21 Murdock Street

Somerville, Massachusetts

(22 Dwelling Units)

Traffic Impact & Access Study

Prepared For:

Cedar Murdock Partners, LLC

Prepared by:

Design Consultants, Inc.

DESIGN CONSULTANTS, INC.

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EXECUTIVE SUMMARY

Design Consultants, Inc. (DCI) has prepared this Traffic Impact and Access Study (TIAS) to analyze the impact of the proposed residential units at 21 Murdock Street ("Project") on surrounding traffic operations in Somerville, MA. Currently, the site has two commercial buildings totaling 23,151 square feet, one at 227 Cedar Street and one at 17 Murdock Street. The proposed project will demolish both buildings and construct five new residential buildings. Of the five new residential buildings, two will contain 4-units, two will contain 2-units, and one will contain 10-units, for a total number of 22 dwelling units. A total of 34 parking spaces will be constructed for those units. A total of 26 of the 34 parking spaces will be located underground, underneath the 10-unit building. There will be a two-way driveway on Cedar Street that will act as both the access and egress point for all vehicles. An emergency access driveway will connect the site to Murdock Street, which will be used for emergency vehicles only. There will be a breakaway gate placed at the entrance that will prohibit passenger vehicles from entering and exiting from Murdock Street.

Land use surrounding the site is primarily residential. Approximately 700 feet north of the Project site is a recreational field as well as an industrial area.

Existing conditions analysis, trip generation, safety analyses, and capacity analyses were carried out to assess the impact that the new development at 21 Murdock Street will have on local traffic operations.

Study Area

The following five (5) intersections in Somerville, Massachusetts were examined in this traffic study:

- Cedar Street at Highland Avenue
- Cedar Street at Clyde Street
- Cedar Street at Murdock Street
- Cedar Street at Franey Road
- Cedar Street at Broadway

Each of the study intersections is highlighted relative to the project site in Figure A2. Section B contains detailed descriptions of the existing conditions for each study intersection and corresponding roadways.

Safety Analysis

Crash data from the Massachusetts Department of Transportation (MassDOT) was analyzed from years 2012 to 2014, the most recent three years of data available. The data was analyzed to determine trends in location, manner of collision, and weather in order to point out high crash locations and analyze possible causation if necessary. None of the study intersections have crash rates above District 4 and State averages. None of the crashes resulted in fatal injuries. In addition

to the intersection crash data, a sight distance analysis was carried out at the proposed site driveway on Cedar Street.

Capacity Analysis

Capacity analyses were performed at each of the study intersections under three scenarios: Existing Conditions, No-Build, and Build.

The MassDOT Transportation Impact Assessment (TIA) Guidelines require a 7-year planning horizon to the year 2023. The Existing Conditions analysis is based on current traffic counts carried out in the study area. The No-Build scenario reflects traffic adjustments due to regional growth and off-site developments on a seven year horizon to the year 2023. The Build scenario takes the predicted site specific traffic volumes on the study network and sums them with the traffic volumes of the No-Build scenario. Detailed breakdowns of each of these scenarios are included in Section B of this report.

Level of Service (LOS) was the basis for comparison and operational analysis for this study. LOS is a term used to qualitatively measure performance of traffic conditions of each intersection and is explained further in the body of this study. A comparison showing the results of these analyses is shown in Table 1.

Table 1: Level-of-Service Summary

ID	*East-West Road*	*North-South Road*	*Lane*	Existing		No-Build*		Build	
				AM	PM	AM	PM	AM	PM
1	Broadway	Cedar Street	*EB T*	D	C	D	C	D	C
			EB R	A	A	A	A	A	A
			WB L	D	B	D	C	D	C
			WB R	B	B	B	B	B	B
			NB LR	D	E	D	E	D	E
			Overall	C	C	C	C	C	C
2	Highland Avenue	Cedar Street	*EB LTR*	B	C	B	B	B	B
			WB LTR	C	C	C	C	C	C
			SB LTR	E	D	E	D	E	D
			Overall	D	C	D	C	D	C
3	Clyde Street	Cedar Street	*WB LR*	B	B	B	B	B	B
			NB T	--	--	--	--	--	--
			SB T	--	--	--	--	--	--
			Overall	--	--	--	--	--	--
4	Murdock Street	Cedar Street	*NB TR*	--	--	--	--	--	--
			SB LT	A	A	A	A	A	A
			NWB LR	B	B	B	B	B	B
			Overall	--	--	--	--	--	--
5	Franey Road	Cedar Street	*WB LR*	C	B	C	B	C	B
			NB TR	--	--	--	--	--	--
			SB LT	A	A	A	A	A	A
			Overall	--	--	--	--	--	--

LEGEND

LOS Declined from Existing to No-Build

*Any improvements to No-Build Conditions are due to the standard practice of using a 0.92 Peak Hour Factor for future conditions in accordance with MassDOT Guidelines.

As shown in Table 1, the residential units at 21 Murdock Street are expected to have a minimal impact on surrounding traffic network. This impact is represented by the lack of LOS degradation between the No-Build and Build conditions. More detailed analyses of each scenario are included in Section D of this report.

Conclusion

This study was created for the proposed residential development at 21 Murdock Street in Somerville, Massachusetts. The goal was to analyze the impact that the new development will have on surrounding traffic networks. The project includes 22 residential units in five buildings, as well as 34 parking spaces on-site.

From a safety perspective, recent data has shown that none of five study intersections have above average crash rates. Additionally, sight distance at the proposed Cedar Street driveway exceeds the requirements set forth by the American Association of State Highway and Transportation Officials (AASHTO).

Capacity analyses were performed for each of the five study intersections for the weekday morning and weekday evening peak hours. In order to determine the specific impact that the proposed Project will have on traffic operations, analyses were carried out for 2016 Existing conditions, 2023 No-Build conditions, and 2023 Build conditions. Zero of the study intersections have movements that decline in Level of Service going from the No-Build to Build scenarios, representing a lack of impact of the proposed Project.

A. EXISTING CONDITIONS

A1. STUDY AREA

The study area is located in a primarily residential area in Somerville at 21 Murdock Street. The following five intersections were selected for analysis as part of this study:

- Cedar Street at Highland Avenue
- Cedar Street at Clyde Street
- Cedar Street at Murdock Street
- Cedar Street at Franey Road
- Cedar Street at Broadway

Figure A1 is a locus map, showing the study area relative to the larger transportation network.

A2. STUDY ROADWAYS

Cedar Street is classified as an urban collector and is under City of Somerville jurisdiction, except when it crosses over the MBTA Commuter Rail tracks for a stretch of approximately 160 feet north of Alpine Street, where it is under MassDOT jurisdiction. It runs in an approximate

northeast-southwest direction, and spans approximately 0.80 miles from its northeastern limit at Broadway to its southwestern limit at Elm Street. Within the study area, Cedar Street has a curb-to-curb width of approximately 27 feet. Cedar Street is a two-way, two-lane roadway between Highland Avenue and Broadway, and a one-way, one-lane roadway in the southwest direction between Highland Avenue and Elm Street. Parking is permitted on the east side of Cedar Street near the project site, and prohibited on the west side. The posted speed limit on Cedar Street is 25 miles per hour. Sidewalks are continuous along both sides of the street.

Murdock Street is classified as a local road under City of Somerville jurisdiction. Murdock Street runs northwest-southeast and is approximately 860 feet in length, spanning from its intersection with Cedar Street to its intersection with Clyde Street. Within the study area, Murdock Street has an approximate paved width of 20 feet, with parking permitted on gravel shoulders. There is no posted speed limit on Murdock Street. Within the study area, there are no sidewalks located along Murdock Street.

Franey Road is classified as a local road under City of Somerville jurisdiction. Franey Road is a two-way roadway that spans approximately 650 feet from its intersection with Cedar Street to its intersection with Charles E. Ryan Road. The curb-to-curb width along Franey Road varies between 35 and 37 feet, with parking permitted along the south side and sporadically along the north side of the roadway. There is no posted speed limit along Franey Road. Sidewalks are present along the south side of the roadway.

Clyde Street is classified as a local road under City of Somerville jurisdiction. Clyde Street is a one-way roadway in the northwest direction, and is approximately 700 feet in length, connecting Warwick Street/Maxwells Green to Cedar Street. The curb-to-curb width along Cedar Street is approximately 20 feet, with parking permitted on the south side of the roadway. There is no posted speed limit on Clyde Street. There are sidewalks along both sides of Clyde Street along its entire length.

Highland Avenue is classified as an urban minor arterial under City of Somerville jurisdiction. It runs in an approximate northwest-southeast direction, and spans approximately 1.75 miles from its intersection with Elm Street and College Avenue in Davis Square to its intersection with Medford Street and Hamlet Street. Highland Avenue has a curb-to-curb width of 40 feet within the study area. Highland Avenue carries one travel lane in each direction, separated by a double yellow center line. There is no posted speed limit on Highland Avenue. Sidewalks are provided on both sides of the road.

A3. STUDY INTERSECTIONS

Of the five total study intersections, three are unsignalized and two are signalized. Figure A2 shows the study intersections of the project.

The intersection of **Cedar Street at Broadway** is a three-way, signalized intersection. Cedar Street runs north-south and Broadway runs generally northwest-southeast. The northbound approach on Cedar Street carries one left-through-right turn lane. The Broadway northwest approach carries a shared through-right turn lane and an exclusive left-turn lane. The southeast approach carries a shared left-through lane and an exclusive right-turn lane. The northwest left-turn is both protected and permitted, southeast right-turn is permitted with both the Broadway phase as well as with the Cedar Street phase. There is an exclusive pedestrian phase, and there are pedestrian pushbuttons at every corner. Sidewalks are present at all approaches to the intersection, and there are crosswalks present across the Cedar Street approach and the Broadway northwest approach.

The intersection of **Cedar Street at Franey Road** is a three-way, unsignalized intersection. Cedar Street runs generally north-south and carries one travel lane in each direction. Franey Road runs generally east-west and there is one left-right turn lane at the intersection. At the intersection, there are sidewalks on both sides of Cedar Street and the south side of Franey Road. Crosswalks are provided across the Franey Road approach.

The intersection of **Cedar Street at Murdock Street** is a three-way, unsignalized intersection. Cedar Street runs in a generally north-south direction, and Murdock Street approaches from the southeast, and both streets carry one travel lane in both directions. The Cedar Street approaches do not operate under any traffic control, while the Murdock Street approach is under stop control. There are sidewalks on both sides of Cedar Street. A crosswalk is present across the Murdock Street approach.

The intersection of **Cedar Street at Clyde Street** is a three-way, unsignalized intersection. Cedar Street runs in a general north-south direction, and Clyde Street approaches from the southeast. Cedar Street has one travel lane in each direction, and Clyde Street carries one lane with one-way travel in the northwest direction. There are sidewalks present at all approaches to the intersection. A crosswalk is present across the Clyde Street approach.

The intersection of **Cedar Street at Highland Avenue** is a four-way, signalized intersection. Cedar Street runs in a generally north-south direction, and Highland Avenue runs generally east-west. The eastbound and westbound movements on Highland Avenue operate on the same phase, and the southbound movement on Cedar Street operates on its own phase. There are sidewalks present at all approaches to the intersection. There is an exclusive pedestrian phase, and crosswalks are present across all approaches at the intersection.

A4. MULTI-MODAL TRANSPORTATION

Pedestrian and Bicycle Facilities

Along Murdock Street, there are no sidewalks along the roadway. Sidewalks are present on both sides of Cedar Street, both sides of Broadway, both sides of Highland Avenue, both sides of Clyde Street, and the south side of Franey Road within the Project area. There are striped crosswalks

across all approaches at the intersection of Cedar Street and Highland Avenue, across the Franey Road approach at its intersection with Cedar Street, and across the Cedar Street approach and Broadway westbound approach at the intersection of Cedar Street at Broadway.

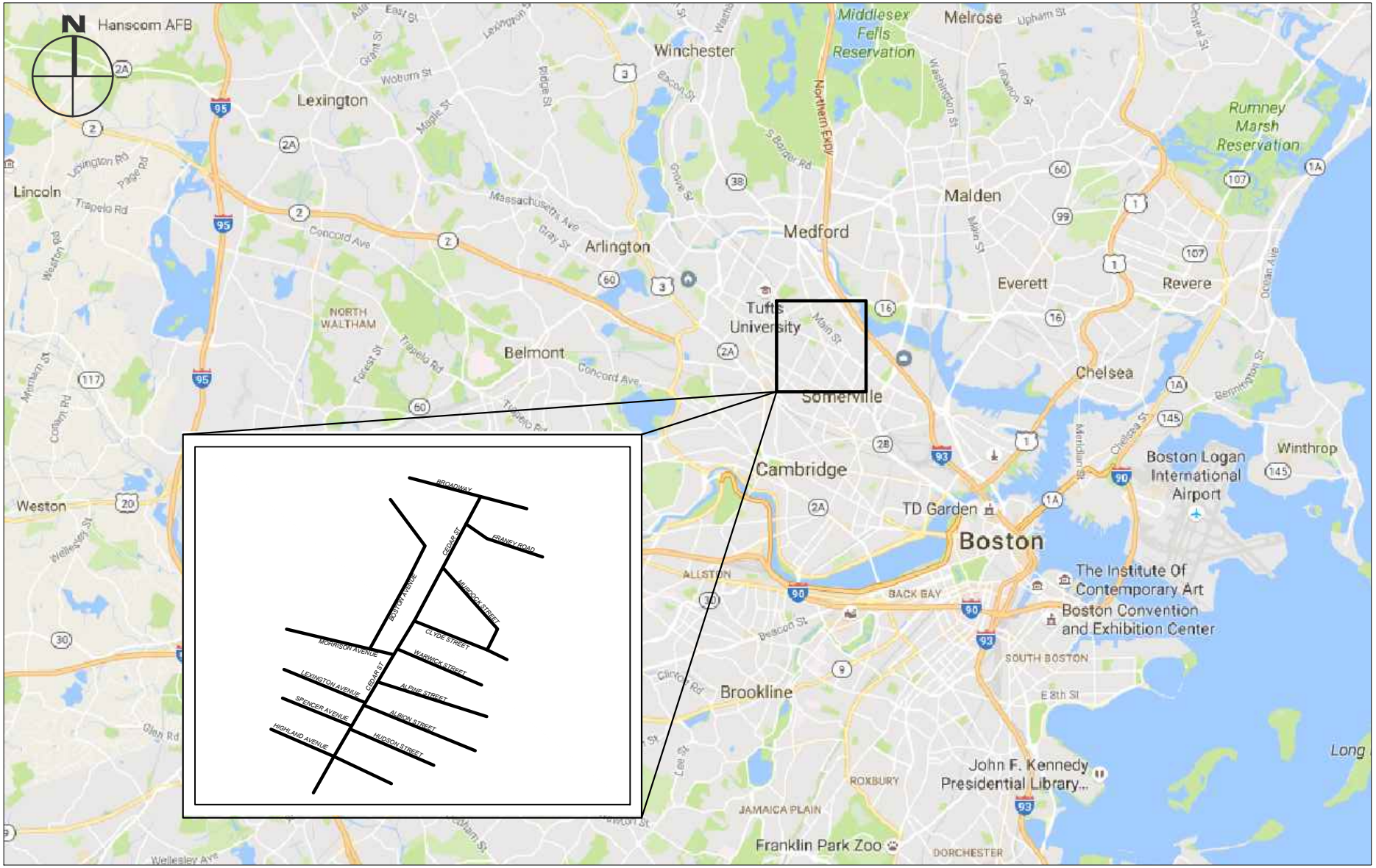
There are "sharrows" (shared lane markings) along Cedar Street within the study area. Along Broadway west of its intersection with Cedar Street, there are painted bicycle lanes in both the eastbound and westbound directions. Along Highland Avenue, there are sharrows in both directions on each side of Cedar Street.

Additionally, the Somerville Community Path is located approximately 1000 feet from the Project site. The Somerville Community Path is a shared-use path in Somerville that starts at the Alewife Linear Park and currently ends at Lowell Street in Somerville. According to the MBTA's published plans for the Green Line Extension project, the MBTA has committed to extending the community path from Lowell Street in Somerville to North Point. This extended shared use path will encourage more residents to walk or ride bicycles versus driving a motor vehicle.

Massachusetts Bay Transportation Authority (MBTA)

The MBTA services the study area with bus routes 80, 88, 89, 90, and 93. Bus route 80 runs along Broadway, approximately 800 feet from the Project site, between Arlington Center in Arlington and Lechmere Station on the MBTA Green Line in Cambridge. Bus route 88 runs along Highland Avenue, approximately 0.33 miles from the Project site, and runs between Clarendon Hills Busway in Somerville and Lechmere Station in Cambridge. Bus route 89 runs along Broadway between the Clarendon Hill Busway and Sullivan Square Station, a stop on the MBTA Orange Line. Bus route 90 runs along Highland Avenue between Davis Square in Somerville, a stop on the MBTA Red Line, and Wellington Station in Medford, a stop on the MBTA Orange Line. Bus route 93 runs between Sullivan Station and Devonshire Street/Milk Street in downtown Boston. Detailed schedules and bus routes for each bus service is provided in Appendix B.

The MBTA Red Line has a stop in Davis Square, approximately 0.75 miles from the Project site. The MBTA Red Line is a rapid transit line that connects Davis Square with downtown Boston and surrounding areas, with connections to other rapid transit lines.



P:\2016 PROJECTS\2016-127 21 MURDOCK ST SOMERVILLE_TRAFFIC\CAD\16-127 TRAFFIC FIGURES JANUARY 2017.DWG

Design Consultants, Inc.
Consulting Engineers and Surveyors
120 MIDDLESEX AVENUE, SUITE 20
SOMERVILLE, MA 02145
(617) 776-3350

21 MURDOCK STREET SOMERVILLE, MA

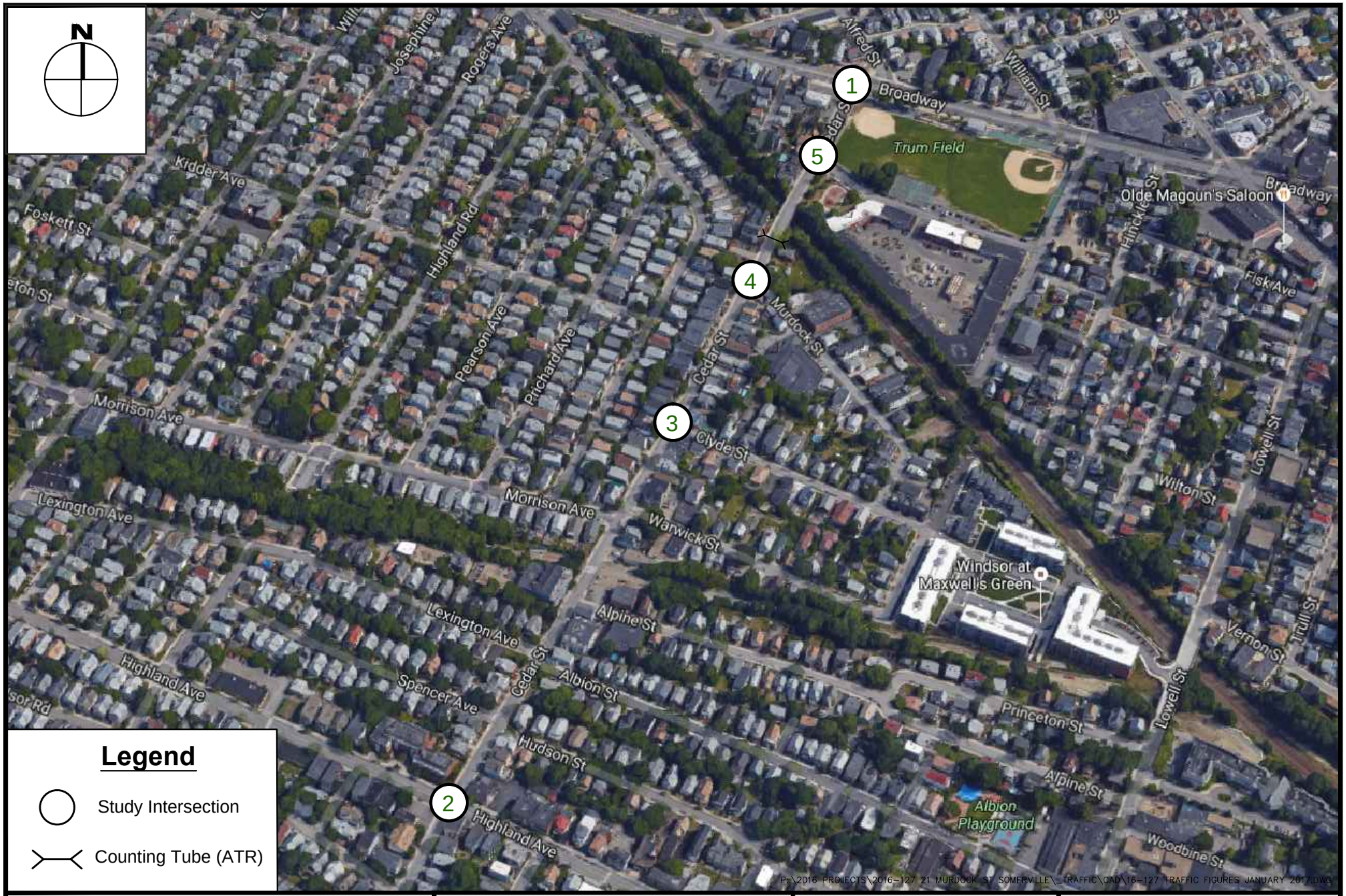
Locus Map

PROJECT NO.: 2016-127

DATE: JANUARY 2017

SCALE: N.T.S.

Figure A1



Design Consultants, Inc.
Consulting Engineers and Surveyors
120 MIDDLESEX AVENUE, SUITE 20
SOMERVILLE, MA 02145
(617) 776-3350

21 MURDOCK STREET SOMERVILLE, MA

Study Intersections

PROJECT NO.: 2016-127

DATE: JANUARY 2017

SCALE: N.T.S.

Figure A2

B. TRAFFIC VOLUME

B1. EXISTING TRAFFIC COUNTS

DCI contracted with Precision Data Industries, LLC (PDI) to collect turning movement counts in November 2016. In order to provide accurate analysis for separate peak hours during the day, PDI collected data during both morning (7am to 9am) and evening (4pm to 6pm) peak periods for all study intersections on a typical Wednesday. The traffic counts included cars, heavy vehicles, pedestrians, and bicycles.

In compliance with MassDOT Transportation Impact Assessment (TIA) Guidelines, PDI collected Automatic Traffic Recorder (ATR) counts through two consecutive days during a Tuesday to Wednesday period in December 2016. The ATR data included traffic volume data, vehicular speed data, and vehicle classification data. The counts are summarized in 15-minute, hourly, and daily intervals. Data was collected at the following location:

- Cedar Street northeast of Murdock Street

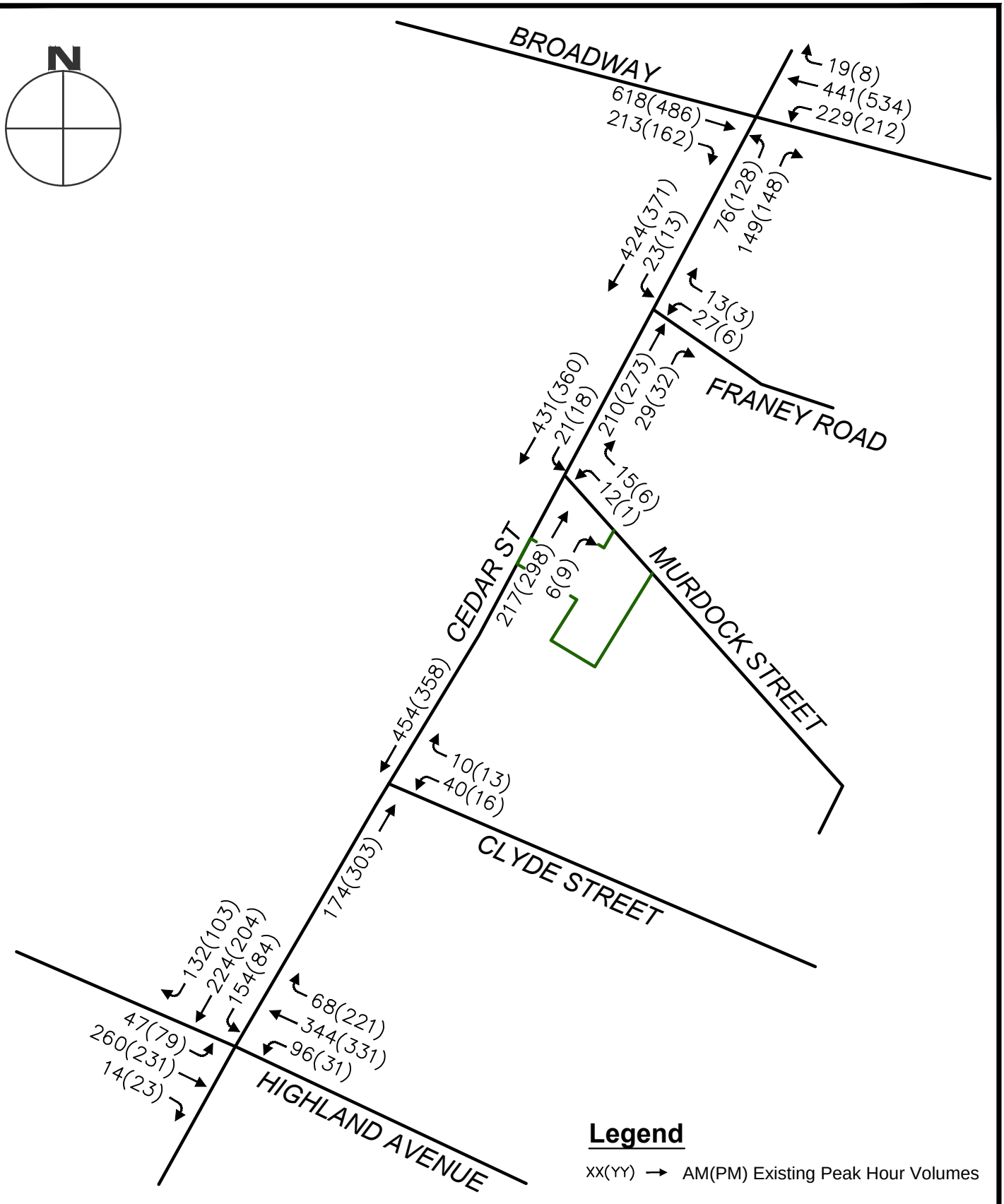
The ATR data collected on Cedar Street is summarized below in Table B1. As indicated on Table B1, the average weekday daily traffic on Cedar Street is approximately 8,120 vehicles. Throughout the data collection period, the 85th percentile speed is 28 MPH in both the southbound and northbound directions on Cedar Street. Complete traffic count data is provided in Appendix A.

Table B1: ATR Volume Summary

Location	ADT	85th Percentile Speed	Weekday AM Peak Hour			Weekday PM Peak Hour		
			Volume	K	Peak Direction	Volume	K	Peak Direction
Cedar Street between Murdock Street and Franey Road	8120	28 MPH SB & 28 MPH NB	645	8%	67.4% SB	693	9%	54.8% SB

B2. SEASONAL ADJUSTMENT

As per the MassDOT *Traffic and Safety Engineering 25% Design Submission Guidelines*, a seasonal factor was calculated to adjust the November traffic counts to reflect average annual daily traffic conditions. By calculating monthly volumes from MassDOT Permanent Counting Station 8098 on Interstate 93 in Somerville, it was determined that traffic levels in the vicinity of the project site are 0.05% lower in November when compared to the average monthly rate. In order to be more conservative, existing traffic volumes were increased by 0.05%. The resulting existing peak hour traffic volumes are shown in Figure B1. The detailed seasonal adjustment has been attached in Appendix B.



Design Consultants, Inc.
Consulting Engineers and Surveyors

120 MIDDLESEX AVENUE
SOMERVILLE, MA 02145
617-776-3350

68 PLEASANT STREET
NEWBURYPORT, MA 01950
978-358-7173

21 MURDOCK STREET
SOMERVILLE, MA

Figure B1
2016 Existing
Traffic Volumes

DATE: JAN. 2017

DCI PROJECT: 2016-127

B3. NO-BUILD CONDITIONS

Traffic volumes in the study area were projected to the year 2023, which reflects a seven-year planning horizon from the existing year 2016, consistent with MassDOT's Traffic Impact Assessment (TIA) guidelines. The traffic conditions for the year 2023 under No-Build conditions were examined independent of the proposed project, including all existing traffic and new traffic.

Traffic growth occurs due to land development in the immediate area and the surrounding region. Two methods are typically employed to estimate this growth. The first method identifies planned and permitted developments in the vicinity of the study area. For these specific developments, traffic estimates are generated and assigned to the study network. The second method is to use an annual percentage increase in traffic growth, which is applied to all traffic volumes under study. This method generally covers traffic growth due to regional developments outside the study area or developments that are proposed but not yet permitted. Both methods were used and summed together to define the "No-Build" traffic volumes for this study.

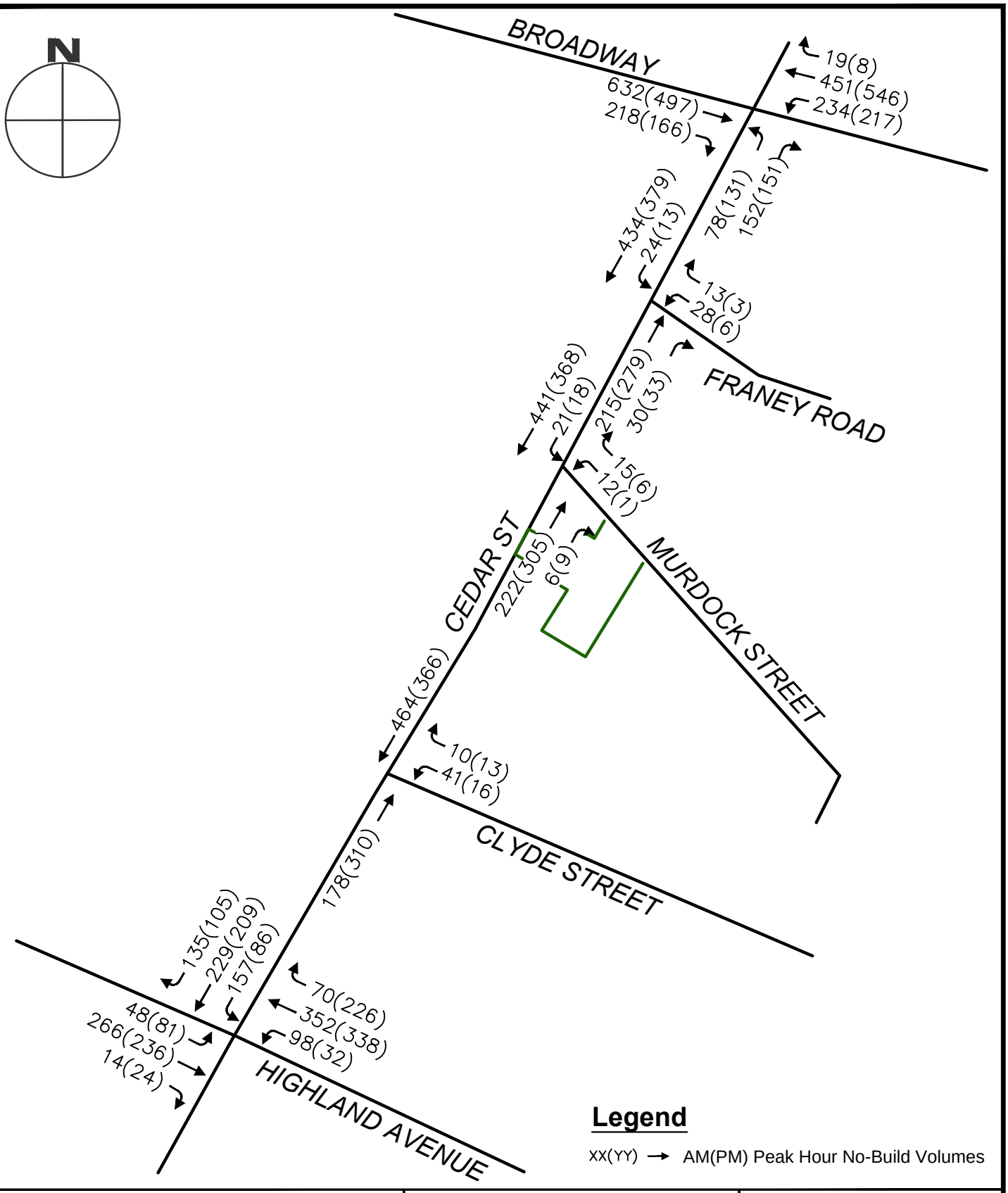
Regional Growth Rate

Based on discussions with the Boston Region Metropolitan Planning Organization known as the Central Transportation Planning Staff (CTPS), and traffic volume data compiled from MassDOT count stations, an annual traffic growth rate for Somerville was chosen for analysis purposes. In order to provide an accurate and conservative analysis, a 0.32 percent compounded annual growth rate was used to account for general background traffic growth and development by others not yet identified. This number is based on the CTPS Long Range Transportation Plan published in 2011, and updated in 2013. The 0.32 percent growth rate was verified by the Director of Technical Services at MAPC in conjunction with the Travel Model Development and Transportation Systems Analysis divisions. The 0.32 percent annual growth rate was applied to project all existing volumes to a seven year design horizon, to the year 2023.

Background Development

DCI has coordinated with the Planning Board of the City of Somerville and the Central Transportation Planning Staff to determine which upcoming projects in the area will have an impact on the traffic network. There are two projects identified as developments that may have a significant impact on traffic operations in the vicinity of the study area. The projects, listed below, do not have supporting documents that distribute site-generated trips onto the network, therefore the trips could not be included in the No-Build scenario for this Project.

- 290 Highland Avenue (7 residential units)
- 13 Alpine Street (5 residential units)



Design Consultants, Inc.
Consulting Engineers and Surveyors

120 MIDDLESEX AVENUE
SOMERVILLE, MA 02145
617-776-3350

68 PLEASANT STREET
NEWBURYPORT, MA 01950
978-358-7173

21 MURDOCK STREET
SOMERVILLE, MA

Figure B2
2023 No-Build
Traffic Volumes

DATE: JAN. 2017

DCI PROJECT: 2016-127

B4. SITE-GENERATED TRIPS

Preliminary Trip Generation

The base trip generation rates used were taken from the *Trip Generation Manual, 9th Edition* published by the Institute of Transportation Engineers (ITE) in 2012. Land Use Code (LUC) 220 was used for this Project, for twenty-two (22) dwelling units. Table B2 shows the proposed site-generated trips estimate for the Project site. Additionally, there are existing buildings, which are currently in use, on site that will be demolished for the proposed Project. The trips generated by the existing uses were deducted from the proposed Project-generated trips, thus providing a net new number of trips during the morning and evening peak hours, and during a typical weekday. Land Use Code 890 was used for the existing land use to provide a conservative estimate. Preliminary trip generation calculations for the existing land uses are found in Table B3, and the net new numbers of trips are shown in Table B4.

Table B2: Preliminary Trip Generation Calculations - Proposed Project

Land Use Code: 220			
	AM Peak Hour	PM Peak Hour	Daily
Dwelling Units (X)	22	22	22
Fitted Curve Equation	T = 0.49(X) +3.73	T = 0.55(X) + 17.65	T = 6.06(X) + 123.56
Total Trips (T)	**15**	**30**	**256**
Entering%	20%	65%	50%
Exiting%	80%	35%	50%
Entering Trips	3	20	128
Exiting Trips	12	10	128

Table B3: Preliminary Trip Generation Calculations - Existing Land Use

Land Use Code: 890			
	AM Peak Hour	PM Peak Hour	Daily
Size (per 1000 square feet)	23.151	23.151	23.151
Average Rate	0.17	0.45	5.06
Total Trips	**4**	**10**	**118**
Entering%	69%	48%	50%
Exiting%	31%	52%	50%
Entering Trips	3	5	59
Exiting Trips	1	5	59

Table B4: Net New Trips for the Proposed Project

	AM Peak Hour	PM Peak Hour	Daily
Proposed Trips	15	30	256
Existing Trips	4	10	118
Total Net Trips	**11**	**20**	**138**

As shown in Table B4, the proposed Project is expected to generate 11 net new trips during the morning peak hour, 20 net new trips during the evening peak hour, and 138 net new trips during a typical weekday. These trip rates are unadjusted as they only account for motorized traffic trips. Non-vehicle trips were deducted from the base trips in the following steps.

Mode Share and Average Vehicle Occupancy

ITE's Trip Generation methods are typically based on data from suburban developments with no nearby transit service and no appreciable share of people walking or bicycling to or from the site. The proposed Project is located in an area that has a high use of non-vehicular modes (bicycle, walking, public transportation). Commuting characteristics were analyzed from the 2010-2014 American Community Survey 5-Year Estimates. Data from Census Tract 3503.00, which covers the Project Site, was analyzed and used to estimate mode splits for journeys to work in the project area. Table B5 displays estimated mode splits.

Table B5: Mode Split Data for Residents of Census Tract 3503.00

MEANS OF TRANSPORTATION TO WORK	
Car, truck, or van	59.1%
Drove alone	49.5%
Carpooled:	9.6%
In 2-person carpool	7.3%
In 3-person carpool	0.0%
In 4 person carpool	2.3%
Public transportation (excluding taxicab)	24.9%
Walked	7.0%
Bicycle	4.5%
Other means	1.0%
Worked at home	3.5%

The *ITE Trip Generation Handbook, 3rd Edition* includes an Average Vehicle Occupancy (AVO) for residential buildings. For LUC 220, it shows an AVO of 1.13 for entering trips and an AVO of 1.09 for exiting trips. Based on the modal split data above for Census Tract 3503.00, an AVO rate of 1.2 persons per vehicle was calculated. For the purpose of this project, the base trips using LUC 220 were first adjusted downward by a factor of 1.1, and the Census Tract AVO of 1.2 was applied to determine a total number of person trips. Mode splits based on the data above were then applied to the resulting trips for the morning and evening peak hours, and a typical weekday. The US Census Tract 3503.00 Journey to Work data is attached in Appendix D.

Trip Generation Summary

As described above, adjustments were made to the base trips using the US Census Tract 3503.00 data. By applying non-vehicular mode splits to the Trip Generation calculations, the amount of expected vehicle traffic associated with the Project is reduced. The resulting adjusted vehicular traffic on the surrounding roadways were estimated and are summarized in Table B6.

Table B6: Adjusted Trip Generation

	AM Peak Hour	PM Peak Hour	Daily
Base Trips	11	20	138
Total Person-Trips	12	22	151
Total Vehicle-Trips	6	11	74
Entering Vehicle-Trips	1	7	37
Exiting Vehicle-Trips	5	4	37
Total Public Transportation Trips	3	5	37
Total Bicycle Trips	1	1	7
Total Walking Trips	1	2	11

As indicated in Table B6, the project is expected to generate six (6) net new vehicle-trips during the weekday morning peak hour, 11 net new vehicle-trips during the weekday evening peak hour, and 74 net new vehicle-trips during a typical weekday.

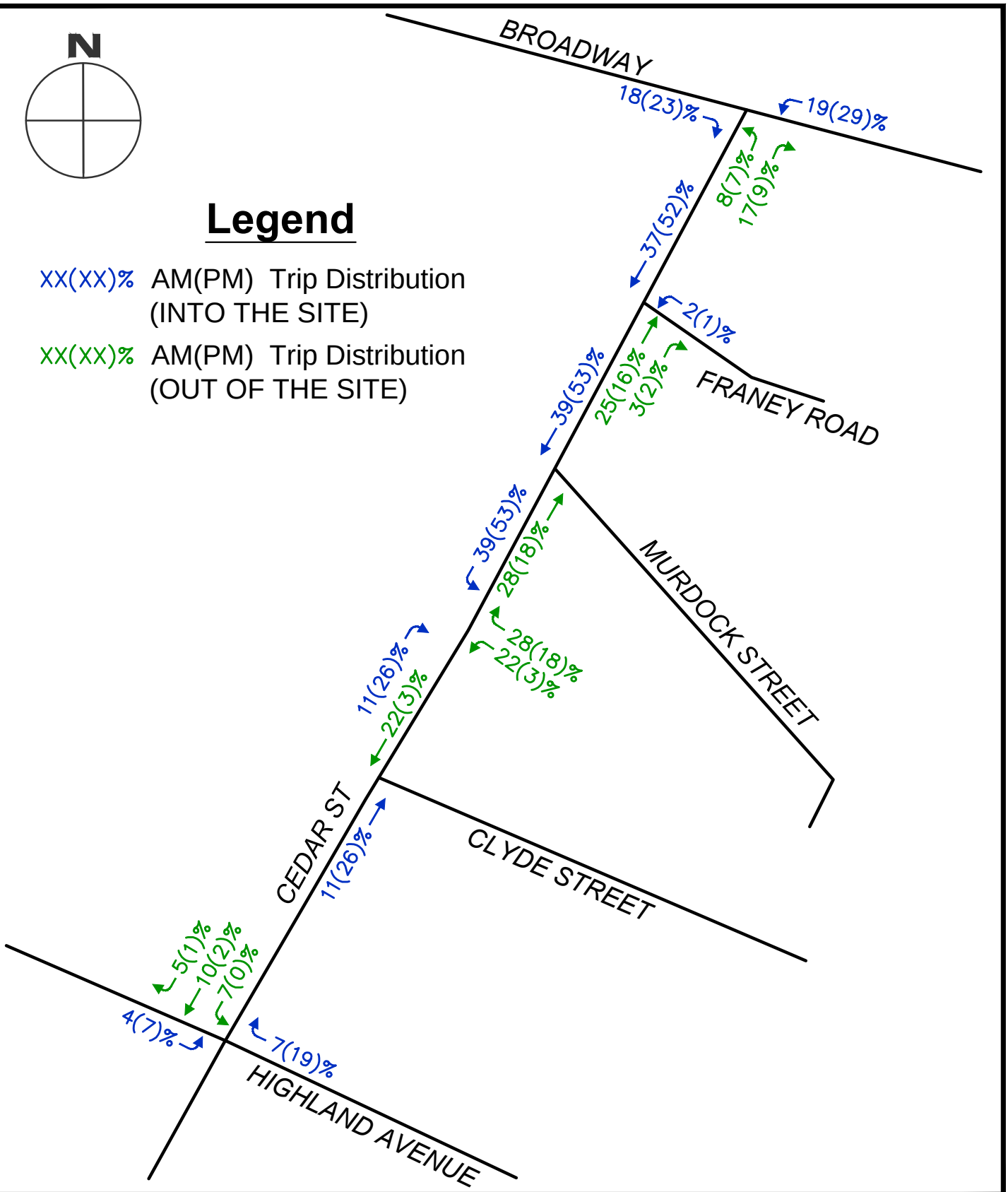
B5. TRIP DISTRIBUTION AND TRIP ASSIGNMENT

DCI estimated the trip distribution of project generated traffic from the site into the study area. This estimation is based on the existing traffic volumes that were collected at the intersection of Cedar Street at Murdock Street. It was determined from the traffic data that during the weekday morning peak hour, approximately 50% of local residents exited from Murdock Street to Cedar Street, and about 50% entered Murdock Street from Cedar Street. During the weekday evening peak hour it was determined that approximately 21% of local residents exited from Murdock Street onto Cedar Street and approximately 79% entered Murdock Street from Cedar Street. The directional distribution of project generated traffic is based on existing travel patterns, which were observed during the data collection in November 2016.

Furthermore, standard practice is to employ the same trip distribution and assignment percentages for both inbound and outbound movements, acknowledging that the trip counts are estimates. This technique accounts for nuances in estimating the future numbers. These nuances can include proximity to the central business district as well as transportation and roadway network intricacies. The trip distribution is shown in Figure B4 for this project and site generated trips are shown graphically in Figure B5.

