ratio	0.103	0.034	-	-	0.02	-	-	0.326
HCM Control Delay (s)	15.6	8.6	0	-	8	0	-	23.8
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	1.4

HCM 6th TWSC
3: Turner Road & Indian Ridge Road (S)




PM Peak Existing
07/13/2020

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	4	19	6	3	0
Future Vol, veh/h	0	4	19	6	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	21	7	3	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	28	0	-	0	29	25
Stage 1	-	-	-	-	25	-
Stage 2	-	-	-	-	4	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1585	-	-	-	986	1051
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	1019	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1585	-	-	-	986	1051
Mov Cap-2 Maneuver	-	-	-	-	986	-
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	1019	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		8.7		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1585	-	-	-	986	
HCM Lane V/C Ratio	-	-	-	-	0.003	
HCM Control Delay (s)	0	-	-	-	8.7	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

HCM 6th TWSC
4: Ashland Street & Cedar Street

PM Peak Existing
07/13/2020

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	4	81	1	15	126	2	1	0	10	10	1	3
Future Vol, veh/h	4	81	1	15	126	2	1	0	10	10	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	88	1	16	137	2	1	0	11	11	1	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	139	0	0	89	0	0	269	268	89	272	267	138
Stage 1	-	-	-	-	-	-	97	97	-	170	170	-
Stage 2	-	-	-	-	-	-	172	171	-	102	97	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1445	-	-	1506	-	-	684	638	969	680	639	910
Stage 1	-	-	-	-	-	-	910	815	-	832	758	-
Stage 2	-	-	-	-	-	-	830	757	-	904	815	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1445	-	-	1506	-	-	673	628	969	664	629	910
Mov Cap-2 Maneuver	-	-	-	-	-	-	673	628	-	664	629	-
Stage 1	-	-	-	-	-	-	907	813	-	830	749	-
Stage 2	-	-	-	-	-	-	816	748	-	891	813	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.8			8.9			10.2		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	932	1445	-	-	1506	-	-	702				
HCM Lane V/C Ratio	0.013	0.003	-	-	0.011	-	-	0.022				
HCM Control Delay (s)	8.9	7.5	0	-	7.4	0	-	10.2				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1				

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	95	151	26	6	1
Future Vol, veh/h	6	95	151	26	6	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	103	164	28	7	1
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	192	0	-	0	295	178
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	117	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1381	-	-	-	696	865
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	908	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1381	-	-	-	693	865
Mov Cap-2 Maneuver	-	-	-	-	693	-
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	908	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.5	0		10.1		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1381	-	-	-	713	
HCM Lane V/C Ratio	0.005	-	-	-	0.011	
HCM Control Delay (s)	7.6	0	-	-	10.1	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	34	375	8	5	228	34	6	13	17	46	3	37
Future Vol, veh/h	34	375	8	5	228	34	6	13	17	46	3	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	408	9	5	248	37	7	14	18	50	3	40




Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	285	0	0	417	0	0	785	782	413	780	768	267
Stage 1	-	-	-	-	-	-	487	487	-	277	277	-
Stage 2	-	-	-	-	-	-	298	295	-	503	491	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1277	-	-	1142	-	-	310	326	639	313	332	772
Stage 1	-	-	-	-	-	-	562	550	-	729	681	-
Stage 2	-	-	-	-	-	-	711	669	-	551	548	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1277	-	-	1142	-	-	282	312	639	284	318	772
Mov Cap-2 Maneuver	-	-	-	-	-	-	282	312	-	284	318	-
Stage 1	-	-	-	-	-	-	541	529	-	701	678	-
Stage 2	-	-	-	-	-	-	667	666	-	501	527	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.2	14.9	17
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	402	1277	-	-	1142	-	-	392
HCM Lane V/C Ratio	0.097	0.029	-	-	0.005	-	-	0.238
HCM Control Delay (s)	14.9	7.9	0	-	8.2	0	-	17
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.9

HCM 6th TWSC
3: Turner Road & Indian Ridge Road (S)




AM Peak No Build
07/13/2020

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	14	3	6	12	1
Future Vol, veh/h	0	14	3	6	12	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	15	3	7	13	1
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	10	0	-	0	22	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	15	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1610	-	-	-	995	1075
Stage 1	-	-	-	-	1016	-
Stage 2	-	-	-	-	1008	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1610	-	-	-	995	1075
Mov Cap-2 Maneuver	-	-	-	-	995	-
Stage 1	-	-	-	-	1016	-
Stage 2	-	-	-	-	1008	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		8.6		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1610	-	-	-	1001	
HCM Lane V/C Ratio	-	-	-	-	0.014	
HCM Control Delay (s)	0	-	-	-	8.6	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

HCM 6th TWSC
4: Ashland Street & Cedar Street

AM Peak No Build
07/13/2020

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	116	0	3	80	2	1	0	10	0	4	2
Future Vol, veh/h	3	116	0	3	80	2	1	0	10	0	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	126	0	3	87	2	1	0	11	0	4	2
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	89	0	0	126	0	0	229	227	126	232	226	88
Stage 1	-	-	-	-	-	-	132	132	-	94	94	-
Stage 2	-	-	-	-	-	-	97	95	-	138	132	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1506	-	-	1460	-	-	726	672	924	723	673	970
Stage 1	-	-	-	-	-	-	871	787	-	913	817	-
Stage 2	-	-	-	-	-	-	910	816	-	865	787	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1506	-	-	1460	-	-	719	669	924	712	670	970
Mov Cap-2 Maneuver	-	-	-	-	-	-	719	669	-	712	670	-
Stage 1	-	-	-	-	-	-	869	785	-	911	815	-
Stage 2	-	-	-	-	-	-	901	814	-	853	785	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			9			9.9		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	901	1506	-	-	1460	-	-	747				
HCM Lane V/C Ratio	0.013	0.002	-	-	0.002	-	-	0.009				
HCM Control Delay (s)	9	7.4	0	-	7.5	0	-	9.9				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0				

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	125	86	10	18	8
Future Vol, veh/h	1	125	86	10	18	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	136	93	11	20	9
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	104	0	-	0	237	99
Stage 1	-	-	-	-	99	-
Stage 2	-	-	-	-	138	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1488	-	-	-	751	957
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	889	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1488	-	-	-	750	957
Mov Cap-2 Maneuver	-	-	-	-	750	-
Stage 1	-	-	-	-	924	-
Stage 2	-	-	-	-	889	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		9.6		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1488	-	-	-	803	
HCM Lane V/C Ratio	0.001	-	-	-	0.035	
HCM Control Delay (s)	7.4	0	-	-	9.6	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	34	375	9	7	228	34	10	14	21	36	3	33
Future Vol, veh/h	34	375	9	7	228	34	10	14	21	36	3	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	408	10	8	248	37	11	15	23	39	3	36




Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	285	0	0	418	0	0	789	788	413	789	775	267
Stage 1	-	-	-	-	-	-	487	487	-	283	283	-
Stage 2	-	-	-	-	-	-	302	301	-	506	492	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1277	-	-	1141	-	-	308	323	639	308	329	772
Stage 1	-	-	-	-	-	-	562	550	-	724	677	-
Stage 2	-	-	-	-	-	-	707	665	-	549	548	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1277	-	-	1141	-	-	281	308	639	276	314	772
Mov Cap-2 Maneuver	-	-	-	-	-	-	281	308	-	276	314	-
Stage 1	-	-	-	-	-	-	541	529	-	696	672	-
Stage 2	-	-	-	-	-	-	666	660	-	495	527	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.2			15.4			16.4		
HCM LOS							C			C		




Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	395	1277	-	-	1141	-	-	394
HCM Lane V/C Ratio	0.124	0.029	-	-	0.007	-	-	0.199
HCM Control Delay (s)	15.4	7.9	0	-	8.2	0	-	16.4
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	0.7

HCM 6th TWSC
3: Turner Road & Indian Ridge Road (S)