B6. BUILD CONDITIONS

In order to analyze future traffic conditions following the completion of the 21 Murdock Street residential project in Somerville, the Build Scenario traffic volumes were calculated. The No-Build traffic volumes (Figure B2) were summed with the calculated site-generated trips (Figure B4), and the resulting Build volumes are shown in Figure B5. These volumes were used to carry out intersection capacity analysis for future Build conditions.



Design Consultants, Inc.
Consulting Engineers and Surveyors

120 MIDDLESEX AVENUE
SOMERVILLE, MA 02145
617-776-3350

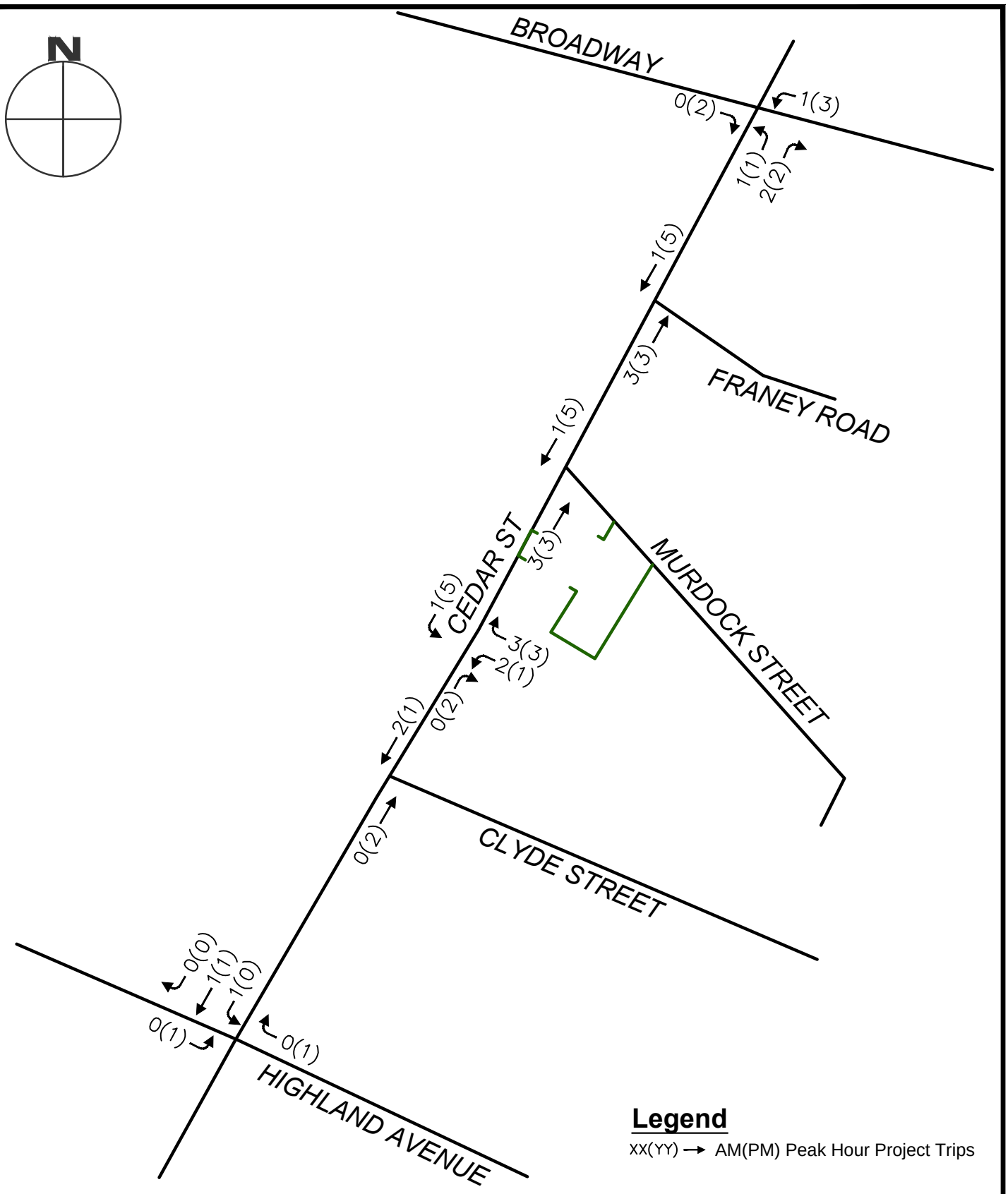
68 PLEASANT STREET
NEWBURYPORT, MA 01950
978-358-7173

21 MURDOCK STREET
SOMERVILLE, MA

Figure B3
Trip Distribution

DATE: JAN. 2017

DCI PROJECT: 2016-127



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120 MIDDLESEX AVENUE
SOMERVILLE, MA 02145
617-776-3350

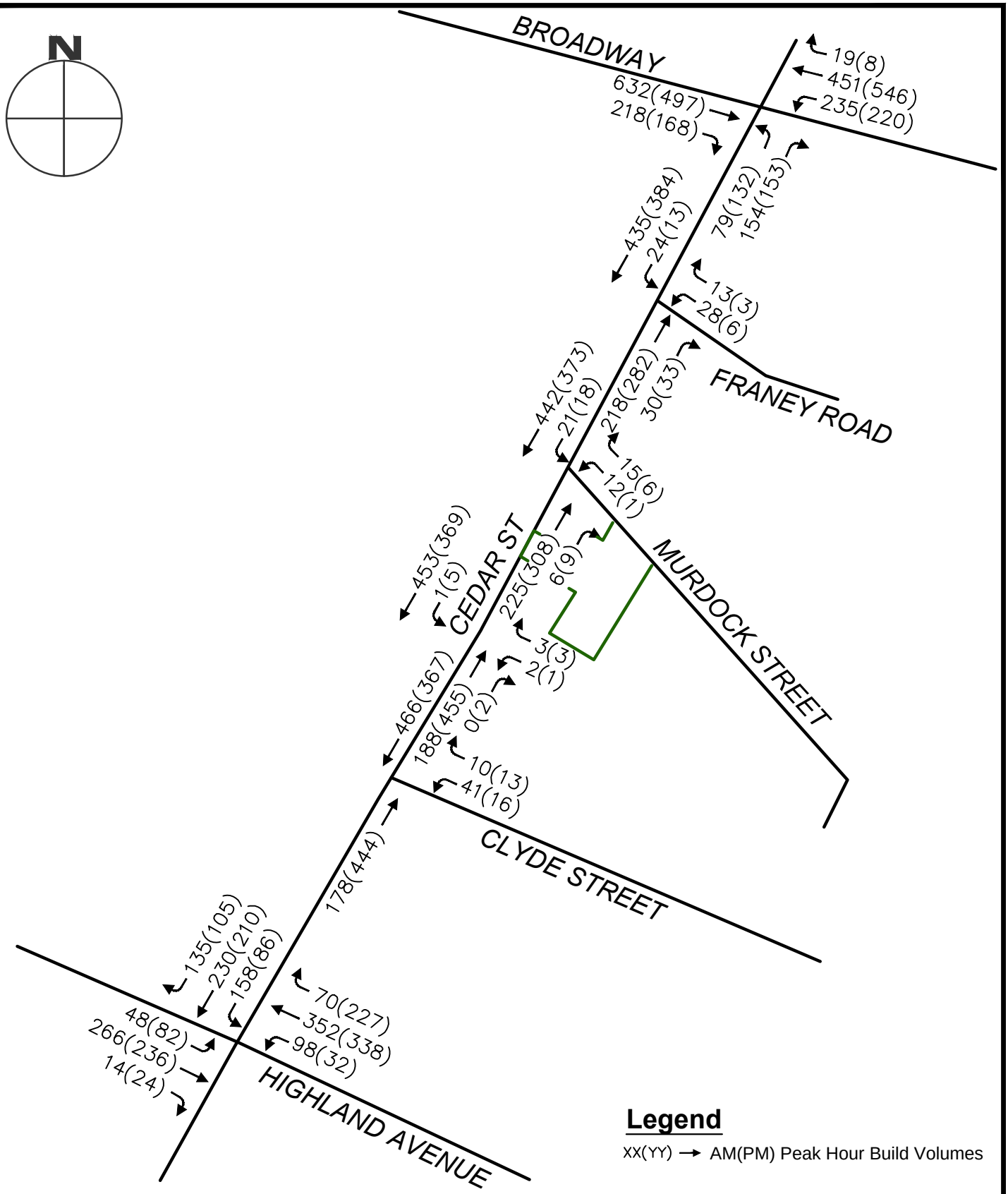
68 PLEASANT STREET
NEWBURYPORT, MA 01950
978-358-7173

21 MURDOCK STREET
SOMERVILLE, MA

Figure B4
Project Trips

DATE: JAN. 2017

DCI PROJECT: 2016-127



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SOMERVILLE, MA 02145
617-776-3350

68 PLEASANT STREET
NEWBURYPORT, MA 01950
978-358-7173

21 MURDOCK STREET
SOMERVILLE, MA

Figure B5
2023 Build
Traffic Volumes

DATE: JAN. 2017

DCI PROJECT: 2016-127

C. SAFETY ANALYSIS

C1. CRASH DATA AND ANALYSIS

Crash data from MassDOT for years 2012 through 2014 was reviewed for each study intersection within the jurisdiction of Somerville. This data represents the most recent three years of data available through the MassDOT crash database. The MassDOT crash records offered the following information:

- Crash Location (General or Specific) / Direction of vehicle(s)
- Date / Time
- Roadway surface conditions / Light conditions / Weather conditions
- Crash Severity / Manner of Collision

While it may be assumed that all relevant crash attributes should be reported and provided in recordkeeping, a portion of the individual crash records have only partial information available. Among various reasons for this, missing crash information might be attributed to the type of police reports filled out and provided to MassDOT.

Locations of the crashes in the area of the study intersections were general and approximated in many cases. This lack of specificity can sometimes hinder the engineer's ability to identify statistically significant trends and diagnose potential safety problems. However, combined with engineering judgment, the synthesized data has yielded a summary of crashes that may be used to speculate on a variety of general crash patterns.

The results of the State crash analysis are shown in Tables C1 and C2. The crash rates compared to average District 4 and State crash rates are shown in Table C3. Detailed crash analysis worksheets for each intersection for years 2012-2014 are contained in Appendix D.

Table C1: MassDOT Intersection Crash Conditions

Year	*Cedar Street at Broadway*	*Cedar Street at Franey Road*	*Cedar Street at Murdock Street*	*Cedar Street at Clyde Street*	*Cedar Street at Highland Avenue*
2012	*3*	0	0	0	5
2013	*0*	0	1	1	1
2014	*0*	1	0	0	1
Total	*3*	*1*	*1*	*1*	*7*
Crash Hour					
06:00AM to 10:00AM	*0*	1	1	0	1
10:00AM to 02:00PM	*1*	0	0	1	3
2:00PM to 06:00PM	*1*	0	0	0	1
06:00PM to 10:00PM	*1*	0	0	0	2
10:00PM to 02:00AM	*0*	0	0	0	0
02:00AM to 06:00AM	*0*	0	0	0	0
Total	*3*	*1*	*1*	*1*	*7*
Light Conditions					
Daylight	*1*	1	1	1	4
Dawn	*0*	0	0	0	0
Dusk	*0*	0	0	0	0
Dark - lighted roadway	*2*	0	0	0	1
Dark - roadway not lighted	*0*	0	0	0	0
Dark	*0*	0	0	0	0
Other, unknown	*0*	0	0	0	2
Total	*3*	*1*	*1*	*1*	*7*
Road Surface					
Dry	*3*	1	0	1	3
Wet	*0*	0	1	0	1
Snow	*0*	0	0	0	0
Ice	*0*	0	0	0	0
Sand, mud etc.	*0*	0	0	0	0
Water	*0*	0	0	0	0
Slush	*0*	0	0	0	0
Other, known	*0*	0	0	0	3
Total	*3*	*1*	*1*	*1*	*7*
Weather					
Clear	*3*	1	0	1	4
Cloudy	*0*	0	0	0	0
Rain	*0*	0	1	0	0
Snow	*0*	0	0	0	0
Sleet, hail, freezing rain	*0*	0	0	0	0
Fog, smog, smoke	*0*	0	0	0	0
Severe crosswinds	*0*	0	0	0	0
Blowing sand, snow	*0*	0	0	0	0
Other, unknown	*0*	0	0	0	3
Total	*3*	*1*	*1*	*1*	*7*

Table C2: MassDOT Intersection Crash Types

	Cedar Street at Broadway	*Cedar Street at Franey Road*	*Cedar Street at Murdock Street*	*Cedar Street at Clyde Street*	*Cedar Street at Highland Avenue*
Crash Severity					
Property Damage Only	1	1	1	1	5
Non-fatal Injury	1	0	0	0	2
Fatal Injury	0	0	0	0	0
Not Reported, Unknown	1	0	0	0	0
Total	*3*	*1*	*1*	*1*	*7*
Manner of Collision					
Sideswipe, Same Direction	0	0	0	1	0
Sideswipe, Opposite Direction	0	0	0	0	1
Angle	1	1	1	0	3
Rear-end	2	0	0	0	2
Head-on	0	0	0	0	0
Single Vehicle	0	0	0	0	1
Other, not reported	0	0	0	0	0
Total	*3*	*1*	*1*	*1*	*7*

Table C3: MassDOT Intersection Crash Rates

	Avg. Crashes per Year	*Avg. Crash Rate (Crashes per MEV)*	*MassDOT D4 Avg. Crash Rate (Crashes per MEV)*	*Statewide Avg. Crash Rate (Crashes per MEV)*
Cedar Street at Broadway	1.00	0.14	0.73	0.77
Cedar Street at Franey Road	0.33	0.11	0.56	0.58
Cedar Street at Murdock Street	0.33	0.12	0.56	0.58
Cedar Street at Clyde Street	0.33	0.12	0.56	0.58
Cedar Street at Highland Avenue	2.33	0.43	0.73	0.77

Tables C1 through C3 are summarized below, and any notable trends or statistics from each intersection are pointed out.

The intersection of **Cedar Street at Broadway** had three (3) reported crashes according to the MassDOT crash database during the three year period from 2012 to 2014. One of these crashes resulted in property damage only and one resulted in a non-fatal injury. One was an angled collision and two were rear-end collisions. The intersection averaged 1.00 crashes per year and had crash rate of 0.14 crashes per million entering vehicles (MEV), which is below both the District 4 and State averages for signalized intersections.

The intersection of **Cedar Street at Franey Road** had one reported crash according to the MassDOT crash database during the three year period from 2012 to 2014. The one crash resulted in a non-fatal injury and was an angled collision. The intersection averaged 0.33 crashes per year and had crash rate of 0.11 crashes per million entering vehicles (MEV), which is below the District 4 and State averages for unsignalized intersections.

The intersection of **Cedar Street at Murdock Street** had one reported crash according to the MassDOT crash database during the three year period from 2012 to 2014. The one crash resulted

in property damage only and was an angled collision. The intersection averaged 0.33 crashes per year and a crash rate of 0.12 crashes per MEV, which is below the District 4 and State averages for unsignalized intersections.

The intersection of **Cedar Street at Clyde Street** had one reported crash according to the MassDOT crash database during the four year period from 2012 to 2014. The one crash resulted in property damage only and was a sideswipe in the same direction. This resulted in 0.33 crashes per year and a crash rate of 0.12 crashes per million entering vehicles, which is below the District 4 and State averages for unsignalized intersections.

The intersection of **Cedar Street at Highland Avenue** had seven (7) reported crashes according to the MassDOT crash database during the three year period from 2012 to 2014. Five (5) of these crashes resulted in property damage only, and two resulted in non-fatal injuries. This resulted in 2.33 crashes per year and a crash rate of 0.43 crashes per MEV, which is below the District 4 and State averages for signalized intersections.

Of the five study intersections analyzed as part of this study, all intersections had crash rates below the District 4 and State averages. As such, there are no salient safety issues that require mitigation as part of this traffic study.

C2. SIGHT DISTANCE ANALYSIS

The location of the proposed site driveway on Cedar Street was evaluated for available stopping sight distance (SSD) and intersection sight distance (ISD). The American Association of State Highway and Transportation Officials (AASHTO) intersection sight distance requirements for various vehicle speeds are shown below in Table C4.

Table C4: AASHTO Minimum Recommended Stopping Sight Distances and Intersection Sight Distances

Design Speed (mph)	Stopping Sight Distance (ft)	Intersection Sight Distance for Left-Turn Manuevers (ft)	Intersection Sight Distance for Right-Turn/Cross Manuevers (ft)
15	80	170	145
20	115	225	195
25	155	280	240
30	200	335	290
35	250	390	335
40	305	445	385
45	360	500	430
50	425	555	480

The signed speed limit on Cedar Street is 25 miles per hour at its intersection with Murdock Street. For the right turn maneuver, looking left from the driveway, the required sight distance is 240 feet, and for the left-turn maneuver, looking right from the driveway, the required sight distance is 280 feet. The required stopping sight distance along Cedar Street is 155 feet. Based

on on-site measurements, the available sight distances at the proposed site driveway on Cedar Street is shown in Table C5.

Table C5: Measured Sight Distances at Proposed Cedar Street Driveway

	Stopping Sight Distance (ft)	Intersection Sight Distance for Left-Turn Manuevers (ft)	Intersection Sight Distance for Right-Turn/Cross Manuevers (ft)
Required at 25 mph	155	280	240
Measured	260	485	325

As shown in Table C5, the stopping sight distance along Cedar Street for the proposed driveway is 260 feet, which is greater than the AASHTO requirement of 155 feet. For vehicles that want to turn right onto Washington Street from the proposed driveway, there is a sight distance of 325 feet, and for vehicles that want to turn left onto Cedar Street, there is a sight distance of 485 feet. All available sight distances exceed the requirements set forth by AASHTO. See Figures C1 and C2 for sight lines looking north and south out from the proposed Cedar Street driveway onto Cedar Street.

Figure C1: Sight Line from Proposed Cedar Street Driveway, Facing North on Cedar Street

Figure C2: Sight Line from Proposed Cedar Street Driveway, Facing South on Cedar Street

D. INTERSECTION CAPACITY ANALYSIS

D1. TRAFFIC ANALYSIS CRITERIA

According to the TIA guidelines, both signalized intersection capacity analyses and stop- and yield-controlled intersection capacity analyses should be used for traffic impact studies. The Highway Capacity Manual (HCM) published by the Transportation Research Board provides methodologies on how to calculate motor vehicle Level of Service (LOS), average delay, and volume-to-capacity ratios. Those terms are commonly used to measure performance levels for freeway sections, ramp junctions, weave sections, and intersections, both signalized and unsignalized.

Level of Service (LOS) is a term used to denote different operating conditions that occur under various traffic volume loads. It is a qualitative measure of the effect of a number of factors including geometrics, speed, travel delay, freedom to maneuver, and safety. The LOS is divided into a range of six letter grades, ranging from A to F, with A being the best and F the worst. A LOS of F is generally considered to be inadequate traffic operation in suburban and urban areas. The delay ranges differ slightly between unsignalized and signalized intersections due to driver expectations and behavior for each LOS. Table D1 summarizes the LOS criteria.

Table D1: Intersection LOS Thresholds

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

Source: 2000 Highway Capacity Manual

In this study, intersection performance measures were calculated in the form of volume to capacity (v/c) ratio, average intersection delay, 95th percentile queue lengths, level-of-service (LOS) of overall intersection operations, and the LOS for each approach. *Synchro 8.0 was the software used to execute the intersection analysis. Synchro 8.0*, a software program from Trafficware, uses the methodologies and thresholds outlined within the HCM. This is the preferred/recommended software of MassDOT. Traffic volume represents the travel demand observed and capacity represents the amount of traffic the intersection can accommodate under prevailing conditions. Volume to capacity ratios that approach or exceed 1.0 indicate traffic congestion or poor operating conditions.

Three types of Synchro reports were created to analyze and compare intersection performance in this study:

- Main report – "Int: Lanes, Volumes, Timings"
- Queuing Analysis Report
- HCM Signalized/Unsignalized Report

For signalized intersections, LOS is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. For unsignalized intersections, the analysis assumes that the traffic on the mainline is not affected by traffic on the side street. The LOS for each movement is calculated by determining the length of gaps that are available in the conflicting traffic stream. The 95th percentile queue length are estimated.

D2. EXISTING CONDITIONS INTERSECTION ANALYSIS

The study intersections were analyzed for existing traffic conditions during the weekday morning and weekday evening peak hours. Existing intersection lane configurations, signal timing, and traffic control were modelled the same as the current traffic operations. Stop-controlled and uncontrolled intersections were also replicated. The results of the existing conditions analysis are shown in Table D2. Detailed analysis worksheets are included in Appendix F.

Table D2: 2016 Existing Conditions LOS

ID	East-West Road	North-South Road	Lane	Existing Conditions							
				AM Peak Hour				PM Peak Hour			
				v/c	ave delay /veh	LOS	95th % Q (ft)	v/c	ave delay /veh	LOS	95th % Q (ft)
1	Broadway	Cedar Street	EB T	0.76	20.4	C	313	0.76	22.8	C	224
			EB R	0.18	0.6	A	9	0.18	0.7	A	5
			WB L	0.79	27.1	C	#100	0.71	20.6	C	#71
			WB R	0.43	7.2	A	136	0.56	10.0	B	171
			NB LR	0.69	24.4	C	131	0.68	26.1	C	#175
			Overall		16.2	B			16.6	B	
2	Highland Avenue	Cedar Street	EB LTR	0.50	10.6	B	109	0.53	11.2	B	123
			WB LTR	0.77	18.5	B	#235	0.81	19.0	B	#298
			SB LTR	0.90	37.2	D	#293	0.75	23.3	C	#228
			Overall		23.6	C			18.4	B	
3	Clyde Street	Cedar Street	WB LR	0.15	13.9	B	13	0.09	13.9	B	7
			NB T	0.13	0.0	--	0	0.21	0.0	--	0
			SB T	0.30	0.0	--	0	0.26	0.0	--	0
			Overall		--	--			--	--	
4	Murdock Street	Cedar Street	NB TR	0.15	0.0	--	0	0.21	0.0	--	0
			SB LT	0.03	0.8	A	2	0.03	0.8	A	2
			NWB LR	0.11	13.6	B	9	0.03	12.1	B	2
			Overall		--	--			--	--	
5	Franey Road	Cedar Street	WB LR	0.18	16.6	C	16	0.04	14.8	B	3
			NB TR	0.17	0.0	--	0	0.21	0.0	--	0
			SB LT	0.03	0.9	A	2	0.01	0.4	A	1
			Overall		--	--			--	--	

Volume-to-capacity (v/c), delay (seconds/veh), and Level of Service (LOS) obtained from HCM 2000 outputs in Synchro 8

~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

= volume for 95th percentile cycle exceeds capacity. If the v/c for this movement is less than 1.0, the 95th percentile queue will rarely be exceeded. Queue shown is maximum after two cycles.

As shown in Table D2, the majority of intersections and specific movements currently operate below capacity and at acceptable levels of service. There are no movements that operate at a level of service D or worse.

D3. NO-BUILD CONDITIONS INTERSECTION ANALYSIS

The study intersections were analyzed for No-Build peak hour traffic conditions during the weekday morning and evening peak hours. For all study intersections, existing traffic control and lane configuration was maintained during the No-Build analysis. The results of this analysis are shown in Table D3. Detailed analysis worksheets are included in Appendix F.

Table D3: 2023 No-Build Conditions LOS

ID	East-West Road	North-South Road	Lane	No-Build*							
				AM Peak Hour				PM Peak Hour			
				v/c	ave delay /veh	LOS	95th % Q (ft)	v/c	ave delay /veh	LOS	95th % Q (ft)
1	Broadway	Cedar Street	EB T	0.86	40.7	D	#710	0.70	31.5	C	#471
			EB R	0.22	1.2	A	17	0.16	1.2	A	15
			WB L	0.85	45.9	D	#274	0.63	20.6	C	#131
			WB R	0.45	14.6	B	300	0.55	16.9	B	380
			NB LR	0.80	47.2	D	#219	0.87	60.0	E	#343
			Overall		30.7	C			27.2	C	
2	Highland Avenue	Cedar Street	EB LTR	0.49	16.5	B	182	0.56	18.1	B	208
			WB LTR	0.79	26.6	C	#386	0.77	23.4	C	#426
			SB LTR	0.98	59.5	E	#443	0.83	35.2	D	#297
			Overall		36.7	D			25.6	C	
3	Clyde Street	Cedar Street	WB LR	0.12	14.0	B	10	0.07	12.9	B	5
			NB T	0.11	0.0	--	0	0.20	0.0	--	0
			SB T	0.30	0.0	--	0	0.23	0.0	--	0
			Overall		--	--			--	--	
4	Murdock Street	Cedar Street	NB TR	0.15	0.0	--	0	0.20	0.0	--	0
			SB LT	0.02	0.5	A	1	0.02	0.5	A	1
			NWB LR	0.06	12.3	B	4	0.01	11.1	B	1
			Overall		--	--			--	--	
5	Franey Road	Cedar Street	WB LR	0.11	15.4	C	10	0.02	13.3	B	2
			NB TR	0.16	0.0	--	0	0.20	0.0	--	0
			SB LT	0.02	0.6	A	2	0.01	0.4	A	1
			Overall		--	--			--	--	

*Any improvements to No-Build Conditions are due to the MassDOT requirement of using a 0.92 Peak Hour Factor for future conditions.
Volume-to-capacity (v/c), delay (seconds/veh), and Level of Service (LOS) obtained from HCM 2000 outputs in Synchro 8
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
# = volume for 95th percentile cycle exceeds capacity. If the v/c for this movement is less than 1.0, the 95th percentile queue will rarely be exceeded. Queue shown is maximum after two cycles.

It is expected that any operational concerns noted during the Existing Conditions analysis continue through the No-Build Conditions with the addition of higher volumes. Additionally, there were some movements that experienced a decrease in delay. This drop in delay is due to the standard practice of using a peak hour factor of 0.92 for future conditions analyses. Synchro's analyses are based on peak 15-minute flow rate, which is calculated by dividing the peak hour approach volume by the peak hour factor. Higher peak hour factors represents smaller variations in the flow rate during the peak hour. Since the peak hour factor is not constant and may vary from day-to-day or season-to-season, MassDOT has dictated that a peak hour factor of 0.92 be utilized for future year analyses for urban areas. The expected impact due specifically to the new proposed development at 21 Murdock Street is reflected in the changes from the 2023 No-Build to the 2023 Build scenarios.

D4. BUILD CONDITIONS INTERSECTION ANALYSIS

The study intersections were analyzed for Build peak hour traffic conditions during the weekday morning and evening peak hours. For all study intersections, existing traffic control and lane configuration was maintained during the Build analysis. The results of this analysis are shown in Table D3. Detailed analysis worksheets are included in Appendix F.

Table D4: 2023 Build Conditions LOS

ID	East-West Road	North-South Road	Lane	Build							
				AM Peak Hour				PM Peak Hour			
				v/c	ave delay /veh	LOS	95th % Q (ft)	v/c	ave delay /veh	LOS	95th % Q (ft)
1	Broadway	Cedar Street	EB T	0.87	40.9	D	#710	0.70	31.7	C	#471
			EB R	0.22	1.2	A	17	0.17	1.2	A	15
			WB L	0.85	46.9	D	#277	0.64	21.2	C	#137
			WB R	0.45	14.7	B	300	0.55	17.0	B	380
			NB LR	0.81	47.6	D	#223	0.88	60.0	E	#348
			Overall		31.0	C			27.4	C	
2	Highland Avenue	Cedar Street	EB LTR	0.49	16.5	B	182	0.57	18.2	B	210
			WB LTR	0.79	26.6	C	#386	0.77	23.5	C	#427
			SB LTR	0.99	60.3	E	#446	0.83	35.4	D	#299
			Overall		37.1	D			25.7	C	
3	Clyde Street	Cedar Street	WB LR	0.12	14.0	B	10	0.07	13.0	B	5
			NB T	0.11	0.0	--	0	0.20	0.0	--	0
			SB T	0.30	0.0	--	0	0.23	0.0	--	0
			Overall		--	--			--	--	
4	Murdock Street	Cedar Street	NB TR	0.15	0.0	--	0	0.20	0.0	--	0
			SB LT	0.02	0.5	A	1	0.02	0.5	A	1
			NWB LR	0.06	12.4	B	5	0.01	11.1	B	1
			Overall		--	--			--	--	
5	Franey Road	Cedar Street	WB LR	0.12	15.5	C	10	0.02	13.4	B	2
			NB TR	0.16	0.0	--	0	0.20	0.0	--	0
			SB LT	0.02	0.6	A	2	0.01	0.4	A	1
			Overall		--	--			--	--	

Volume-to-capacity (v/c), delay (seconds/veh), and Level of Service (LOS) obtained from HCM 2000 outputs in Synchro 8

~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.

= volume for 95th percentile cycle exceeds capacity. If the v/c for this movement is less than 1.0, the 95th percentile queue will rarely be exceeded. Queue shown is maximum after two cycles.

Compared with Table D3 in the previous section, Table D4 on the previous page illustrates minor changes in delay from the No-Build to Build condition. As noted during the No-Build intersection analysis, it is expected that operational issues identified during the previous scenario will continue, given the increase in traffic volumes. However, there were no movements or intersections as a whole that dropped in LOS going from the No-Build to Build Scenarios.

CONCLUSION

This Traffic Impact & Access Study (TIAS) was prepared to analyze the traffic impact of the 21 Murdock Street residential project in Somerville, Massachusetts. Currently, the site has two commercial buildings totaling 23,151 square feet, one at 227 Cedar Street and one at 17 Murdock Street. The proposed project will demolish both buildings and construct five new residential buildings. Of the five new residential buildings, two will contain 4-units, two will contain 2-units, and one will contain 10-units, for a total number of 22 dwelling units.

From a safety perspective, the intersections have been found to be relatively safe and no fatal injuries occurred due to crashes at these intersections. An analysis of the most recent three years of crash data from MassDOT shows that none of the five study intersections have crash rates above the District 4 or State averages. A sight distance analysis was carried out at the proposed driveway

on Cedar Street. Sight distances at this location meets the AASHTO minimum recommended sight distances.

Capacity analyses were carried out for the five study intersections for the weekday morning and weekday evening peak hours. The proposed Project is expected to generate six (6) net new vehicle-trips during the morning peak hour, 11 net new vehicle-trips during the evening peak hour, and 74 net new vehicle-trips during a typical weekday. Analyses were carried out for 2016 Existing conditions, 2023 No-Build conditions, and 2023 Build conditions. Based on the results of these analyses, it can be stated that the proposed redevelopment at 21 Murdock Street will not have significant adverse impact on traffic operations in Somerville, Massachusetts.

APPENDIX A – TRAFFIC COUNTS

N/S: Alfred Street/ Cedar Street
E/W: Broadway
City, State: Somerville, MA
Client: Design Consultants/ S. Siragusa

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165373 A
Site Code : 2016-127
Start Date : 11/16/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Alfred Street From North				Broadway From East				Cedar Street From South				Broadway From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	3	124	58	0	27	1	9	0	67	131	0	0	420
07:15 AM	1	0	0	0	5	100	52	0	26	1	15	0	58	161	0	0	419
07:30 AM	0	0	0	0	3	104	61	0	38	2	22	0	57	157	0	0	444
07:45 AM	0	0	0	0	3	121	65	0	31	0	19	0	43	141	0	0	423
Total	1	0	0	0	14	449	236	0	122	4	65	0	225	590	0	0	1706
08:00 AM	0	0	0	0	8	116	51	0	49	2	20	0	55	159	0	0	460
08:15 AM	1	0	0	0	5	117	53	0	43	0	21	0	26	148	0	0	414
08:30 AM	0	0	0	0	4	112	35	0	29	1	11	0	33	149	0	0	374
08:45 AM	0	0	0	0	4	93	55	0	20	0	18	0	52	124	0	0	366
Total	1	0	0	0	21	438	194	0	141	3	70	0	166	580	0	0	1614
Grand Total	2	0	0	0	35	887	430	0	263	7	135	0	391	1170	0	0	3320
Apprch %	100	0	0	0	2.6	65.6	31.8	0	64.9	1.7	33.3	0	25	75	0	0	
Total %	0.1	0	0	0	1.1	26.7	13	0	7.9	0.2	4.1	0	11.8	35.2	0	0	
Cars	2	0	0	0	32	832	423	0	260	7	130	0	382	1120	0	0	3188
% Cars	100	0	0	0	91.4	93.8	98.4	0	98.9	100	96.3	0	97.7	95.7	0	0	96
Heavy Vehicles	0	0	0	0	3	55	7	0	3	0	5	0	9	50	0	0	132
% Heavy Vehicles	0	0	0	0	8.6	6.2	1.6	0	1.1	0	3.7	0	2.3	4.3	0	0	4

	Alfred Street From North					Broadway From East					Cedar Street From South					Broadway From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	0	0	0	1	5	100	52	0	157	26	1	15	0	42	58	161	0	0	219	419
07:30 AM	0	0	0	0	0	3	104	61	0	168	38	2	22	0	62	57	157	0	0	214	444
07:45 AM	0	0	0	0	0	3	121	65	0	189	31	0	19	0	50	43	141	0	0	184	423
08:00 AM	0	0	0	0	0	8	116	51	0	175	49	2	20	0	71	55	159	0	0	214	460
Total Volume	1	0	0	0	1	19	441	229	0	689	144	5	76	0	225	213	618	0	0	831	1746
% App. Total	100	0	0	0		2.8	64	33.2	0		64	2.2	33.8	0		25.6	74.4	0	0		
PHF	.250	.000	.000	.000	.250	.594	.911	.881	.000	.911	.735	.625	.864	.000	.792	.918	.960	.000	.000	.949	.949
Cars	1	0	0	0	1	17	412	225	0	654	141	5	71	0	217	209	596	0	0	805	1677
% Cars	100	0	0	0	100	89.5	93.4	98.3	0	94.9	97.9	100	93.4	0	96.4	98.1	96.4	0	0	96.9	96.0
Heavy Vehicles	0	0	0	0	0	2	29	4	0	35	3	0	5	0	8	4	22	0	0	26	69
% Heavy Vehicles	0	0	0	0	0	10.5	6.6	1.7	0	5.1	2.1	0	6.6	0	3.6	1.9	3.6	0	0	3.1	4.0

N/S: Alfred Street/ Cedar Street
E/W: Broadway
City, State: Somerville, MA
Client: Design Consultants/ S. Siragusa

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Groups Printed- Cars

	Alfred Street From North				Broadway From East				Cedar Street From South				Broadway From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	3	111	56	0	27	1	9	0	64	125	0	0	396
07:15 AM	1	0	0	0	4	94	51	0	26	1	15	0	58	155	0	0	405
07:30 AM	0	0	0	0	2	97	60	0	38	2	22	0	55	152	0	0	428
07:45 AM	0	0	0	0	3	112	64	0	29	0	17	0	42	136	0	0	403
Total	1	0	0	0	12	414	231	0	120	4	63	0	219	568	0	0	1632
08:00 AM	0	0	0	0	8	109	50	0	48	2	17	0	54	153	0	0	441
08:15 AM	1	0	0	0	4	114	53	0	43	0	21	0	26	136	0	0	398
08:30 AM	0	0	0	0	4	108	34	0	29	1	11	0	32	142	0	0	361
08:45 AM	0	0	0	0	4	87	55	0	20	0	18	0	51	121	0	0	356
Total	1	0	0	0	20	418	192	0	140	3	67	0	163	552	0	0	1556
Grand Total	2	0	0	0	32	832	423	0	260	7	130	0	382	1120	0	0	3188
Apprch %	100	0	0	0	2.5	64.6	32.9	0	65.5	1.8	32.7	0	25.4	74.6	0	0	
Total %	0.1	0	0	0	1	26.1	13.3	0	8.2	0.2	4.1	0	12	35.1	0	0	

	Alfred Street From North					Broadway From East					Cedar Street From South					Broadway From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	0	0	0	1	4	94	51	0	149	26	1	15	0	42	58	155	0	0	213	405
07:30 AM	0	0	0	0	0	2	97	60	0	159	38	2	22	0	62	55	152	0	0	207	428
07:45 AM	0	0	0	0	0	3	112	64	0	179	29	0	17	0	46	42	136	0	0	178	403
08:00 AM	0	0	0	0	0	8	109	50	0	167	48	2	17	0	67	54	153	0	0	207	441
Total Volume	1	0	0	0	1	17	412	225	0	654	141	5	71	0	217	209	596	0	0	805	1677
% App. Total	100	0	0	0		2.6	63	34.4	0		65	2.3	32.7	0		26	74	0	0		
PHF	.250	.000	.000	.000	.250	.531	.920	.879	.000	.913	.734	.625	.807	.000	.810	.901	.961	.000	.000	.945	.951

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Groups Printed- Heavy Vehicles

	Alfred Street From North				Broadway From East				Cedar Street From South				Broadway From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	0	13	2	0	0	0	0	0	3	6	0	0	24
07:15 AM	0	0	0	0	1	6	1	0	0	0	0	0	0	6	0	0	14
07:30 AM	0	0	0	0	1	7	1	0	0	0	0	0	2	5	0	0	16
07:45 AM	0	0	0	0	0	9	1	0	2	0	2	0	1	5	0	0	20
Total	0	0	0	0	2	35	5	0	2	0	2	0	6	22	0	0	74
08:00 AM	0	0	0	0	0	7	1	0	1	0	3	0	1	6	0	0	19
08:15 AM	0	0	0	0	1	3	0	0	0	0	0	0	0	12	0	0	16
08:30 AM	0	0	0	0	0	4	1	0	0	0	0	0	1	7	0	0	13
08:45 AM	0	0	0	0	0	6	0	0	0	0	0	0	1	3	0	0	10
Total	0	0	0	0	1	20	2	0	1	0	3	0	3	28	0	0	58
Grand Total	0	0	0	0	3	55	7	0	3	0	5	0	9	50	0	0	132
Apprch %	0	0	0	0	4.6	84.6	10.8	0	37.5	0	62.5	0	15.3	84.7	0	0	
Total %	0	0	0	0	2.3	41.7	5.3	0	2.3	0	3.8	0	6.8	37.9	0	0	

	Alfred Street From North					Broadway From East					Cedar Street From South					Broadway From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	13	2	0	15	0	0	0	0	0	3	6	0	0	9	24
07:15 AM	0	0	0	0	0	1	6	1	0	8	0	0	0	0	0	0	6	0	0	6	14
07:30 AM	0	0	0	0	0	1	7	1	0	9	0	0	0	0	0	2	5	0	0	7	16
07:45 AM	0	0	0	0	0	0	9	1	0	10	2	0	2	0	4	1	5	0	0	6	20
Total Volume	0	0	0	0	0	2	35	5	0	42	2	0	2	0	4	6	22	0	0	28	74
% App. Total	0	0	0	0		4.8	83.3	11.9	0		50	0	50	0		21.4	78.6	0	0		
PHF	.000	.000	.000	.000	.000	.500	.673	.625	.000	.700	.250	.000	.250	.000	.250	.500	.917	.000	.000	.778	.771

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Groups Printed- Peds and Bicycles

	Alfred Street From North					Broadway From East					Cedar Street From South					Broadway From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	0	0	3	2	0	0	1	3	2	0	0	0	0	4	0	0	0	0	0	15
07:15 AM	0	0	0	2	5	0	2	1	5	1	0	0	0	4	1	0	1	0	0	0	22
07:30 AM	0	0	0	4	6	0	1	1	8	1	0	0	0	2	2	0	1	0	0	0	26
07:45 AM	0	0	0	2	2	0	0	1	4	1	0	0	0	5	2	0	0	0	0	0	17
Total	0	0	0	11	15	0	3	4	20	5	0	0	0	11	9	0	2	0	0	0	80
08:00 AM	0	0	0	1	3	0	0	0	1	4	0	0	0	5	2	1	3	0	0	0	20
08:15 AM	0	0	0	2	4	0	0	2	5	1	0	0	0	8	3	0	2	0	0	0	27
08:30 AM	0	0	0	0	3	0	0	1	4	0	0	0	0	5	3	0	0	0	0	0	16
08:45 AM	0	0	0	1	2	0	0	1	1	1	0	0	0	3	1	0	1	0	0	0	11
Total	0	0	0	4	12	0	0	4	11	6	0	0	0	21	9	1	6	0	0	0	74
Grand Total	0	0	0	15	27	0	3	8	31	11	0	0	0	32	18	1	8	0	0	0	154
Apprch %	0	0	0	35.7	64.3	0	5.7	15.1	58.5	20.8	0	0	0	64	36	11.1	88.9	0	0	0	
Total %	0	0	0	9.7	17.5	0	1.9	5.2	20.1	7.1	0	0	0	20.8	11.7	0.6	5.2	0	0	0	

	Alfred Street From North						Broadway From East						Cedar Street From South						Broadway From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 07:30 AM																									
07:30 AM	0	0	0	4	6	10	0	1	1	8	1	11	0	0	0	2	2	4	0	1	0	0	0	1	26
07:45 AM	0	0	0	2	2	4	0	0	1	4	1	6	0	0	0	5	2	7	0	0	0	0	0	0	17
08:00 AM	0	0	0	1	3	4	0	0	0	1	4	5	0	0	0	5	2	7	1	3	0	0	0	4	20
08:15 AM	0	0	0	2	4	6	0	0	2	5	1	8	0	0	0	8	3	11	0	2	0	0	0	2	27
Total Volume	0	0	0	9	15	24	0	1	4	18	7	30	0	0	0	20	9	29	1	6	0	0	0	7	90
% App. Total	0	0	0	37.5	62.5		0	3.3	13.3	60	23.3		0	0	0	69	31		14.3	85.7	0	0	0		
PHF	.000	.000	.000	.563	.625	.600	.000	.250	.500	.563	.438	.682	.000	.000	.000	.625	.750	.659	.250	.500	.000	.000	.000	.438	.833

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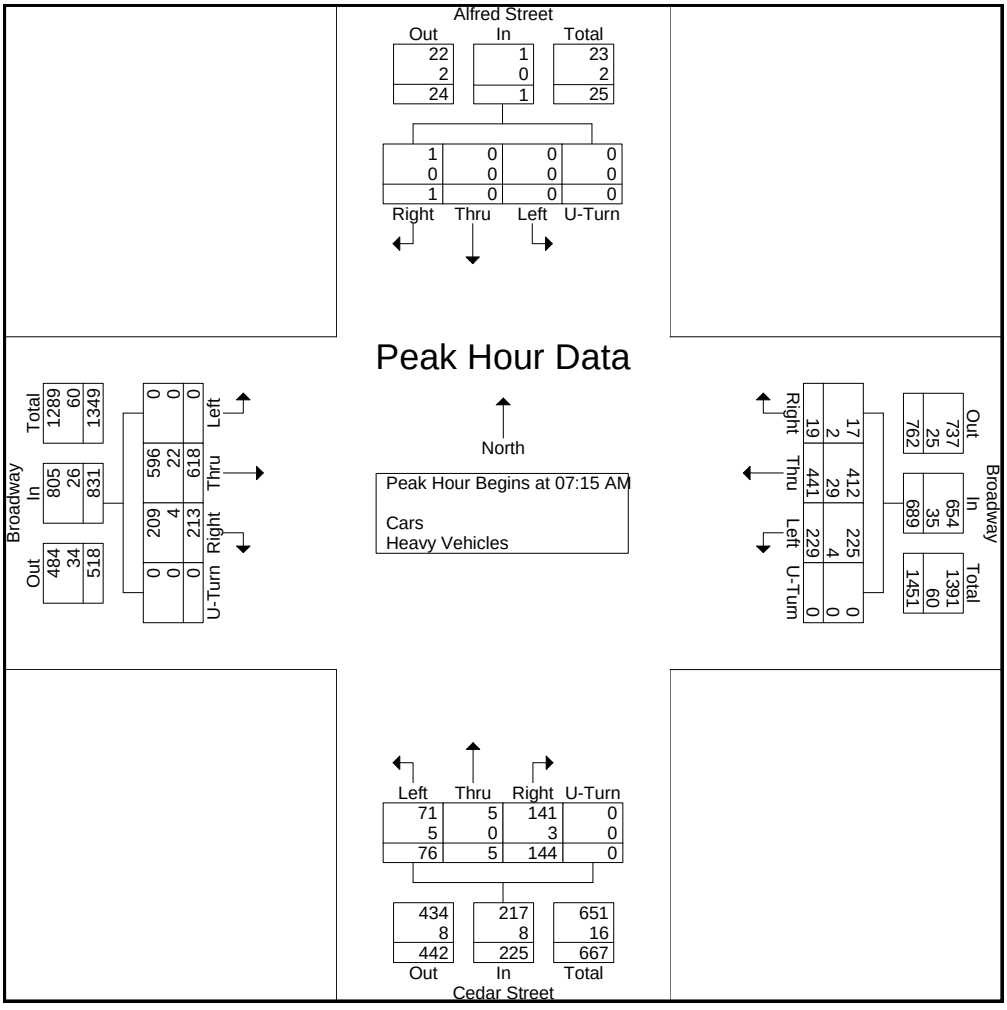
	Alfred Street From North					Broadway From East					Cedar Street From South					Broadway From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	1	0	0	0	1	5	100	52	0	157	26	1	15	0	42	58	161	0	0	219	419
07:30 AM	0	0	0	0	0	3	104	61	0	168	38	2	22	0	62	57	157	0	0	214	444
07:45 AM	0	0	0	0	0	3	121	65	0	189	31	0	19	0	50	43	141	0	0	184	423
08:00 AM	0	0	0	0	0	8	116	51	0	175	49	2	20	0	71	55	159	0	0	214	460
Total Volume	1	0	0	0	1	19	441	229	0	689	144	5	76	0	225	213	618	0	0	831	1746
% App. Total	100	0	0	0		2.8	64	33.2	0		64	2.2	33.8	0		25.6	74.4	0	0		
PHF	.250	.000	.000	.000	.250	.594	.911	.881	.000	.911	.735	.625	.864	.000	.792	.918	.960	.000	.000	.949	.949
Cars	1	0	0	0	1	17	412	225	0	654	141	5	71	0	217	209	596	0	0	805	1677
% Cars	100	0	0	0	100	89.5	93.4	98.3	0	94.9	97.9	100	93.4	0	96.4	98.1	96.4	0	0	96.9	96.0
Heavy Vehicles	0	0	0	0	0	2	29	4	0	35	3	0	5	0	8	4	22	0	0	26	69
% Heavy Vehicles	0	0	0	0	0	10.5	6.6	1.7	0	5.1	2.1	0	6.6	0	3.6	1.9	3.6	0	0	3.1	4.0



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Groups Printed- Cars - Heavy Vehicles

	Alfred Street From North				Broadway From East				Cedar Street From South				Broadway From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	1	0	0	2	133	43	0	23	1	42	0	20	122	0	0	387
04:15 PM	0	0	0	0	1	126	44	0	21	0	45	0	31	104	0	0	372
04:30 PM	0	0	0	0	2	138	35	0	26	1	29	0	28	125	0	0	384
04:45 PM	0	0	0	0	6	150	32	0	34	0	30	0	32	91	2	0	377
Total	0	1	0	0	11	547	154	0	104	2	146	0	111	442	2	0	1520
05:00 PM	0	0	0	0	1	130	56	0	31	1	33	0	34	117	1	0	404
05:15 PM	0	1	0	0	3	136	51	0	41	2	40	0	36	120	1	0	431
05:30 PM	1	0	0	0	2	125	44	0	34	2	32	0	37	126	0	0	403
05:45 PM	0	0	0	0	2	143	61	0	36	1	23	0	55	121	0	0	442
Total	1	1	0	0	8	534	212	0	142	6	128	0	162	484	2	0	1680
Grand Total	1	2	0	0	19	1081	366	0	246	8	274	0	273	926	4	0	3200
Apprch %	33.3	66.7	0	0	1.3	73.7	25	0	46.6	1.5	51.9	0	22.7	77	0.3	0	
Total %	0	0.1	0	0	0.6	33.8	11.4	0	7.7	0.2	8.6	0	8.5	28.9	0.1	0	
Cars	1	2	0	0	18	1055	363	0	240	8	269	0	269	894	4	0	3123
% Cars	100	100	0	0	94.7	97.6	99.2	0	97.6	100	98.2	0	98.5	96.5	100	0	97.6
Heavy Vehicles	0	0	0	0	1	26	3	0	6	0	5	0	4	32	0	0	77
% Heavy Vehicles	0	0	0	0	5.3	2.4	0.8	0	2.4	0	1.8	0	1.5	3.5	0	0	2.4

	Alfred Street From North					Broadway From East					Cedar Street From South					Broadway From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	1	130	56	0	187	31	1	33	0	65	34	117	1	0	152	404
05:15 PM	0	1	0	0	1	3	136	51	0	190	41	2	40	0	83	36	120	1	0	157	431
05:30 PM	1	0	0	0	1	2	125	44	0	171	34	2	32	0	68	37	126	0	0	163	403
05:45 PM	0	0	0	0	0	2	143	61	0	206	36	1	23	0	60	55	121	0	0	176	442
Total Volume	1	1	0	0	2	8	534	212	0	754	142	6	128	0	276	162	484	2	0	648	1680
% App. Total	50	50	0	0		1.1	70.8	28.1	0		51.4	2.2	46.4	0		25	74.7	0.3	0		
PHF	.250	.250	.000	.000	.500	.667	.934	.869	.000	.915	.866	.750	.800	.000	.831	.736	.960	.500	.000	.920	.950
Cars	1	1	0	0	2	7	523	210	0	740	141	6	126	0	273	161	467	2	0	630	1645
% Cars	100	100	0	0	100	87.5	97.9	99.1	0	98.1	99.3	100	98.4	0	98.9	99.4	96.5	100	0	97.2	97.9
Heavy Vehicles	0	0	0	0	0	1	11	2	0	14	1	0	2	0	3	1	17	0	0	18	35
% Heavy Vehicles	0	0	0	0	0	12.5	2.1	0.9	0	1.9	0.7	0	1.6	0	1.1	0.6	3.5	0	0	2.8	2.1

N/S: Alfred Street/ Cedar Street
E/W: Broadway
City, State: Somerville, MA
Client: Design Consultants/ S. Siragusa

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165373 AA
Site Code : 2016-127
Start Date : 11/16/2016
Page No : 1

Groups Printed- Cars

	Alfred Street From North				Broadway From East				Cedar Street From South				Broadway From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	1	0	0	2	130	42	0	22	1	41	0	18	117	0	0	374
04:15 PM	0	0	0	0	1	122	44	0	20	0	44	0	31	100	0	0	362
04:30 PM	0	0	0	0	2	134	35	0	24	1	28	0	28	122	0	0	374
04:45 PM	0	0	0	0	6	146	32	0	33	0	30	0	31	88	2	0	368
Total	0	1	0	0	11	532	153	0	99	2	143	0	108	427	2	0	1478
05:00 PM	0	0	0	0	1	126	55	0	31	1	33	0	34	115	1	0	397
05:15 PM	0	1	0	0	3	134	51	0	40	2	40	0	35	112	1	0	419
05:30 PM	1	0	0	0	2	124	44	0	34	2	30	0	37	122	0	0	396
05:45 PM	0	0	0	0	1	139	60	0	36	1	23	0	55	118	0	0	433
Total	1	1	0	0	7	523	210	0	141	6	126	0	161	467	2	0	1645
Grand Total	1	2	0	0	18	1055	363	0	240	8	269	0	269	894	4	0	3123
Apprch %	33.3	66.7	0	0	1.3	73.5	25.3	0	46.4	1.5	52	0	23.1	76.6	0.3	0	
Total %	0	0.1	0	0	0.6	33.8	11.6	0	7.7	0.3	8.6	0	8.6	28.6	0.1	0	

	Alfred Street From North					Broadway From East					Cedar Street From South					Broadway From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	1	126	55	0	182	31	1	33	0	65	34	115	1	0	150	397
05:15 PM	0	1	0	0	1	3	134	51	0	188	40	2	40	0	82	35	112	1	0	148	419
05:30 PM	1	0	0	0	1	2	124	44	0	170	34	2	30	0	66	37	122	0	0	159	396
05:45 PM	0	0	0	0	0	1	139	60	0	200	36	1	23	0	60	55	118	0	0	173	433
Total Volume	1	1	0	0	2	7	523	210	0	740	141	6	126	0	273	161	467	2	0	630	1645
% App. Total	50	50	0	0		0.9	70.7	28.4	0		51.6	2.2	46.2	0		25.6	74.1	0.3	0		
PHF	.250	.250	.000	.000	.500	.583	.941	.875	.000	.925	.881	.750	.788	.000	.832	.732	.957	.500	.000	.910	.950

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Groups Printed- Heavy Vehicles

	Alfred Street From North				Broadway From East				Cedar Street From South				Broadway From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	0	3	1	0	1	0	1	0	2	5	0	0	13
04:15 PM	0	0	0	0	0	4	0	0	1	0	1	0	0	4	0	0	10
04:30 PM	0	0	0	0	0	4	0	0	2	0	1	0	0	3	0	0	10
04:45 PM	0	0	0	0	0	4	0	0	1	0	0	0	1	3	0	0	9
Total	0	0	0	0	0	15	1	0	5	0	3	0	3	15	0	0	42
05:00 PM	0	0	0	0	0	4	1	0	0	0	0	0	0	2	0	0	7
05:15 PM	0	0	0	0	0	2	0	0	1	0	0	0	1	8	0	0	12
05:30 PM	0	0	0	0	0	1	0	0	0	0	2	0	0	4	0	0	7
05:45 PM	0	0	0	0	1	4	1	0	0	0	0	0	0	3	0	0	9
Total	0	0	0	0	1	11	2	0	1	0	2	0	1	17	0	0	35
Grand Total	0	0	0	0	1	26	3	0	6	0	5	0	4	32	0	0	77
Apprch %	0	0	0	0	3.3	86.7	10	0	54.5	0	45.5	0	11.1	88.9	0	0	
Total %	0	0	0	0	1.3	33.8	3.9	0	7.8	0	6.5	0	5.2	41.6	0	0	

	Alfred Street From North					Broadway From East					Cedar Street From South					Broadway From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	3	1	0	4	1	0	1	0	2	2	5	0	0	7	13
04:15 PM	0	0	0	0	0	0	4	0	0	4	1	0	1	0	2	0	4	0	0	4	10
04:30 PM	0	0	0	0	0	0	4	0	0	4	2	0	1	0	3	0	3	0	0	3	10
04:45 PM	0	0	0	0	0	0	4	0	0	4	1	0	0	0	1	1	3	0	0	4	9
Total Volume	0	0	0	0	0	0	15	1	0	16	5	0	3	0	8	3	15	0	0	18	42
% App. Total	0	0	0	0		0	93.8	6.2	0		62.5	0	37.5	0		16.7	83.3	0	0		
PHF	.000	.000	.000	.000	.000	.000	.938	.250	.000	1.00	.625	.000	.750	.000	.667	.375	.750	.000	.000	.643	.808

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Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

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Page No : 1

Groups Printed- Peds and Bicycles

	Alfred Street From North					Broadway From East					Cedar Street From South					Broadway From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	0	0	1	1	0	2	0	2	4	0	0	0	2	2	0	2	0	0	0	16
04:15 PM	0	0	0	1	1	0	2	0	0	5	0	0	0	0	3	0	0	0	0	0	12
04:30 PM	0	0	0	5	6	0	1	0	2	3	0	0	0	3	1	0	0	0	0	0	21
04:45 PM	0	0	0	6	0	0	0	0	1	1	0	0	0	2	0	0	2	0	0	0	12
Total	0	0	0	13	8	0	5	0	5	13	0	0	0	7	6	0	4	0	0	0	61
05:00 PM	0	0	0	3	3	0	1	0	4	1	0	0	0	7	4	1	1	0	0	1	26
05:15 PM	0	0	0	2	4	0	2	0	2	1	0	0	1	1	3	0	6	0	0	1	23
05:30 PM	0	0	0	2	1	0	0	0	2	6	0	0	0	3	5	0	2	0	0	0	21
05:45 PM	0	0	0	2	1	0	3	0	1	6	1	1	1	1	1	0	1	0	0	0	19
Total	0	0	0	9	9	0	6	0	9	14	1	1	2	12	13	1	10	0	0	2	89
Grand Total	0	0	0	22	17	0	11	0	14	27	1	1	2	19	19	1	14	0	0	2	150
Apprch %	0	0	0	56.4	43.6	0	21.2	0	26.9	51.9	2.4	2.4	4.8	45.2	45.2	5.9	82.4	0	0	11.8	
Total %	0	0	0	14.7	11.3	0	7.3	0	9.3	18	0.7	0.7	1.3	12.7	12.7	0.7	9.3	0	0	1.3	

	Alfred Street From North						Broadway From East						Cedar Street From South						Broadway From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 05:00 PM																									
05:00 PM	0	0	0	3	3	6	0	1	0	4	1	6	0	0	0	7	4	11	1	1	0	0	1	3	26
05:15 PM	0	0	0	2	4	6	0	2	0	2	1	5	0	0	1	1	3	5	0	6	0	0	1	7	23
05:30 PM	0	0	0	2	1	3	0	0	0	2	6	8	0	0	0	3	5	8	0	2	0	0	0	2	21
05:45 PM	0	0	0	2	1	3	0	3	0	1	6	10	1	1	1	1	1	5	0	1	0	0	0	1	19
Total Volume	0	0	0	9	9	18	0	6	0	9	14	29	1	1	2	12	13	29	1	10	0	0	2	13	89
% App. Total	0	0	0	50	50		0	20.7	0	31	48.3		3.4	3.4	6.9	41.4	44.8		7.7	76.9	0	0	15.4		
PHF	.000	.000	.000	.750	.563	.750	.000	.500	.000	.563	.583	.725	.250	.250	.500	.429	.650	.659	.250	.417	.000	.000	.500	.464	.856

N/S: Alfred Street/ Cedar Street
E/W: Broadway
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Office: 508-875-0100 Fax: 508-875-0118
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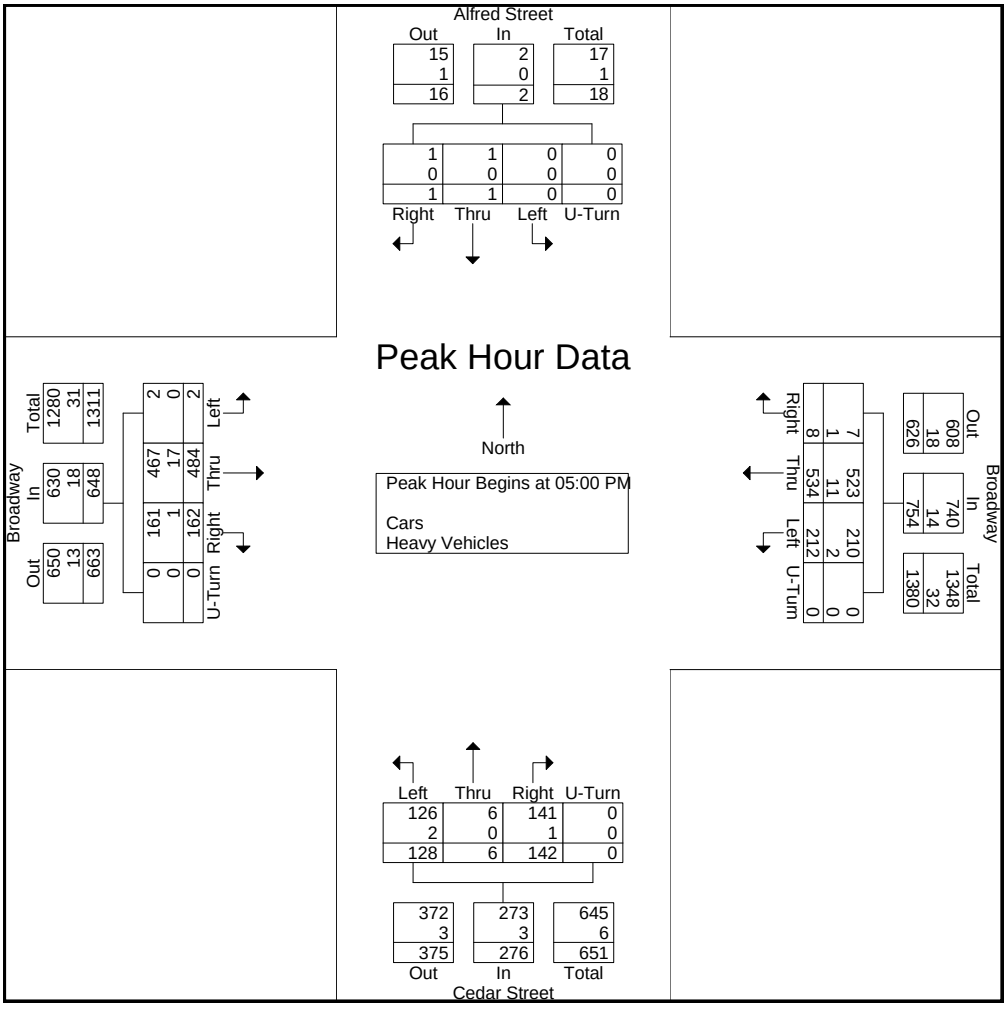
	Alfred Street From North					Broadway From East					Cedar Street From South					Broadway From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	1	130	56	0	187	31	1	33	0	65	34	117	1	0	152	404
05:15 PM	0	1	0	0	1	3	136	51	0	190	41	2	40	0	83	36	120	1	0	157	431
05:30 PM	1	0	0	0	1	2	125	44	0	171	34	2	32	0	68	37	126	0	0	163	403
05:45 PM	0	0	0	0	0	2	143	61	0	206	36	1	23	0	60	55	121	0	0	176	442
Total Volume	1	1	0	0	2	8	534	212	0	754	142	6	128	0	276	162	484	2	0	648	1680
% App. Total	50	50	0	0		1.1	70.8	28.1	0		51.4	2.2	46.4	0		25	74.7	0.3	0		
PHF	.250	.250	.000	.000	.500	.667	.934	.869	.000	.915	.866	.750	.800	.000	.831	.736	.960	.500	.000	.920	.950
Cars	1	1	0	0	2	7	523	210	0	740	141	6	126	0	273	161	467	2	0	630	1645
% Cars	100	100	0	0	100	87.5	97.9	99.1	0	98.1	99.3	100	98.4	0	98.9	99.4	96.5	100	0	97.2	97.9
Heavy Vehicles	0	0	0	0	0	1	11	2	0	14	1	0	2	0	3	1	17	0	0	18	35
% Heavy Vehicles	0	0	0	0	0	12.5	2.1	0.9	0	1.9	0.7	0	1.6	0	1.1	0.6	3.5	0	0	2.8	2.1



N/S: Cedar Street
E: Franey Street
City, State: Somerville, MA
Client: Design Consultants/ S. Siragusa

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
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Site Code : 2016-127
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Groups Printed- Cars - Heavy Vehicles

	Cedar Street From North			Franey Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	118	5	0	1	1	0	3	35	0	163
07:15 AM	105	9	0	1	4	0	12	48	0	179
07:30 AM	118	1	0	3	5	0	3	51	0	181
07:45 AM	101	6	0	6	11	0	5	50	0	179
Total	442	21	0	11	21	0	23	184	0	702
08:00 AM	100	7	0	3	7	0	9	61	0	187
08:15 AM	75	4	0	1	4	1	10	59	0	154
08:30 AM	67	3	0	1	4	0	6	40	0	121
08:45 AM	104	2	0	1	4	0	5	37	0	153
Total	346	16	0	6	19	1	30	197	0	615
Grand Total	788	37	0	17	40	1	53	381	0	1317
Apprch %	95.5	4.5	0	29.3	69	1.7	12.2	87.8	0	
Total %	59.8	2.8	0	1.3	3	0.1	4	28.9	0	
Cars	771	34	0	13	28	1	49	376	0	1272
% Cars	97.8	91.9	0	76.5	70	100	92.5	98.7	0	96.6
Heavy Vehicles	17	3	0	4	12	0	4	5	0	45
% Heavy Vehicles	2.2	8.1	0	23.5	30	0	7.5	1.3	0	3.4

	Cedar Street From North				Franey Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	105	9	0	114	1	4	0	5	12	48	0	60	179
07:30 AM	118	1	0	119	3	5	0	8	3	51	0	54	181
07:45 AM	101	6	0	107	6	11	0	17	5	50	0	55	179
08:00 AM	100	7	0	107	3	7	0	10	9	61	0	70	187
Total Volume	424	23	0	447	13	27	0	40	29	210	0	239	726
% App. Total	94.9	5.1	0		32.5	67.5	0		12.1	87.9	0		
PHF	.898	.639	.000	.939	.542	.614	.000	.588	.604	.861	.000	.854	.971
Cars	415	21	0	436	9	17	0	26	28	205	0	233	695
% Cars	97.9	91.3	0	97.5	69.2	63.0	0	65.0	96.6	97.6	0	97.5	95.7
Heavy Vehicles	9	2	0	11	4	10	0	14	1	5	0	6	31
% Heavy Vehicles	2.1	8.7	0	2.5	30.8	37.0	0	35.0	3.4	2.4	0	2.5	4.3

N/S: Cedar Street
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Groups Printed- Cars

	Cedar Street From North			Franey Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	113	4	0	1	1	0	3	35	0	157
07:15 AM	104	9	0	1	4	0	12	48	0	178
07:30 AM	114	1	0	2	3	0	3	51	0	174
07:45 AM	99	6	0	3	5	0	5	47	0	165
Total	430	20	0	7	13	0	23	181	0	674
08:00 AM	98	5	0	3	5	0	8	59	0	178
08:15 AM	75	4	0	1	4	1	8	59	0	152
08:30 AM	66	3	0	1	4	0	6	40	0	120
08:45 AM	102	2	0	1	2	0	4	37	0	148
Total	341	14	0	6	15	1	26	195	0	598
Grand Total	771	34	0	13	28	1	49	376	0	1272
Apprch %	95.8	4.2	0	31	66.7	2.4	11.5	88.5	0	
Total %	60.6	2.7	0	1	2.2	0.1	3.9	29.6	0	

	Cedar Street From North				Franey Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	104	9	0	113	1	4	0	5	12	48	0	60	178
07:30 AM	114	1	0	115	2	3	0	5	3	51	0	54	174
07:45 AM	99	6	0	105	3	5	0	8	5	47	0	52	165
08:00 AM	98	5	0	103	3	5	0	8	8	59	0	67	178
Total Volume	415	21	0	436	9	17	0	26	28	205	0	233	695
% App. Total	95.2	4.8	0		34.6	65.4	0		12	88	0		
PHF	.910	.583	.000	.948	.750	.850	.000	.813	.583	.869	.000	.869	.976

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Groups Printed- Heavy Vehicles

	Cedar Street From North			Franey Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	5	1	0	0	0	0	0	0	0	6
07:15 AM	1	0	0	0	0	0	0	0	0	1
07:30 AM	4	0	0	1	2	0	0	0	0	7
07:45 AM	2	0	0	3	6	0	0	3	0	14
Total	12	1	0	4	8	0	0	3	0	28
08:00 AM	2	2	0	0	2	0	1	2	0	9
08:15 AM	0	0	0	0	0	0	2	0	0	2
08:30 AM	1	0	0	0	0	0	0	0	0	1
08:45 AM	2	0	0	0	2	0	1	0	0	5
Total	5	2	0	0	4	0	4	2	0	17
Grand Total	17	3	0	4	12	0	4	5	0	45
Apprch %	85	15	0	25	75	0	44.4	55.6	0	
Total %	37.8	6.7	0	8.9	26.7	0	8.9	11.1	0	

	Cedar Street From North				Franey Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	4	0	0	4	1	2	0	3	0	0	0	0	7
07:45 AM	2	0	0	2	3	6	0	9	0	3	0	3	14
08:00 AM	2	2	0	4	0	2	0	2	1	2	0	3	9
08:15 AM	0	0	0	0	0	0	0	0	2	0	0	2	2
Total Volume	8	2	0	10	4	10	0	14	3	5	0	8	32
% App. Total	80	20	0		28.6	71.4	0		37.5	62.5	0		
PHF	.500	.250	.000	.625	.333	.417	.000	.389	.375	.417	.000	.667	.571

N/S: Cedar Street
E: Franey Street
City, State: Somerville, MA
Client: Design Consultants/ S. Siragusa

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165373 B
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Groups Printed- Peds and Bicycles

	Cedar Street From North				Franey Street From East				Cedar Street From South				
Start Time	Thru	Left	Peds EB	Peds WB	Right	Left	Peds SB	Peds NB	Right	Thru	Peds WB	Peds EB	Int. Total
07:00 AM	2	0	0	0	0	0	5	4	0	0	0	0	11
07:15 AM	2	0	0	0	0	0	5	1	0	0	0	1	9
07:30 AM	1	0	0	0	0	0	2	3	0	0	0	0	6
07:45 AM	2	0	0	0	0	1	2	1	0	0	0	0	6
Total	7	0	0	0	0	1	14	9	0	0	0	1	32
08:00 AM	3	0	0	0	0	0	3	6	0	0	0	0	12
08:15 AM	3	0	0	0	0	0	5	0	0	0	1	0	9
08:30 AM	3	0	0	0	0	2	3	1	0	0	0	0	9
08:45 AM	2	0	0	0	1	0	3	1	0	0	0	0	7
Total	11	0	0	0	1	2	14	8	0	0	1	0	37
Grand Total	18	0	0	0	1	3	28	17	0	0	1	1	69
Apprch %	100	0	0	0	2	6.1	57.1	34.7	0	0	50	50	
Total %	26.1	0	0	0	1.4	4.3	40.6	24.6	0	0	1.4	1.4	

	Cedar Street From North					Franey Street From East					Cedar Street From South					
Start Time	Thru	Left	Peds EB	Peds WB	App. Total	Right	Left	Peds SB	Peds NB	App. Total	Right	Thru	Peds WB	Peds EB	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 08:00 AM																
08:00 AM	3	0	0	0	3	0	0	3	6	9	0	0	0	0	0	12
08:15 AM	3	0	0	0	3	0	0	5	0	5	0	0	1	0	1	9
08:30 AM	3	0	0	0	3	0	2	3	1	6	0	0	0	0	0	9
08:45 AM	2	0	0	0	2	1	0	3	1	5	0	0	0	0	0	7
Total Volume	11	0	0	0	11	1	2	14	8	25	0	0	1	0	1	37
% App. Total	100	0	0	0		4	8	56	32		0	0	100	0		
PHF	.917	.000	.000	.000	.917	.250	.250	.700	.333	.694	.000	.000	.250	.000	.250	.771

N/S: Cedar Street
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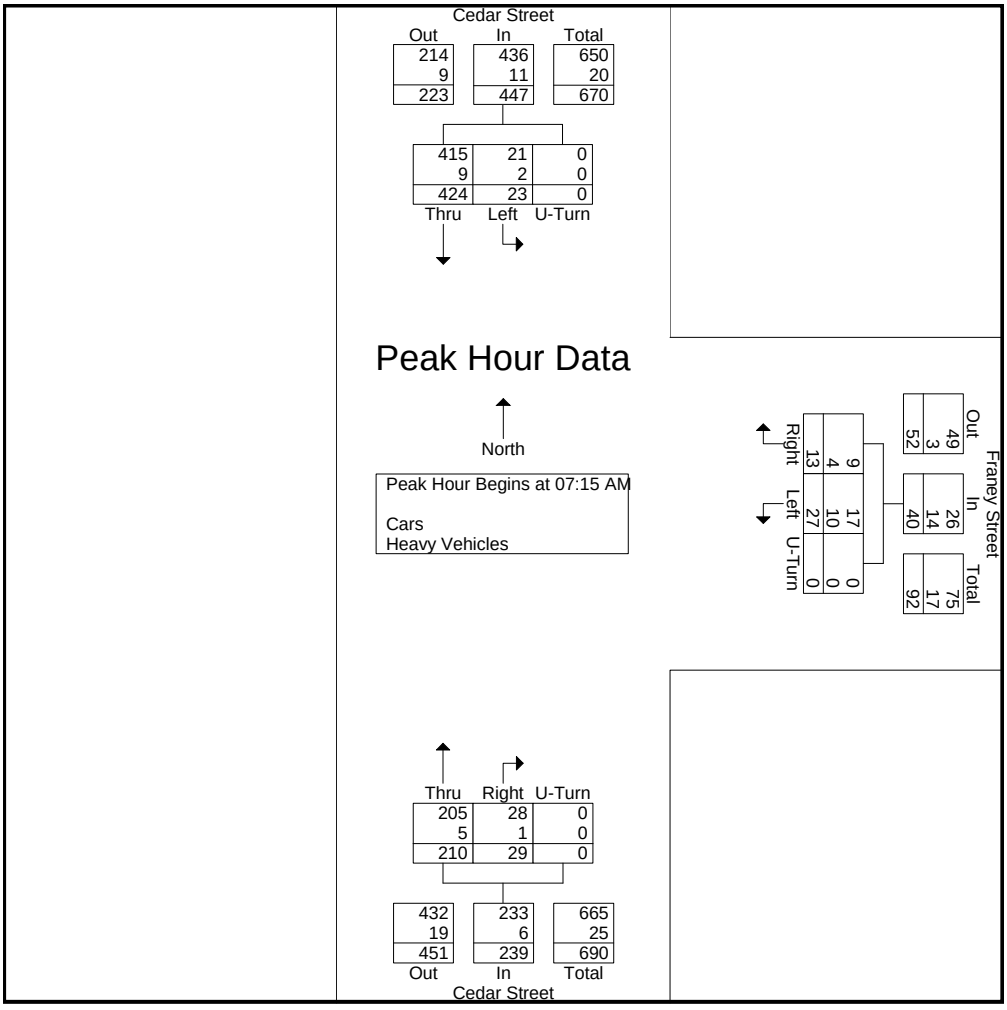
	Cedar Street From North				Franey Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	105	9	0	114	1	4	0	5	12	48	0	60	179
07:30 AM	118	1	0	119	3	5	0	8	3	51	0	54	181
07:45 AM	101	6	0	107	6	11	0	17	5	50	0	55	179
08:00 AM	100	7	0	107	3	7	0	10	9	61	0	70	187
Total Volume	424	23	0	447	13	27	0	40	29	210	0	239	726
% App. Total	94.9	5.1	0		32.5	67.5	0		12.1	87.9	0		
PHF	.898	.639	.000	.939	.542	.614	.000	.588	.604	.861	.000	.854	.971
Cars	415	21	0	436	9	17	0	26	28	205	0	233	695
% Cars	97.9	91.3	0	97.5	69.2	63.0	0	65.0	96.6	97.6	0	97.5	95.7
Heavy Vehicles	9	2	0	11	4	10	0	14	1	5	0	6	31
% Heavy Vehicles	2.1	8.7	0	2.5	30.8	37.0	0	35.0	3.4	2.4	0	2.5	4.3



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Groups Printed- Cars - Heavy Vehicles

	Cedar Street From North			Franey Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	58	3	0	10	9	0	7	60	0	147
04:15 PM	78	2	0	3	6	0	14	67	0	170
04:30 PM	65	2	0	3	1	0	6	55	0	132
04:45 PM	57	3	0	0	1	0	5	66	0	132
Total	258	10	0	16	17	0	32	248	0	581
05:00 PM	88	4	0	0	1	0	11	68	0	172
05:15 PM	83	4	0	1	3	0	11	80	0	182
05:30 PM	83	2	0	1	1	0	7	64	0	158
05:45 PM	117	3	0	1	1	0	3	61	0	186
Total	371	13	0	3	6	0	32	273	0	698
Grand Total	629	23	0	19	23	0	64	521	0	1279
Apprch %	96.5	3.5	0	45.2	54.8	0	10.9	89.1	0	
Total %	49.2	1.8	0	1.5	1.8	0	5	40.7	0	
Cars	622	21	0	19	22	0	62	508	0	1254
% Cars	98.9	91.3	0	100	95.7	0	96.9	97.5	0	98
Heavy Vehicles	7	2	0	0	1	0	2	13	0	25
% Heavy Vehicles	1.1	8.7	0	0	4.3	0	3.1	2.5	0	2

	Cedar Street From North				Franey Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	88	4	0	92	0	1	0	1	11	68	0	79	172
05:15 PM	83	4	0	87	1	3	0	4	11	80	0	91	182
05:30 PM	83	2	0	85	1	1	0	2	7	64	0	71	158
05:45 PM	117	3	0	120	1	1	0	2	3	61	0	64	186
Total Volume	371	13	0	384	3	6	0	9	32	273	0	305	698
% App. Total	96.6	3.4	0		33.3	66.7	0		10.5	89.5	0		
PHF	.793	.813	.000	.800	.750	.500	.000	.563	.727	.853	.000	.838	.938
Cars	368	13	0	381	3	6	0	9	30	268	0	298	688
% Cars	99.2	100	0	99.2	100	100	0	100	93.8	98.2	0	97.7	98.6
Heavy Vehicles	3	0	0	3	0	0	0	0	2	5	0	7	10
% Heavy Vehicles	0.8	0	0	0.8	0	0	0	0	6.3	1.8	0	2.3	1.4

N/S: Cedar Street
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Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165373 BB
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Start Date : 11/16/2016
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Groups Printed- Cars

	Cedar Street From North			Franey Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	55	1	0	10	8	0	7	58	0	139
04:15 PM	78	2	0	3	6	0	14	65	0	168
04:30 PM	65	2	0	3	1	0	6	52	0	129
04:45 PM	56	3	0	0	1	0	5	65	0	130
Total	254	8	0	16	16	0	32	240	0	566
05:00 PM	87	4	0	0	1	0	9	67	0	168
05:15 PM	82	4	0	1	3	0	11	79	0	180
05:30 PM	83	2	0	1	1	0	7	61	0	155
05:45 PM	116	3	0	1	1	0	3	61	0	185
Total	368	13	0	3	6	0	30	268	0	688
Grand Total	622	21	0	19	22	0	62	508	0	1254
Apprch %	96.7	3.3	0	46.3	53.7	0	10.9	89.1	0	
Total %	49.6	1.7	0	1.5	1.8	0	4.9	40.5	0	

	Cedar Street From North				Franey Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	87	4	0	91	0	1	0	1	9	67	0	76	168
05:15 PM	82	4	0	86	1	3	0	4	11	79	0	90	180
05:30 PM	83	2	0	85	1	1	0	2	7	61	0	68	155
05:45 PM	116	3	0	119	1	1	0	2	3	61	0	64	185
Total Volume	368	13	0	381	3	6	0	9	30	268	0	298	688
% App. Total	96.6	3.4	0		33.3	66.7	0		10.1	89.9	0		
PHF	.793	.813	.000	.800	.750	.500	.000	.563	.682	.848	.000	.828	.930

N/S: Cedar Street
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Office: 508-875-0100 Fax: 508-875-0118
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Groups Printed- Heavy Vehicles

	Cedar Street From North			Franey Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	3	2	0	0	1	0	0	2	0	8
04:15 PM	0	0	0	0	0	0	0	2	0	2
04:30 PM	0	0	0	0	0	0	0	3	0	3
04:45 PM	1	0	0	0	0	0	0	1	0	2
Total	4	2	0	0	1	0	0	8	0	15
05:00 PM	1	0	0	0	0	0	2	1	0	4
05:15 PM	1	0	0	0	0	0	0	1	0	2
05:30 PM	0	0	0	0	0	0	0	3	0	3
05:45 PM	1	0	0	0	0	0	0	0	0	1
Total	3	0	0	0	0	0	2	5	0	10
Grand Total	7	2	0	0	1	0	2	13	0	25
Apprch %	77.8	22.2	0	0	100	0	13.3	86.7	0	
Total %	28	8	0	0	4	0	8	52	0	

	Cedar Street From North				Franey Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	3	2	0	5	0	1	0	1	0	2	0	2	8
04:15 PM	0	0	0	0	0	0	0	0	0	2	0	2	2
04:30 PM	0	0	0	0	0	0	0	0	0	3	0	3	3
04:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total Volume	4	2	0	6	0	1	0	1	0	8	0	8	15
% App. Total	66.7	33.3	0		0	100	0		0	100	0		
PHF	.333	.250	.000	.300	.000	.250	.000	.250	.000	.667	.000	.667	.469

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Groups Printed- Peds and Bicycles

	Cedar Street From North				Franey Street From East				Cedar Street From South				
Start Time	Thru	Left	Peds EB	Peds WB	Right	Left	Peds SB	Peds NB	Right	Thru	Peds WB	Peds EB	Int. Total
04:00 PM	0	0	0	0	0	0	2	5	0	0	0	0	7
04:15 PM	0	0	0	1	0	1	2	1	0	0	0	2	7
04:30 PM	0	0	0	1	0	0	1	4	0	0	0	0	6
04:45 PM	0	0	0	0	0	0	2	1	0	1	0	0	4
Total	0	0	0	2	0	1	7	11	0	1	0	2	24
05:00 PM	1	0	3	2	0	0	9	2	0	0	1	0	18
05:15 PM	0	0	1	4	0	0	6	7	0	2	1	0	21
05:30 PM	1	0	1	2	0	0	1	3	0	0	0	0	8
05:45 PM	0	0	0	0	0	0	2	8	0	3	0	2	15
Total	2	0	5	8	0	0	18	20	0	5	2	2	62
Grand Total	2	0	5	10	0	1	25	31	0	6	2	4	86
Apprch %	11.8	0	29.4	58.8	0	1.8	43.9	54.4	0	50	16.7	33.3	
Total %	2.3	0	5.8	11.6	0	1.2	29.1	36	0	7	2.3	4.7	

	Cedar Street From North					Franey Street From East					Cedar Street From South					
Start Time	Thru	Left	Peds EB	Peds WB	App. Total	Right	Left	Peds SB	Peds NB	App. Total	Right	Thru	Peds WB	Peds EB	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 05:00 PM																
05:00 PM	1	0	3	2	6	0	0	9	2	11	0	0	1	0	1	18
05:15 PM	0	0	1	4	5	0	0	6	7	13	0	2	1	0	3	21
05:30 PM	1	0	1	2	4	0	0	1	3	4	0	0	0	0	0	8
05:45 PM	0	0	0	0	0	0	0	2	8	10	0	3	0	2	5	15
Total Volume	2	0	5	8	15	0	0	18	20	38	0	5	2	2	9	62
% App. Total	13.3	0	33.3	53.3		0	0	47.4	52.6		0	55.6	22.2	22.2		
PHF	.500	.000	.417	.500	.625	.000	.000	.500	.625	.731	.000	.417	.500	.250	.450	.738

N/S: Cedar Street
E: Franey Street
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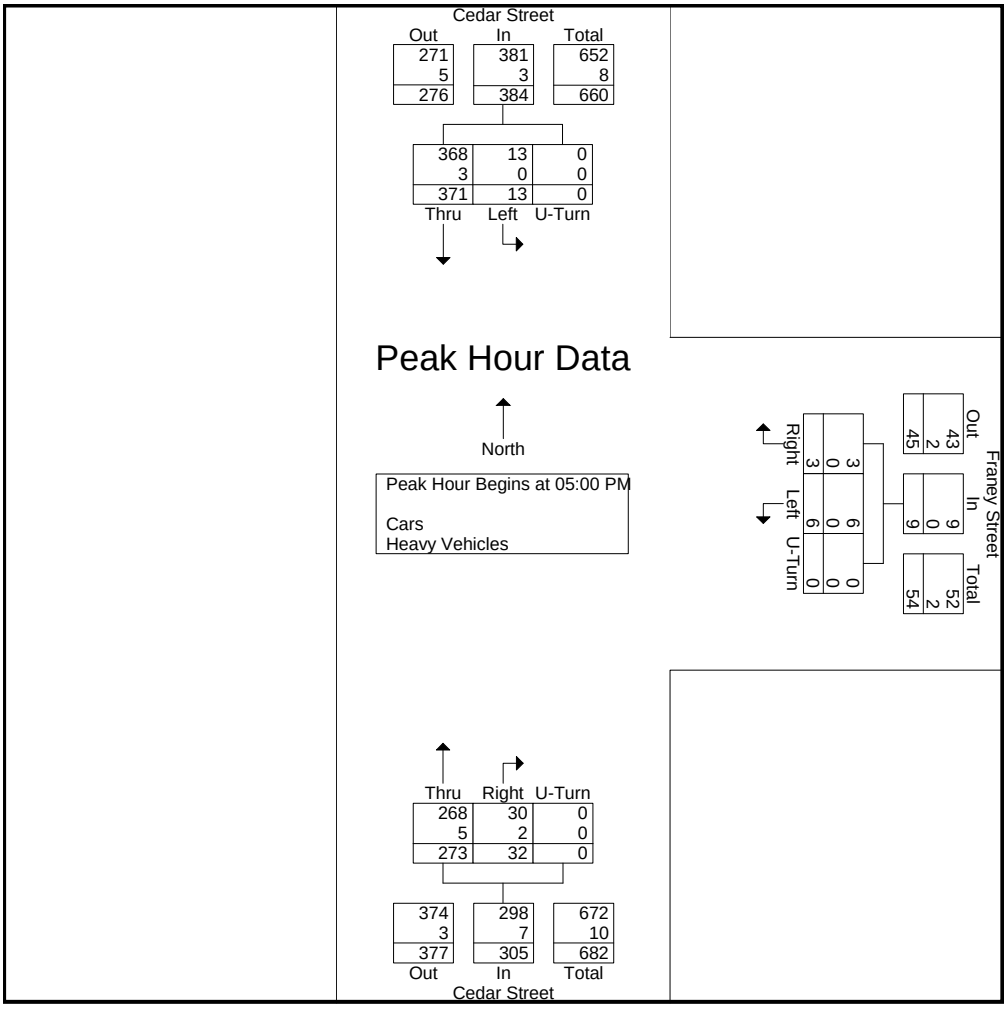
	Cedar Street From North				Franey Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	88	4	0	92	0	1	0	1	11	68	0	79	172
05:15 PM	83	4	0	87	1	3	0	4	11	80	0	91	182
05:30 PM	83	2	0	85	1	1	0	2	7	64	0	71	158
05:45 PM	117	3	0	120	1	1	0	2	3	61	0	64	186
Total Volume	371	13	0	384	3	6	0	9	32	273	0	305	698
% App. Total	96.6	3.4	0		33.3	66.7	0		10.5	89.5	0		
PHF	.793	.813	.000	.800	.750	.500	.000	.563	.727	.853	.000	.838	.938
Cars	368	13	0	381	3	6	0	9	30	268	0	298	688
% Cars	99.2	100	0	99.2	100	100	0	100	93.8	98.2	0	97.7	98.6
Heavy Vehicles	3	0	0	3	0	0	0	0	2	5	0	7	10
% Heavy Vehicles	0.8	0	0	0.8	0	0	0	0	6.3	1.8	0	2.3	1.4



N/S: Cedar Street
E: Murdock Street
City, State: Somerville, MA
Client: Design Consultants/ S. Siragusa

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Office: 508-875-0100 Fax: 508-875-0118
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File Name : 165373 C
Site Code : 2016-127
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Groups Printed- Cars - Heavy Vehicles

	Cedar Street From North			Murdock Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	115	1	0	2	2	0	2	36	0	158
07:15 AM	108	3	0	1	3	0	0	59	0	174
07:30 AM	119	3	0	2	7	0	1	49	0	181
07:45 AM	104	8	0	6	0	0	1	49	0	168
Total	446	15	0	11	12	0	4	193	0	681
08:00 AM	100	6	1	6	2	0	4	60	0	179
08:15 AM	74	4	4	9	2	0	0	56	0	149
08:30 AM	70	3	0	3	2	0	0	45	0	123
08:45 AM	108	2	0	0	3	0	1	42	0	156
Total	352	15	5	18	9	0	5	203	0	607
Grand Total	798	30	5	29	21	0	9	396	0	1288
Apprch %	95.8	3.6	0.6	58	42	0	2.2	97.8	0	
Total %	62	2.3	0.4	2.3	1.6	0	0.7	30.7	0	
Cars	770	29	5	28	19	0	9	387	0	1247
% Cars	96.5	96.7	100	96.6	90.5	0	100	97.7	0	96.8
Heavy Vehicles	28	1	0	1	2	0	0	9	0	41
% Heavy Vehicles	3.5	3.3	0	3.4	9.5	0	0	2.3	0	3.2