AM Peak Build
07/13/2020

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	14	3	7	1	5
Future Vol, veh/h	2	14	3	7	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	15	3	8	1	5
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	11	0	-	0	26	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	19	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1608	-	-	-	989	1075
Stage 1	-	-	-	-	1016	-
Stage 2	-	-	-	-	1004	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1608	-	-	-	988	1075
Mov Cap-2 Maneuver	-	-	-	-	988	-
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1004	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.9	0		8.4		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1608	-	-	-	1059	
HCM Lane V/C Ratio	0.001	-	-	-	0.006	
HCM Control Delay (s)	7.2	0	-	-	8.4	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	3	117	0	4	82	3	0	1	11	1	4	2
Future Vol, veh/h	3	117	0	4	82	3	0	1	11	1	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	127	0	4	89	3	0	1	12	1	4	2
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	92	0	0	127	0	0	235	233	127	239	232	91
Stage 1	-	-	-	-	-	-	133	133	-	99	99	-
Stage 2	-	-	-	-	-	-	102	100	-	140	133	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1503	-	-	1459	-	-	720	667	923	715	668	967
Stage 1	-	-	-	-	-	-	870	786	-	907	813	-
Stage 2	-	-	-	-	-	-	904	812	-	863	786	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1503	-	-	1459	-	-	712	664	923	702	665	967
Mov Cap-2 Maneuver	-	-	-	-	-	-	712	664	-	702	665	-
Stage 1	-	-	-	-	-	-	868	784	-	905	811	-
Stage 2	-	-	-	-	-	-	894	810	-	849	784	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.3			9.1			9.9		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	894	1503	-	-	1459	-	-	736				
HCM Lane V/C Ratio	0.015	0.002	-	-	0.003	-	-	0.01				
HCM Control Delay (s)	9.1	7.4	0	-	7.5	0	-	9.9				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0				

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	125	86	11	20	13
Future Vol, veh/h	3	125	86	11	20	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	136	93	12	22	14
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	105	0	-	0	241	99
Stage 1	-	-	-	-	99	-
Stage 2	-	-	-	-	142	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1486	-	-	-	747	957
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	885	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1486	-	-	-	746	957
Mov Cap-2 Maneuver	-	-	-	-	746	-
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	885	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		9.6		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1486	-	-	-	817	
HCM Lane V/C Ratio	0.002	-	-	-	0.044	
HCM Control Delay (s)	7.4	0	-	-	9.6	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	34	329	5	25	487	50	5	9	25	39	13	40
Future Vol, veh/h	34	329	5	25	487	50	5	9	25	39	13	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	358	5	27	529	54	5	10	27	42	14	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	583	0	0	363	0	0	1074	1072	361	1063	1047	556
Stage 1	-	-	-	-	-	-	435	435	-	610	610	-
Stage 2	-	-	-	-	-	-	639	637	-	453	437	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	991	-	-	1196	-	-	198	220	684	201	228	531
Stage 1	-	-	-	-	-	-	600	580	-	482	485	-
Stage 2	-	-	-	-	-	-	464	471	-	586	579	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	991	-	-	1196	-	-	162	203	684	175	210	531
Mov Cap-2 Maneuver	-	-	-	-	-	-	162	203	-	175	210	-
Stage 1	-	-	-	-	-	-	572	553	-	459	469	-
Stage 2	-	-	-	-	-	-	399	455	-	527	552	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.4	16.7	27.9
HCM LOS			C	D




Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	349	991	-	-	1196	-	-	255
HCM Lane V/C Ratio	0.121	0.037	-	-	0.023	-	-	0.392
HCM Control Delay (s)	16.7	8.8	0	-	8.1	0	-	27.9
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0.1	-	-	1.8

HCM 6th TWSC
3: Turner Road & Indian Ridge Road (S)

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Intersection

Int Delay, s/veh 0.7




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	4	20	8	3	0
Future Vol, veh/h	0	4	20	8	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	22	9	3	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	31	0	0 31 27
Stage 1	-	-	- 27 -
Stage 2	-	-	- 4 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1582	-	- 983 1048
Stage 1	-	-	- 996 -
Stage 2	-	-	- 1019 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1582	-	- 983 1048
Mov Cap-2 Maneuver	-	-	- 983 -
Stage 1	-	-	- 996 -
Stage 2	-	-	- 1019 -