	Cedar Street From North				Murdock Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	108	3	0	111	1	3	0	4	0	59	0	59	174
07:30 AM	119	3	0	122	2	7	0	9	1	49	0	50	181
07:45 AM	104	8	0	112	6	0	0	6	1	49	0	50	168
08:00 AM	100	6	1	107	6	2	0	8	4	60	0	64	179
Total Volume	431	20	1	452	15	12	0	27	6	217	0	223	702
% App. Total	95.4	4.4	0.2		55.6	44.4	0		2.7	97.3	0		
PHF	.905	.625	.250	.926	.625	.429	.000	.750	.375	.904	.000	.871	.970
Cars	412	20	1	433	14	12	0	26	6	211	0	217	676
% Cars	95.6	100	100	95.8	93.3	100	0	96.3	100	97.2	0	97.3	96.3
Heavy Vehicles	19	0	0	19	1	0	0	1	0	6	0	6	26
% Heavy Vehicles	4.4	0	0	4.2	6.7	0	0	3.7	0	2.8	0	2.7	3.7

N/S: Cedar Street
E: Murdock Street
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Client: Design Consultants/ S. Siragusa

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Office: 508-875-0100 Fax: 508-875-0118
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File Name : 165373 C
Site Code : 2016-127
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Groups Printed- Cars

	Cedar Street From North			Murdock Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	110	1	0	2	2	0	2	36	0	153
07:15 AM	107	3	0	1	3	0	0	59	0	173
07:30 AM	113	3	0	2	7	0	1	49	0	175
07:45 AM	96	8	0	6	0	0	1	46	0	157
Total	426	15	0	11	12	0	4	190	0	658
08:00 AM	96	6	1	5	2	0	4	57	0	171
08:15 AM	74	4	4	9	2	0	0	54	0	147
08:30 AM	70	2	0	3	2	0	0	44	0	121
08:45 AM	104	2	0	0	1	0	1	42	0	150
Total	344	14	5	17	7	0	5	197	0	589
Grand Total	770	29	5	28	19	0	9	387	0	1247
Apprch %	95.8	3.6	0.6	59.6	40.4	0	2.3	97.7	0	
Total %	61.7	2.3	0.4	2.2	1.5	0	0.7	31	0	

	Cedar Street From North				Murdock Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	107	3	0	110	1	3	0	4	0	59	0	59	173
07:30 AM	113	3	0	116	2	7	0	9	1	49	0	50	175
07:45 AM	96	8	0	104	6	0	0	6	1	46	0	47	157
08:00 AM	96	6	1	103	5	2	0	7	4	57	0	61	171
Total Volume	412	20	1	433	14	12	0	26	6	211	0	217	676
% App. Total	95.2	4.6	0.2		53.8	46.2	0		2.8	97.2	0		
PHF	.912	.625	.250	.933	.583	.429	.000	.722	.375	.894	.000	.889	.966

N/S: Cedar Street
E: Murdock Street
City, State: Somerville, MA
Client: Design Consultants/ S. Siragusa

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165373 C
Site Code : 2016-127
Start Date : 11/16/2016
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Groups Printed- Heavy Vehicles

	Cedar Street From North			Murdock Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	5	0	0	0	0	0	0	0	0	5
07:15 AM	1	0	0	0	0	0	0	0	0	1
07:30 AM	6	0	0	0	0	0	0	0	0	6
07:45 AM	8	0	0	0	0	0	0	3	0	11
Total	20	0	0	0	0	0	0	3	0	23
08:00 AM	4	0	0	1	0	0	0	3	0	8
08:15 AM	0	0	0	0	0	0	0	2	0	2
08:30 AM	0	1	0	0	0	0	0	1	0	2
08:45 AM	4	0	0	0	2	0	0	0	0	6
Total	8	1	0	1	2	0	0	6	0	18
Grand Total	28	1	0	1	2	0	0	9	0	41
Apprch %	96.6	3.4	0	33.3	66.7	0	0	100	0	
Total %	68.3	2.4	0	2.4	4.9	0	0	22	0	

	Cedar Street From North				Murdock Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	6	0	0	6	0	0	0	0	0	0	0	0	6
07:45 AM	8	0	0	8	0	0	0	0	0	3	0	3	11
08:00 AM	4	0	0	4	1	0	0	1	0	3	0	3	8
08:15 AM	0	0	0	0	0	0	0	0	0	2	0	2	2
Total Volume	18	0	0	18	1	0	0	1	0	8	0	8	27
% App. Total	100	0	0		100	0	0		0	100	0		
PHF	.563	.000	.000	.563	.250	.000	.000	.250	.000	.667	.000	.667	.614

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Groups Printed- Peds and Bicycles

	Cedar Street From North				Murdock Street From East				Cedar Street From South				
Start Time	Thru	Left	Peds EB	Peds WB	Right	Left	Peds SB	Peds NB	Right	Thru	Peds WB	Peds EB	Int. Total
07:00 AM	2	0	0	0	0	0	4	4	0	0	0	0	10
07:15 AM	2	0	0	0	0	0	4	2	0	0	0	0	8
07:30 AM	1	0	0	0	0	0	4	4	0	0	0	0	9
07:45 AM	3	0	0	0	0	0	3	0	0	0	0	0	6
Total	8	0	0	0	0	0	15	10	0	0	0	0	33
08:00 AM	1	0	0	0	0	0	4	4	0	1	0	0	10
08:15 AM	3	0	0	0	0	1	4	0	0	0	0	0	8
08:30 AM	5	0	0	0	0	1	2	0	0	0	0	0	8
08:45 AM	2	0	0	0	0	0	5	2	0	0	0	0	9
Total	11	0	0	0	0	2	15	6	0	1	0	0	35
Grand Total	19	0	0	0	0	2	30	16	0	1	0	0	68
Apprch %	100	0	0	0	0	4.2	62.5	33.3	0	100	0	0	
Total %	27.9	0	0	0	0	2.9	44.1	23.5	0	1.5	0	0	

	Cedar Street From North					Murdock Street From East					Cedar Street From South					
Start Time	Thru	Left	Peds EB	Peds WB	App. Total	Right	Left	Peds SB	Peds NB	App. Total	Right	Thru	Peds WB	Peds EB	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 08:00 AM																
08:00 AM	1	0	0	0	1	0	0	4	4	8	0	1	0	0	1	10
08:15 AM	3	0	0	0	3	0	1	4	0	5	0	0	0	0	0	8
08:30 AM	5	0	0	0	5	0	1	2	0	3	0	0	0	0	0	8
08:45 AM	2	0	0	0	2	0	0	5	2	7	0	0	0	0	0	9
Total Volume	11	0	0	0	11	0	2	15	6	23	0	1	0	0	1	35
% App. Total	100	0	0	0		0	8.7	65.2	26.1		0	100	0	0		
PHF	.550	.000	.000	.000	.550	.000	.500	.750	.375	.719	.000	.250	.000	.000	.250	.875

N/S: Cedar Street
E: Murdock Street
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Client: Design Consultants/ S. Siragusa

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46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

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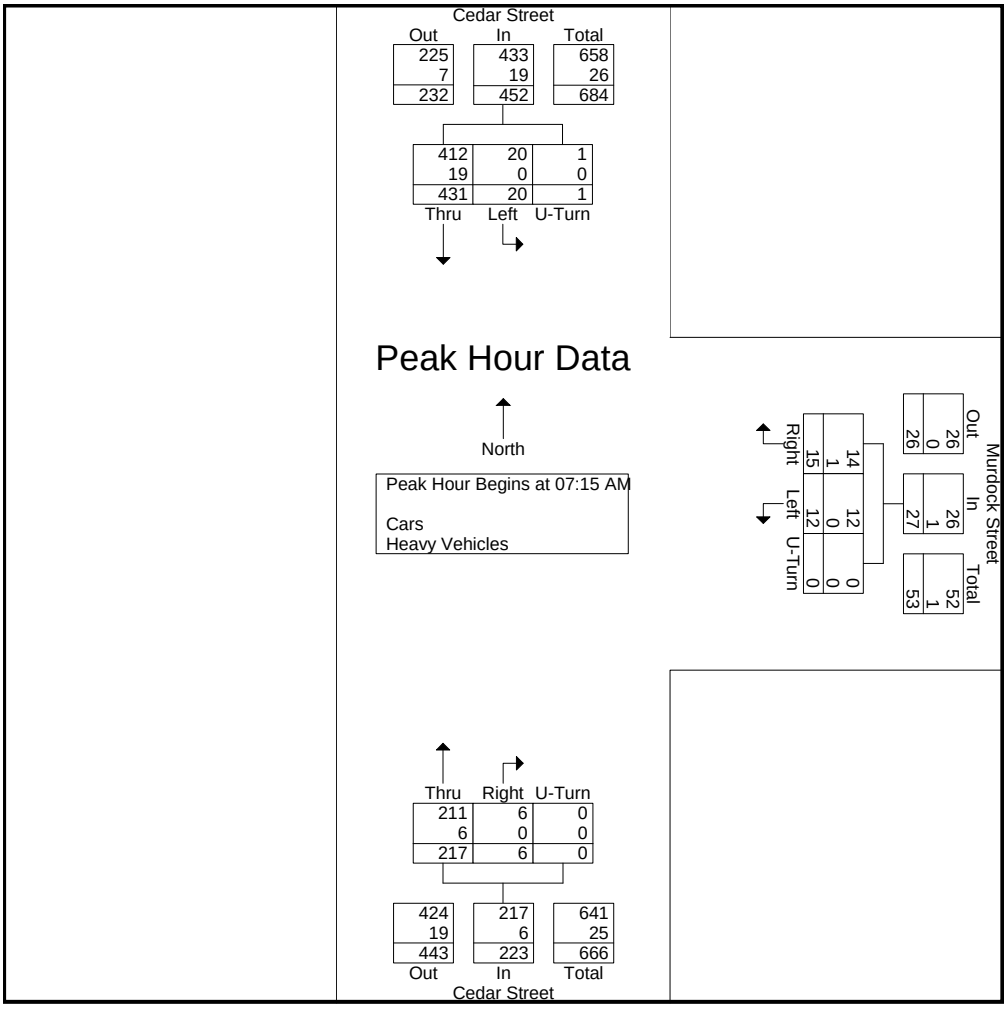
	Cedar Street From North				Murdock Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	108	3	0	111	1	3	0	4	0	59	0	59	174
07:30 AM	119	3	0	122	2	7	0	9	1	49	0	50	181
07:45 AM	104	8	0	112	6	0	0	6	1	49	0	50	168
08:00 AM	100	6	1	107	6	2	0	8	4	60	0	64	179
Total Volume	431	20	1	452	15	12	0	27	6	217	0	223	702
% App. Total	95.4	4.4	0.2		55.6	44.4	0		2.7	97.3	0		
PHF	.905	.625	.250	.926	.625	.429	.000	.750	.375	.904	.000	.871	.970
Cars	412	20	1	433	14	12	0	26	6	211	0	217	676
% Cars	95.6	100	100	95.8	93.3	100	0	96.3	100	97.2	0	97.3	96.3
Heavy Vehicles	19	0	0	19	1	0	0	1	0	6	0	6	26
% Heavy Vehicles	4.4	0	0	4.2	6.7	0	0	3.7	0	2.8	0	2.7	3.7



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File Name : 165373 CC
Site Code : 2016-127
Start Date : 11/16/2016
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Groups Printed- Cars - Heavy Vehicles

	Cedar Street From North			Murdock Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	64	4	0	4	1	0	1	63	0	137
04:15 PM	77	6	0	1	2	0	1	81	0	168
04:30 PM	61	5	0	4	1	0	4	57	0	132
04:45 PM	57	0	0	3	0	0	0	68	0	128
Total	259	15	0	12	4	0	6	269	0	565
05:00 PM	89	3	0	2	1	0	1	81	0	177
05:15 PM	75	8	0	3	0	0	4	86	0	176
05:30 PM	85	2	0	0	0	0	1	68	0	156
05:45 PM	111	5	0	1	0	0	3	63	0	183
Total	360	18	0	6	1	0	9	298	0	692
Grand Total	619	33	0	18	5	0	15	567	0	1257
Apprch %	94.9	5.1	0	78.3	21.7	0	2.6	97.4	0	
Total %	49.2	2.6	0	1.4	0.4	0	1.2	45.1	0	
Cars	613	31	0	16	5	0	15	557	0	1237
% Cars	99	93.9	0	88.9	100	0	100	98.2	0	98.4
Heavy Vehicles	6	2	0	2	0	0	0	10	0	20
% Heavy Vehicles	1	6.1	0	11.1	0	0	0	1.8	0	1.6

	Cedar Street From North				Murdock Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	89	3	0	92	2	1	0	3	1	81	0	82	177
05:15 PM	75	8	0	83	3	0	0	3	4	86	0	90	176
05:30 PM	85	2	0	87	0	0	0	0	1	68	0	69	156
05:45 PM	111	5	0	116	1	0	0	1	3	63	0	66	183
Total Volume	360	18	0	378	6	1	0	7	9	298	0	307	692
% App. Total	95.2	4.8	0		85.7	14.3	0		2.9	97.1	0		
PHF	.811	.563	.000	.815	.500	.250	.000	.583	.563	.866	.000	.853	.945
Cars	358	17	0	375	5	1	0	6	9	292	0	301	682
% Cars	99.4	94.4	0	99.2	83.3	100	0	85.7	100	98.0	0	98.0	98.6
Heavy Vehicles	2	1	0	3	1	0	0	1	0	6	0	6	10
% Heavy Vehicles	0.6	5.6	0	0.8	16.7	0	0	14.3	0	2.0	0	2.0	1.4

N/S: Cedar Street
E: Murdock Street
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Client: Design Consultants/ S. Siragusa

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Office: 508-875-0100 Fax: 508-875-0118
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Groups Printed- Cars

	Cedar Street From North			Murdock Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	62	3	0	3	1	0	1	62	0	132
04:15 PM	77	6	0	1	2	0	1	80	0	167
04:30 PM	61	5	0	4	1	0	4	56	0	131
04:45 PM	55	0	0	3	0	0	0	67	0	125
Total	255	14	0	11	4	0	6	265	0	555
05:00 PM	89	2	0	1	1	0	1	79	0	173
05:15 PM	74	8	0	3	0	0	4	85	0	174
05:30 PM	85	2	0	0	0	0	1	65	0	153
05:45 PM	110	5	0	1	0	0	3	63	0	182
Total	358	17	0	5	1	0	9	292	0	682
Grand Total	613	31	0	16	5	0	15	557	0	1237
Apprch %	95.2	4.8	0	76.2	23.8	0	2.6	97.4	0	
Total %	49.6	2.5	0	1.3	0.4	0	1.2	45	0	

	Cedar Street From North				Murdock Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	89	2	0	91	1	1	0	2	1	79	0	80	173
05:15 PM	74	8	0	82	3	0	0	3	4	85	0	89	174
05:30 PM	85	2	0	87	0	0	0	0	1	65	0	66	153
05:45 PM	110	5	0	115	1	0	0	1	3	63	0	66	182
Total Volume	358	17	0	375	5	1	0	6	9	292	0	301	682
% App. Total	95.5	4.5	0		83.3	16.7	0		3	97	0		
PHF	.814	.531	.000	.815	.417	.250	.000	.500	.563	.859	.000	.846	.937

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Groups Printed- Heavy Vehicles

	Cedar Street From North			Murdock Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	2	1	0	1	0	0	0	1	0	5
04:15 PM	0	0	0	0	0	0	0	1	0	1
04:30 PM	0	0	0	0	0	0	0	1	0	1
04:45 PM	2	0	0	0	0	0	0	1	0	3
Total	4	1	0	1	0	0	0	4	0	10
05:00 PM	0	1	0	1	0	0	0	2	0	4
05:15 PM	1	0	0	0	0	0	0	1	0	2
05:30 PM	0	0	0	0	0	0	0	3	0	3
05:45 PM	1	0	0	0	0	0	0	0	0	1
Total	2	1	0	1	0	0	0	6	0	10
Grand Total	6	2	0	2	0	0	0	10	0	20
Apprch %	75	25	0	100	0	0	0	100	0	
Total %	30	10	0	10	0	0	0	50	0	

	Cedar Street From North				Murdock Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	2	0	0	2	0	0	0	0	0	1	0	1	3
05:00 PM	0	1	0	1	1	0	0	1	0	2	0	2	4
05:15 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
05:30 PM	0	0	0	0	0	0	0	0	0	3	0	3	3
Total Volume	3	1	0	4	1	0	0	1	0	7	0	7	12
% App. Total	75	25	0		100	0	0		0	100	0		
PHF	.375	.250	.000	.500	.250	.000	.000	.250	.000	.583	.000	.583	.750

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Groups Printed- Peds and Bicycles

	Cedar Street From North				Murdock Street From East				Cedar Street From South				
Start Time	Thru	Left	Peds EB	Peds WB	Right	Left	Peds SB	Peds NB	Right	Thru	Peds WB	Peds EB	Int. Total
04:00 PM	0	0	0	0	0	0	2	3	1	0	0	0	6
04:15 PM	1	0	2	0	0	0	0	3	0	0	0	0	6
04:30 PM	0	0	0	0	0	0	0	1	0	1	2	0	4
04:45 PM	0	0	0	0	0	0	1	0	0	3	1	0	5
Total	1	0	2	0	0	0	3	7	1	4	3	0	21
05:00 PM	1	0	0	0	0	0	5	0	1	0	0	0	7
05:15 PM	0	0	0	0	0	0	3	10	0	2	0	0	15
05:30 PM	0	0	0	0	0	0	2	3	0	0	0	0	5
05:45 PM	1	0	0	0	0	0	1	7	1	3	0	0	13
Total	2	0	0	0	0	0	11	20	2	5	0	0	40
Grand Total	3	0	2	0	0	0	14	27	3	9	3	0	61
Apprch %	60	0	40	0	0	0	34.1	65.9	20	60	20	0	
Total %	4.9	0	3.3	0	0	0	23	44.3	4.9	14.8	4.9	0	

	Cedar Street From North					Murdock Street From East					Cedar Street From South					
Start Time	Thru	Left	Peds EB	Peds WB	App. Total	Right	Left	Peds SB	Peds NB	App. Total	Right	Thru	Peds WB	Peds EB	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 05:00 PM																
05:00 PM	1	0	0	0	1	0	0	5	0	5	1	0	0	0	1	7
05:15 PM	0	0	0	0	0	0	0	3	10	13	0	2	0	0	2	15
05:30 PM	0	0	0	0	0	0	0	2	3	5	0	0	0	0	0	5
05:45 PM	1	0	0	0	1	0	0	1	7	8	1	3	0	0	4	13
Total Volume	2	0	0	0	2	0	0	11	20	31	2	5	0	0	7	40
% App. Total	100	0	0	0		0	0	35.5	64.5		28.6	71.4	0	0		
PHF	.500	.000	.000	.000	.500	.000	.000	.550	.500	.596	.500	.417	.000	.000	.438	.667

N/S: Cedar Street
E: Murdock Street
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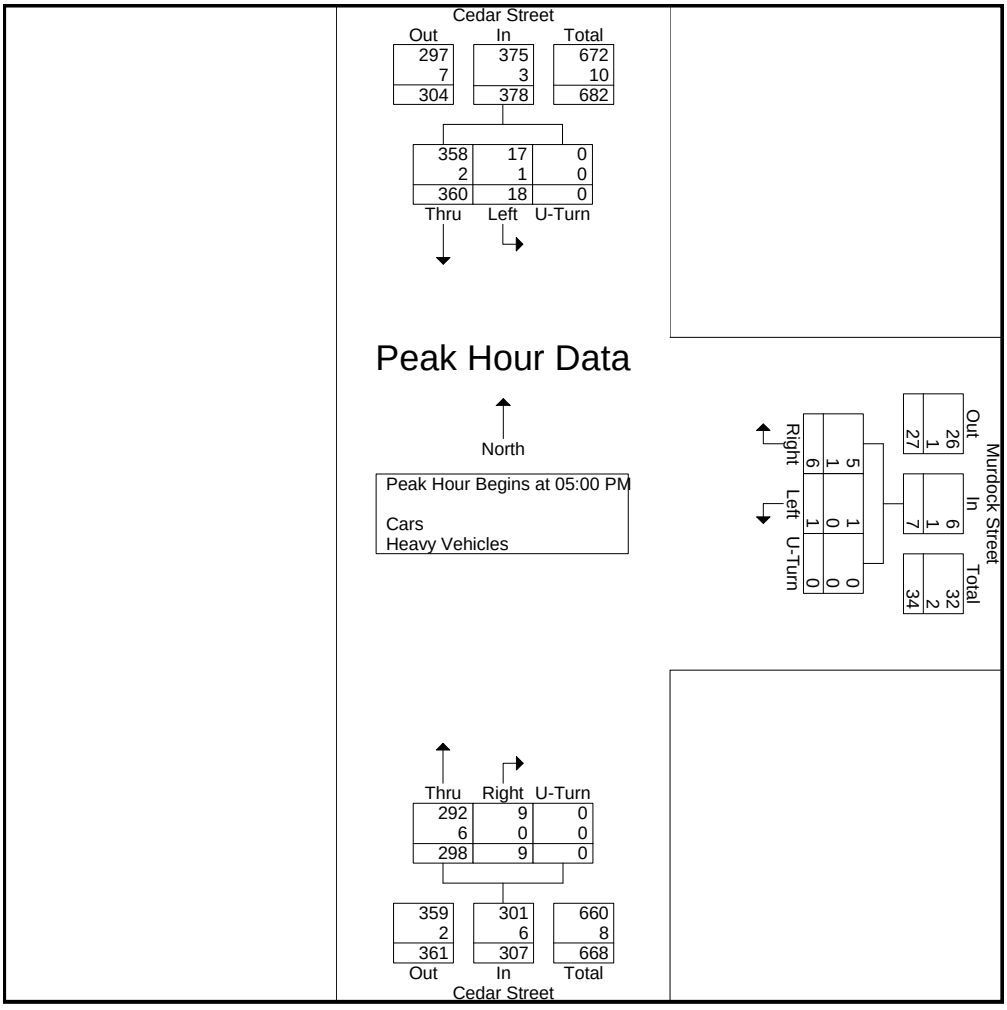
	Cedar Street From North				Murdock Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	89	3	0	92	2	1	0	3	1	81	0	82	177
05:15 PM	75	8	0	83	3	0	0	3	4	86	0	90	176
05:30 PM	85	2	0	87	0	0	0	0	1	68	0	69	156
05:45 PM	111	5	0	116	1	0	0	1	3	63	0	66	183
Total Volume	360	18	0	378	6	1	0	7	9	298	0	307	692
% App. Total	95.2	4.8	0		85.7	14.3	0		2.9	97.1	0		
PHF	.811	.563	.000	.815	.500	.250	.000	.583	.563	.866	.000	.853	.945
Cars	358	17	0	375	5	1	0	6	9	292	0	301	682
% Cars	99.4	94.4	0	99.2	83.3	100	0	85.7	100	98.0	0	98.0	98.6
Heavy Vehicles	2	1	0	3	1	0	0	1	0	6	0	6	10
% Heavy Vehicles	0.6	5.6	0	0.8	16.7	0	0	14.3	0	2.0	0	2.0	1.4



N/S: Cedar Street
E: Clyde Street
City, State: Somerville, MA
Client: Design Consultants/ S. Siragusa

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165373 D
Site Code : 2016-127
Start Date : 11/16/2016
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Groups Printed- Cars - Heavy Vehicles

	Cedar Street From North			Clyde Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	119	0	0	0	12	0	0	32	0	163
07:15 AM	106	0	0	0	10	0	0	54	0	170
07:30 AM	129	0	0	4	9	0	0	44	0	186
07:45 AM	100	0	0	6	9	0	0	44	0	159
Total	454	0	0	10	40	0	0	174	0	678
08:00 AM	89	0	0	8	14	0	0	50	1	162
08:15 AM	88	0	0	6	10	0	0	48	0	152
08:30 AM	76	0	0	8	8	0	0	37	0	129
08:45 AM	111	0	0	5	6	0	0	39	1	162
Total	364	0	0	27	38	0	0	174	2	605
Grand Total	818	0	0	37	78	0	0	348	2	1283
Apprch %	100	0	0	32.2	67.8	0	0	99.4	0.6	
Total %	63.8	0	0	2.9	6.1	0	0	27.1	0.2	
Cars	795	0	0	37	77	0	0	340	2	1251
% Cars	97.2	0	0	100	98.7	0	0	97.7	100	97.5
Heavy Vehicles	23	0	0	0	1	0	0	8	0	32
% Heavy Vehicles	2.8	0	0	0	1.3	0	0	2.3	0	2.5

	Cedar Street From North				Clyde Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	119	0	0	119	0	12	0	12	0	32	0	32	163
07:15 AM	106	0	0	106	0	10	0	10	0	54	0	54	170
07:30 AM	129	0	0	129	4	9	0	13	0	44	0	44	186
07:45 AM	100	0	0	100	6	9	0	15	0	44	0	44	159
Total Volume	454	0	0	454	10	40	0	50	0	174	0	174	678
% App. Total	100	0	0		20	80	0		0	100	0		
PHF	.880	.000	.000	.880	.417	.833	.000	.833	.000	.806	.000	.806	.911
Cars	437	0	0	437	10	40	0	50	0	171	0	171	658
% Cars	96.3	0	0	96.3	100	100	0	100	0	98.3	0	98.3	97.1
Heavy Vehicles	17	0	0	17	0	0	0	0	0	3	0	3	20
% Heavy Vehicles	3.7	0	0	3.7	0	0	0	0	0	1.7	0	1.7	2.9

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Groups Printed- Cars

	Cedar Street From North			Clyde Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	114	0	0	0	12	0	0	32	0	158
07:15 AM	105	0	0	0	10	0	0	54	0	169
07:30 AM	126	0	0	4	9	0	0	44	0	183
07:45 AM	92	0	0	6	9	0	0	41	0	148
Total	437	0	0	10	40	0	0	171	0	658
08:00 AM	85	0	0	8	14	0	0	47	1	155
08:15 AM	88	0	0	6	10	0	0	46	0	150
08:30 AM	76	0	0	8	8	0	0	37	0	129
08:45 AM	109	0	0	5	5	0	0	39	1	159
Total	358	0	0	27	37	0	0	169	2	593
Grand Total	795	0	0	37	77	0	0	340	2	1251
Apprch %	100	0	0	32.5	67.5	0	0	99.4	0.6	
Total %	63.5	0	0	3	6.2	0	0	27.2	0.2	

	Cedar Street From North				Clyde Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	114	0	0	114	0	12	0	12	0	32	0	32	158
07:15 AM	105	0	0	105	0	10	0	10	0	54	0	54	169
07:30 AM	126	0	0	126	4	9	0	13	0	44	0	44	183
07:45 AM	92	0	0	92	6	9	0	15	0	41	0	41	148
Total Volume	437	0	0	437	10	40	0	50	0	171	0	171	658
% App. Total	100	0	0		20	80	0		0	100	0		
PHF	.867	.000	.000	.867	.417	.833	.000	.833	.000	.792	.000	.792	.899

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Groups Printed- Heavy Vehicles

	Cedar Street From North			Clyde Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	5	0	0	0	0	0	0	0	0	5
07:15 AM	1	0	0	0	0	0	0	0	0	1
07:30 AM	3	0	0	0	0	0	0	0	0	3
07:45 AM	8	0	0	0	0	0	0	3	0	11
Total	17	0	0	0	0	0	0	3	0	20
08:00 AM	4	0	0	0	0	0	0	3	0	7
08:15 AM	0	0	0	0	0	0	0	2	0	2
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	2	0	0	0	1	0	0	0	0	3
Total	6	0	0	0	1	0	0	5	0	12
Grand Total	23	0	0	0	1	0	0	8	0	32
Apprch %	100	0	0	0	100	0	0	100	0	
Total %	71.9	0	0	0	3.1	0	0	25	0	

	Cedar Street From North				Clyde Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	3	0	0	3	0	0	0	0	0	0	0	0	3
07:45 AM	8	0	0	8	0	0	0	0	0	3	0	3	11
08:00 AM	4	0	0	4	0	0	0	0	0	3	0	3	7
08:15 AM	0	0	0	0	0	0	0	0	0	2	0	2	2
Total Volume	15	0	0	15	0	0	0	0	0	8	0	8	23
% App. Total	100	0	0		0	0	0		0	100	0		
PHF	.469	.000	.000	.469	.000	.000	.000	.000	.000	.667	.000	.667	.523

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Groups Printed- Peds and Bicycles

	Cedar Street From North				Clyde Street From East				Cedar Street From South				
Start Time	Thru	Left	Peds EB	Peds WB	Right	Left	Peds SB	Peds NB	Right	Thru	Peds WB	Peds EB	Int. Total
07:00 AM	2	0	0	0	0	0	6	0	0	0	1	0	9
07:15 AM	2	0	0	0	0	0	7	2	0	0	0	0	11
07:30 AM	2	0	0	0	0	0	5	3	0	0	0	1	11
07:45 AM	3	0	0	1	0	1	6	1	0	0	0	0	12
Total	9	0	0	1	0	1	24	6	0	0	1	1	43
08:00 AM	2	0	0	0	0	1	7	2	0	1	0	0	13
08:15 AM	1	0	0	0	0	1	11	2	0	0	0	0	15
08:30 AM	7	0	0	0	0	0	7	0	0	0	0	0	14
08:45 AM	2	0	0	0	0	0	4	2	0	0	0	0	8
Total	12	0	0	0	0	2	29	6	0	1	0	0	50
Grand Total	21	0	0	1	0	3	53	12	0	1	1	1	93
Apprch %	95.5	0	0	4.5	0	4.4	77.9	17.6	0	33.3	33.3	33.3	
Total %	22.6	0	0	1.1	0	3.2	57	12.9	0	1.1	1.1	1.1	

	Cedar Street From North					Clyde Street From East					Cedar Street From South					
Start Time	Thru	Left	Peds EB	Peds WB	App. Total	Right	Left	Peds SB	Peds NB	App. Total	Right	Thru	Peds WB	Peds EB	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 07:45 AM																
07:45 AM	3	0	0	1	4	0	1	6	1	8	0	0	0	0	0	12
08:00 AM	2	0	0	0	2	0	1	7	2	10	0	1	0	0	1	13
08:15 AM	1	0	0	0	1	0	1	11	2	14	0	0	0	0	0	15
08:30 AM	7	0	0	0	7	0	0	7	0	7	0	0	0	0	0	14
Total Volume	13	0	0	1	14	0	3	31	5	39	0	1	0	0	1	54
% App. Total	92.9	0	0	7.1		0	7.7	79.5	12.8		0	100	0	0		
PHF	.464	.000	.000	.250	.500	.000	.750	.705	.625	.696	.000	.250	.000	.000	.250	.900

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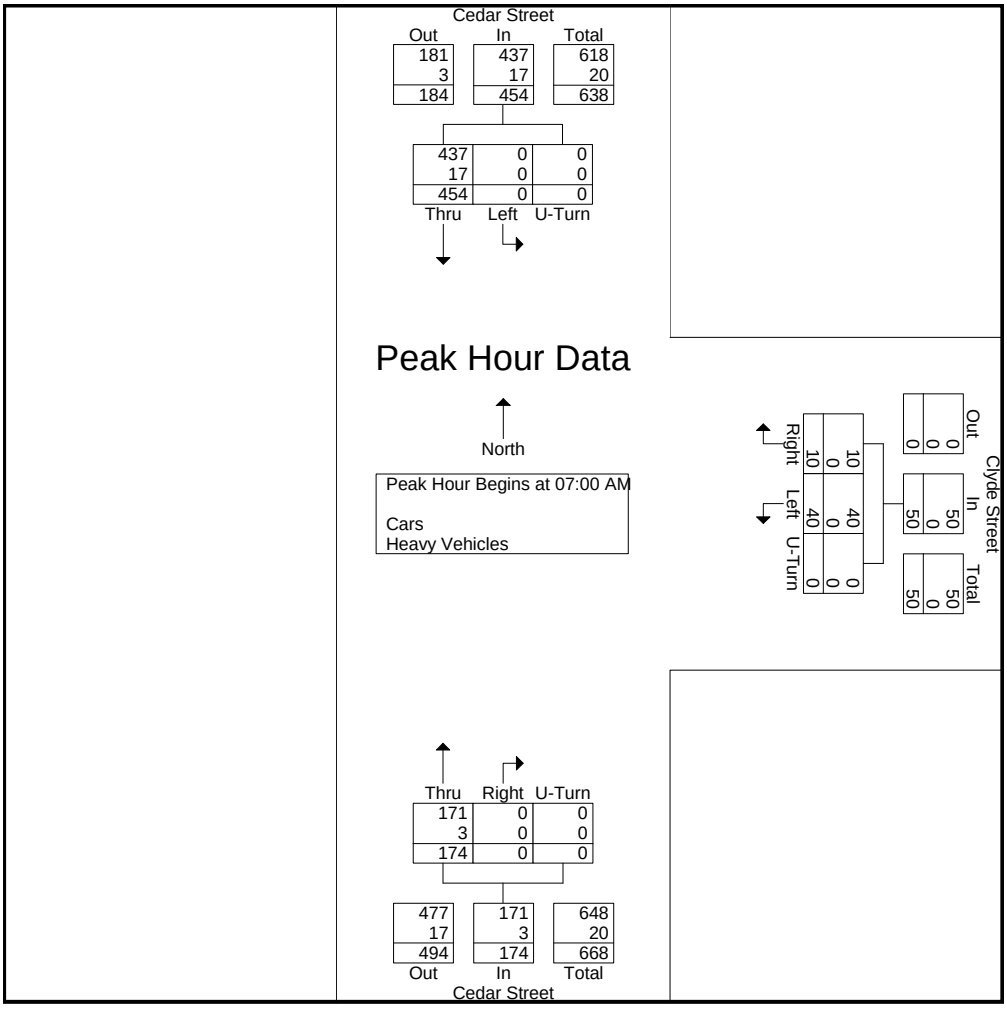
	Cedar Street From North				Clyde Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	119	0	0	119	0	12	0	12	0	32	0	32	163
07:15 AM	106	0	0	106	0	10	0	10	0	54	0	54	170
07:30 AM	129	0	0	129	4	9	0	13	0	44	0	44	186
07:45 AM	100	0	0	100	6	9	0	15	0	44	0	44	159
Total Volume	454	0	0	454	10	40	0	50	0	174	0	174	678
% App. Total	100	0	0		20	80	0		0	100	0		
PHF	.880	.000	.000	.880	.417	.833	.000	.833	.000	.806	.000	.806	.911
Cars	437	0	0	437	10	40	0	50	0	171	0	171	658
% Cars	96.3	0	0	96.3	100	100	0	100	0	98.3	0	98.3	97.1
Heavy Vehicles	17	0	0	17	0	0	0	0	0	3	0	3	20
% Heavy Vehicles	3.7	0	0	3.7	0	0	0	0	0	1.7	0	1.7	2.9



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Groups Printed- Cars - Heavy Vehicles

	Cedar Street From North			Clyde Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	64	0	0	2	3	0	0	66	0	135
04:15 PM	79	0	0	4	3	0	0	82	0	168
04:30 PM	61	0	0	2	2	0	0	60	1	126
04:45 PM	55	0	0	4	2	0	0	64	0	125
Total	259	0	0	12	10	0	0	272	1	554
05:00 PM	90	0	0	4	4	0	0	80	0	178
05:15 PM	73	0	0	4	4	0	0	89	0	170
05:30 PM	86	0	0	3	2	0	0	68	0	159
05:45 PM	109	0	0	2	6	0	0	66	0	183
Total	358	0	0	13	16	0	0	303	0	690
Grand Total	617	0	0	25	26	0	0	575	1	1244
Apprch %	100	0	0	49	51	0	0	99.8	0.2	
Total %	49.6	0	0	2	2.1	0	0	46.2	0.1	
Cars	612	0	0	23	26	0	0	564	1	1226
% Cars	99.2	0	0	92	100	0	0	98.1	100	98.6
Heavy Vehicles	5	0	0	2	0	0	0	11	0	18
% Heavy Vehicles	0.8	0	0	8	0	0	0	1.9	0	1.4

	Cedar Street From North				Clyde Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	90	0	0	90	4	4	0	8	0	80	0	80	178
05:15 PM	73	0	0	73	4	4	0	8	0	89	0	89	170
05:30 PM	86	0	0	86	3	2	0	5	0	68	0	68	159
05:45 PM	109	0	0	109	2	6	0	8	0	66	0	66	183
Total Volume	358	0	0	358	13	16	0	29	0	303	0	303	690
% App. Total	100	0	0		44.8	55.2	0		0	100	0		
PHF	.821	.000	.000	.821	.813	.667	.000	.906	.000	.851	.000	.851	.943
Cars	356	0	0	356	12	16	0	28	0	298	0	298	682
% Cars	99.4	0	0	99.4	92.3	100	0	96.6	0	98.3	0	98.3	98.8
Heavy Vehicles	2	0	0	2	1	0	0	1	0	5	0	5	8
% Heavy Vehicles	0.6	0	0	0.6	7.7	0	0	3.4	0	1.7	0	1.7	1.2

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Groups Printed- Cars

	Cedar Street From North			Clyde Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	62	0	0	2	3	0	0	65	0	132
04:15 PM	79	0	0	3	3	0	0	80	0	165
04:30 PM	61	0	0	2	2	0	0	58	1	124
04:45 PM	54	0	0	4	2	0	0	63	0	123
Total	256	0	0	11	10	0	0	266	1	544
05:00 PM	90	0	0	4	4	0	0	78	0	176
05:15 PM	72	0	0	4	4	0	0	88	0	168
05:30 PM	86	0	0	2	2	0	0	66	0	156
05:45 PM	108	0	0	2	6	0	0	66	0	182
Total	356	0	0	12	16	0	0	298	0	682
Grand Total	612	0	0	23	26	0	0	564	1	1226
Apprch %	100	0	0	46.9	53.1	0	0	99.8	0.2	
Total %	49.9	0	0	1.9	2.1	0	0	46	0.1	

	Cedar Street From North				Clyde Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	90	0	0	90	4	4	0	8	0	78	0	78	176
05:15 PM	72	0	0	72	4	4	0	8	0	88	0	88	168
05:30 PM	86	0	0	86	2	2	0	4	0	66	0	66	156
05:45 PM	108	0	0	108	2	6	0	8	0	66	0	66	182
Total Volume	356	0	0	356	12	16	0	28	0	298	0	298	682
% App. Total	100	0	0		42.9	57.1	0		0	100	0		
PHF	.824	.000	.000	.824	.750	.667	.000	.875	.000	.847	.000	.847	.937

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Groups Printed- Heavy Vehicles

	Cedar Street From North			Clyde Street From East			Cedar Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	2	0	0	0	0	0	0	1	0	3
04:15 PM	0	0	0	1	0	0	0	2	0	3
04:30 PM	0	0	0	0	0	0	0	2	0	2
04:45 PM	1	0	0	0	0	0	0	1	0	2
Total	3	0	0	1	0	0	0	6	0	10
05:00 PM	0	0	0	0	0	0	0	2	0	2
05:15 PM	1	0	0	0	0	0	0	1	0	2
05:30 PM	0	0	0	1	0	0	0	2	0	3
05:45 PM	1	0	0	0	0	0	0	0	0	1
Total	2	0	0	1	0	0	0	5	0	8
Grand Total	5	0	0	2	0	0	0	11	0	18
Apprch %	100	0	0	100	0	0	0	100	0	
Total %	27.8	0	0	11.1	0	0	0	61.1	0	

	Cedar Street From North				Clyde Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	2	0	0	2	0	0	0	0	0	1	0	1	3
04:15 PM	0	0	0	0	1	0	0	1	0	2	0	2	3
04:30 PM	0	0	0	0	0	0	0	0	0	2	0	2	2
04:45 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total Volume	3	0	0	3	1	0	0	1	0	6	0	6	10
% App. Total	100	0	0		100	0	0		0	100	0		
PHF	.375	.000	.000	.375	.250	.000	.000	.250	.000	.750	.000	.750	.833

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Groups Printed- Peds and Bicycles

	Cedar Street From North				Clyde Street From East				Cedar Street From South				
Start Time	Thru	Left	Peds EB	Peds WB	Right	Left	Peds SB	Peds NB	Right	Thru	Peds WB	Peds EB	Int. Total
04:00 PM	0	0	0	1	0	0	1	6	0	0	0	0	8
04:15 PM	1	0	1	0	0	0	4	2	0	0	1	0	9
04:30 PM	0	0	0	0	0	0	0	3	0	1	1	0	5
04:45 PM	1	0	0	0	0	0	1	2	0	2	0	0	6
Total	2	0	1	1	0	0	6	13	0	3	2	0	28
05:00 PM	0	0	0	0	0	0	4	1	0	1	0	0	6
05:15 PM	0	0	0	0	0	0	4	10	0	3	0	0	17
05:30 PM	0	0	0	0	0	0	0	3	0	0	0	0	3
05:45 PM	0	0	0	1	0	0	2	6	0	4	0	0	13
Total	0	0	0	1	0	0	10	20	0	8	0	0	39
Grand Total	2	0	1	2	0	0	16	33	0	11	2	0	67
Apprch %	40	0	20	40	0	0	32.7	67.3	0	84.6	15.4	0	
Total %	3	0	1.5	3	0	0	23.9	49.3	0	16.4	3	0	

	Cedar Street From North					Clyde Street From East					Cedar Street From South					
Start Time	Thru	Left	Peds EB	Peds WB	App. Total	Right	Left	Peds SB	Peds NB	App. Total	Right	Thru	Peds WB	Peds EB	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 05:00 PM																
05:00 PM	0	0	0	0	0	0	0	4	1	5	0	1	0	0	1	6
05:15 PM	0	0	0	0	0	0	0	4	10	14	0	3	0	0	3	17
05:30 PM	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	3
05:45 PM	0	0	0	1	1	0	0	2	6	8	0	4	0	0	4	13
Total Volume	0	0	0	1	1	0	0	10	20	30	0	8	0	0	8	39
% App. Total	0	0	0	100		0	0	33.3	66.7		0	100	0	0		
PHF	.000	.000	.000	.250	.250	.000	.000	.625	.500	.536	.000	.500	.000	.000	.500	.574

N/S: Cedar Street
E: Clyde Street
City, State: Somerville, MA
Client: Design Consultants/ S. Siragusa

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165373 DD
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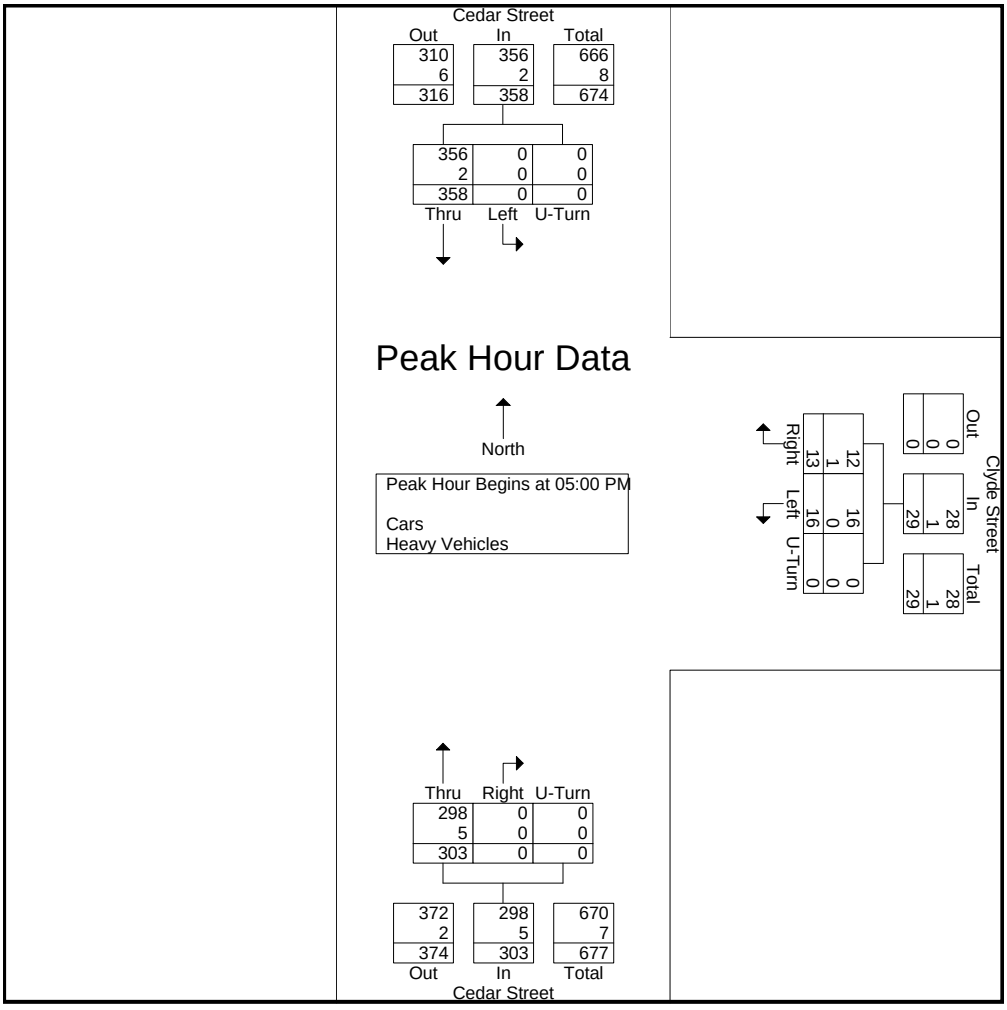
	Cedar Street From North				Clyde Street From East				Cedar Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	90	0	0	90	4	4	0	8	0	80	0	80	178
05:15 PM	73	0	0	73	4	4	0	8	0	89	0	89	170
05:30 PM	86	0	0	86	3	2	0	5	0	68	0	68	159
05:45 PM	109	0	0	109	2	6	0	8	0	66	0	66	183
Total Volume	358	0	0	358	13	16	0	29	0	303	0	303	690
% App. Total	100	0	0		44.8	55.2	0		0	100	0		
PHF	.821	.000	.000	.821	.813	.667	.000	.906	.000	.851	.000	.851	.943
Cars	356	0	0	356	12	16	0	28	0	298	0	298	682
% Cars	99.4	0	0	99.4	92.3	100	0	96.6	0	98.3	0	98.3	98.8
Heavy Vehicles	2	0	0	2	1	0	0	1	0	5	0	5	8
% Heavy Vehicles	0.6	0	0	0.6	7.7	0	0	3.4	0	1.7	0	1.7	1.2



N/S: Cedar Street
E/W: Highland Avenue
City, State: Somerville, MA
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46 Morton Street, Framingham, MA 01702
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Groups Printed- Cars - Heavy Vehicles

	Cedar Street From North				Highland Avenue From East				Cedar Street From South				Highland Avenue From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	33	66	38	0	14	81	10	0	0	0	0	0	2	75	7	0	326
07:15 AM	35	50	41	0	22	84	27	0	0	0	0	0	6	67	14	0	346
07:30 AM	27	61	42	0	16	89	27	0	0	0	0	0	5	64	12	0	343
07:45 AM	37	47	33	0	16	90	32	0	0	0	0	0	1	54	14	0	324
Total	132	224	154	0	68	344	96	0	0	0	0	0	14	260	47	0	1339
08:00 AM	30	57	28	0	10	63	29	0	0	0	0	0	8	70	18	0	313
08:15 AM	31	34	41	0	9	92	36	0	1	0	0	0	8	85	9	0	346
08:30 AM	31	55	30	0	15	79	30	0	0	0	0	0	3	71	11	0	325
08:45 AM	31	56	32	0	16	70	32	0	0	0	0	0	6	64	5	0	312
Total	123	202	131	0	50	304	127	0	1	0	0	0	25	290	43	0	1296
Grand Total	255	426	285	0	118	648	223	0	1	0	0	0	39	550	90	0	2635
Apprch %	26.4	44.1	29.5	0	11.9	65.5	22.5	0	100	0	0	0	5.7	81	13.3	0	
Total %	9.7	16.2	10.8	0	4.5	24.6	8.5	0	0	0	0	0	1.5	20.9	3.4	0	
Cars	249	413	278	0	114	625	219	0	0	0	0	0	38	529	90	0	2555
% Cars	97.6	96.9	97.5	0	96.6	96.5	98.2	0	0	0	0	0	97.4	96.2	100	0	97
Heavy Vehicles	6	13	7	0	4	23	4	0	1	0	0	0	1	21	0	0	80
% Heavy Vehicles	2.4	3.1	2.5	0	3.4	3.5	1.8	0	100	0	0	0	2.6	3.8	0	0	3

	Cedar Street From North					Highland Avenue From East					Cedar Street From South					Highland Avenue From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	33	66	38	0	137	14	81	10	0	105	0	0	0	0	0	2	75	7	0	84	326
07:15 AM	35	50	41	0	126	22	84	27	0	133	0	0	0	0	0	6	67	14	0	87	346
07:30 AM	27	61	42	0	130	16	89	27	0	132	0	0	0	0	0	5	64	12	0	81	343
07:45 AM	37	47	33	0	117	16	90	32	0	138	0	0	0	0	0	1	54	14	0	69	324
Total Volume	132	224	154	0	510	68	344	96	0	508	0	0	0	0	0	14	260	47	0	321	1339
% App. Total	25.9	43.9	30.2	0		13.4	67.7	18.9	0		0	0	0	0		4.4	81	14.6	0		
PHF	.892	.848	.917	.000	.931	.773	.956	.750	.000	.920	.000	.000	.000	.000	.000	.583	.867	.839	.000	.922	.967
Cars	126	220	150	0	496	67	336	96	0	499	0	0	0	0	0	13	250	47	0	310	1305
% Cars	95.5	98.2	97.4	0	97.3	98.5	97.7	100	0	98.2	0	0	0	0	0	92.9	96.2	100	0	96.6	97.5
Heavy Vehicles	6	4	4	0	14	1	8	0	0	9	0	0	0	0	0	1	10	0	0	11	34
% Heavy Vehicles	4.5	1.8	2.6	0	2.7	1.5	2.3	0	0	1.8	0	0	0	0	0	7.1	3.8	0	0	3.4	2.5

N/S: Cedar Street
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Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

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Site Code : 2016-127
Start Date : 11/16/2016
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Groups Printed- Cars

	Cedar Street From North				Highland Avenue From East				Cedar Street From South				Highland Avenue From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	31	64	36	0	14	79	10	0	0	0	0	0	1	72	7	0	314
07:15 AM	34	50	41	0	22	82	27	0	0	0	0	0	6	64	14	0	340
07:30 AM	26	60	40	0	16	87	27	0	0	0	0	0	5	62	12	0	335
07:45 AM	35	46	33	0	15	88	32	0	0	0	0	0	1	52	14	0	316
Total	126	220	150	0	67	336	96	0	0	0	0	0	13	250	47	0	1305
08:00 AM	30	54	27	0	9	60	29	0	0	0	0	0	8	65	18	0	300
08:15 AM	31	31	41	0	9	89	33	0	0	0	0	0	8	84	9	0	335
08:30 AM	31	55	29	0	15	74	30	0	0	0	0	0	3	66	11	0	314
08:45 AM	31	53	31	0	14	66	31	0	0	0	0	0	6	64	5	0	301
Total	123	193	128	0	47	289	123	0	0	0	0	0	25	279	43	0	1250
Grand Total	249	413	278	0	114	625	219	0	0	0	0	0	38	529	90	0	2555
Apprch %	26.5	43.9	29.6	0	11.9	65.2	22.9	0	0	0	0	0	5.8	80.5	13.7	0	
Total %	9.7	16.2	10.9	0	4.5	24.5	8.6	0	0	0	0	0	1.5	20.7	3.5	0	

	Cedar Street From North					Highland Avenue From East					Cedar Street From South					Highland Avenue From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	31	64	36	0	131	14	79	10	0	103	0	0	0	0	0	1	72	7	0	80	314
07:15 AM	34	50	41	0	125	22	82	27	0	131	0	0	0	0	0	6	64	14	0	84	340
07:30 AM	26	60	40	0	126	16	87	27	0	130	0	0	0	0	0	5	62	12	0	79	335
07:45 AM	35	46	33	0	114	15	88	32	0	135	0	0	0	0	0	1	52	14	0	67	316
Total Volume	126	220	150	0	496	67	336	96	0	499	0	0	0	0	0	13	250	47	0	310	1305
% App. Total	25.4	44.4	30.2	0		13.4	67.3	19.2	0		0	0	0	0		4.2	80.6	15.2	0		
PHF	.900	.859	.915	.000	.947	.761	.955	.750	.000	.924	.000	.000	.000	.000	.000	.542	.868	.839	.000	.923	.960

N/S: Cedar Street
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Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165373 E
Site Code : 2016-127
Start Date : 11/16/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Cedar Street From North				Highland Avenue From East				Cedar Street From South				Highland Avenue From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	2	2	2	0	0	2	0	0	0	0	0	0	1	3	0	0	12
07:15 AM	1	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0	6
07:30 AM	1	1	2	0	0	2	0	0	0	0	0	0	0	2	0	0	8
07:45 AM	2	1	0	0	1	2	0	0	0	0	0	0	0	2	0	0	8
Total	6	4	4	0	1	8	0	0	0	0	0	0	1	10	0	0	34
08:00 AM	0	3	1	0	1	3	0	0	0	0	0	0	0	5	0	0	13
08:15 AM	0	3	0	0	0	3	3	0	1	0	0	0	0	1	0	0	11
08:30 AM	0	0	1	0	0	5	0	0	0	0	0	0	0	5	0	0	11
08:45 AM	0	3	1	0	2	4	1	0	0	0	0	0	0	0	0	0	11
Total	0	9	3	0	3	15	4	0	1	0	0	0	0	11	0	0	46
Grand Total	6	13	7	0	4	23	4	0	1	0	0	0	1	21	0	0	80
Apprch %	23.1	50	26.9	0	12.9	74.2	12.9	0	100	0	0	0	4.5	95.5	0	0	
Total %	7.5	16.2	8.8	0	5	28.8	5	0	1.2	0	0	0	1.2	26.2	0	0	

	Cedar Street From North					Highland Avenue From East					Cedar Street From South					Highland Avenue From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	3	1	0	4	1	3	0	0	4	0	0	0	0	0	0	5	0	0	5	13
08:15 AM	0	3	0	0	3	0	3	3	0	6	1	0	0	0	1	0	1	0	0	1	11
08:30 AM	0	0	1	0	1	0	5	0	0	5	0	0	0	0	0	0	5	0	0	5	11
08:45 AM	0	3	1	0	4	2	4	1	0	7	0	0	0	0	0	0	0	0	0	0	11
Total Volume	0	9	3	0	12	3	15	4	0	22	1	0	0	0	1	0	11	0	0	11	46
% App. Total	0	75	25	0		13.6	68.2	18.2	0		100	0	0	0		0	100	0	0		
PHF	.000	.750	.750	.000	.750	.375	.750	.333	.000	.786	.250	.000	.000	.000	.250	.000	.550	.000	.000	.550	.885

N/S: Cedar Street
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Site Code : 2016-127
Start Date : 11/16/2016
Page No : 1

Groups Printed- Peds and Bicycles

	Cedar Street From North					Highland Avenue From East					Cedar Street From South					Highland Avenue From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	1	0	3	4	0	2	0	6	2	0	0	0	2	1	0	0	0	0	3	24
07:15 AM	1	0	0	1	7	0	0	0	4	2	0	0	0	5	1	0	1	0	1	1	24
07:30 AM	2	1	0	4	8	0	1	0	13	2	0	0	0	3	9	0	1	0	1	4	49
07:45 AM	1	2	0	2	14	0	2	0	18	5	0	0	0	6	2	0	3	0	1	4	60
Total	4	4	0	10	33	0	5	0	41	11	0	0	0	16	13	0	5	0	3	12	157
08:00 AM	2	4	1	5	10	0	2	0	17	4	0	0	0	9	1	0	0	0	0	1	56
08:15 AM	1	3	1	2	8	1	1	0	15	0	0	0	0	7	12	0	1	0	2	4	58
08:30 AM	3	4	1	1	9	0	3	0	12	0	0	0	0	9	8	1	2	0	0	4	57
08:45 AM	0	4	0	3	7	0	2	0	15	1	0	0	0	6	2	0	0	0	0	1	41
Total	6	15	3	11	34	1	8	0	59	5	0	0	0	31	23	1	3	0	2	10	212
Grand Total	10	19	3	21	67	1	13	0	100	16	0	0	0	47	36	1	8	0	5	22	369
Apprch %	8.3	15.8	2.5	17.5	55.8	0.8	10	0	76.9	12.3	0	0	0	56.6	43.4	2.8	22.2	0	13.9	61.1	
Total %	2.7	5.1	0.8	5.7	18.2	0.3	3.5	0	27.1	4.3	0	0	0	12.7	9.8	0.3	2.2	0	1.4	6	

	Cedar Street From North						Highland Avenue From East						Cedar Street From South						Highland Avenue From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 07:45 AM																									
07:45 AM	1	2	0	2	14	19	0	2	0	18	5	25	0	0	0	6	2	8	0	3	0	1	4	8	60
08:00 AM	2	4	1	5	10	22	0	2	0	17	4	23	0	0	0	9	1	10	0	0	0	0	1	1	56
08:15 AM	1	3	1	2	8	15	1	1	0	15	0	17	0	0	0	7	12	19	0	1	0	2	4	7	58
08:30 AM	3	4	1	1	9	18	0	3	0	12	0	15	0	0	0	9	8	17	1	2	0	0	4	7	57
Total Volume	7	13	3	10	41	74	1	8	0	62	9	80	0	0	0	31	23	54	1	6	0	3	13	23	231
% App. Total	9.5	17.6	4.1	13.5	55.4		1.2	10	0	77.5	11.2		0	0	0	57.4	42.6		4.3	26.1	0	13	56.5		
PHF	.583	.813	.750	.500	.732	.841	.250	.667	.000	.861	.450	.800	.000	.000	.000	.861	.479	.711	.250	.500	.000	.375	.813	.719	.963

N/S: Cedar Street
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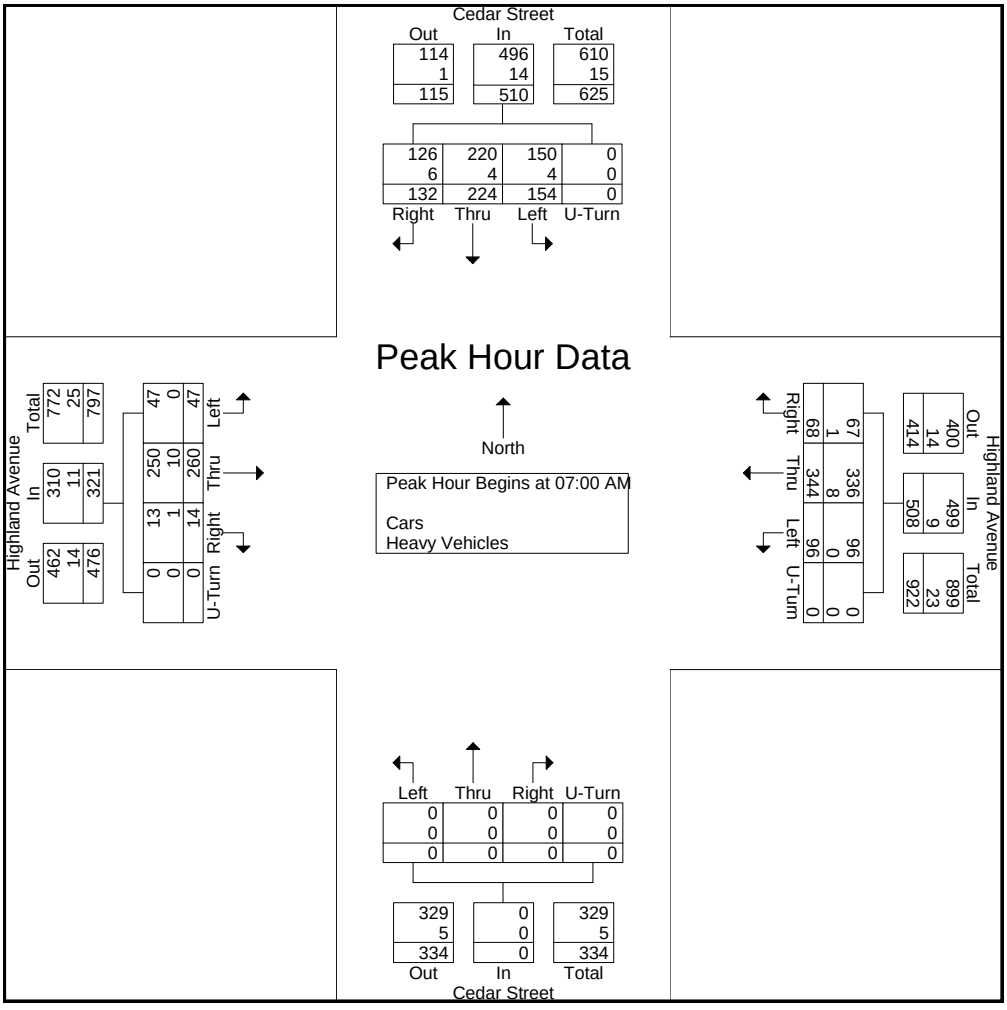
	Cedar Street From North					Highland Avenue From East					Cedar Street From South					Highland Avenue From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	33	66	38	0	137	14	81	10	0	105	0	0	0	0	0	2	75	7	0	84	326
07:15 AM	35	50	41	0	126	22	84	27	0	133	0	0	0	0	0	6	67	14	0	87	346
07:30 AM	27	61	42	0	130	16	89	27	0	132	0	0	0	0	0	5	64	12	0	81	343
07:45 AM	37	47	33	0	117	16	90	32	0	138	0	0	0	0	0	1	54	14	0	69	324
Total Volume	132	224	154	0	510	68	344	96	0	508	0	0	0	0	0	14	260	47	0	321	1339
% App. Total	25.9	43.9	30.2	0		13.4	67.7	18.9	0		0	0	0	0		4.4	81	14.6	0		
PHF	.892	.848	.917	.000	.931	.773	.956	.750	.000	.920	.000	.000	.000	.000	.000	.583	.867	.839	.000	.922	.967
Cars	126	220	150	0	496	67	336	96	0	499	0	0	0	0	0	13	250	47	0	310	1305
% Cars	95.5	98.2	97.4	0	97.3	98.5	97.7	100	0	98.2	0	0	0	0	0	92.9	96.2	100	0	96.6	97.5
Heavy Vehicles	6	4	4	0	14	1	8	0	0	9	0	0	0	0	0	1	10	0	0	11	34
% Heavy Vehicles	4.5	1.8	2.6	0	2.7	1.5	2.3	0	0	1.8	0	0	0	0	0	7.1	3.8	0	0	3.4	2.5



N/S: Cedar Street
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Groups Printed- Cars - Heavy Vehicles

	Cedar Street From North				Highland Avenue From East				Cedar Street From South				Highland Avenue From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	19	45	8	0	54	82	10	0	0	0	0	0	2	54	15	0	289
04:15 PM	26	31	19	0	50	78	8	0	0	0	0	0	4	43	25	0	284
04:30 PM	25	43	17	0	43	70	5	0	0	0	0	0	7	57	12	0	279
04:45 PM	22	34	15	0	35	80	9	0	0	0	0	0	4	51	14	0	264
Total	92	153	59	0	182	310	32	0	0	0	0	0	17	205	66	0	1116
05:00 PM	21	49	28	0	48	89	7	0	0	0	0	0	5	60	18	0	325
05:15 PM	31	45	20	0	69	95	6	0	0	0	0	0	5	47	21	0	339
05:30 PM	27	56	22	0	52	78	6	0	0	0	0	0	6	64	17	0	328
05:45 PM	24	54	13	1	52	69	12	0	0	0	0	0	7	60	23	0	315
Total	103	204	83	1	221	331	31	0	0	0	0	0	23	231	79	0	1307
Grand Total	195	357	142	1	403	641	63	0	0	0	0	0	40	436	145	0	2423
Apprch %	28.1	51.4	20.4	0.1	36.4	57.9	5.7	0	0	0	0	0	6.4	70.2	23.3	0	
Total %	8	14.7	5.9	0	16.6	26.5	2.6	0	0	0	0	0	1.7	18	6	0	
Cars	192	353	141	1	400	625	62	0	0	0	0	0	40	419	143	0	2376
% Cars	98.5	98.9	99.3	100	99.3	97.5	98.4	0	0	0	0	0	100	96.1	98.6	0	98.1
Heavy Vehicles	3	4	1	0	3	16	1	0	0	0	0	0	0	17	2	0	47
% Heavy Vehicles	1.5	1.1	0.7	0	0.7	2.5	1.6	0	0	0	0	0	0	3.9	1.4	0	1.9

	Cedar Street From North					Highland Avenue From East					Cedar Street From South					Highland Avenue From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	21	49	28	0	98	48	89	7	0	144	0	0	0	0	0	5	60	18	0	83	325
05:15 PM	31	45	20	0	96	69	95	6	0	170	0	0	0	0	0	5	47	21	0	73	339
05:30 PM	27	56	22	0	105	52	78	6	0	136	0	0	0	0	0	6	64	17	0	87	328
05:45 PM	24	54	13	1	92	52	69	12	0	133	0	0	0	0	0	7	60	23	0	90	315
Total Volume	103	204	83	1	391	221	331	31	0	583	0	0	0	0	0	23	231	79	0	333	1307
% App. Total	26.3	52.2	21.2	0.3		37.9	56.8	5.3	0		0	0	0	0		6.9	69.4	23.7	0		
PHF	.831	.911	.741	.250	.931	.801	.871	.646	.000	.857	.000	.000	.000	.000	.000	.821	.902	.859	.000	.925	.964
Cars	103	202	82	1	388	220	322	31	0	573	0	0	0	0	0	23	224	79	0	326	1287
% Cars	100	99.0	98.8	100	99.2	99.5	97.3	100	0	98.3	0	0	0	0	0	100	97.0	100	0	97.9	98.5
Heavy Vehicles	0	2	1	0	3	1	9	0	0	10	0	0	0	0	0	0	7	0	0	7	20
% Heavy Vehicles	0	1.0	1.2	0	0.8	0.5	2.7	0	0	1.7	0	0	0	0	0	0	3.0	0	0	2.1	1.5

N/S: Cedar Street
E/W: Highland Avenue
City, State: Somerville, MA
Client: Design Consultants/ S. Siragusa

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165373 EE
Site Code : 2016-127
Start Date : 11/16/2016
Page No : 1

Groups Printed- Cars

	Cedar Street From North				Highland Avenue From East				Cedar Street From South				Highland Avenue From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	18	43	8	0	54	79	10	0	0	0	0	0	2	52	15	0	281
04:15 PM	26	31	19	0	50	76	7	0	0	0	0	0	4	41	23	0	277
04:30 PM	25	43	17	0	42	69	5	0	0	0	0	0	7	52	12	0	272
04:45 PM	20	34	15	0	34	79	9	0	0	0	0	0	4	50	14	0	259
Total	89	151	59	0	180	303	31	0	0	0	0	0	17	195	64	0	1089
05:00 PM	21	49	27	0	48	86	7	0	0	0	0	0	5	59	18	0	320
05:15 PM	31	44	20	0	68	93	6	0	0	0	0	0	5	44	21	0	332
05:30 PM	27	56	22	0	52	78	6	0	0	0	0	0	6	61	17	0	325
05:45 PM	24	53	13	1	52	65	12	0	0	0	0	0	7	60	23	0	310
Total	103	202	82	1	220	322	31	0	0	0	0	0	23	224	79	0	1287
Grand Total	192	353	141	1	400	625	62	0	0	0	0	0	40	419	143	0	2376
Apprch %	27.9	51.4	20.5	0.1	36.8	57.5	5.7	0	0	0	0	0	6.6	69.6	23.8	0	
Total %	8.1	14.9	5.9	0	16.8	26.3	2.6	0	0	0	0	0	1.7	17.6	6	0	

	Cedar Street From North					Highland Avenue From East					Cedar Street From South					Highland Avenue From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	21	49	27	0	97	48	86	7	0	141	0	0	0	0	0	5	59	18	0	82	320
05:15 PM	31	44	20	0	95	68	93	6	0	167	0	0	0	0	0	5	44	21	0	70	332
05:30 PM	27	56	22	0	105	52	78	6	0	136	0	0	0	0	0	6	61	17	0	84	325
05:45 PM	24	53	13	1	91	52	65	12	0	129	0	0	0	0	0	7	60	23	0	90	310
Total Volume	103	202	82	1	388	220	322	31	0	573	0	0	0	0	0	23	224	79	0	326	1287
% App. Total	26.5	52.1	21.1	0.3		38.4	56.2	5.4	0		0	0	0	0		7.1	68.7	24.2	0		
PHF	.831	.902	.759	.250	.924	.809	.866	.646	.000	.858	.000	.000	.000	.000	.000	.821	.918	.859	.000	.906	.969

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Groups Printed- Heavy Vehicles

	Cedar Street From North				Highland Avenue From East				Cedar Street From South				Highland Avenue From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	1	2	0	0	0	3	0	0	0	0	0	0	0	2	0	0	8
04:15 PM	0	0	0	0	0	2	1	0	0	0	0	0	0	2	2	0	7
04:30 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	5	0	0	7
04:45 PM	2	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	5
Total	3	2	0	0	2	7	1	0	0	0	0	0	0	10	2	0	27
05:00 PM	0	0	1	0	0	3	0	0	0	0	0	0	0	1	0	0	5
05:15 PM	0	1	0	0	1	2	0	0	0	0	0	0	0	3	0	0	7
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
05:45 PM	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	0	5
Total	0	2	1	0	1	9	0	0	0	0	0	0	0	7	0	0	20
Grand Total	3	4	1	0	3	16	1	0	0	0	0	0	0	17	2	0	47
Apprch %	37.5	50	12.5	0	15	80	5	0	0	0	0	0	0	89.5	10.5	0	
Total %	6.4	8.5	2.1	0	6.4	34	2.1	0	0	0	0	0	0	36.2	4.3	0	

	Cedar Street From North					Highland Avenue From East					Cedar Street From South					Highland Avenue From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	1	2	0	0	3	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	8
04:15 PM	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	0	2	2	0	4	7
04:30 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	5	0	0	5	7
04:45 PM	2	0	0	0	2	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	5
Total Volume	3	2	0	0	5	2	7	1	0	10	0	0	0	0	0	0	10	2	0	12	27
% App. Total	60	40	0	0		20	70	10	0		0	0	0	0		0	83.3	16.7	0		
PHF	.375	.250	.000	.000	.417	.500	.583	.250	.000	.833	.000	.000	.000	.000	.000	.000	.500	.250	.000	.600	.844

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Page No : 1

Groups Printed- Peds and Bicycles

	Cedar Street From North					Highland Avenue From East					Cedar Street From South					Highland Avenue From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	0	0	2	2	1	0	0	3	3	0	0	0	6	3	0	1	0	2	2	25
04:15 PM	1	1	0	2	2	1	1	0	1	2	0	0	0	3	7	0	1	0	1	1	24
04:30 PM	0	0	0	4	4	0	0	0	4	3	0	0	0	1	5	0	2	0	0	3	26
04:45 PM	0	0	1	4	2	0	1	0	3	7	0	0	0	6	7	0	0	0	1	2	34
Total	1	1	1	12	10	2	2	0	11	15	0	0	0	16	22	0	4	0	4	8	109
05:00 PM	0	1	0	3	1	0	1	0	2	0	0	0	0	1	6	0	3	0	4	2	24
05:15 PM	0	0	0	6	5	0	2	1	0	11	0	0	0	2	11	0	3	0	2	3	46
05:30 PM	0	1	0	5	1	1	3	1	7	12	0	0	0	4	10	1	6	0	5	3	60
05:45 PM	0	0	0	4	3	1	2	0	6	8	0	0	0	8	22	0	2	0	5	5	66
Total	0	2	0	18	10	2	8	2	15	31	0	0	0	15	49	1	14	0	16	13	196
Grand Total	1	3	1	30	20	4	10	2	26	46	0	0	0	31	71	1	18	0	20	21	305
Apprch %	1.8	5.5	1.8	54.5	36.4	4.5	11.4	2.3	29.5	52.3	0	0	0	30.4	69.6	1.7	30	0	33.3	35	
Total %	0.3	1	0.3	9.8	6.6	1.3	3.3	0.7	8.5	15.1	0	0	0	10.2	23.3	0.3	5.9	0	6.6	6.9	

	Cedar Street From North						Highland Avenue From East						Cedar Street From South						Highland Avenue From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 05:00 PM																									
05:00 PM	0	1	0	3	1	5	0	1	0	2	0	3	0	0	0	1	6	7	0	3	0	4	2	9	24
05:15 PM	0	0	0	6	5	11	0	2	1	0	11	14	0	0	0	2	11	13	0	3	0	2	3	8	46
05:30 PM	0	1	0	5	1	7	1	3	1	7	12	24	0	0	0	4	10	14	1	6	0	5	3	15	60
05:45 PM	0	0	0	4	3	7	1	2	0	6	8	17	0	0	0	8	22	30	0	2	0	5	5	12	66
Total Volume	0	2	0	18	10	30	2	8	2	15	31	58	0	0	0	15	49	64	1	14	0	16	13	44	196
% App. Total	0	6.7	0	60	33.3		3.4	13.8	3.4	25.9	53.4		0	0	0	23.4	76.6		2.3	31.8	0	36.4	29.5		
PHF	.000	.500	.000	.750	.500	.682	.500	.667	.500	.536	.646	.604	.000	.000	.000	.469	.557	.533	.250	.583	.000	.800	.650	.733	.742

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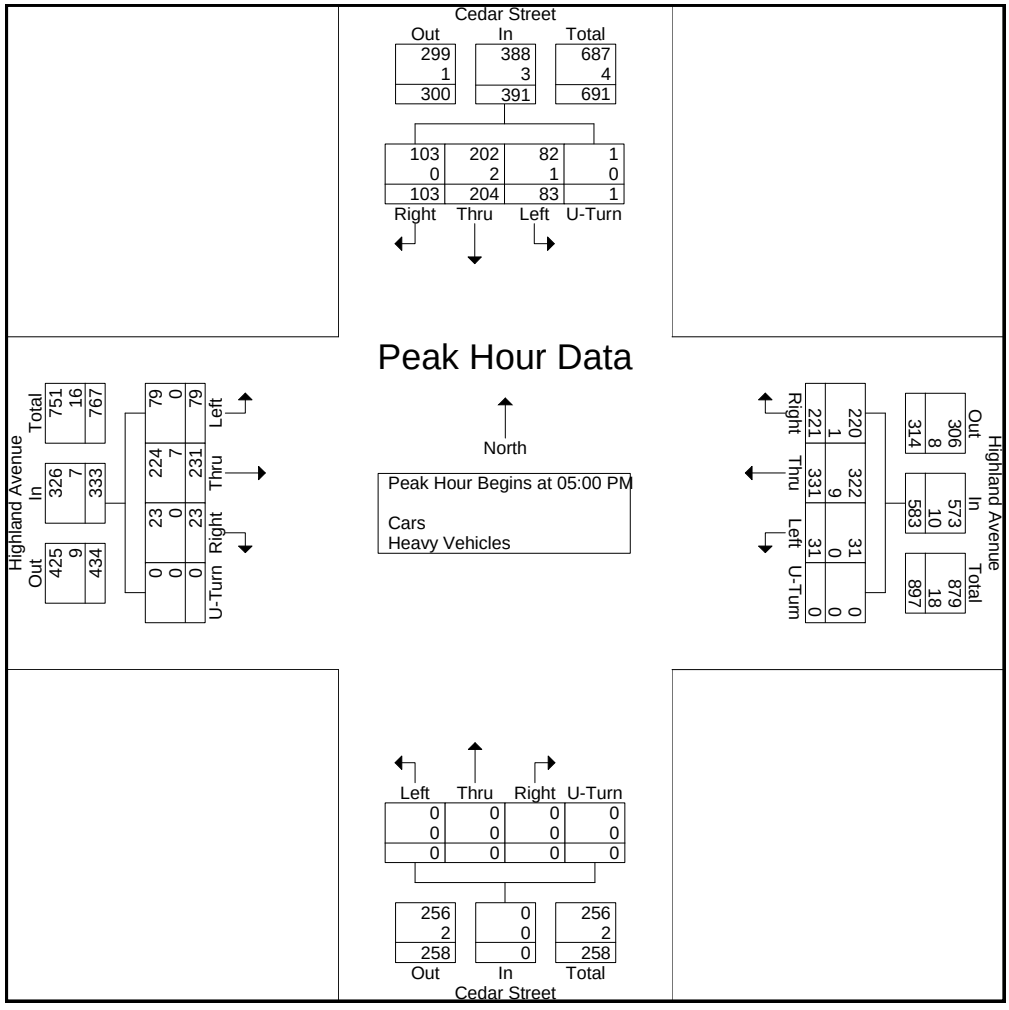
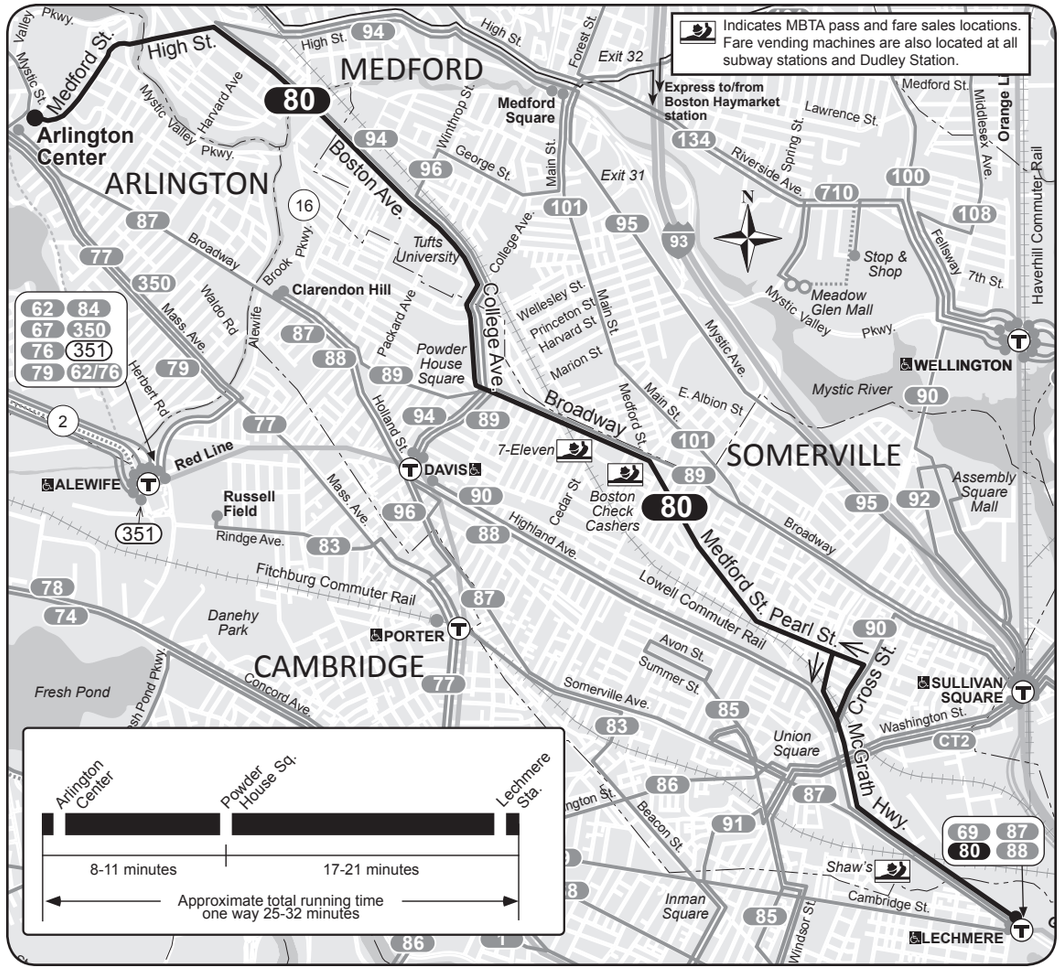
	Cedar Street From North					Highland Avenue From East					Cedar Street From South					Highland Avenue From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	21	49	28	0	98	48	89	7	0	144	0	0	0	0	0	5	60	18	0	83	325
05:15 PM	31	45	20	0	96	69	95	6	0	170	0	0	0	0	0	5	47	21	0	73	339
05:30 PM	27	56	22	0	105	52	78	6	0	136	0	0	0	0	0	6	64	17	0	87	328
05:45 PM	24	54	13	1	92	52	69	12	0	133	0	0	0	0	0	7	60	23	0	90	315
Total Volume	103	204	83	1	391	221	331	31	0	583	0	0	0	0	0	23	231	79	0	333	1307
% App. Total	26.3	52.2	21.2	0.3		37.9	56.8	5.3	0		0	0	0	0		6.9	69.4	23.7	0		
PHF	.831	.911	.741	.250	.931	.801	.871	.646	.000	.857	.000	.000	.000	.000	.000	.821	.902	.859	.000	.925	.964
Cars	103	202	82	1	388	220	322	31	0	573	0	0	0	0	0	23	224	79	0	326	1287
% Cars	100	99.0	98.8	100	99.2	99.5	97.3	100	0	98.3	0	0	0	0	0	100	97.0	100	0	97.9	98.5
Heavy Vehicles	0	2	1	0	3	1	9	0	0	10	0	0	0	0	0	0	7	0	0	7	20
% Heavy Vehicles	0	1.0	1.2	0	0.8	0.5	2.7	0	0	1.7	0	0	0	0	0	0	3.0	0	0	2.1	1.5



APPENDIX B – MULTI-MODAL TRANSPORTATION

Route 80 Arlington Center - Lechmere Station



schedule change

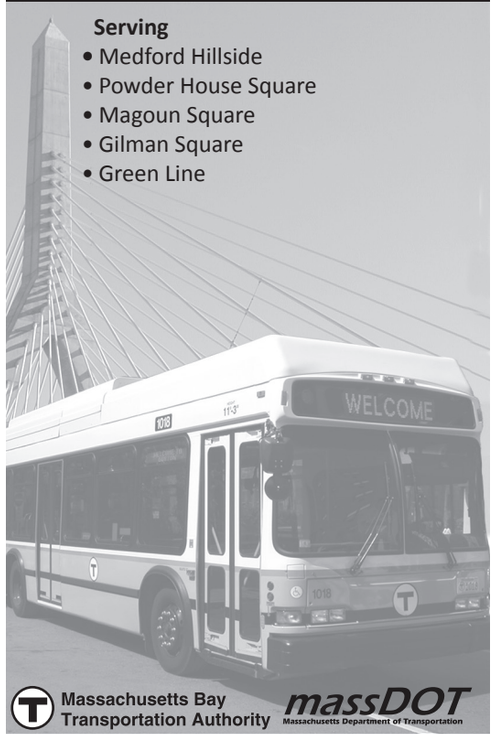
80

Fall September 3, 2016 - December 30, 2016

Arlington Center-Lechmere Station

Serving

- Medford Hillside
- Powder House Square
- Magoun Square
- Gilman Square
- Green Line



Massachusetts Bay Transportation Authority

massDOT Massachusetts Department of Transportation

Information 617-222-3200 • 1-800-392-6100
(TTY) 617-222-5146 • www.mbta.com

80 Weekday

Inbound			Outbound		
Leave Arlington Center	Arrive Powder House Sq.	Arrive Lechmere Station	Leave Lechmere Station	Arrive Powder House Sq.	Arrive Arlington Center
5:05A	5:11A	5:24A	5:30A	5:41A	5:50A
5:30	5:36	5:49	6:00	6:15	6:26
6:00	6:08	6:22	6:30	6:45	6:56
6:20	6:28	6:46	7:00	7:16	7:32
6:40	6:49	7:07	7:20	7:36	7:52
7:00	7:09	7:27	7:40	7:56	8:12
7:20	7:29	7:53	8:05	8:21	8:37
7:40	7:53	8:17	8:25	8:41	8:57
8:00	8:13	8:37	8:50	9:06	9:22
8:20	8:33	8:57	9:15	9:31	9:47
8:45	8:58	9:15	9:40	9:56	10:12
9:05	9:15	9:32	10:05	10:21	10:37
9:30	9:40	9:57	10:35	10:51	11:07
9:55	10:05	10:22	11:00	11:16	11:32
10:20	10:30	10:47	11:25	11:41	11:57
10:45	10:55	11:12	11:55	**12:11P**	**12:27P**
11:15	11:25	11:42			
11:40	11:50	**12:07P**			
			12:20P	**12:36P**	**12:52P**
12:05P	**12:15P**	**12:32P**	**12:45**	**1:01**	**1:17**
12:35	**12:45**	**1:02**	**1:10**	**1:26**	**1:42**
1:00	**1:10**	**1:27**	**1:35**	**1:51**	**2:07**
1:25	**1:35**	**1:52**	**2:05**	**2:21**	**2:34**
1:50	**2:00**	**2:17**	**2:35**	**2:52**	**3:05**
2:15	**2:25**	**2:42**	**3:00**	**3:17**	**3:30**
2:40	**2:50**	**3:07**	**3:20**	**3:37**	**3:50**
3:00	**3:10**	**3:27**	**3:40**	**3:57**	**4:10**
3:20	**3:30**	**3:47**	**4:00**	**4:17**	**4:30**
3:40	**3:50**	**4:07**	**4:20**	**4:38**	**4:53**
4:00	**4:10**	**4:27**	**4:40**	**4:59**	**5:14**
4:20	**4:30**	**4:47**	**5:00**	**5:19**	**5:34**
4:40	**4:50**	**5:07**	**5:20**	**5:39**	**5:54**
5:00	**5:11**	**5:29**	**5:40**	**5:59**	**6:14**
5:20	**5:31**	**5:49**	**6:00**	**6:19**	**6:33**
5:40	**5:51**	**6:09**	**6:20**	**6:37**	**6:50**
6:00	**6:11**	**6:29**	**6:40**	**6:55**	**7:08**
6:30	**6:41**	**6:59**	**7:00**	**7:15**	**7:28**
7:00	**7:08**	**7:23**	**7:30**	**7:44**	**7:56**
7:30	**7:38**	**7:53**	**8:00**	**8:14**	**8:26**
8:15	**8:23**	**8:38**	**8:45**	**8:59**	**9:11**
9:00	**9:08**	**9:23**	**9:30**	**9:44**	**9:56**
9:45	**9:53**	**10:07**	**10:15**	**10:29**	**10:41**
10:30	**10:37**	**10:49**	**11:00**	**11:13**	**11:23**
11:30	**11:37**	**11:49**	12:00M	12:11A	12:21A
12:30A	12:37A	12:49A	w 1:00A	1:11	1:21

80 Saturday

Inbound			Outbound		
Leave Arlington Center	Arrive Powder House Sq.	Arrive Lechmere Station	Leave Lechmere Station	Arrive Powder House Sq.	Arrive Arlington Center
5:05A	5:11A	5:25A	5:30A	5:40A	5:51A
6:00	6:06	6:20	6:30	6:40	6:51
6:30	6:36	6:50	7:00	7:10	7:21
7:00	7:06	7:20	7:30	7:40	7:51
7:30	7:37	7:53	8:00	8:10	8:23
8:00	8:07	8:23	8:30	8:40	8:53
8:30	8:37	8:53	9:00	9:12	9:26
9:00	9:08	9:25	9:30	9:42	9:56
9:30	9:38	9:55	10:00	10:14	10:28
10:00	10:11	10:29	10:35	10:49	11:03
10:35	10:46	11:04	11:10	11:24	11:38
11:10	11:21	11:39	11:45	11:59	**12:13P**
11:45	11:56	**12:14P**			
12:20P	**12:31P**	**12:49P**	**12:20P**	**12:34P**	**12:49P**
12:55	**1:06**	**1:24**	**12:55**	**1:09**	**1:24**
1:30	**1:41**	**1:59**	**1:30**	**1:44**	**1:59**
2:05	**2:16**	**2:34**	**2:05**	**2:19**	**2:34**
2:40	**2:51**	**3:09**	**2:40**	**2:54**	**3:09**
3:15	**3:26**	**3:44**	**3:15**	**3:29**	**3:44**
3:50	**4:01**	**4:19**	**3:50**	**4:03**	**4:17**
4:25	**4:35**	**4:52**	**4:25**	**4:38**	**4:52**
5:00	**5:09**	**5:26**	**5:00**	**5:13**	**5:27**
5:35	**5:44**	**6:01**	**5:35**	**5:48**	**6:02**
6:05	**6:14**	**6:31**	**6:02**	**6:15**	**6:29**
6:32	**6:40**	**6:56**	**7:00**	**7:13**	**7:27**
7:30	**7:38**	**7:54**	**8:00**	**8:13**	**8:27**
8:30	**8:36**	**8:52**	**9:00**	**9:12**	**9:25**
9:30	**9:36**	**9:52**	**10:00**	**10:12**	**10:25**
10:30	**10:36**	**10:52**	**11:00**	**11:12**	**11:25**
11:30	**11:36**	**11:52**	12:00M	12:11A	12:22A
12:30A	12:36A	12:50A	w 1:00A	1:11	1:22

w- Waits for last trolley to arrive at Lechmere Station.