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1582	-	-	-	983
HCM Lane V/C Ratio	-	-	-	-	0.003
HCM Control Delay (s)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	4	87	1	16	135	11	1	0	11	11	1	3
Future Vol, veh/h	4	87	1	16	135	11	1	0	11	11	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	95	1	17	147	12	1	0	12	12	1	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	159	0	0	96	0	0	293	297	96	297	291	153
Stage 1	-	-	-	-	-	-	104	104	-	187	187	-
Stage 2	-	-	-	-	-	-	189	193	-	110	104	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1420	-	-	1498	-	-	659	615	960	655	619	893
Stage 1	-	-	-	-	-	-	902	809	-	815	745	-
Stage 2	-	-	-	-	-	-	813	741	-	895	809	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1420	-	-	1498	-	-	648	606	960	639	610	893
Mov Cap-2 Maneuver	-	-	-	-	-	-	648	606	-	639	610	-
Stage 1	-	-	-	-	-	-	899	807	-	813	736	-
Stage 2	-	-	-	-	-	-	799	732	-	881	807	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.7			9			10.5		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	923	1420	-	-	1498	-	-	675				
HCM Lane V/C Ratio	0.014	0.003	-	-	0.012	-	-	0.024				
HCM Control Delay (s)	9	7.5	0	-	7.4	0	-	10.5				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1				

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	102	162	28	6	1
Future Vol, veh/h	6	102	162	28	6	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	111	176	30	7	1
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	206	0	-	0	316	191
Stage 1	-	-	-	-	191	-
Stage 2	-	-	-	-	125	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1365	-	-	-	677	851
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	901	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1365	-	-	-	674	851
Mov Cap-2 Maneuver	-	-	-	-	674	-
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	901	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		10.2		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1365	-	-	-	695	
HCM Lane V/C Ratio	0.005	-	-	-	0.011	
HCM Control Delay (s)	7.7	0	-	-	10.2	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	9	329	5	29	487	50	7	10	23	39	13	40
Future Vol, veh/h	9	329	5	29	487	50	7	10	23	39	13	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	358	5	32	529	54	8	11	25	42	14	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	583	0	0	363	0	0	1030	1028	361	1019	1003	556
Stage 1	-	-	-	-	-	-	381	381	-	620	620	-
Stage 2	-	-	-	-	-	-	649	647	-	399	383	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	991	-	-	1196	-	-	212	234	684	215	242	531
Stage 1	-	-	-	-	-	-	641	613	-	476	480	-
Stage 2	-	-	-	-	-	-	458	467	-	627	612	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	991	-	-	1196	-	-	178	222	684	192	229	531
Mov Cap-2 Maneuver	-	-	-	-	-	-	178	222	-	192	229	-
Stage 1	-	-	-	-	-	-	633	605	-	470	461	-
Stage 2	-	-	-	-	-	-	391	448	-	586	604	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.4	17.2	25.5
HCM LOS			C	D




Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	339	991	-	-	1196	-	-	274
HCM Lane V/C Ratio	0.128	0.01	-	-	0.026	-	-	0.365
HCM Control Delay (s)	17.2	8.7	0	-	8.1	0	-	25.5
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	1.6

HCM 6th TWSC
3: Turner Road & Indian Ridge Road (S)

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Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	4	20	10	1	4
Future Vol, veh/h	6	4	20	10	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	4	22	11	1	4

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	33	0	0 46 28
Stage 1	-	-	- 28 -
Stage 2	-	-	- 18 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1579	-	- 964 1047
Stage 1	-	-	- 995 -
Stage 2	-	-	- 1005 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1579	-	- 960 1047
Mov Cap-2 Maneuver	-	-	- 960 -
Stage 1	-	-	- 991 -
Stage 2	-	-	- 1005 -

Approach	EB	WB	SB
HCM Control Delay, s	4.4	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1579	-	-	-	1028
HCM Lane V/C Ratio	0.004	-	-	-	0.005
HCM Control Delay (s)	7.3	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 6th TWSC
4: Ashland Street & Cedar Street