NOTE: Buses at Arlington Center board on Medford Street at Massachusetts Avenue.

Route 80
Arlington Center - Lechmere Station

80 Sunday

Inbound			Outbound		
Leave Arlington Center	Arrive Powder House Sq.	Arrive Lechmere Station	Leave Lechmere Station	Arrive Powder House Sq.	Arrive Arlington Center
6:30A	6:37A	6:51A	7:00A	7:11A	7:22A
7:30	7:37	7:51	8:00	8:11	8:22
8:30	8:38	8:54	9:00	9:14	9:26
9:30	9:39	9:56	10:00	10:14	10:26
10:35	10:44	11:01	11:10	11:24	11:36
11:45	11:55	**12:12P**			
			12:20P	**12:34P**	**12:46P**
12:55P	**1:06P**	**1:23P**	**1:30**	**1:44**	**1:57**
2:05	**2:14**	**2:30**	**2:40**	**2:54**	**3:07**
3:15	**3:24**	**3:40**	**3:50**	**4:05**	**4:17**
4:25	**4:34**	**4:50**	**5:00**	**5:16**	**5:28**
5:35	**5:44**	**6:00**	**6:10**	**6:25**	**6:37**
6:45	**6:54**	**7:10**	**7:20**	**7:35**	**7:47**
7:55	**8:03**	**8:19**	**8:30**	**8:43**	**8:56**
9:05	**9:13**	**9:29**	**9:40**	**9:53**	**10:03**
10:15	**10:23**	**10:36**	**10:50**	**11:03**	**11:13**
11:25	**11:32**	**11:44**	12:00M	12:10A	12:21A

All buses are accessible to persons with disabilities

Fare	Local Bus	Bus + Bus	Rapid Transit	Bus + Rapid Transit
CharlieCard	$1.70	$1.70	$2.25	$2.25
CharlieTicket	$2.00	$2.00	$2.75	$4.75
Cash-on-Board	$2.00	$4.00	$2.75	$4.75
Student*	$0.85	$0.85	$1.10	$1.10
Senior/TAP**	$0.85	$0.85	$1.10	$1.10

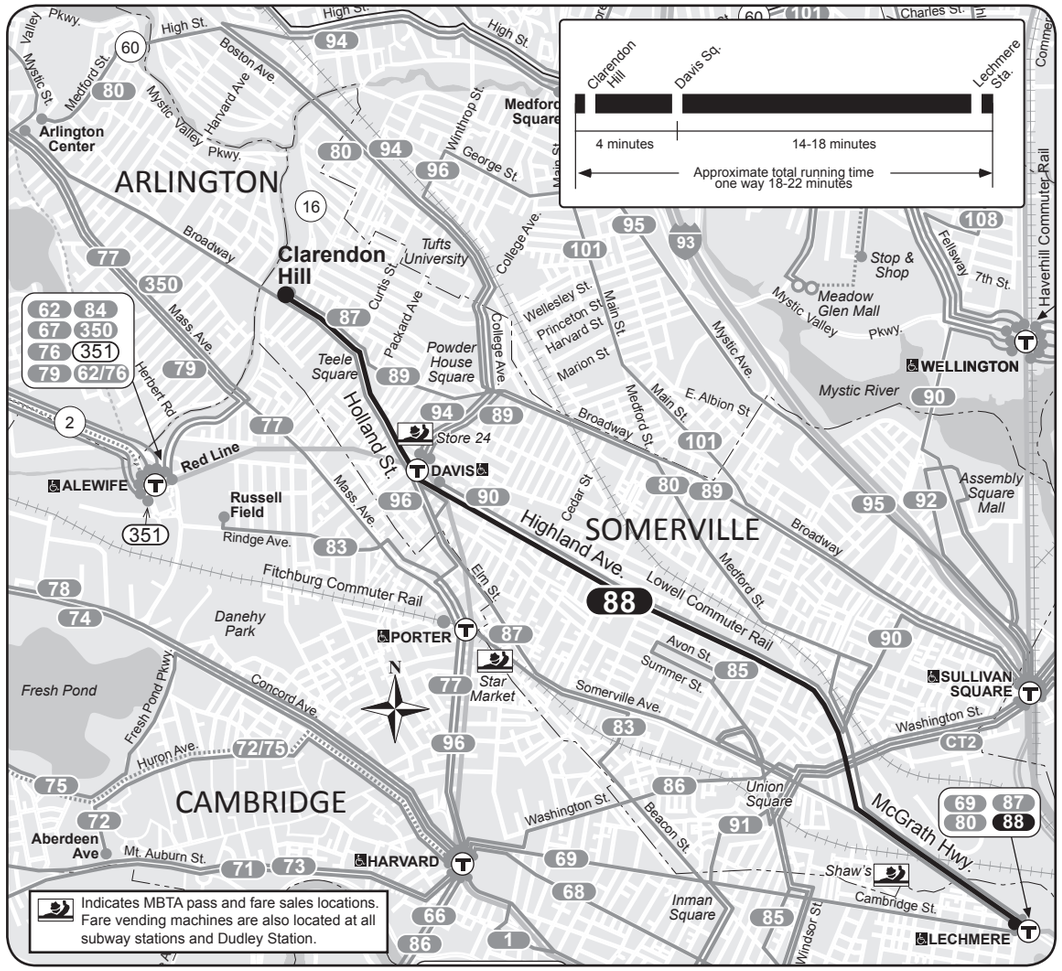
VALID PASSES: LinkPass ($84.50/mo.); Local Bus ($55/mo.); *Student LinkPass ($30.00/mo.); **Senior/TAP LinkPass ($30/mo.); and express bus, commuter rail, and boat passes.
FREE FARES: Children 11 and under ride free when accompanied by an adult; Blind Access CharlieCard holders ride free and if using a guide, the guide rides free.

* Requires Student CharlieCard, available to students through participating middle schools and high schools.

** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

Fall 2016 Holidays
October 10 & November 11: see Weekday
September 5, November 24 & December 26: see Sunday

Route 88 Clarendon Hill - Lechmere Station



88

Fall September 3, 2016 - December 30, 2016

Clarendon Hill- Lechmere Station

Serving

- Teele Square
- Davis Station
- Somerville City Hospital
- Somerville High School
- Somerville City Hall
- Green Line
- Red Line

Massachusetts Bay Transportation Authority

massDOT Massachusetts Department of Transportation

Information 617-222-3200 • 1-800-392-6100
(TTY) 617-222-5146 • www.mbta.com

88 Weekday

Inbound				Outbound			
Leave Clarendon Hill	Arrive Davis Square	Arrive Somerville High School	Arrive Lechmere Station	Leave Lechmere Station	Arrive Somerville High School	Arrive Davis Square	Arrive Clarendon Hill
5:16A	5:19A	5:25A	5:32A	5:35A	5:41A	5:47A	5:51A
5:41	5:44	5:50	5:57	6:05	6:13	6:21	6:25
6:06	6:09	6:15	6:22	6:35	6:43	6:51	6:55
6:28	6:33	6:41	6:52	6:57	7:05	7:13	7:17
6:50	6:56	7:04	7:15	7:19	7:27	7:37	7:42
7:06	7:12	7:20	7:30	7:40	7:48	7:58	8:03
7:17	7:23	.....	.....	7:58	8:06	8:16	8:21
7:22	7:28	7:38	7:49	8:14	8:22	8:32	8:37
7:38	7:45	7:56	8:07	8:30	8:38	8:48	8:53
7:40	7:46	.....	.....	8:46	8:54	9:04	9:09
7:54	8:01	8:12	8:23	9:10	9:18	9:28	9:33
8:00	8:06	.....	.....	9:35	9:43	9:53	9:58
8:10	8:17	8:28	8:39	10:00	10:08	10:18	10:23
8:20	8:26	.....	.....	10:25	10:33	10:43	10:48
8:28	8:35	8:46	8:57	10:50	10:58	11:08	11:13
8:40	8:46	.....	.....	11:15	11:23	11:33	11:38
8:46	8:53	9:03	9:13	11:35	11:43	11:53	11:58
9:03	9:07	9:17	9:27				
9:25	9:29	9:39	9:49	**12:00N**	**12:08P**	**12:18P**	**12:23P**
9:50	9:54	10:04	10:14	**12:25P**	**12:33**	**12:43**	**12:48**
10:15	10:19	10:29	10:39	**12:50**	**12:58**	**1:08**	**1:13**
10:40	10:44	10:54	11:04	**1:10**	**1:18**	**1:28**	**1:33**
11:05	11:09	11:19	11:29	**1:30**	**1:38**	**1:48**	**1:53**
11:30	11:34	11:44	11:54	**1:50**	**1:58**	**2:08**	**2:13**
11:50	11:54	**12:04P**	**12:14P**	**2:10**	**2:18**	**2:28**	**2:33**
				.....	**s 2:35**	**2:48**	**2:54**
12:10P	**12:14P**	**12:24P**	**12:34P**	**2:30**	**2:40**	**2:50**	**2:55**
Every	***20 Minutes***		***Until***	.....	**s 2:40**	**2:53**	**2:59**
4:10	**4:14**	**4:24**	**4:34**	.....	**s 2:50**	**3:03**	**3:09**
4:30	**4:34**	**4:44**	**4:54**	**2:50**	**3:00**	**3:10**	**3:15**
4:50	**4:54**	**5:04**	**5:14**	**3:10**	**3:20**	**3:30**	**3:35**
5:10	**5:14**	**5:24**	**5:34**	***Every***	***20 Minutes***		***Until***
5:30	**5:35**	**5:46**	**5:56**	**5:30**	**5:41**	**5:53**	**6:01**
5:50	**5:55**	**6:06**	**6:16**	**5:50**	**6:01**	**6:12**	**6:17**
6:10	**6:15**	**6:26**	**6:36**	**6:10**	**6:20**	**6:31**	**6:36**
6:30	**6:35**	**6:46**	**6:56**	**6:30**	**6:40**	**6:51**	**6:56**
6:50	**6:55**	**7:06**	**7:16**	**6:50**	**7:00**	**7:11**	**7:16**
7:10	**7:15**	**7:26**	**7:36**	**7:10**	**7:20**	**7:31**	**7:35**
7:30	**7:34**	**7:42**	**7:51**	**7:35**	**7:42**	**7:52**	**7:56**
7:50	**7:54**	**8:02**	**8:11**	**8:00**	**8:07**	**8:17**	**8:21**
8:10	**8:14**	**8:22**	**8:31**	**8:30**	**8:37**	**8:47**	**8:51**
8:35	**8:39**	**8:47**	**8:56**	**9:00**	**9:07**	**9:17**	**9:21**
9:05	**9:09**	**9:17**	**9:26**	**9:30**	**9:37**	**9:47**	**9:51**
9:35	**9:38**	**9:45**	**9:53**	**10:00**	**10:07**	**10:17**	**10:21**
10:05	**10:08**	**10:15**	**10:23**	**10:30**	**10:36**	**10:43**	**10:47**
10:35	**10:38**	**10:45**	**10:53**	**11:00**	**11:06**	**11:13**	**11:17**
11:05	**11:08**	**11:15**	**11:23**	**11:30**	**11:36**	**11:43**	**11:47**
11:35	**11:38**	**11:45**	**11:53**	12:00M	12:05A	12:11A	12:14A
12:05A	12:07A	12:13A	12:20A	12:30A	12:35	12:41	12:44
12:35	12:37	12:43	12:50	w 1:00	1:05	1:11	1:14

88 Saturday

Inbound				Outbound			
Leave Clarendon Hill	Arrive Davis Square	Arrive Somerville High School	Arrive Lechmere Station	Leave Lechmere Station	Arrive Somerville High School	Arrive Davis Square	Arrive Clarendon Hill
5:30A	5:32A	5:37A	5:46A	6:00A	6:05A	6:11A	6:16A
6:00	6:02	6:07	6:16	6:30	6:35	6:41	6:46
6:30	6:32	6:37	6:46	7:00	7:05	7:11	7:16
7:00	7:02	7:07	7:16	7:30	7:35	7:41	7:46
7:30	7:32	7:37	7:46	8:00	8:05	8:13	8:17
8:00	8:02	8:07	8:16	8:30	8:36	8:44	8:49
8:30	8:32	8:40	8:49	9:00	9:06	9:14	9:19
9:00	9:02	9:10	9:19	9:30	9:36	9:44	9:49
9:30	9:32	9:41	9:52	10:00	10:06	10:17	10:21
10:00	10:02	10:11	10:22	10:30	10:36	10:47	10:51
10:30	10:32	10:41	10:52	11:00	11:06	11:17	11:21
11:00	11:02	11:11	11:22	11:30	11:36	11:47	11:51
11:20	11:22	11:32	11:42	11:50	11:56	**12:07P**	**12:11P**
11:40	11:43	11:54	**12:04P**				
12:00N	**12:03P**	**12:14P**	**12:24P**	**12:10P**	**12:16P**	**12:27P**	**12:31P**
Every	***20 Minutes***		***Until***	***Every***	***20 Minutes***		***Until***
3:00	**3:03**	**3:12**	**3:22**	**3:10**	**3:16**	**3:27**	**3:31**
3:20	**3:23**	**3:32**	**3:42**	**3:30**	**3:36**	**3:47**	**3:51**
3:40	**3:43**	**3:52**	**4:02**	**3:50**	**3:56**	**4:07**	**4:11**
4:00	**4:03**	**4:12**	**4:22**	**4:10**	**4:16**	**4:27**	**4:31**
4:20	**4:23**	**4:32**	**4:42**	**4:30**	**4:36**	**4:47**	**4:51**
4:40	**4:43**	**4:52**	**5:02**	**4:50**	**4:56**	**5:07**	**5:11**
5:00	**5:03**	**5:12**	**5:22**	**5:10**	**5:16**	**5:27**	**5:32**
5:20	**5:23**	**5:32**	**5:42**	**5:30**	**5:36**	**5:45**	**5:50**
5:40	**5:43**	**5:52**	**6:02**	**5:50**	**5:56**	**6:05**	**6:10**
6:00	**6:03**	**6:12**	**6:22**	**6:10**	**6:16**	**6:25**	**6:30**
6:20	**6:23**	**6:32**	**6:42**	**6:30**	**6:36**	**6:45**	**6:50**
6:40	**6:43**	**6:52**	**7:02**	**6:50**	**6:56**	**7:05**	**7:10**
7:00	**7:03**	**7:11**	**7:20**	**7:30**	**7:36**	**7:45**	**7:50**
7:20	**7:23**	**7:31**	**7:40**	**7:50**	**7:56**	**8:05**	**8:10**
8:00	**8:03**	**8:11**	**8:20**	**8:30**	**8:36**	**8:45**	**8:50**
8:20	**8:23**	**8:31**	**8:40**	**9:10**	**9:16**	**9:25**	**9:30**
9:00	**9:03**	**9:11**	**9:20**	**9:50**	**9:56**	**10:03**	**10:08**
9:40	**9:43**	**9:51**	**10:00**	**10:30**	**10:36**	**10:43**	**10:48**
10:20	**10:23**	**10:31**	**10:40**	**11:10**	**11:16**	**11:23**	**11:28**
11:00	**11:03**	**11:11**	**11:20**	**11:50**	**11:55**	12:01A	12:07A
11:40	**11:42**	**11:49**	**11:57**	12:30A	12:35A	12:41	12:47
12:20A	12:22A	12:29A	12:37A	w 1:00	1:04	1:10	1:14

s - Does NOT run during school vacation

w- Waits for last trolley to arrive at Lechmere Station.

All buses are accessible to persons with disabilities

Route 88
Clarendon Hill-Lechmere Station

88 Sunday

Inbound				Outbound			
Leave Clarendon Hill	Arrive Davis Square	Arrive Somerville High School	Arrive Lechmere Station	Leave Lechmere Station	Arrive Somerville High School	Arrive Davis Square	Arrive Clarendon Hill
6:40A	6:43A	6:49A	6:56A	6:20A	6:26A	6:33A	6:36A
7:40	7:43	7:49	7:56	7:20	7:26	7:33	7:36
8:40	8:43	8:50	8:58	8:20	8:26	8:33	8:36
9:10	9:13	9:20	9:28	9:20	9:26	9:34	9:37
9:42	9:45	9:52	10:00	9:55	10:01	10:10	10:13
10:20	10:24	10:33	10:43	10:35	10:42	10:51	10:56
11:05	11:09	11:18	11:28	11:15	11:22	11:31	11:36
11:45	11:49	11:58	**12:08P**	11:55	**12:02P**	**12:11P**	**12:16P**
12:25P	**12:29P**	**12:39P**	**12:49P**	**12:35P**	**12:42P**	**12:51P**	**12:56P**
1:05	**1:09**	**1:19**	**1:29**	**1:15**	**1:22**	**1:32**	**1:38**
1:45	**1:49**	**1:59**	**2:09**	**1:55**	**2:02**	**2:11**	**2:17**
2:25	**2:29**	**2:39**	**2:49**	**2:35**	**2:42**	**2:51**	**2:57**
3:05	**3:09**	**3:19**	**3:29**	**3:15**	**3:22**	**3:31**	**3:37**
3:45	**3:49**	**3:59**	**4:08**	**3:55**	**4:02**	**4:11**	**4:17**
4:25	**4:29**	**4:38**	**4:47**	**4:35**	**4:42**	**4:51**	**4:57**
5:05	**5:09**	**5:18**	**5:27**	**5:15**	**5:23**	**5:31**	**5:36**
5:45	**5:49**	**5:58**	**6:07**	**5:55**	**6:03**	**6:11**	**6:16**
6:25	**6:29**	**6:38**	**6:47**	**6:35**	**6:43**	**6:51**	**6:56**
7:05	**7:09**	**7:17**	**7:26**	**7:15**	**7:23**	**7:31**	**7:36**
7:45	**7:48**	**7:56**	**8:04**	**7:55**	**8:02**	**8:09**	**8:14**
8:25	**8:28**	**8:36**	**8:44**	**8:35**	**8:42**	**8:49**	**8:54**
9:05	**9:08**	**9:16**	**9:24**	**9:15**	**9:22**	**9:29**	**9:34**
9:45	**9:48**	**9:56**	**10:04**	**9:55**	**10:01**	**10:08**	**10:13**
10:25	**10:28**	**10:35**	**10:44**	**10:35**	**10:40**	**10:47**	**10:52**
11:00	**11:03**	**11:10**	**11:19**	**11:10**	**11:15**	**11:22**	**11:27**
11:30	**11:33**	**11:40**	**11:49**	**11:50**	**11:55**	12:01A	12:05A
12:10A	12:13A	12:18A	12:25A	12:20A	12:25A	12:31	12:35
12:40	12:43	12:48	12:55	w 1:00	1:05	1:11	1:15

Fare	Local Bus	Bus + Bus	Rapid Transit	Bus + Rapid Transit
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CharlieTicket	$2.00	$2.00	$2.75	$4.75
Cash-on-Board	$2.00	$4.00	$2.75	$4.75
Student*	$0.85	$0.85	$1.10	$1.10
Senior/TAP**	$0.85	$0.85	$1.10	$1.10

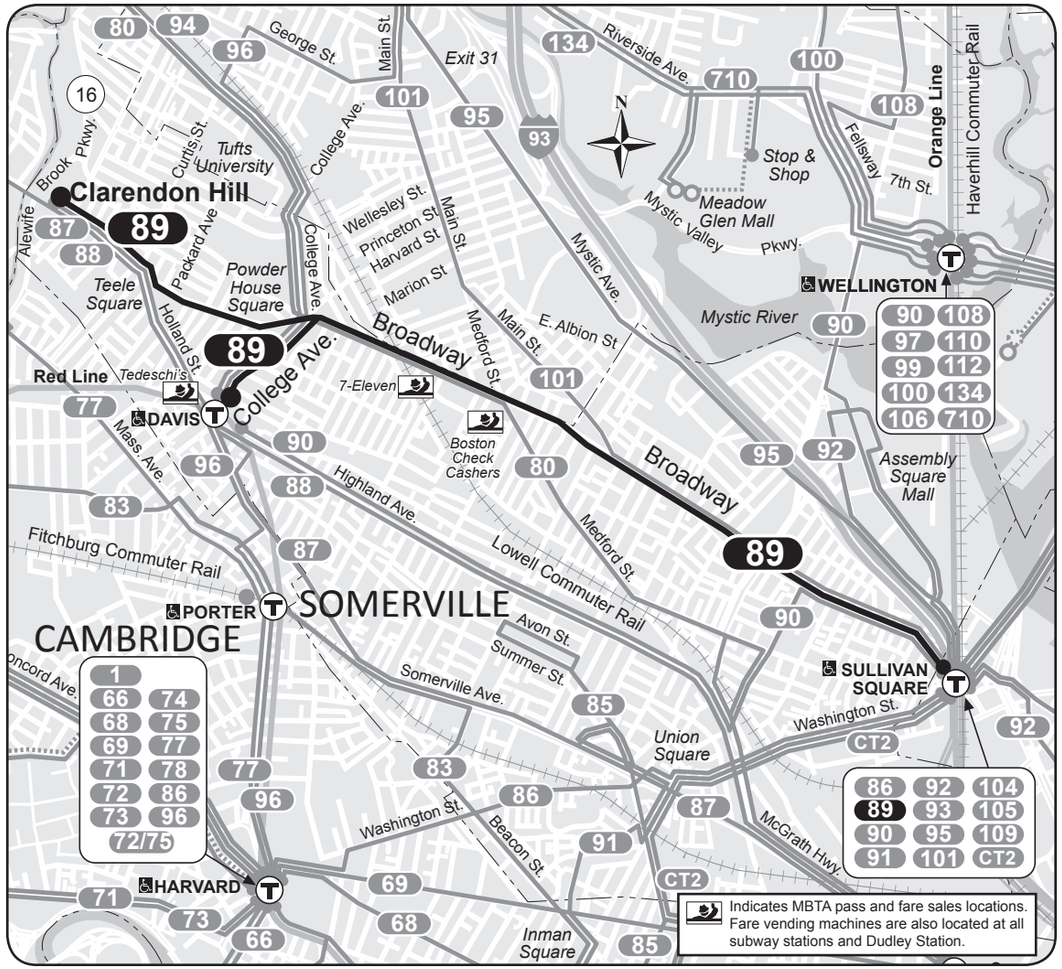
VALID PASSES: LinkPass ($84.50/mo.); Local Bus ($55/mo.); *Student LinkPass ($30.00/mo.); **Senior/TAP LinkPass ($30/mo.); and express bus, commuter rail, and boat passes.
FREE FARES: Children 11 and under ride free when accompanied by an adult; Blind Access CharlieCard holders ride free and if using a guide, the guide rides free.

* Requires Student CharlieCard, available to students through participating middle schools and high schools.

** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

Fall 2016 Holidays
October 10 & November 11: see Weekday
September 5, November 24 & December 26: see Sunday

Route 89 Clarendon Hill or Davis Square - Sullivan Square Station



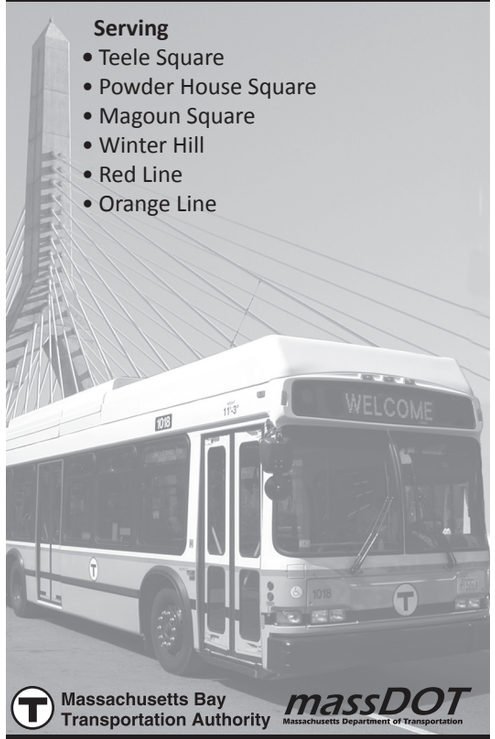
89

Fall September 3, 2016 - December 30, 2016

Clarendon Hill or Davis Square-Sullivan Sq. Station

Serving

- Teele Square
- Powder House Square
- Magoun Square
- Winter Hill
- Red Line
- Orange Line



Massachusetts Bay Transportation Authority

massDOT Massachusetts Department of Transportation

Information 617-222-3200 • 1-800-392-6100
(TTY) 617-222-5146 • www.mbta.com

89 Weekday

Inbound				Outbound			
Leave Clarendon Hill	Leave Davis Square	Arrive Winter Hill	Arrive Sullivan Station	Leave Sullivan Station	Arrive Winter Hill	Arrive Davis Square	Arrive Clarendon Hill
a 4:33A	.....	4:38A	4:49A	5:24A	5:29A	.....	5:37A
5:00	.....	5:05	5:15	5:42	5:48	5:58A	.....
5:25	.....	5:30	5:40	6:10	6:15	.....	6:24
5:45	.....	5:50	6:00	6:20	6:26	6:36	.....
.....	6:03A	6:08	6:16	6:40	6:45	.....	6:54
6:15	.....	6:22	6:34	6:50	6:56	7:13	.....
6:30	.....	6:37	6:49	7:00	7:05	.....	7:14
6:40	.....	6:47	6:59	7:07	7:15	7:33	.....
.....	6:53	6:58	7:08	7:18	7:23	.....	7:33
7:00	.....	7:08	7:19	7:25	7:33	7:51	.....
7:09	.....	7:17	7:28	7:36	7:43	.....	7:54
.....	7:21	7:30	7:40	7:45	7:53	8:11	.....
7:27	.....	7:37	7:47	7:54	8:01	.....	8:12
.....	7:39	7:46	7:56	8:03	8:11	8:29	.....
7:45	.....	7:56	8:06	8:12	8:19	.....	8:30
.....	7:58	8:05	8:15	8:22	8:30	8:48	.....
8:03	.....	8:14	8:24	8:35	8:42	.....	8:53
.....	8:17	8:24	8:34	8:52	8:58	9:16	.....
8:21	.....	8:32	8:42	9:17	9:24	.....	9:35
.....	8:35	8:42	8:52	9:50	9:56	10:14	.....
8:40	.....	8:51	9:01	10:15	10:22	.....	10:33
.....	8:55	9:02	9:11	10:50	10:58	11:14	.....
9:05	.....	9:14	9:26	11:20	11:27	.....	11:38
.....	9:25	9:32	9:41	11:55	**12:03P**	**12:19P**	.....
9:45	.....	9:54	10:06				
.....	10:20	10:27	10:36	**12:30P**	**12:37P**	.....	**12:48P**
10:45	.....	10:53	11:03	**1:00**	**1:08**	**1:24**	.....
.....	11:25	11:32	11:41	**1:30**	**1:37**	.....	**1:48**
11:55	.....	**12:03P**	**12:13P**	**1:57**	**2:05**	**2:21**	.....
				2:15	**2:22**	.....	**2:33**
.....	**12:30P**	**12:37P**	**12:48P**	**2:30**	**2:37**	.....	**2:48**
1:00P	.....	**1:08**	**1:18**	**2:45**	**2:53**	**3:09**	.....
.....	**1:35**	**1:41**	**1:50**	**3:00**	**3:09**	.....	**3:21**
2:00	.....	**2:08**	**2:18**	**3:12**	**3:20**	**3:37**	.....
.....	**2:25**	**2:31**	**2:40**	**3:24**	**3:33**	.....	**3:45**
ds 2:30	.....	**2:38**	**2:47**	**3:36**	**3:47**	**4:03**	.....
2:40	.....	**2:48**	**2:58**	**3:50**	**3:59**	.....	**4:10**
2:55	.....	**3:03**	**3:15**	**4:00**	**4:11**	**4:27**	.....
.....	**3:13**	**3:21**	**3:31**	**4:10**	**4:19**	.....	**4:30**
3:25	.....	**3:34**	**3:46**	**4:19**	**4:30**	**4:46**	.....
.....	**3:42**	**3:50**	**4:00**	**4:29**	**4:38**	.....	**4:49**
3:52	.....	**4:01**	**4:13**	**4:38**	**4:49**	**5:05**	.....
.....	**4:10**	**4:18**	**4:28**	**4:48**	**4:57**	.....	**5:08**
4:15	.....	**4:24**	**4:36**	**4:57**	**5:09**	**5:25**	.....
.....	**4:33**	**4:41**	**4:51**	**5:07**	**5:16**	.....	**5:27**
4:36	.....	**4:45**	**4:57**	**5:16**	**5:28**	**5:44**	.....
.....	**4:52**	**5:00**	**5:10**	**5:26**	**5:34**	.....	**5:47**
4:55	.....	**5:05**	**5:14**	**5:35**	**5:47**	**6:03**	.....
.....	**5:11**	**5:19**	**5:29**	**5:45**	**5:53**	.....	**6:06**
5:15	.....	**5:27**	**5:36**	**5:55**	**6:04**	**6:18**	.....
.....	**5:31**	**5:39**	**5:49**	**6:05**	**6:15**	.....	**6:26**
5:34	.....	**5:46**	**5:55**	**6:15**	**6:23**	**6:37**	.....
.....	**5:51**	**5:59**	**6:07**	**6:30**	**6:40**	.....	**6:51**
5:57	.....	**6:09**	**6:18**	**6:45**	**6:53**	**7:07**	.....
.....	**6:09**	**6:16**	**6:24**	**7:03**	**7:09**	.....	**7:20**
6:15	.....	**6:27**	**6:36**	**7:30**	**7:38**	**7:52**	.....
.....	**6:24**	**6:31**	**6:39**	**8:15**	**8:23**	**8:37**	.....
6:35	.....	**6:47**	**6:56**	**9:00**	**9:08**	**9:22**	.....
.....	**6:42**	**6:49**	**6:57**	**10:00**	**10:11**	**10:22**	.....
6:56	.....	**7:06**	**7:15**	**11:00**	**11:06**	**11:16**	.....
.....	**7:11**	**7:18**	**7:26**	12:00M	12:06A	12:16A	.....
7:25	.....	**7:35**	**7:44**	w 1:05A	1:13	1:26	1:32A
.....	**7:55**	**8:01**	**8:09**				
.....	**8:40**	**8:46**	**8:54**				
.....	**9:30**	**9:36**	**9:44**				
.....	**10:30**	**10:35**	**10:43**				
.....	**11:30**	**11:35**	**11:43**				
.....	12:30A	12:35A	12:43A				

89 Saturday

Inbound				Outbound			
Leave Clarendon Hill	Leave Davis Square	Arrive Winter Hill	Arrive Sullivan Station	Leave Sullivan Station	Arrive Winter Hill	Arrive Davis Square	Arrive Clarendon Hill
a 4:33A	.....	4:38A	4:48A	5:10A	5:14A	.....	5:20A
5:07	.....	5:12	5:19	5:45	5:51	6:00A	.....
5:30	.....	5:35	5:42	6:20	6:26	.....	6:35
.....	6:04	6:08	6:16	6:55	7:01	7:10	.....
6:43	.....	6:48	6:55	7:30	7:36	.....	7:45
.....	7:14	7:18	7:26	8:05	8:12	8:22	.....
7:53	.....	7:58	8:05	8:40	8:46	.....	8:55
.....	8:31	8:36	8:46	9:15	9:22	9:32	.....
9:04	.....	9:12	9:20	9:50	9:56	.....	10:07
.....	9:41	9:46	9:56	10:25	10:32	10:42	.....
10:13	.....	10:22	10:31	11:00	11:06	.....	11:18
.....	10:51	10:56	11:06	11:35	11:42	11:52	.....
11:23	.....	11:33	11:43				
				12:10P	**12:16P**	.....	**12:28P**
.....	**12:01P**	**12:08P**	**12:18P**	**12:45**	**12:52**	**1:02P**	.....
12:33	.....	**12:43**	**12:53**	**1:20**	**1:26**	.....	**1:38**
.....	**1:11**	**1:18**	**1:28**	**1:55**	**2:02**	**2:12**	.....
1:43	.....	**1:53**	**2:03**	**2:30**	**2:36**	.....	**2:48**
.....	**2:21**	**2:28**	**2:38**	**3:05**	**3:12**	**3:22**	.....
2:53	.....	**3:03**	**3:13**	**3:40**	**3:46**	.....	**3:58**
.....	**3:31**	**3:42**	**3:53**	**4:15**	**4:22**	**4:32**	.....
4:03	.....	**4:13**	**4:23**	**4:50**	**4:56**	.....	**5:08**
.....	**4:41**	**4:48**	**4:57**	**5:25**	**5:32**	**5:42**	.....
5:13	.....	**5:23**	**5:33**	**6:00**	**6:06**	.....	**6:18**
.....	**5:51**	**5:58**	**6:06**	**6:30**	**6:38**	**6:52**	.....
6:23	.....	**6:32**	**6:39**	**7:20**	**7:28**	**7:39**	.....
.....	**6:58**	**7:04**	**7:12**	**8:10**	**8:16**	**8:27**	.....
.....	**7:43**	**7:49**	**7:57**	**9:00**	**9:06**	**9:17**	.....
.....	**8:33**	**8:39**	**8:47**	**9:50**	**9:56**	**10:07**	.....
.....	**9:23**	**9:29**	**9:37**	**10:40**	**10:46**	**10:57**	.....
.....	**10:13**	**10:19**	**10:27**	**11:30**	**11:36**	**11:47**	.....
.....	**11:03**	**11:09**	**11:17**	12:20A	12:26A	12:33A	.....
.....	**11:53**	**11:59**	12:06A	w 1:10	1:16	1:22	1:29A
.....	12:38A	12:44A	12:51				

a - Through service to downtown Boston
b - Leaves from Haymarket Station at 5:44 am
d - Leaves from Broadway at Endicott Avenue
s - Does NOT run during school vacation
w - Waits for last train to arrive at Sullivan Station.

Route 89
Clarendon Hill or Davis Square-Sullivan Square Station

89 Sunday

Inbound			Outbound		
Leave Clarendon Hill	Arrive Winter Hill	Arrive Sullivan Station	Leave Sullivan Station	Arrive Winter Hill	Arrive Clarendon Hill
a 5:15A	5:24A	5:28A	b 5:54A	5:59A	6:08A
6:25	6:31	6:39	7:00	7:05	7:14
7:25	7:31	7:39	8:00	8:06	8:16
8:25	8:31	8:39	9:00	9:06	9:16
9:35	9:43	9:53	10:10	10:16	10:26
10:45	10:53	11:03	11:20	11:27	11:38
11:55	**12:03P**	**12:13P**			
			12:30P	**12:35P**	**12:48P**
1:05P	**1:13P**	**1:23P**	**1:40**	**1:45**	**1:58**
2:15	**2:23**	**2:33**	**2:50**	**2:55**	**3:08**
3:25	**3:33**	**3:43**	**4:00**	**4:07**	**4:19**
4:35	**4:44**	**4:53**	**5:10**	**5:17**	**5:29**
5:45	**5:54**	**6:03**	**6:20**	**6:25**	**6:37**
6:55	**7:02**	**7:10**	**7:30**	**7:35**	**7:47**
8:05	**8:12**	**8:20**	**8:40**	**8:46**	**8:56**
9:15	**9:22**	**9:30**	**9:50**	**9:56**	**10:05**
10:25	**10:31**	**10:38**	**11:00**	**11:05**	**11:14**
11:25	**11:31**	**11:38**	12:00M	12:05A	12:14A
12:25A	12:31A	12:37A	w 1:00A	1:05	1:11

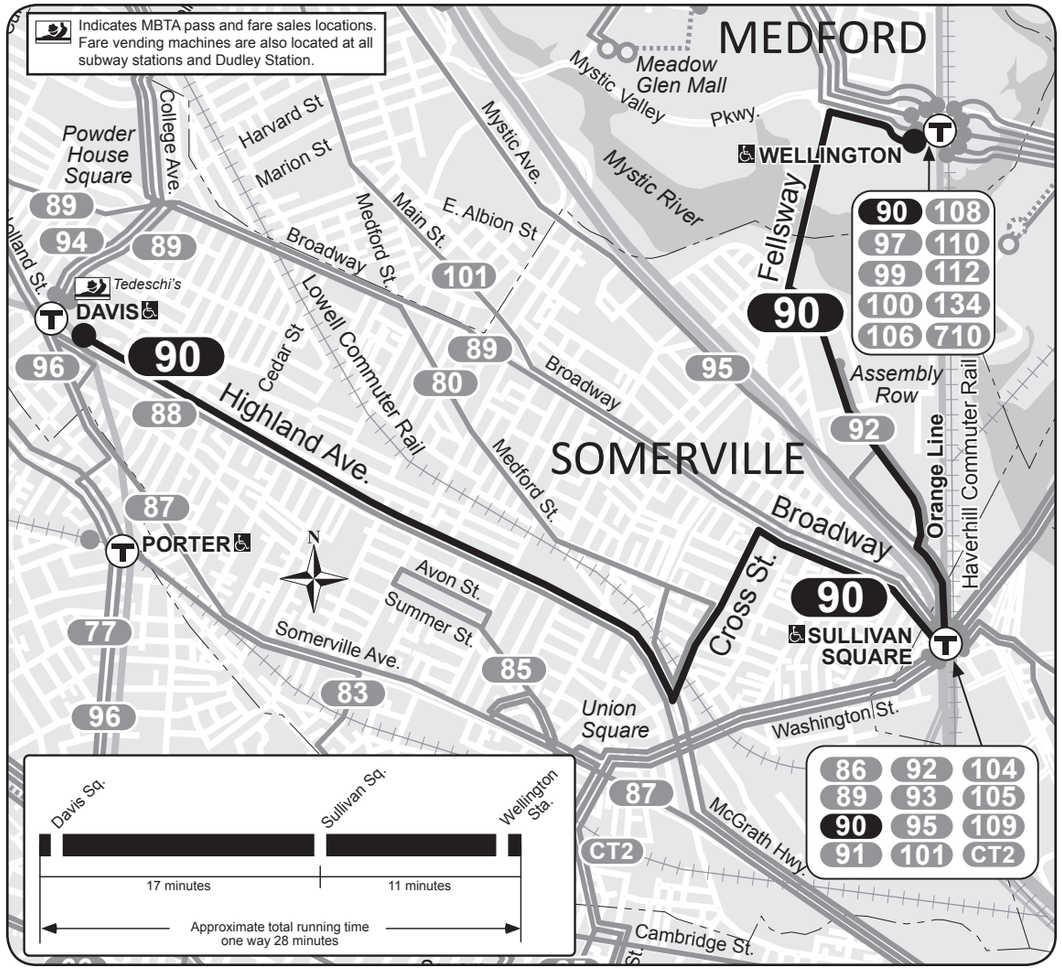
All buses are accessible to persons with disabilities

Fare	Local Bus	Bus + Bus	Rapid Transit	Bus + Rapid Transit
CharlieCard	$1.70	$1.70	$2.25	$2.25
CharlieTicket	$2.00	$2.00	$2.75	$4.75
Cash-on-Board	$2.00	$4.00	$2.75	$4.75
Student*	$0.85	$0.85	$1.10	$1.10
Senior/TAP**	$0.85	$0.85	$1.10	$1.10

VALID PASSES: LinkPass ($84.50/mo.); Local Bus ($55/mo.); *Student LinkPass ($30.00/mo.); **Senior/TAP LinkPass ($30/mo.); and express bus, commuter rail, and boat passes.
FREE FARES: Children 11 and under ride free when accompanied by an adult; Blind Access CharlieCard holders ride free and if using a guide, the guide rides free.
* Requires Student CharlieCard, available to students through participating middle schools and high schools.
** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

Fall 2016 Holidays
October 10 & November 11: see Weekday
September 5, November 24 & December 26: see Sunday

Route 90 Davis Square - Wellington Station



route change

90

Fall September 3, 2016 - December 30, 2016

Davis Square- Wellington Station

Serving

- Assembly Square Mall
- Sullivan Square Station
- Somerville City Hospital
- Somerville High School
- Somerville City Hall
- Orange Line
- Red Line

Massachusetts Bay Transportation Authority

massDOT Massachusetts Department of Transportation

Information 617-222-3200 • 1-800-392-6100
(TTY) 617-222-5146 • www.mbta.com

90 Weekday

Inbound			Outbound		
Leave Davis Square	Arrive Sullivan Station	Arrive Wellington Station	Leave Wellington Station	Arrive Sullivan Station	Arrive Davis Square
6:30A	6:48A	6:55A	7:10A	7:25A	7:45A
7:10	7:37	7:42	7:50	8:07	8:27
7:50	8:18	8:25	8:30	8:44	9:02
8:35	9:03	9:11	9:20	9:34	9:50
9:25	9:45	9:53	10:10	10:24	10:41
10:15	10:35	10:43	11:00	11:14	11:31
11:05	11:26	11:35	11:50	**12:05P**	**12:22P**
11:55	**12:16P**	**12:25P**			
			12:40P	**12:55P**	**1:12P**
12:45P	**1:06P**	**1:15P**	**1:30**	**1:45**	**2:02**
1:30	**1:51**	**2:00**	**2:20**	**2:35**	**2:52**
2:15	**2:36**	**2:45**	**3:05**	**3:20**	**3:39**
3:00	**3:28**	**3:39**	**3:50**	**4:05**	**4:24**
3:45	**4:10**	**4:21**	**4:35**	**4:50**	**5:12**
4:30	**4:55**	**5:06**	**5:20**	**5:36**	**5:59**
5:15	**5:40**	**5:51**	**6:05**	**6:21**	**6:38**
6:05	**6:30**	**6:43**	**6:50**	**7:04**	**7:19**
6:50	**7:11**	**7:24**	**7:35**	**7:49**	**8:03**
7:35	**7:52**	**8:01**	**8:05**	**8:17**	**8:31**
8:35	**8:52**	**9:01**	**9:10**	**9:22**	**9:36**
9:40	**9:57**	**10:06**	**10:15**	**10:27**	**10:41**

90 Saturday

Inbound			Outbound		
Leave Davis Square	Arrive Sullivan Station	Arrive Wellington Station	Leave Wellington Station	Arrive Sullivan Station	Arrive Davis Square
7:30	7:43	7:49	8:05	8:14	8:28
8:40	8:53	8:59	9:10	9:19	9:33
9:45	10:01	10:08	10:20	10:29	10:43
10:55	11:11	11:18	11:30	11:39	11:53
12:05P	**12:24P**	**12:31P**	**12:40P**	**12:49P**	**1:03P**
1:15	**1:36**	**1:44**	**1:50**	**2:04**	**2:21**
2:25	**2:46**	**2:54**	**3:00**	**3:14**	**3:31**
3:35	**3:56**	**4:04**	**4:10**	**4:24**	**4:40**
4:45	**5:06**	**5:14**	**5:20**	**5:33**	**5:49**
5:55	**6:13**	**6:21**	**6:30**	**6:42**	**6:57**
7:05	**7:23**	**7:31**	**7:40**	**7:52**	**8:07**
8:15	**8:32**	**8:38**	**8:50**	**9:02**	**9:17**
9:25	**9:42**	**9:48**	**10:00**	**10:11**	**10:24**

90 Sunday

Inbound			Outbound		
Leave Davis Square	Arrive Sullivan Station	Arrive Wellington Station	Leave Wellington Station	Arrive Sullivan Station	Arrive Davis Square
10:30	10:47	10:56	11:05A	11:17A	11:33A
11:40	11:58	**12:07P**			
			12:15P	**12:27P**	**12:46P**
12:50P	**1:11P**	**1:20P**	**1:25**	**1:37**	**1:53**
2:00	**2:20**	**2:32**	**2:35**	**2:48**	**3:04**
3:10	**3:28**	**3:39**	**3:45**	**3:56**	**4:12**
4:20	**4:39**	**4:47**	**4:55**	**5:07**	**5:22**
5:30	**5:48**	**5:56**	**6:00**	**6:10**	**6:24**

All buses are accessible to persons with disabilities

Fare	Local Bus	Bus + Bus	Rapid Transit	Bus + Rapid Transit
CharlieCard	$1.70	$1.70	$2.25	$2.25
CharlieTicket	$2.00	$2.00	$2.75	$4.75
Cash-on-Board	$2.00	$4.00	$2.75	$4.75
Student*	$0.85	$0.85	$1.10	$1.10
Senior/TAP**	$0.85	$0.85	$1.10	$1.10

VALID PASSES: LinkPass ($84.50/mo.); Local Bus ($55/mo.); *Student LinkPass ($30.00/mo.); **Senior/TAP LinkPass ($30/mo.); and express bus, commuter rail, and boat passes.
FREE FARES: Children 11 and under ride free when accompanied by an adult; Blind Access CharlieCard holders ride free and if using a guide, the guide rides free.

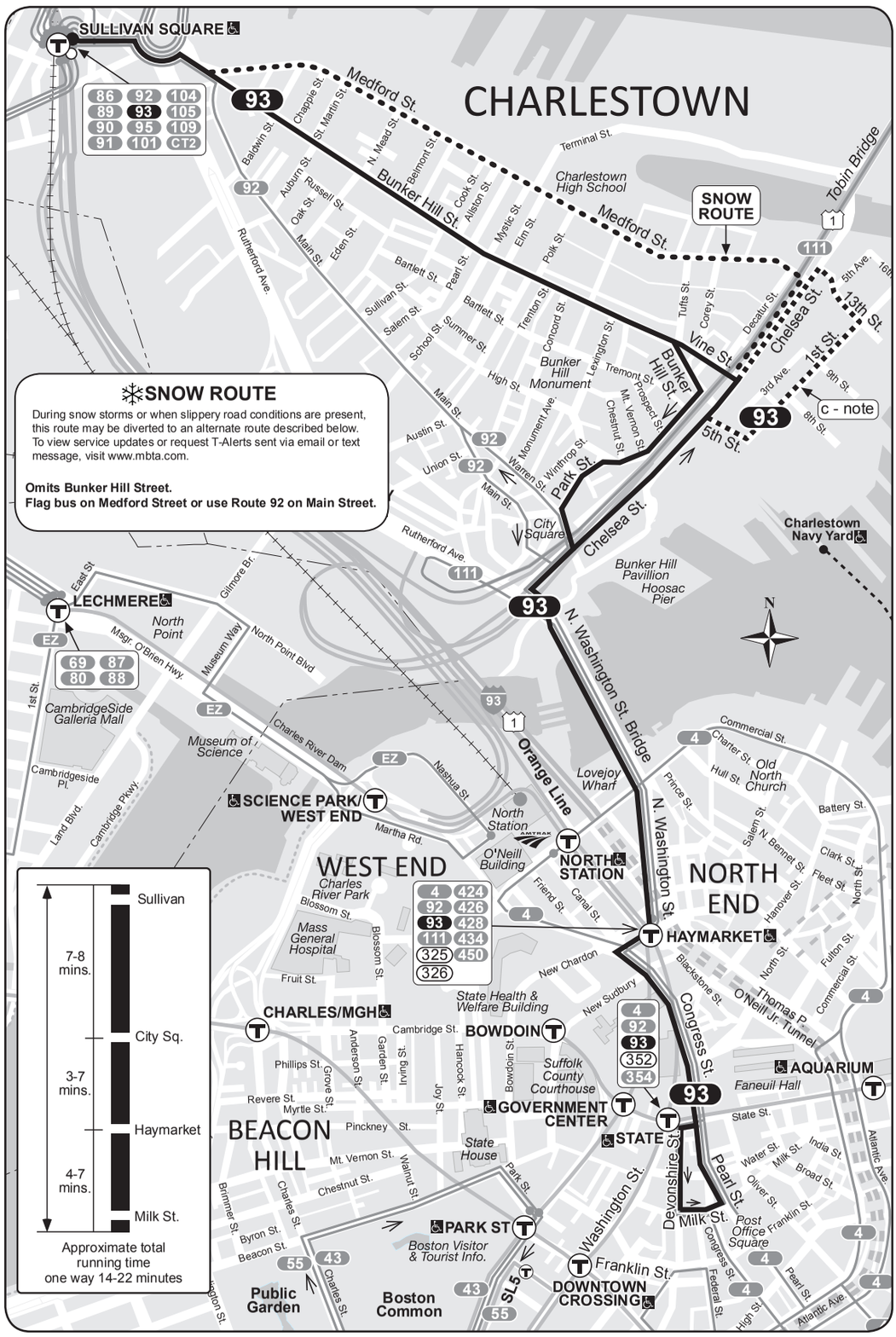
* Requires Student CharlieCard, available to students through participating middle schools and high schools.

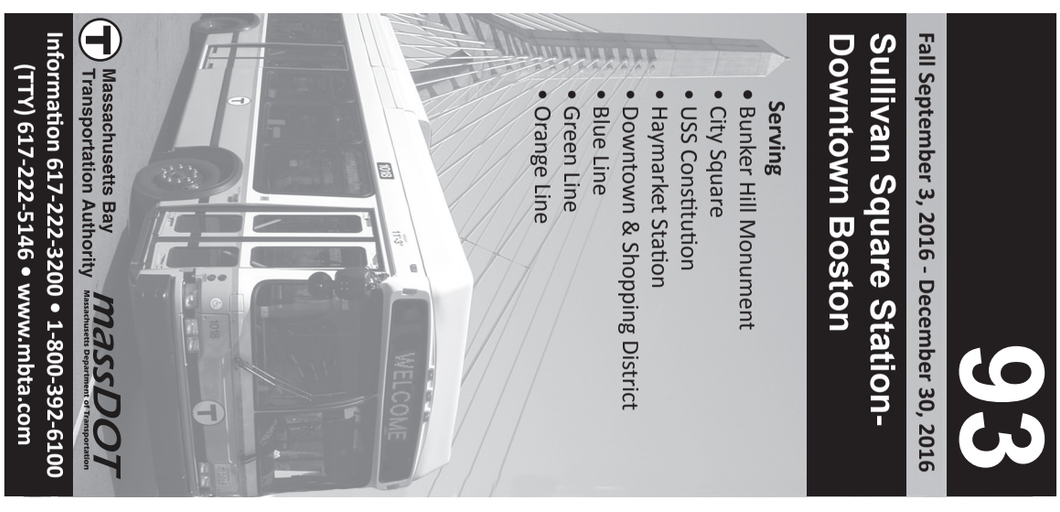
** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

Route 90
Davis Square-Wellington Station

Fall 2016 Holidays
October 10 & November 11: see Weekday
September 5, November 24 & December 26: see Sunday

Route 93 Sullivan Square Station - Downtown Boston





93 Weekday AM

Inbound			Outbound		
Leave Sullivan Square	Arrive Haymarket Square	Arrive Devonshire & Milk Sts.	Leave Devonshire & Milk Sts.	Lv/Arrive Haymarket Square	Arrive Sullivan Square
a 4:49A	4:59A	.....	.....	5:03A	5:11A
5:30	5:41	5:45A	5:51A	5:53	6:02
6:00	6:11	6:15	c 6:25	6:28	6:43
6:15	6:26	6:30	6:36	6:38	6:52
6:25	6:36	6:40	6:46	6:48	7:02
6:35	6:46	6:50	6:56	6:58	7:12
6:45	6:56	7:00	7:10	7:12	7:26
6:55	7:08	7:13	7:15	7:17	7:33
7:05	7:18	7:23	c 7:28	7:32	7:46
7:12	7:25	7:30	7:37	7:40	7:55
7:19	7:32	7:37	c 7:45	7:49	8:03
7:26	7:41	7:46	7:53	7:56	8:11
7:33	7:49	7:54	c 8:02	8:06	8:20
7:40	7:56	8:01	8:08	8:11	8:26
7:47	8:03	8:08	8:15	8:18	8:33
7:54	8:10	8:15	8:22	8:25	8:40
8:01	8:17	8:22	8:29	8:32	8:47
8:08	8:24	8:29	c 8:38	8:42	8:56
8:15	8:32	8:39	c 8:48	8:52	9:06
8:22	8:41	8:48	8:56	8:59	9:14
8:29	8:47	8:54	9:06	9:09	9:24
8:36	8:54	9:01	9:07	9:10	9:25
8:43	9:00	9:07	9:13	9:16	9:31
8:51	9:05	9:12	9:18	9:21	9:36
c 9:00	9:15	9:22	9:28	9:31	9:46
9:10	9:25	9:32	9:40	9:43	9:58
9:20	9:35	9:42	9:55	9:58	10:12
9:35	9:50	9:57	10:10	10:14	10:28
9:50	10:05	10:12	c 10:25	10:31	10:44
c 10:05	10:20	10:27	10:40	10:44	10:58
10:20	10:35	10:40	10:55	10:59	11:13
10:40	10:54	10:59	11:10	11:14	11:28
c 11:00	11:13	11:18	c 11:25	11:31	11:44
11:20	11:34	11:39	11:45	11:49	**12:04P**
11:40	11:54	11:59			

a - Leaves from Clarendon Hill at 4:33 am
b - Leaves from Clarendon Hill at 5:15 am
c - Via Vine Street to Navy Yard
d - Continues to Clarendon Hill
e - Leaves from Bunker Hill Street at Concord Street
s - Does NOT run during school vacation
u - Trip departs from Sullivan Square Station upper busway
w - Waits for last train to arrive at Sullivan Station.

93 Weekday PM

Inbound			Outbound		
Leave Sullivan Square	Arrive Haymarket Square	Arrive Devonshire & Milk Sts.	Leave Devonshire & Milk Sts.	Lv/Arrive Haymarket Square	Arrive Sullivan Square
c 12:00N	**12:13P**	**12:18P**	**12:05P**	**12:10P**	**12:25P**
12:20P	**12:34**	**12:39**	**c 12:25**	**12:30**	**12:45**
12:40	**12:54**	**12:59**	**12:45**	**12:50**	**1:05**
c 1:00	**1:13**	**1:18**	**1:05**	**1:10**	**1:25**
1:20	**1:34**	**1:39**	**c 1:25**	**1:30**	**1:45**
1:40	**1:54**	**1:59**	**1:45**	**1:50**	**2:05**
c 2:00	**2:13**	**2:18**	**2:05**	**2:10**	**2:25**
es 1:50	**2:17**	**.....**	**.....**	**s 2:20**	**2:34**
2:15	**2:29**	**2:34**	**c 2:25**	**2:31**	**2:46**
2:30	**2:44**	**2:49**	**2:39**	**2:44**	**2:59**
2:45	**2:59**	**3:04**	**2:55**	**3:00**	**3:15**
c 3:00	**3:13**	**3:18**	**3:10**	**3:15**	**3:30**
3:15	**3:29**	**3:34**	**c 3:25**	**3:31**	**3:46**
3:30	**3:42**	**3:47**	**3:40**	**3:45**	**4:00**
3:40	**3:52**	**3:57**	**3:55**	**4:00**	**4:15**
3:45	**3:57**	**4:02**	**4:04**	**4:09**	**4:24**
3:52	**4:04**	**4:09**	**4:13**	**4:18**	**4:33**
c 3:58	**4:10**	**4:15**	**4:21**	**4:26**	**4:41**
4:06	**4:18**	**4:23**	**4:31**	**4:36**	**4:51**
4:14	**4:26**	**4:31**	**4:37**	**4:42**	**4:57**
4:22	**4:35**	**4:41**	**4:45**	**4:50**	**5:06**
c 4:30	**4:44**	**4:50**	**4:53**	**4:58**	**5:15**
4:38	**4:52**	**4:58**	**5:01**	**5:08**	**5:25**
4:46	**5:00**	**5:06**	**5:10**	**5:17**	**5:34**
4:54	**5:07**	**5:13**	**5:17**	**5:24**	**5:40**
c 5:02	**5:16**	**5:22**	**5:26**	**5:32**	**5:48**
5:10	**5:23**	**5:29**	**5:33**	**5:39**	**5:55**
5:18	**5:31**	**5:37**	**5:41**	**5:47**	**6:02**
5:26	**5:39**	**5:45**	**5:49**	**5:55**	**6:11**
c 5:34	**5:48**	**5:54**	**5:57**	**6:02**	**6:18**
5:42	**5:55**	**6:01**	**c 6:05**	**6:11**	**6:27**
c 5:57	**6:11**	**6:17**	**6:13**	**6:18**	**6:33**
6:12	**6:25**	**6:30**	**6:21**	**6:26**	**6:40**
6:27	**6:38**	**6:42**	**6:35**	**6:40**	**6:54**
6:45	**6:56**	**7:00**	**6:50**	**6:55**	**7:09**
7:00	**7:11**	**7:15**	**7:05**	**7:10**	**7:24**
7:15	**7:26**	**7:30**	**7:20**	**7:25**	**7:39**
u 7:40	**7:53**	**.....**	**7:35**	**7:40**	**7:54**
u 8:15	**8:28**	**.....**	**.....**	**8:00**	**8:11**
u 8:50	**9:03**	**.....**	**.....**	**8:35**	**8:46**
u 9:25	**9:38**	**.....**	**.....**	**9:10**	**9:21**
u 10:05	**10:18**	**.....**	**.....**	**9:45**	**9:56**
u 11:05	**11:18**	**.....**	**.....**	**10:25**	**10:36**
u 12:05	**12:18**	**.....**	**.....**	**11:25**	**11:36**
uw 1:10	**1:22**	**.....**	**.....**	**12:25**	**12:36**
			.....	**1:23**	**1:34**

93 Saturday

Inbound			Outbound		
Leave Sullivan Square	Arrive Haymarket Square	Arrive Devonshire & Milk Sts.	Leave Devonshire & Milk Sts.	Lv/Arrive Haymarket Square	Arrive Sullivan Square
a 4:48A	4:54A	.....	.....	5:04A	5:12A
5:17	5:27	.....	.....	5:28	5:36
5:45	5:55	.....	.....	5:58	6:06
6:15	6:25	.....	.....	6:28	6:36
6:45	6:55	.....	.....	6:58	7:06
7:20	7:30	.....	.....	7:35	7:43
7:40	7:50	.....	.....	7:55	8:03
8:00	8:10	.....	.....	8:15	8:23
8:20	8:32	8:36A	8:45A	8:51	9:02
8:40	8:52	8:56	9:05	9:11	9:22
9:00	9:12	9:16	9:25	9:31	9:42
9:20	9:32	9:36	9:45	9:51	10:02
9:40	9:52	9:56	10:05	10:11	10:22
10:00	10:12	10:16	10:25	10:31	10:42
10:20	10:32	10:36	10:45	10:51	11:02
10:40	10:52	10:56	11:05	11:11	11:22
11:00	11:12	11:16	11:25	11:31	11:42
11:20	11:32	11:36	11:45	11:51	**12:03P**
11:40	11:52	11:56			
			12:05P	**12:12P**	**12:24P**
12:00N	**12:12P**	**12:16P**	***Every***	***20 Mins.***	***Until***
Every	***20 Mins.***	***Until***	**3:05**	**3:12**	**3:25**
3:00	**3:12**	**3:18**	**3:25**	**3:32**	**3:45**
3:20	**3:32**	**3:38**	**3:45**	**3:53**	**4:06**
3:40	**3:52**	**3:58**	**4:05**	**4:13**	**4:26**
4:00	**4:12**	**4:18**	**4:25**	**4:33**	**4:46**
4:20	**4:33**	**4:37**	**4:45**	**4:53**	**5:06**
4:40	**4:52**	**4:56**	**5:05**	**5:13**	**5:26**
5:00	**5:12**	**5:16**	**5:25**	**5:33**	**5:46**
5:20	**5:32**	**5:36**	**5:45**	**5:53**	**6:05**
5:40	**5:52**	**5:56**	**6:05**	**6:12**	**6:25**
6:00	**6:12**	**6:16**	**6:25**	**6:32**	**6:45**
6:20	**6:32**	**6:36**	**6:45**	**6:52**	**7:05**
6:45	**6:57**	**7:01**	**7:10**	**7:17**	**7:30**
7:15	**7:27**	**7:31**	**7:35**	**7:42**	**7:55**
u 7:45	**8:00**	**.....**	**.....**	**8:05**	**8:17**
u 8:30	**8:45**	**.....**	**.....**	**8:50**	**9:02**
u 9:20	**9:33**	**.....**	**.....**	**9:40**	**9:50**
u 10:20	**10:33**	**.....**	**.....**	**10:40**	**10:50**
u 11:20	**11:33**	**.....**	**.....**	**11:40**	**11:50**
u 12:20A	12:33A	.....	.....	12:40A	12:50A
uw 1:10	1:23	.....	.....	1:30	1:40

All buses are accessible to persons with disabilities

93 Sunday

Inbound			Outbound		
Leave Sullivan Square	Arrive Haymarket Square	Arrive Devonshire & Milk Sts.	Leave Devonshire & Milk Sts.	Lv/Arrive Haymarket Square	Arrive Sullivan Square
b 5:28A	5:39A	.....	.....	d 5:44A	5:54A
6:00	6:11	.....	.....	6:13	6:23
7:00	7:13	.....	.....	7:13	7:23
8:00	8:13	.....	.....	8:13	8:23
9:00	9:13	.....	.....	9:13	9:23
9:30	9:43	.....	.....	9:43	9:53
10:00	10:13	.....	.....	10:13	10:23
11:00	11:12	11:17A	11:20A	11:25	11:39
11:40	11:52	11:57			
			12:00N	**12:05P**	**12:19P**
12:20P	**12:32P**	**12:37P**	**12:45P**	**12:50**	**1:04**
1:05	**1:17**	**1:22**	**1:30**	**1:35**	**1:49**
1:50	**2:02**	**2:07**	**2:15**	**2:20**	**2:34**
2:35	**2:47**	**2:52**	**3:00**	**3:05**	**3:19**
3:20	**3:32**	**3:37**	**3:45**	**3:50**	**4:04**
4:05	**4:17**	**4:22**	**4:30**	**4:35**	**4:49**
4:50	**5:02**	**5:07**	**5:15**	**5:20**	**5:34**
5:35	**5:47**	**5:52**	**6:00**	**6:05**	**6:19**
6:20	**6:32**	**6:37**	**6:40**	**6:45**	**6:59**
7:01	**7:14**	**.....**	**.....**	**7:14**	**7:25**
u 8:01	**8:14**	**.....**	**.....**	**8:14**	**8:24**
u 9:01	**9:14**	**.....**	**.....**	**9:14**	**9:24**
u 10:00	**10:11**	**.....**	**.....**	**10:13**	**10:23**
u 11:00	**11:11**	**.....**	**.....**	**11:13**	**11:23**
u 12:00M	12:11A	.....	.....	12:13A	12:23A

Route 93
Sullivan Square-Downtown Boston

Fare	Local Bus	Bus + Bus	Rapid Transit	Bus + Rapid Transit
CharlieCard	$1.70	$1.70	$2.25	$2.25
CharlieTicket	$2.00	$2.00	$2.75	$4.75
Cash-on-Board	$2.00	$4.00	$2.75	$4.75
Student*	$0.85	$0.85	$1.10	$1.10
Senior/TAP**	$0.85	$0.85	$1.10	$1.10

VALID PASSES: LinkPass ($84.50/mo.); Local Bus ($55/mo.); *Student LinkPass ($30.00/mo.); **Senior/TAP LinkPass ($30/mo.); and express bus, commuter rail, and boat passes.
FREE FARES: Children 11 and under ride free when accompanied by an adult; Blind Access CharlieCard holders ride free and if using a guide, the guide rides free.
* Requires Student CharlieCard, available to students through participating middle schools and high schools.
** Requires Senior/TAP CharlieCard, available to Medicare cardholders, seniors 65+, and persons with disabilities.

Fall 2016 Holidays
October 10 & November 11: see Weekday
September 5, November 24 & December 26: see Sunday

APPENDIX C – SEASONAL ADJUSTMENT

Massachusetts Highway Department

8098: Monthly Hourly Volume for November 2015

Location ID: 8098
County: MIDDLESEX
Funcationl Class 1
Location: INTERSTATE 93

Seasonal Factor Group: U1-Boston
Daily Factor Group:
Axle Factor Group: U1-Boston
Growth Factor Group:

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL
1	2695	2474	1892	1200	848	964	1650	2803	3641	4894	6576	8453	9084	9566	9601	9811	9517	9018	8546	8280	6454	5125	3842	2889	129823
2	2135	1222	751	540	887	2628	8153	8424	9443	8306	7349	7959	7541	8053	8485	9654	9782	9807	10530	10012	7457	5461	4557	3305	152441
3	2314	1242	699	618	817	2467	7961	8440	8908	8271	7633	8109	7976	7912	8724	10258	9201	9589	10177	10834	7978	5708	5604	4699	156139
4	2532	1383	741	686	867	2332	7801	8618	8965	8247	7579	8139	7902	8056	8915	10173	9178	9440	9079	10297	8218	6263	5232	4000	154643
5	2521	1394	869	698	963	2472	7826	8625	8832	7739	7186	7936	8117	8557	9492	10862	9615	9649	10132	10150	8594	6613	5764	4778	159384
6																									
7	2694	1776	1541	1005	1409	3106	4809	6100	7806	8866	9191	9403	9818	10122	9970	10185	9857	10205	8902	7160	5890	5600	6015	5299	156729
8	2987	2154	1665	946	914	1692	2816	3800	5289	7437	8710	9491	10056	9135	8878	8859	9779	9282	8277	7247	5483	4331	3033	2121	134382
9	1304	811	623	891	2447	8101	8282	8647	8106	7712	7813	7814	7926	8714	10212	9408	9247	10063	10160	7346	5420	4593	3405	2360	151405
10	1339	761	649	886	2458	8128	8469	9276	7983	7403	7914	7886	8050	8949	10121	9087	9505	10371	9813	8184	5900	4985	4169	2748	155034
11	1515	826	606	765	1757	5526	7552	8471	7932	7377	8008	7949	7960	8553	9113	9148	9739	10312	9062	6946	5586	4931	4797	2758	147189
12	1303	807	692	893	2358	7693	8723	9225	8186	7674	7907	8283	8266	9239	10141	8147	8804	9375	10541	8426	6771	6012	6113	3451	159030
13	1973	1070	851	941	2320	7858	8282	8408	8166	7648	8651	8725	8425	10018	10406	9090	8803	10144	10398	8562	6369	5852	6050	4319	163329
14	2659	1813	1487	1001	1273	2914	4435	5606	7265	8266	9090	9471	10080	10364	10264	10479	10113	9856	8527	7336	5645	5941	6138	4666	154689
15	2935	2332	1712	1026	894	1530	2714	3369	4831	6578	7847	9167	9755	9825	9800	10217	9301	7735	7107	5544	6645	4534	3241	2119	130758
16	1436	844	720	924	2852	8177	8336	9240	8288	7409	7687	7713	8071	8876	9888	9098	8331	8932	10728	7587	5500	4555	3419	2438	151049
17	1372	815	679	881	2487	7799	8509	8363	7779	7417	7613	7396	8114	8917	8921	8920	9408	10276	10568	7973	6196	5782	4749	2582	153516
18	1361	808	675	865	2294	7621	8067	8556	7716	7613	8145	8007	8531	9294	10273	9197	8187	9216	9416	8044	6441	5936	4863	2878	154004
19	1660	1013	720	987	2377	7959	8534	9291	8247	7264	8373	8230	8678	9684	10772	9463	9384	9870	8456	9498	6816	6248	5486	3407	162417
20	2005	1244	927	971	2377	7210	7758	8855	8606	7795	8544	8630	9201	9103	9631	9271	9801	10339	10018	8068	6625	6004	5857	4509	163349
21	2831	1926	1515	1029	1332	3273	4537	5749	7294	8006	8972	9638	9902	9981	10165	10010	10100	9788	8802	7085	5992	5929	6830	5189	155875
22	3430	2443	1831	1063	980	1636	2623	3390	4680	6173	8196	9282	9326	9122	9248	8350	9035	8184	7151	6233	5119	3993	2980	2101	126569
23	1402	820	633	820	2456	7931	8429	9012	7902	7158	7976	8137	8060	8889	9769	8034	8988	9032	9124	7777	5483	4162	3570	2460	148024
24	1986	1153	902	945	2398	7601	8242	7579	7490	7604	8492	8654	9204	9726	9899	9120	9040	9811	9869	8837	6681	5670	4479	3366	158748
25	1909	1074	814	1022	2398	7478	7586	7743	7665	7473	8459	9277	10285	9381	8880	8948	8453	7641	7187	6413	5309	4734	4767	3255	148151
26	2148	1536	1208	744	865	1436	2228	2802	3314	4983	7597	9121	9648	8460	6406	5556	6074	7073	7884	7597	7419	5767	3975	2649	116490
27	1469	895	702	769	1624	4081	4667	5090	5331	6419	8230	9064	9173	9234	9467	9302	9352	8410	7459	6189	5089	4961	4885	3342	135204
28	2253	1729	1391	938	1217	2304	3289	4012	4817	6215	7477	8240	8457	8933	8815	8966	8553	8203	7805	6505	5224	5126	4801	3742	129012
29	2489	2029	1564	1023	1255	1879	2764	3369	4325	6111	7909	9246	9677	9791	9860	9846	9755	8851	8002	7115	5173	3754	2953	1892	130632
30	1700	898	689	960	2798	8317	8353	8677	7778	7191	7767	7877	8051	8724	10115	10014	9828	10229	9587	7257	5513	4445	3327	2319	152414

November Average	147945.8
AADT	148021
Percent Difference	0.05%
Increase Volumes by 0.05%	

APPENDIX D – TRIP GENERATION

Apartment
(220)

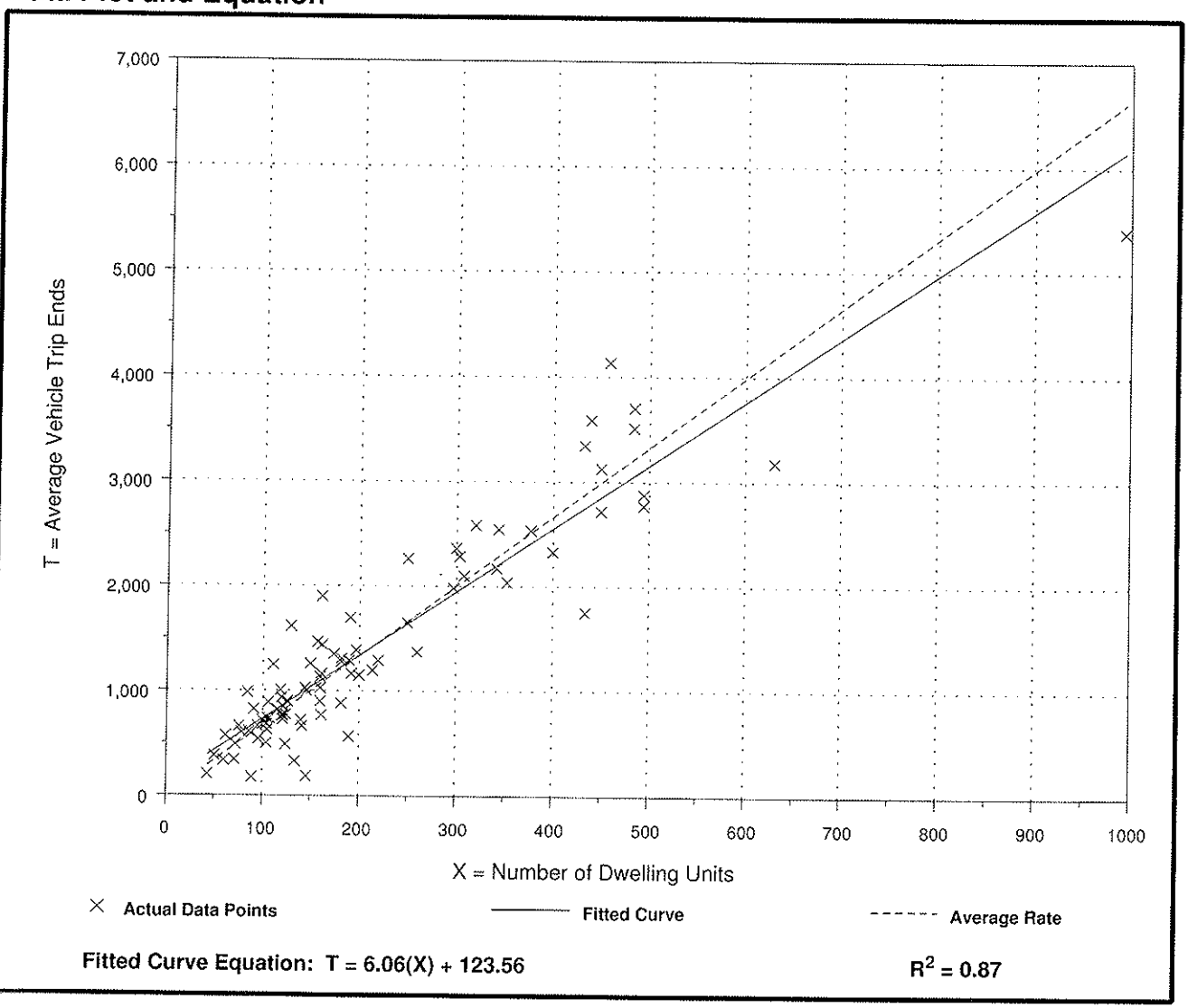
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 88
Avg. Number of Dwelling Units: 210
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.65	1.27 - 12.50	3.07

Data Plot and Equation



Fitted Curve Equation: T = 6.06(X) + 123.56

R^2 = 0.87

Apartment
(220)

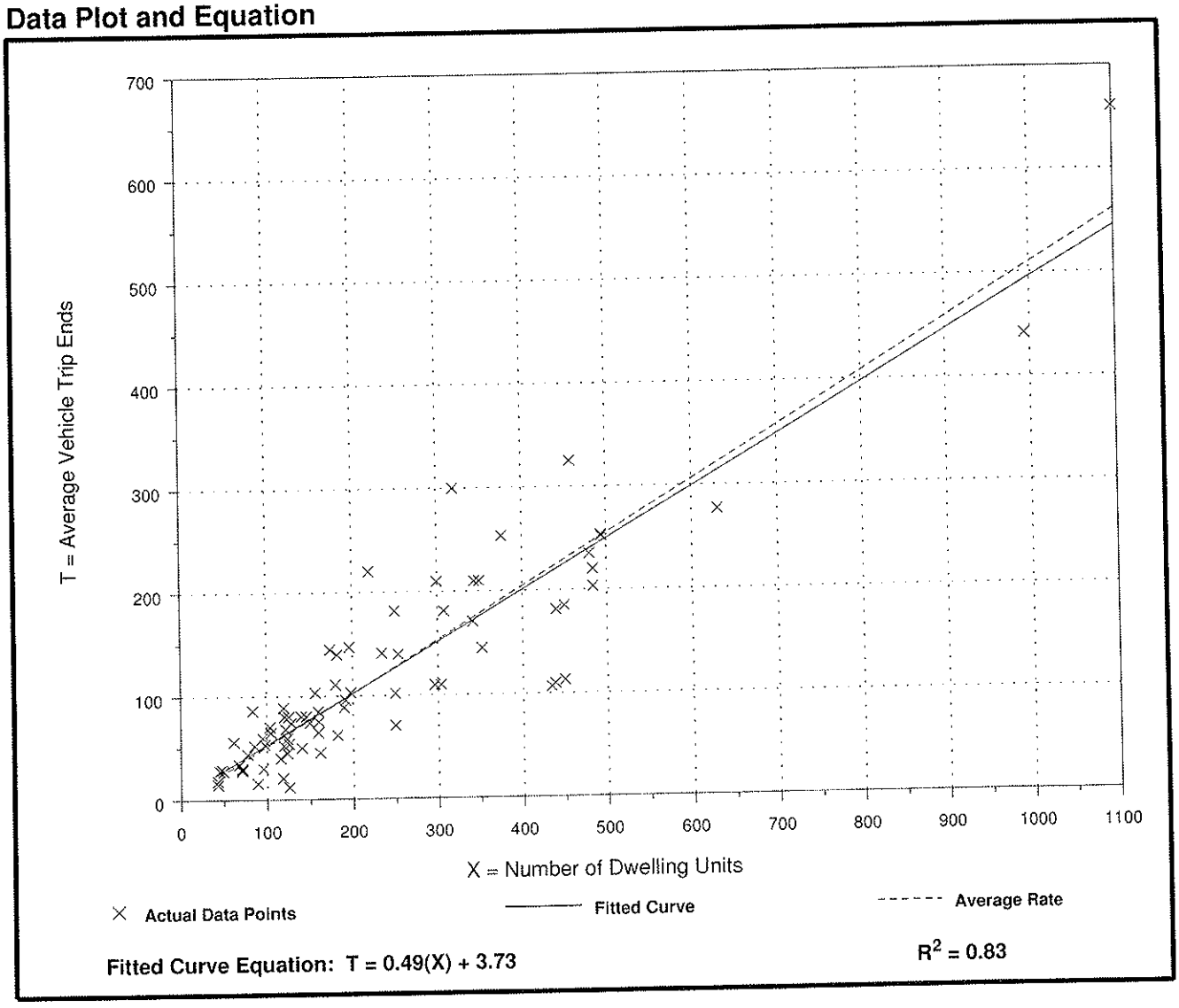
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 78
Avg. Number of Dwelling Units: 235
Directional Distribution: 20% entering, 80% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.10 - 1.02	0.73

Data Plot and Equation



Fitted Curve Equation: T = 0.49(X) + 3.73

R^2 = 0.83

Apartment
(220)

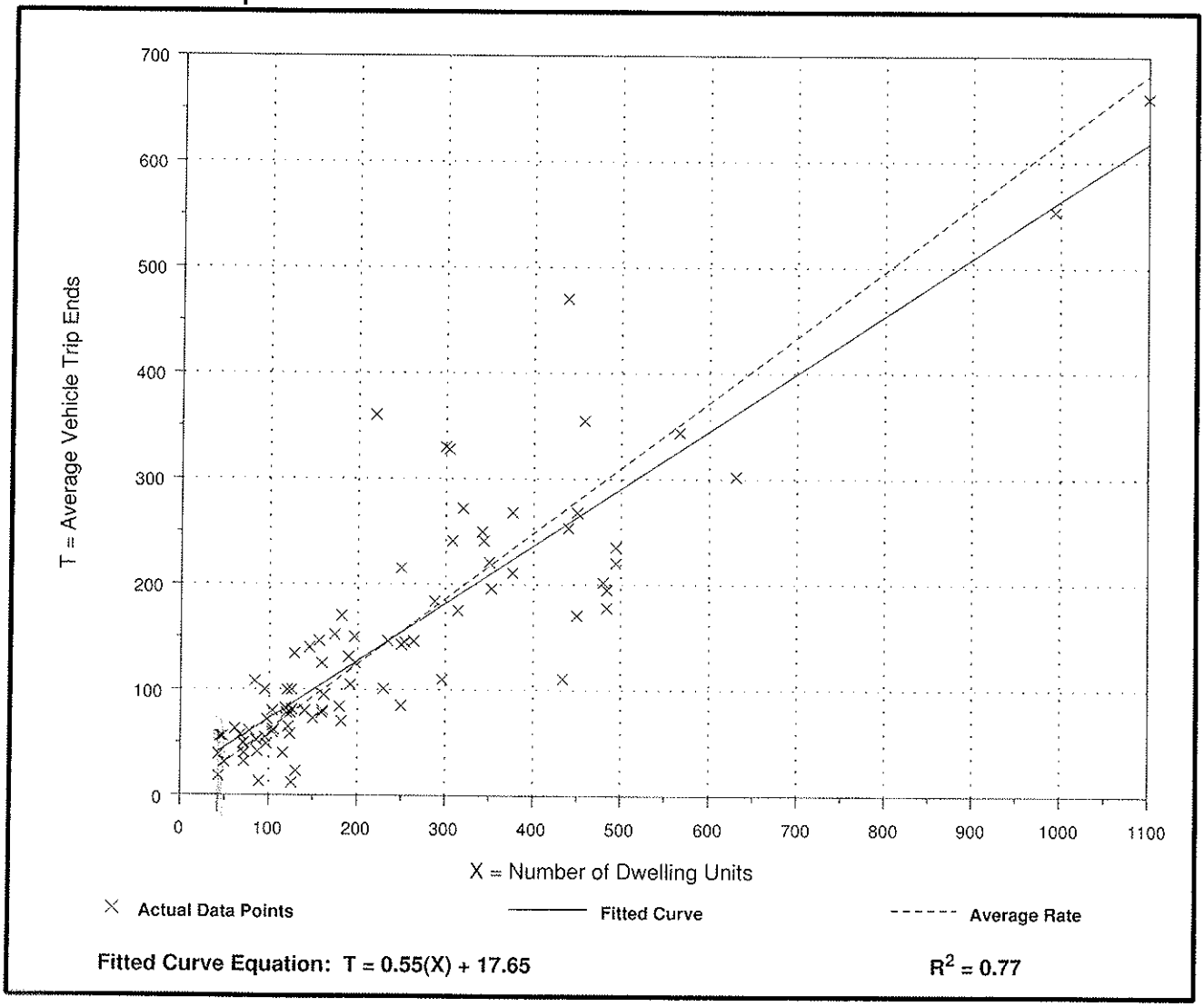
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 90
Avg. Number of Dwelling Units: 233
Directional Distribution: 65% entering, 35% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.62	0.10 - 1.64	0.82

Data Plot and Equation



Fitted Curve Equation: $T = 0.55(X) + 17.65$

$R^2 = 0.77$

S0801

COMMUTING CHARACTERISTICS BY SEX

2010-2014 American Community Survey 5-Year Estimates

Supporting documentation on code lists, subject definitions, data accuracy, and statistical testing can be found on the American Community Survey website in the Data and Documentation section.

Sample size and data quality measures (including coverage rates, allocation rates, and response rates) can be found on the American Community Survey website in the Methodology section.

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties.