PM Peak Build
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Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	4	91	1	17	137	12	0	1	12	3	11	3
Future Vol, veh/h	4	91	1	17	137	12	0	1	12	3	11	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	99	1	18	149	13	0	1	13	3	12	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	162	0	0	100	0	0	307	306	100	307	300	156
Stage 1	-	-	-	-	-	-	108	108	-	192	192	-
Stage 2	-	-	-	-	-	-	199	198	-	115	108	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1417	-	-	1493	-	-	645	608	956	645	612	890
Stage 1	-	-	-	-	-	-	897	806	-	810	742	-
Stage 2	-	-	-	-	-	-	803	737	-	890	806	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1417	-	-	1493	-	-	625	598	956	628	602	890
Mov Cap-2 Maneuver	-	-	-	-	-	-	625	598	-	628	602	-
Stage 1	-	-	-	-	-	-	894	804	-	808	732	-
Stage 2	-	-	-	-	-	-	777	727	-	874	804	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.8	9	10.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	914	1417	-	-	1493	-	-	643
HCM Lane V/C Ratio	0.015	0.003	-	-	0.012	-	-	0.029
HCM Control Delay (s)	9	7.5	0	-	7.4	0	-	10.8
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	102	162	30	7	5
Future Vol, veh/h	13	102	162	30	7	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	111	176	33	8	5
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	209	0	-	0	332	193
Stage 1	-	-	-	-	193	-
Stage 2	-	-	-	-	139	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1362	-	-	-	663	849
Stage 1	-	-	-	-	840	-
Stage 2	-	-	-	-	888	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1362	-	-	-	656	849
Mov Cap-2 Maneuver	-	-	-	-	656	-
Stage 1	-	-	-	-	831	-
Stage 2	-	-	-	-	888	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.9	0		10.1		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1362	-	-	-	725	
HCM Lane V/C Ratio	0.01	-	-	-	0.018	
HCM Control Delay (s)	7.7	0	-	-	10.1	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

CENSUS DATA

Measures - Workers 16 and Ove

	Total, means of transportation	Car, truck, or van – 1 or 2 persons		Car, truck, or van – 3 or 4 persons		Car, truck, or van – 5 or 6 persons		Car, truck, or van – 7 or 8 persons		Bus or trolley bus	Streetcar or trolley car	Subway or elevated	Railroad	Ferryboat	Bicycle	Walked	Taxicab	Motorcycle	Other method	Worked at home	Auto					
		Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error																	
WORKPLACE																										
Holliston town, Middlesex County, Massachusetts	1,535	194	8,390	150	40	44	4	8	0	12	0	12	0	12	0	12	65	47	0	12	10	138	583	1,831	874	154
Lumpkinham River, Middlesex County, Massachusetts	241	85	241	85	241	85	241	85	241	85	241	85	241	85	241	85	241	85	241	85	241	85	241	85	241	85
North city, Suffolk County, Massachusetts	875	183	475	125	20	34	0	12	15	23	0	12	20	34	0	12	75	46	220	89	0	12	0	12	530	136
Norfolk town, Middlesex County, Massachusetts	315	87	295	88	20	31	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	315	96
Northborough, Middlesex County, Massachusetts	89	213	89	213	89	213	89	213	89	213	89	213	89	213	89	213	89	213	89	213	89	213	89	213	89	213
Newton city, Middlesex County, Massachusetts	200	104	175	100	10	14	20	24	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	205	106
Cambridge city, Middlesex County, Massachusetts	190	83	180	86	0	12	0	12	0	12	0	12	0	12	0	12	10	13	0	12	0	12	0	12	180	84
Northampton town, Norfolk County, Massachusetts	190	83	180	86	0	12	0	12	0	12	0	12	0	12	0	12	10	13	0	12	0	12	0	12	180	84
Hopkinton town, Middlesex County, Massachusetts	175	79	175	79	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	175	83
Norham town, Norfolk County, Massachusetts	155	74	155	74	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	155	76
Waltham city, Middlesex County, Massachusetts	145	69	145	69	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	145	71
Ashland town, Middlesex County, Massachusetts	130	71	130	71	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	130	74
Milford town, Worcester County, Massachusetts	125	72	115	71	10	13	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	125	76
Quincy city, Norfolk County, Massachusetts	120	93	120	93	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	120	96
Worcester city, Worcester County, Massachusetts	110	59	110	59	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	110	60
Norwood town, Norfolk County, Massachusetts	100	58	85	49	11	25	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	100	60
Taunton town, Norfolk County, Massachusetts	65	45	65	45	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	65	24
Westborough town, Worcester County, Massachusetts	40	31	40	31	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	40	34
Weston town, Middlesex County, Massachusetts	60	54	60	54	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	60	60
Bellingham town, Norfolk County, Massachusetts	60	43	60	43	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	60	49
Bellingham town, Middlesex County, Massachusetts	46	35	46	35	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	46	39
Lowell city, Middlesex County, Massachusetts	55	48	55	48	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	55	55
Medway town, Norfolk County, Massachusetts	55	42	45	46	10	13	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	55	48
Second town, Middlesex County, Massachusetts	45	38	45	38	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	45	40
Watertown city, Middlesex County, Massachusetts	45	32	45	32	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	45	42
Hopkinton town, Worcester County, Massachusetts	45	41	45	41	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	45	49
Bedford town, Middlesex County, Massachusetts	40	32	40	32	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	40	43
Weymouth town, Middlesex County, Massachusetts	40	35	40	35	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	40	44
Weymouth town, Norfolk County, Massachusetts	40	40	40	40	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	40	48
Andover town, Worcester County, Massachusetts	40	37	40	37	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	40	46
Franklin town, Norfolk County, Massachusetts	35	39	35	29	10	16	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	35	41
Acton town, Middlesex County, Massachusetts	30	38	15	26	0	12	0	12	15	29	0	12	0	12	0	12	0	12	0	12	0	12	0	12	30	46
Bedford town, Middlesex County, Massachusetts	30	31	30	25	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	30	46
Medford city, Middlesex County, Massachusetts	30	29	30	29	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	30	39
Braintree town, Norfolk County, Massachusetts	30	34	30	34	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	30	43
Southborough town, Norfolk County, Massachusetts	30	29	30	29	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	30	39
Southborough town, Worcester County, Massachusetts	30	23	30	23	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	30	35
Maryland town, Middlesex County, Massachusetts	25	37	25	37	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	25	46
Andover city, Middlesex County, Massachusetts	25	28	25	28	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	25	46
Grotonville city, Middlesex County, Massachusetts	25	25	25	25	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	25	38
Tewksbury town, Middlesex County, Massachusetts	25	27	25	27	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	25	38
Marlborough town, Middlesex County, Massachusetts	25	25	25	25	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	25	38
Deerham town, Norfolk County, Massachusetts	25	28	25	28	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	25	39
Medfield town, Norfolk County, Massachusetts	25	24	25	24	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	25	36
Wrentham town, Norfolk County, Massachusetts	25	25	25	25	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	25	36
Westwood town, Norfolk County, Massachusetts	25	25	25	25	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	25	36
Taunton town, Worcester County, Massachusetts	25	34	25	34	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	25	43
Bedford town, Bristol County, Massachusetts	20	27	20	27	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	20	38
Brookline town, Norfolk County, Massachusetts	20	22	20	22	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	20	34
Weymouth Town city, Norfolk County, Massachusetts	20	30	15	33	0	12	4	9	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	19	42
Northborough town, Worcester County, Massachusetts	20	24	20	24	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	20	38
Everett city, Middlesex County, Massachusetts	15	17	15	17	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	15	32
Leicester town, Middlesex County, Massachusetts	15	22	15	22	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	15	34
Northon town, Middlesex County, Massachusetts	15	18	15	18	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	15	34
Wassfield town, Middlesex County, Massachusetts	15	22	15	22	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	15	34
Westford town, Middlesex County, Massachusetts	15	21	4	7	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	10	21	0	12	4	27
Dover town, Norfolk County, Massachusetts	15	24	15	24	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	15	36
Milton town, Norfolk County, Massachusetts	15	24	15	24	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	15	36
Norfolk town, Norfolk County, Massachusetts	15	26	15	26	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	15	37
Quincy town, Norfolk County, Massachusetts	15	22	15	22	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	15	34
Norham town, Norfolk County, Massachusetts	15	24	15	24	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	15	39
Methuen town city, Essex County, Massachusetts	10	13	10	13	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	10	10
Billerica town, Middlesex County, Massachusetts	10	15	10	15	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	10	