Subject	Census Tract 3503, Middlesex County, Massachusetts				
	Total		Male		Female
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate
Workers 16 years and over	1,613	+/-189	857	+/-173	756
MEANS OF TRANSPORTATION TO WORK					
Car, truck, or van	59.1%	+/-9.2	56.6%	+/-10.8	62.0%
Drove alone	49.5%	+/-7.8	46.0%	+/-9.3	53.6%
Carpooled	9.6%	+/-5.5	10.6%	+/-9.1	8.5%
In 2-person carpool	7.3%	+/-5.4	6.3%	+/-7.9	8.5%
In 3-person carpool	0.0%	+/-2.1	0.0%	+/-4.0	0.0%
In 4-or-more person carpool	2.3%	+/-2.5	4.3%	+/-4.7	0.0%
Workers per car, truck, or van	1.10	+/-0.06	1.13	+/-0.12	1.08
Public transportation (excluding taxicab)	24.9%	+/-6.6	22.9%	+/-9.3	27.2%
Walked	7.0%	+/-3.9	8.3%	+/-6.3	5.6%
Bicycle	4.5%	+/-3.5	8.4%	+/-6.5	0.0%
Taxicab, motorcycle, or other means	1.0%	+/-1.4	1.8%	+/-2.5	0.1%
Worked at home	3.5%	+/-2.9	2.1%	+/-2.5	5.0%
PLACE OF WORK					
Worked in state of residence	100.0%	+/-2.1	100.0%	+/-4.0	100.0%
Worked in county of residence	63.8%	+/-6.9	69.0%	+/-10.0	57.9%
Worked outside county of residence	36.2%	+/-6.9	31.0%	+/-10.0	42.1%
Worked outside state of residence	0.0%	+/-2.1	0.0%	+/-4.0	0.0%
Living in a place	100.0%	+/-2.1	100.0%	+/-4.0	100.0%
Worked in place of residence	23.7%	+/-6.5	20.0%	+/-8.3	27.9%
Worked outside place of residence	76.3%	+/-6.5	80.0%	+/-8.3	72.1%
Not living in a place	0.0%	+/-2.1	0.0%	+/-4.0	0.0%
Living in 12 selected states	100.0%	+/-2.1	100.0%	+/-4.0	100.0%
Worked in minor civil division of residence	23.7%	+/-6.5	20.0%	+/-8.3	27.9%
Worked outside minor civil division of residence	76.3%	+/-6.5	80.0%	+/-8.3	72.1%
Not living in 12 selected states	0.0%	+/-2.1	0.0%	+/-4.0	0.0%
Workers 16 years and over who did not work at home	1,557	+/-195	839	+/-177	718
TIME LEAVING HOME TO GO TO WORK					

Subject	Census Tract 3503, Middlesex County, Massachusetts				
	Total		Male		Female
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate
12:00 a.m. to 4:59 a.m.	4.9%	+/-3.2	5.7%	+/-4.8	4.0%
5:00 a.m. to 5:29 a.m.	0.3%	+/-0.6	0.6%	+/-1.1	0.0%
5:30 a.m. to 5:59 a.m.	1.2%	+/-1.3	0.0%	+/-4.1	2.5%
6:00 a.m. to 6:29 a.m.	8.1%	+/-4.1	9.1%	+/-7.7	7.0%
6:30 a.m. to 6:59 a.m.	5.8%	+/-3.1	5.2%	+/-4.3	6.5%
7:00 a.m. to 7:29 a.m.	11.2%	+/-4.3	10.7%	+/-6.2	11.7%
7:30 a.m. to 7:59 a.m.	20.6%	+/-6.2	8.3%	+/-5.3	34.8%
8:00 a.m. to 8:29 a.m.	27.3%	+/-7.6	33.0%	+/-11.3	20.6%
8:30 a.m. to 8:59 a.m.	6.2%	+/-2.9	5.5%	+/-3.3	7.1%
9:00 a.m. to 11:59 p.m.	14.4%	+/-6.2	21.8%	+/-10.0	5.7%
TRAVEL TIME TO WORK					
Less than 10 minutes	10.1%	+/-5.0	12.8%	+/-6.6	7.1%
10 to 14 minutes	6.7%	+/-4.2	5.8%	+/-4.5	7.7%
15 to 19 minutes	15.0%	+/-5.1	13.3%	+/-9.2	17.0%
20 to 24 minutes	9.0%	+/-4.1	9.2%	+/-5.7	8.8%
25 to 29 minutes	3.6%	+/-2.3	3.0%	+/-3.1	4.3%
30 to 34 minutes	15.7%	+/-6.2	18.0%	+/-8.5	13.1%
35 to 44 minutes	8.7%	+/-4.5	13.0%	+/-7.3	3.8%
45 to 59 minutes	18.0%	+/-5.9	13.7%	+/-9.8	23.1%
60 or more minutes	13.0%	+/-4.6	11.2%	+/-6.1	15.2%
Mean travel time to work (minutes)	31.8	+/-2.8	31.5	+/-4.7	32.2
VEHICLES AVAILABLE					
Workers 16 years and over in households	1,612	+/-189	857	+/-173	755
No vehicle available	11.6%	+/-6.7	12.7%	+/-8.0	10.3%
1 vehicle available	47.6%	+/-9.0	47.0%	+/-12.1	48.2%
2 vehicles available	28.5%	+/-9.6	27.8%	+/-12.3	29.4%
3 or more vehicles available	12.3%	+/-7.7	12.5%	+/-9.3	12.1%
PERCENT IMPUTED					
Means of transportation to work	3.1%	(X)	(X)	(X)	(X)
Private vehicle occupancy	2.7%	(X)	(X)	(X)	(X)
Place of work	12.5%	(X)	(X)	(X)	(X)
Time leaving home to go to work	5.5%	(X)	(X)	(X)	(X)
Travel time to work	6.6%	(X)	(X)	(X)	(X)
Vehicles available	0.0%	(X)	(X)	(X)	(X)

Subject	Census Tract 3503, Middlesex County, Massachusetts
	Female
	Margin of Error
Workers 16 years and over	+/-138
MEANS OF TRANSPORTATION TO WORK	
Car, truck, or van	+/-13.0
Drove alone	+/-10.2
Carpooled	+/-6.2
In 2-person carpool	+/-6.2
In 3-person carpool	+/-4.5
In 4-or-more person carpool	+/-4.5
Workers per car, truck, or van	+/-0.05
Public transportation (excluding taxicab)	+/-9.1
Walked	+/-5.5
Bicycle	+/-4.5
Taxicab, motorcycle, or other means	+/-0.6
Worked at home	+/-4.3
PLACE OF WORK	
Worked in state of residence	+/-4.5
Worked in county of residence	+/-9.8
Worked outside county of residence	+/-9.8
Worked outside state of residence	+/-4.5
Living in a place	+/-4.5
Worked in place of residence	+/-9.0
Worked outside place of residence	+/-9.0
Not living in a place	+/-4.5
Living in 12 selected states	+/-4.5
Worked in minor civil division of residence	+/-9.0
Worked outside minor civil division of residence	+/-9.0
Not living in 12 selected states	+/-4.5
Workers 16 years and over who did not work at home	+/-140
TIME LEAVING HOME TO GO TO WORK	
12:00 a.m. to 4:59 a.m.	+/-5.1
5:00 a.m. to 5:29 a.m.	+/-4.8
5:30 a.m. to 5:59 a.m.	+/-2.8
6:00 a.m. to 6:29 a.m.	+/-4.2
6:30 a.m. to 6:59 a.m.	+/-4.4
7:00 a.m. to 7:29 a.m.	+/-5.2
7:30 a.m. to 7:59 a.m.	+/-10.0
8:00 a.m. to 8:29 a.m.	+/-9.2
8:30 a.m. to 8:59 a.m.	+/-4.5
9:00 a.m. to 11:59 p.m.	+/-4.2
TRAVEL TIME TO WORK	
Less than 10 minutes	+/-6.3
10 to 14 minutes	+/-6.1
15 to 19 minutes	+/-8.2
20 to 24 minutes	+/-4.8
25 to 29 minutes	+/-3.4
30 to 34 minutes	+/-8.4
35 to 44 minutes	+/-2.8
45 to 59 minutes	+/-7.5
60 or more minutes	+/-7.2
Mean travel time to work (minutes)	+/-3.4

Subject	Census Tract 3503, Middlesex County, Massachusetts
	Female
	Margin of Error
VEHICLES AVAILABLE	
Workers 16 years and over in households	+/-137
No vehicle available	+/-7.4
1 vehicle available	+/-13.4
2 vehicles available	+/-11.1
3 or more vehicles available	+/-8.7
PERCENT IMPUTED	
Means of transportation to work	(X)
Private vehicle occupancy	(X)
Place of work	(X)
Time leaving home to go to work	(X)
Travel time to work	(X)
Vehicles available	(X)

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see Accuracy of the Data). The effect of nonsampling error is not represented in these tables.

The 12 selected states are Connecticut, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin.

Workers include members of the Armed Forces and civilians who were at work last week.

While the 2010-2014 American Community Survey (ACS) data generally reflect the February 2013 Office of Management and Budget (OMB) definitions of metropolitan and micropolitan statistical areas; in certain instances the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB definitions due to differences in the effective dates of the geographic entities.

Estimates of urban and rural population, housing units, and characteristics reflect boundaries of urban areas defined based on Census 2010 data. As a result, data for urban and rural areas from the ACS do not necessarily reflect the results of ongoing urbanization.

Source: U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates

Explanation of Symbols:

1. An '**' entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.
2. An '-' entry in the estimate column indicates that either no sample observations or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest interval or upper interval of an open-ended distribution.
3. An '-' following a median estimate means the median falls in the lowest interval of an open-ended distribution.
4. An '+' following a median estimate means the median falls in the upper interval of an open-ended distribution.
5. An '***' entry in the margin of error column indicates that the median falls in the lowest interval or upper interval of an open-ended distribution. A statistical test is not appropriate.
6. An '*****' entry in the margin of error column indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.
7. An 'N' entry in the estimate and margin of error columns indicates that data for this geographic area cannot be displayed because the number of sample cases is too small.
8. An '(X)' means that the estimate is not applicable or not available.

Design Consultants, Inc.
December 2016
21 Murdock Street Somerville, MA
Average Vehicle Occupancy Calculations
Based on Census Tract Data

MEANS OF TRANSPORTATION TO WORK	
Car, truck, or van	59.1%
Drove alone	49.5%
Carpooled:	9.6%
In 2-person carpool	7.3%
In 3-person carpool	0.0%
In 4 person carpool	2.3%
Public transportation (excluding taxicab)	24.9%
Bicycle	7.0%
Walked	4.5%
Other means	1.0%
Worked at home	3.5%

Average Vehicle Occupancy (AVO)			
# Occupants	**Weight**	**mult. by**	**Product**
Drove Alone	0.495	1	0.495
Carpool (2)	0.073	2	0.146
Carpool (3)	0	3	0
Carpool (4)	0.023	4	0.092
Sums	*0.591*		*0.733*
AVO (Sum of Products/Sum of Weights)			**1.2**

APPENDIX E – CRASH RATE WORKSHEETS

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville COUNT DATE : Nov-16

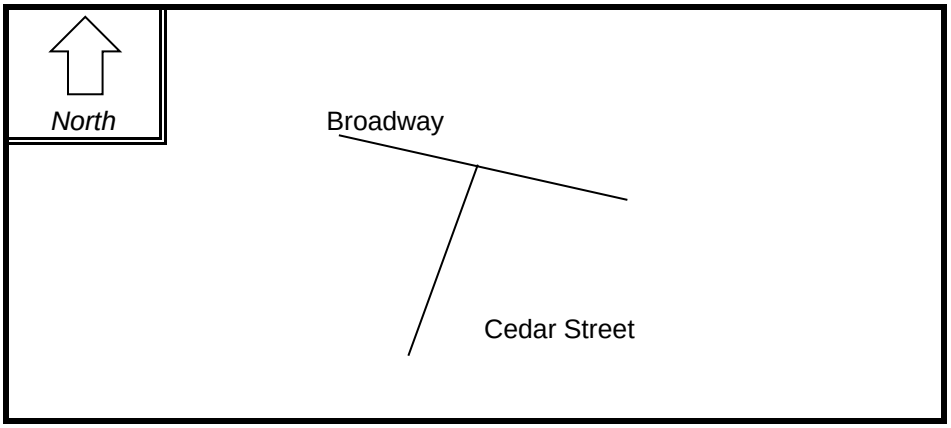
DISTRICT : 4 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Broadway

MINOR STREET(S) : Cedar Street

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	SB	WB	NB	EB		
PEAK HOURLY VOLUMES (AM) :	1	689	225	831		1,746

" K " FACTOR :	0.090	INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME :			19,400
TOTAL # OF CRASHES :	3	# OF YEARS :	3	AVERAGE # OF CRASHES PER YEAR (**A**) :	1.00

CRASH RATE CALCULATION : 0.14 RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: 21 Murdock Street Nov-16

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville COUNT DATE : Nov-16

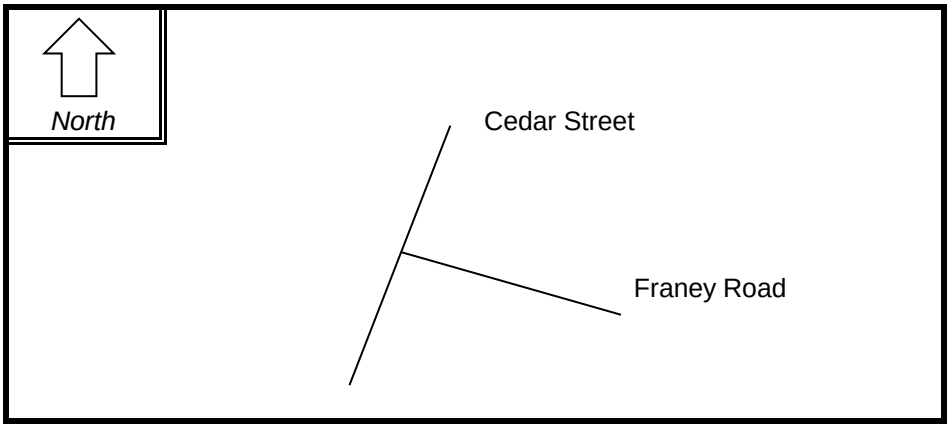
DISTRICT : 4 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Cedar Street

MINOR STREET(S) : Franey Road

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	SB	WB	NB			
PEAK HOURLY VOLUMES (AM) :	447	40	239			**726**

" K " FACTOR : **0.090** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **8,067**

TOTAL # OF CRASHES : 1 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **0.33**

CRASH RATE CALCULATION : **0.11** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: 21 Murdock Street Nov-16

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville COUNT DATE : Nov-16

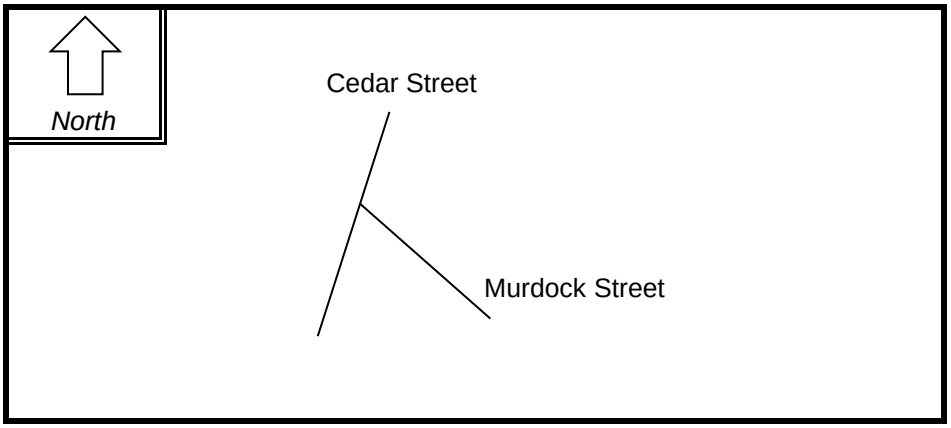
DISTRICT : 4 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Cedar Street

MINOR STREET(S) : Murdock Street

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	SB	WB	NB			
PEAK HOURLY VOLUMES (AM) :	452	27	223			**702**

" K " FACTOR : **0.090** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **7,800**

TOTAL # OF CRASHES : 1 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **0.33**

CRASH RATE CALCULATION : **0.12** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: 21 Murdock Street Nov-16

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville COUNT DATE : Nov-16

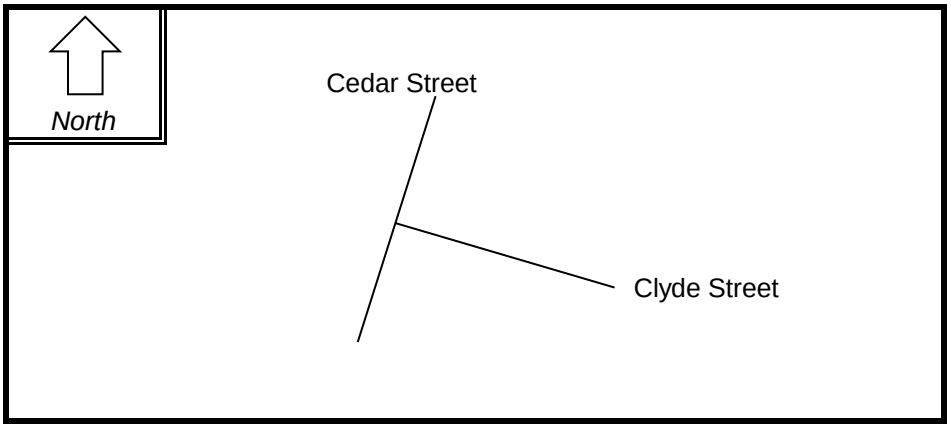
DISTRICT : 4 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Cedar Street

MINOR STREET(S) : Clyde Street

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	SB	WB	NB			
PEAK HOURLY VOLUMES (PM) :	358	29	303			**690**

" K " FACTOR : **0.090** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **7,667**

TOTAL # OF CRASHES : 1 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **0.33**

CRASH RATE CALCULATION : **0.12** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: 21 Murdock Street Nov-16

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville COUNT DATE : Nov-16

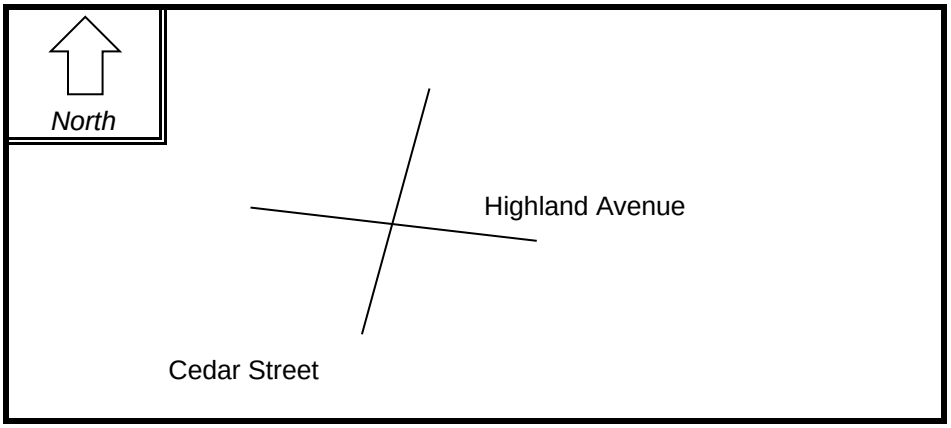
DISTRICT : 4 UNSIGNALIZED : SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Highland Avenue

MINOR STREET(S) : Cedar Street

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	SB	WB	NB	EB		
PEAK HOURLY VOLUMES (PM) :	510	508	0	321		**1,339**

" K " FACTOR : **0.090** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **14,878**

TOTAL # OF CRASHES : 7 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **2.33**

CRASH RATE CALCULATION : **0.43** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: 21 Murdock Street Nov-16

APPENDIX F – INTERSECTION CAPACITY ANALYSIS

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø9
Lane Configurations							
Volume (vph)	618	213	229	441	76	149	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850			0.906		
Flt Protected			0.950		0.985		
Satd. Flow (prot)	1827	1583	1770	1776	1638	0	
Flt Permitted			0.134		0.985		
Satd. Flow (perm)	1827	1583	250	1776	1638	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		232			91		
Link Speed (mph)	30			30	30		
Link Distance (ft)	337			452	331		
Travel Time (s)	7.7			10.3	7.5		
Peak Hour Factor	0.96	0.92	0.88	0.91	0.86	0.74	
Heavy Vehicles (%)	4%	2%	2%	7%	7%	2%	
Adj. Flow (vph)	644	232	260	485	88	201	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	644	232	260	485	289	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			16	16		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		9	15		15	9	
Number of Detectors	1	1	1	1	1		
Detector Template					Left		
Leading Detector (ft)	40	40	40	40	20		
Trailing Detector (ft)	0	0	0	0	0		
Detector 1 Position(ft)	0	0	0	0	0		
Detector 1 Size(ft)	40	40	40	40	20		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Turn Type		pm+ov	pm+pt				
Protected Phases	4	2	3	8	2		9
Permitted Phases		4	8				
Detector Phase	4	2	3	8	2		
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	22.0	18.0	10.0	22.0	18.0		22.0
Total Split (s)	45.0	22.0	16.0	61.0	22.0	0.0	25.0
Total Split (%)	41.7%	20.4%	14.8%	56.5%	20.4%	0.0%	23%
Maximum Green (s)	39.0	18.0	10.0	55.0	18.0		19.0
Yellow Time (s)	4.0	3.0	4.0	4.0	3.0		4.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø9
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0		2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	4.0	6.0	6.0	4.0	4.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0
Recall Mode	Max	None	None	Max	None		None
Walk Time (s)							5.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							33
Act Effct Green (s)	39.9	59.4	56.3	56.3	15.5		
Actuated g/C Ratio	0.43	0.63	0.60	0.60	0.17		
v/c Ratio	0.83	0.21	0.82	0.46	0.83		
Control Delay	38.3	1.2	39.2	15.1	48.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	38.3	1.2	39.2	15.1	48.3		
LOS	D	A	D	B	D		
Approach Delay	28.5			23.5	48.3		
Approach LOS	C			C	D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 93.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 29.5		Intersection LOS: C	
Intersection Capacity Utilization 71.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Broadway & Cedar Street

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Group Flow (vph)	644	232	260	485	289
v/c Ratio	0.83	0.21	0.82	0.46	0.83
Control Delay	38.3	1.2	39.2	15.1	48.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	1.2	39.2	15.1	48.3
Queue Length 50th (ft)	415	0	97	204	131
Queue Length 95th (ft)	#645	16	#243	296	#243
Internal Link Dist (ft)	257			372	251
Turn Bay Length (ft)					
Base Capacity (vph)	777	1129	316	1065	394
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.83	0.21	0.82	0.46	0.73

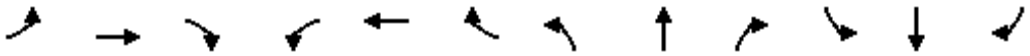
Intersection Summary

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	618	213	229	441	76	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	4.0	6.0	6.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.91	
Flt Protected	1.00	1.00	0.95	1.00	0.99	
Satd. Flow (prot)	1827	1583	1770	1776	1638	
Flt Permitted	1.00	1.00	0.13	1.00	0.99	
Satd. Flow (perm)	1827	1583	250	1776	1638	
Peak-hour factor, PHF	0.96	0.92	0.88	0.91	0.86	0.74
Adj. Flow (vph)	644	232	260	485	88	201
RTOR Reduction (vph)	0	98	0	0	76	0
Lane Group Flow (vph)	644	134	260	485	213	0
Heavy Vehicles (%)	4%	2%	2%	7%	7%	2%
Turn Type		pm+ov	pm+pt			
Protected Phases	4	2	3	8	2	
Permitted Phases		4	8			
Actuated Green, G (s)	40.1	55.6	56.3	56.3	15.5	
Effective Green, g (s)	40.1	55.6	56.3	56.3	15.5	
Actuated g/C Ratio	0.42	0.58	0.58	0.58	0.16	
Clearance Time (s)	6.0	4.0	6.0	6.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	760	913	307	1037	263	
v/s Ratio Prot	0.35	0.02	c0.09	0.27	c0.13	
v/s Ratio Perm		0.06	c0.40			
v/c Ratio	0.85	0.15	0.85	0.47	0.81	
Uniform Delay, d1	25.4	9.4	18.3	11.5	39.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.3	0.1	18.9	1.5	16.5	
Delay (s)	36.7	9.5	37.2	13.0	55.5	
Level of Service	D	A	D	B	E	
Approach Delay (s)	29.5			21.4	55.5	
Approach LOS	C			C	E	

Intersection Summary			
HCM Average Control Delay	30.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	96.4	Sum of lost time (s)	24.6
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	260	14	96	344	68	0	0	0	154	224	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.979						0.965	
Flt Protected		0.993			0.989						0.986	
Satd. Flow (prot)	0	1805	0	0	1811	0	0	0	0	0	1754	0
Flt Permitted		0.878			0.817						0.986	
Satd. Flow (perm)	0	1596	0	0	1496	0	0	0	0	0	1754	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			15						24	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		332			332			237			1258	
Travel Time (s)		7.5			7.5			5.4			28.6	
Peak Hour Factor	0.84	0.87	0.58	0.75	0.96	0.77	0.92	0.92	0.92	0.92	0.85	0.89
Heavy Vehicles (%)	0%	4%	7%	0%	2%	2%	2%	2%	2%	3%	2%	5%
Adj. Flow (vph)	56	299	24	128	358	88	0	0	0	167	264	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	379	0	0	574	0	0	0	0	0	579	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2					1	2	
Detector Template	Left	Thru		Left	Thru					Left	Thru	
Leading Detector (ft)	20	100		20	100					20	100	
Trailing Detector (ft)	0	0		0	0					0	0	
Detector 1 Position(ft)	0	0		0	0					0	0	
Detector 1 Size(ft)	20	6		20	6					20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8						6	
Permitted Phases	4			8						6		

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

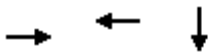
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8					6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0					4.0	4.0	
Minimum Split (s)	10.0	10.0		10.0	10.0					10.0	10.0	
Total Split (s)	32.0	32.0	0.0	32.0	32.0	0.0	0.0	0.0	0.0	24.0	24.0	0.0
Total Split (%)	45.1%	45.1%	0.0%	45.1%	45.1%	0.0%	0.0%	0.0%	0.0%	33.8%	33.8%	0.0%
Maximum Green (s)	28.0	28.0		28.0	28.0					20.0	20.0	
Yellow Time (s)	3.0	3.0		3.0	3.0					3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0					1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0	3.0	
Recall Mode	Max	Max		Max	Max					None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		28.3			28.3						20.2	
Actuated g/C Ratio		0.45			0.45						0.32	
v/c Ratio		0.53			0.85						1.01	
Control Delay		17.4			32.5						66.0	
Queue Delay		0.0			0.0						0.0	
Total Delay		17.4			32.5						66.0	
LOS		B			C						E	
Approach Delay		17.4			32.5						66.0	
Approach LOS		B			C						E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 71			
Actuated Cycle Length: 63.5			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 41.4		Intersection LOS: D	
Intersection Capacity Utilization 75.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Highland Avenue & Cedar Street

Lane Group	ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	15.0
Total Split (s)	15.0
Total Split (%)	21%
Maximum Green (s)	8.0
Yellow Time (s)	6.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	2.0
Flash Dont Walk (s)	3.0
Pedestrian Calls (#/hr)	51
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

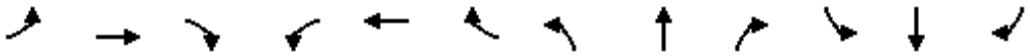


Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	379	574	579
v/c Ratio	0.53	0.85	1.01
Control Delay	17.4	32.5	66.0
Queue Delay	0.0	0.0	0.0
Total Delay	17.4	32.5	66.0
Queue Length 50th (ft)	117	216	~275
Queue Length 95th (ft)	189	#416	#420
Internal Link Dist (ft)	252	252	1178
Turn Bay Length (ft)			
Base Capacity (vph)	714	674	574
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.53	0.85	1.01

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	260	14	96	344	68	0	0	0	154	224	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						1.00	
Frt		0.99			0.98						0.97	
Flt Protected		0.99			0.99						0.99	
Satd. Flow (prot)		1805			1812						1755	
Flt Permitted		0.88			0.82						0.99	
Satd. Flow (perm)		1596			1496						1755	
Peak-hour factor, PHF	0.84	0.87	0.58	0.75	0.96	0.77	0.92	0.92	0.92	0.92	0.85	0.89
Adj. Flow (vph)	56	299	24	128	358	88	0	0	0	167	264	148
RTOR Reduction (vph)	0	3	0	0	9	0	0	0	0	0	17	0
Lane Group Flow (vph)	0	376	0	0	565	0	0	0	0	0	562	0
Heavy Vehicles (%)	0%	4%	7%	0%	2%	2%	2%	2%	2%	3%	2%	5%
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		28.3			28.3						20.2	
Effective Green, g (s)		28.3			28.3						20.2	
Actuated g/C Ratio		0.42			0.42						0.30	
Clearance Time (s)		4.0			4.0						4.0	
Vehicle Extension (s)		3.0			3.0						3.0	
Lane Grp Cap (vph)		678			636						532	
v/s Ratio Prot												
v/s Ratio Perm		0.24			c0.38						0.32	
v/c Ratio		0.55			0.89						1.06	
Uniform Delay, d1		14.4			17.7						23.2	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		3.2			16.9						54.9	
Delay (s)		17.6			34.6						78.1	
Level of Service		B			C						E	
Approach Delay (s)		17.6			34.6			0.0			78.1	
Approach LOS		B			C			A			E	

Intersection Summary			
HCM Average Control Delay	46.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	66.6	Sum of lost time (s)	18.1
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	40	10	174	0	0	454
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.955					
Flt Protected	0.968					
Satd. Flow (prot)	1756	0	1863	0	0	1827
Flt Permitted	0.968					
Satd. Flow (perm)	1756	0	1863	0	0	1827
Link Speed (mph)	30		30			30
Link Distance (ft)	588		1258			563
Travel Time (s)	13.4		28.6			12.8
Peak Hour Factor	0.83	0.42	0.81	0.25	0.92	0.88
Heavy Vehicles (%)	0%	0%	2%	0%	0%	4%
Adj. Flow (vph)	48	24	215	0	0	516
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	0	215	0	0	516
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.9%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	40	10	174	0	0	454
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.42	0.81	0.25	0.92	0.88
Hourly flow rate (vph)	48	24	215	0	0	516
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			1258			
pX, platoon unblocked						
vC, conflicting volume	731	215			215	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	731	215			215	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	97			100	
cM capacity (veh/h)	392	830			1367	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	72	215	516
Volume Left	48	0	0
Volume Right	24	0	0
cSH	475	1700	1700
Volume to Capacity	0.15	0.13	0.30
Queue Length 95th (ft)	13	0	0
Control Delay (s)	13.9	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.9	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (vph)	217	6	21	431	12	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992				0.938	
Flt Protected				0.997	0.974	
Satd. Flow (prot)	1833	0	0	1826	1682	0
Flt Permitted				0.997	0.974	
Satd. Flow (perm)	1833	0	0	1826	1682	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	563			454	551	
Travel Time (s)	12.8			10.3	12.5	
Peak Hour Factor	0.90	0.38	0.63	0.91	0.43	0.63
Heavy Vehicles (%)	3%	0%	0%	4%	0%	7%
Adj. Flow (vph)	241	16	33	474	28	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	257	0	0	507	52	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.0%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	217	6	21	431	12	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.38	0.63	0.91	0.43	0.63
Hourly flow rate (vph)	241	16	33	474	28	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				785		
pX, platoon unblocked						
vC, conflicting volume			257		789	249
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			257		789	249
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			97		92	97
cM capacity (veh/h)			1320		353	778

Direction, Lane #	NB 1	SB 1	NW 1
Volume Total	257	507	52
Volume Left	0	33	28
Volume Right	16	0	24
cSH	1700	1320	472
Volume to Capacity	0.15	0.03	0.11
Queue Length 95th (ft)	0	2	9
Control Delay (s)	0.0	0.8	13.6
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	13.6
Approach LOS			B

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	27	13	210	29	23	424
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.952		0.978			
Flt Protected	0.969					0.996
Satd. Flow (prot)	1317	0	1819	0	0	1846
Flt Permitted	0.969					0.996
Satd. Flow (perm)	1317	0	1819	0	0	1846
Link Speed (mph)	30		30			30
Link Distance (ft)	95		454			331
Travel Time (s)	2.2		10.3			7.5
Peak Hour Factor	0.61	0.54	0.86	0.60	0.64	0.90
Heavy Vehicles (%)	31%	37%	2%	3%	9%	2%
Adj. Flow (vph)	44	24	244	48	36	471
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	292	0	0	507
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	27	13	210	29	23	424
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.61	0.54	0.86	0.60	0.64	0.90
Hourly flow rate (vph)	44	24	244	48	36	471
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						331
pX, platoon unblocked						
vC, conflicting volume	811	268			293	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	811	268			293	
tC, single (s)	6.7	6.6			4.2	
tC, 2 stage (s)						
tF (s)	3.8	3.6			2.3	
p0 queue free %	85	97			97	
cM capacity (veh/h)	303	693			1230	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	68	293	507
Volume Left	44	0	36
Volume Right	24	48	0
cSH	378	1700	1230
Volume to Capacity	0.18	0.17	0.03
Queue Length 95th (ft)	16	0	2
Control Delay (s)	16.6	0.0	0.9
Lane LOS	C		A
Approach Delay (s)	16.6	0.0	0.9
Approach LOS	C		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø9
Lane Configurations							
Volume (vph)	484	162	212	534	128	148	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850			0.930		
Flt Protected			0.950		0.976		
Satd. Flow (prot)	1827	1599	1787	1863	1699	0	
Flt Permitted			0.246		0.976		
Satd. Flow (perm)	1827	1599	463	1863	1699	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		219			42		
Link Speed (mph)	30			30	30		
Link Distance (ft)	337			452	331		
Travel Time (s)	7.7			10.3	7.5		
Peak Hour Factor	0.96	0.74	0.87	0.93	0.80	0.87	
Heavy Vehicles (%)	4%	1%	1%	2%	2%	1%	
Adj. Flow (vph)	504	219	244	574	160	170	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	504	219	244	574	330	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			16	16		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		9	15		15	9	
Number of Detectors	1	1	1	1	1		
Detector Template					Left		
Leading Detector (ft)	40	40	40	40	20		
Trailing Detector (ft)	0	0	0	0	0		
Detector 1 Position(ft)	0	0	0	0	0		
Detector 1 Size(ft)	40	40	40	40	20		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Turn Type		pm+ov	pm+pt				
Protected Phases	4	2	3	8	2		9
Permitted Phases		4	8				
Detector Phase	4	2	3	8	2		
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	22.0	18.0	10.0	22.0	18.0		22.0
Total Split (s)	45.0	22.0	16.0	61.0	22.0	0.0	25.0
Total Split (%)	41.7%	20.4%	14.8%	56.5%	20.4%	0.0%	23%
Maximum Green (s)	39.0	18.0	10.0	55.0	18.0		19.0
Yellow Time (s)	4.0	3.0	4.0	4.0	3.0		4.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø9
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0		2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	4.0	6.0	6.0	4.0	4.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0
Recall Mode	Max	None	None	Max	None		None
Walk Time (s)							5.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							33
Act Effct Green (s)	40.5	62.6	55.7	55.7	18.2		
Actuated g/C Ratio	0.42	0.65	0.58	0.58	0.19		
v/c Ratio	0.66	0.20	0.62	0.53	0.93		
Control Delay	29.9	1.2	19.7	16.7	69.0		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	29.9	1.2	19.7	16.7	69.0		
LOS	C	A	B	B	E		
Approach Delay	21.2			17.6	69.0		
Approach LOS	C			B	E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 96.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 28.1		Intersection LOS: C	
Intersection Capacity Utilization 66.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Broadway & Cedar Street

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Group Flow (vph)	504	219	244	574	330
v/c Ratio	0.66	0.20	0.62	0.53	0.93
Control Delay	29.9	1.2	19.7	16.7	69.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	1.2	19.7	16.7	69.0
Queue Length 50th (ft)	290	0	87	253	~203
Queue Length 95th (ft)	418	7	130	363	#315
Internal Link Dist (ft)	257			372	251
Turn Bay Length (ft)					
Base Capacity (vph)	769	1117	408	1080	356
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.66	0.20	0.60	0.53	0.93

Intersection Summary

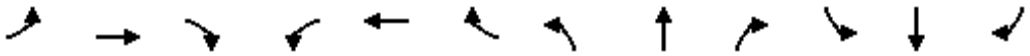
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	484	162	212	534	128	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	4.0	6.0	6.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.93	
Flt Protected	1.00	1.00	0.95	1.00	0.98	
Satd. Flow (prot)	1827	1599	1787	1863	1701	
Flt Permitted	1.00	1.00	0.25	1.00	0.98	
Satd. Flow (perm)	1827	1599	462	1863	1701	
Peak-hour factor, PHF	0.96	0.74	0.87	0.93	0.80	0.87
Adj. Flow (vph)	504	219	244	574	160	170
RTOR Reduction (vph)	0	89	0	0	34	0
Lane Group Flow (vph)	504	130	244	574	296	0
Heavy Vehicles (%)	4%	1%	1%	2%	2%	1%
Turn Type		pm+ov	pm+pt			
Protected Phases	4	2	3	8	2	
Permitted Phases		4	8			
Actuated Green, G (s)	40.5	58.7	55.7	55.7	18.2	
Effective Green, g (s)	40.5	58.7	55.7	55.7	18.2	
Actuated g/C Ratio	0.41	0.59	0.56	0.56	0.18	
Clearance Time (s)	6.0	4.0	6.0	6.0	4.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	750	951	384	1051	314	
v/s Ratio Prot	0.28	0.03	0.06	c0.31	c0.17	
v/s Ratio Perm		0.06	c0.30			
v/c Ratio	0.67	0.14	0.64	0.55	0.94	
Uniform Delay, d1	23.7	8.8	14.4	13.5	39.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.8	0.0	2.5	2.0	35.3	
Delay (s)	28.5	8.8	16.9	15.6	75.0	
Level of Service	C	A	B	B	E	
Approach Delay (s)	22.5			16.0	75.0	
Approach LOS	C			B	E	

Intersection Summary			
HCM Average Control Delay	28.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	98.7	Sum of lost time (s)	24.8
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	231	23	31	331	224	0	0	0	84	204	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.947						0.964	
Flt Protected		0.988			0.997						0.988	
Satd. Flow (prot)	0	1821	0	0	1759	0	0	0	0	0	1796	0
Flt Permitted		0.703			0.955						0.988	
Satd. Flow (perm)	0	1296	0	0	1685	0	0	0	0	0	1796	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			55						26	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		332			332			237			1258	
Travel Time (s)		7.5			7.5			5.4			28.6	
Peak Hour Factor	0.86	0.90	0.82	0.65	0.87	0.80	0.92	0.92	0.92	0.74	0.91	0.83
Heavy Vehicles (%)	0%	3%	0%	0%	3%	1%	2%	2%	2%	1%	1%	0%
Adj. Flow (vph)	92	257	28	48	380	280	0	0	0	114	224	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	377	0	0	708	0	0	0	0	0	462	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2					1	2	
Detector Template	Left	Thru		Left	Thru					Left	Thru	
Leading Detector (ft)	20	100		20	100					20	100	
Trailing Detector (ft)	0	0		0	0					0	0	
Detector 1 Position(ft)	0	0		0	0					0	0	
Detector 1 Size(ft)	20	6		20	6					20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8						6	
Permitted Phases	4			8						6		

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

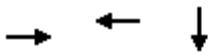
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8					6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0					4.0	4.0	
Minimum Split (s)	10.0	10.0		10.0	10.0					10.0	10.0	
Total Split (s)	32.0	32.0	0.0	32.0	32.0	0.0	0.0	0.0	0.0	24.0	24.0	0.0
Total Split (%)	45.1%	45.1%	0.0%	45.1%	45.1%	0.0%	0.0%	0.0%	0.0%	33.8%	33.8%	0.0%
Maximum Green (s)	28.0	28.0		28.0	28.0					20.0	20.0	
Yellow Time (s)	3.0	3.0		3.0	3.0					3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0					1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0					2.0	2.0	
Recall Mode	Max	Max		Max	Max					None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		28.6			28.6						17.9	
Actuated g/C Ratio		0.47			0.47						0.29	
v/c Ratio		0.62			0.87						0.85	
Control Delay		20.3			30.6						37.3	
Queue Delay		0.0			0.0						0.0	
Total Delay		20.3			30.6						37.3	
LOS		C			C						D	
Approach Delay		20.3			30.6						37.3	
Approach LOS		C			C						D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 71			
Actuated Cycle Length: 61.1			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 30.1		Intersection LOS: C	
Intersection Capacity Utilization 72.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Highland Avenue & Cedar Street

Lane Group	ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	15.0
Total Split (s)	15.0
Total Split (%)	21%
Maximum Green (s)	8.0
Yellow Time (s)	6.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	2.0
Recall Mode	None
Walk Time (s)	2.0
Flash Dont Walk (s)	3.0
Pedestrian Calls (#/hr)	51
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

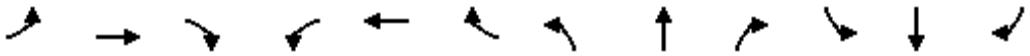
Intersection Summary



Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	377	708	462
v/c Ratio	0.62	0.87	0.85
Control Delay	20.3	30.6	37.3
Queue Delay	0.0	0.0	0.0
Total Delay	20.3	30.6	37.3
Queue Length 50th (ft)	123	262	170
Queue Length 95th (ft)	#230	#461	#327
Internal Link Dist (ft)	252	252	1178
Turn Bay Length (ft)			
Base Capacity (vph)	611	818	618
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.62	0.87	0.75

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	231	23	31	331	224	0	0	0	84	204	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						1.00	
Frt		0.99			0.95						0.96	
Flt Protected		0.99			1.00						0.99	
Satd. Flow (prot)		1821			1757						1796	
Flt Permitted		0.70			0.96						0.99	
Satd. Flow (perm)		1295			1684						1796	
Peak-hour factor, PHF	0.86	0.90	0.82	0.65	0.87	0.80	0.92	0.92	0.92	0.74	0.91	0.83
Adj. Flow (vph)	92	257	28	48	380	280	0	0	0	114	224	124
RTOR Reduction (vph)	0	4	0	0	30	0	0	0	0	0	19	0
Lane Group Flow (vph)	0	373	0	0	678	0	0	0	0	0	443	0
Heavy Vehicles (%)	0%	3%	0%	0%	3%	1%	2%	2%	2%	1%	1%	0%
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		28.6			28.6						17.9	
Effective Green, g (s)		28.6			28.6						17.9	
Actuated g/C Ratio		0.45			0.45						0.28	
Clearance Time (s)		4.0			4.0						4.0	
Vehicle Extension (s)		2.0			2.0						2.0	
Lane Grp Cap (vph)		577			750						501	
v/s Ratio Prot												
v/s Ratio Perm		0.29			c0.40						0.25	
v/c Ratio		0.65			0.90						0.88	
Uniform Delay, d1		13.9			16.5						22.2	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		5.5			16.3						16.4	
Delay (s)		19.4			32.8						38.6	
Level of Service		B			C						D	
Approach Delay (s)		19.4			32.8			0.0			38.6	
Approach LOS		B			C			A			D	

Intersection Summary			
HCM Average Control Delay	31.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	64.2	Sum of lost time (s)	17.7
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	16	13	303	0	0	358
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.946					
Flt Protected	0.971					
Satd. Flow (prot)	1691	0	1863	0	0	1881
Flt Permitted	0.971					
Satd. Flow (perm)	1691	0	1863	0	0	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	588		1258			563
Travel Time (s)	13.4		28.6			12.8
Peak Hour Factor	0.67	0.81	0.85	0.25	0.92	0.82
Heavy Vehicles (%)	0%	8%	2%	0%	0%	1%
Adj. Flow (vph)	24	16	356	0	0	437
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	0	356	0	0	437
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 28.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	16	13	303	0	0	358
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.67	0.81	0.85	0.25	0.92	0.82
Hourly flow rate (vph)	24	16	356	0	0	437
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			1258			
pX, platoon unblocked						
vC, conflicting volume	793	356			356	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	793	356			356	
tC, single (s)	6.4	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.2	
p0 queue free %	93	98			100	
cM capacity (veh/h)	360	674			1213	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	40	356	437
Volume Left	24	0	0
Volume Right	16	0	0
cSH	443	1700	1700
Volume to Capacity	0.09	0.21	0.26
Queue Length 95th (ft)	7	0	0
Control Delay (s)	13.9	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.9	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (vph)	298	9	18	360	1	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.994				0.899	
Flt Protected				0.997	0.988	
Satd. Flow (prot)	1853	0	0	1869	1497	0
Flt Permitted				0.997	0.988	
Satd. Flow (perm)	1853	0	0	1869	1497	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	563			454	551	
Travel Time (s)	12.8			10.3	12.5	
Peak Hour Factor	0.87	0.56	0.56	0.81	0.25	0.50
Heavy Vehicles (%)	2%	0%	6%	1%	0%	17%
Adj. Flow (vph)	343	16	32	444	4	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	359	0	0	476	16	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	298	9	18	360	1	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.56	0.56	0.81	0.25	0.50
Hourly flow rate (vph)	343	16	32	444	4	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				785		
pX, platoon unblocked						
vC, conflicting volume			359		859	351
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			359		859	351
tC, single (s)			4.2		6.4	6.4
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.5
p0 queue free %			97		99	98
cM capacity (veh/h)			1178		320	660

Direction, Lane #	NB 1	SB 1	NW 1
Volume Total	359	477	16
Volume Left	0	32	4
Volume Right	16	0	12
cSH	1700	1178	522
Volume to Capacity	0.21	0.03	0.03
Queue Length 95th (ft)	0	2	2
Control Delay (s)	0.0	0.8	12.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.8	12.1
Approach LOS			B

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		43.6%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	6	3	273	32	13	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.966		0.984			
Flt Protected	0.964					0.998
Satd. Flow (prot)	1769	0	1824	0	0	1878
Flt Permitted	0.964					0.998
Satd. Flow (perm)	1769	0	1824	0	0	1878
Link Speed (mph)	30		30			30
Link Distance (ft)	95		454			331
Travel Time (s)	2.2		10.3			7.5
Peak Hour Factor	0.50	0.75	0.85	0.73	0.81	0.79
Heavy Vehicles (%)	0%	0%	2%	6%	0%	1%
Adj. Flow (vph)	12	4	321	44	16	470
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	365	0	0	486
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.0%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	6	3	273	32	13	371
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.75	0.85	0.73	0.81	0.79
Hourly flow rate (vph)	12	4	321	44	16	470
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						331
pX, platoon unblocked						
vC, conflicting volume	845	343			365	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	845	343			365	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	99			99	
cM capacity (veh/h)	331	704			1205	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	365	486
Volume Left	12	0	16
Volume Right	4	44	0
cSH	382	1700	1205
Volume to Capacity	0.04	0.21	0.01
Queue Length 95th (ft)	3	0	1
Control Delay (s)	14.8	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	14.8	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø9
Lane Configurations							
Volume (vph)	632	218	234	451	78	152	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850			0.911		
Flt Protected			0.950		0.983		
Satd. Flow (prot)	1827	1583	1770	1776	1641	0	
Flt Permitted			0.110		0.983		
Satd. Flow (perm)	1827	1583	205	1776	1641	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		237			78		
Link Speed (mph)	30			30	30		
Link Distance (ft)	337			452	331		
Travel Time (s)	7.7			10.3	7.5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	4%	2%	2%	7%	7%	2%	
Adj. Flow (vph)	687	237	254	490	85	165	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	687	237	254	490	250	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			16	16		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		9	15		15	9	
Number of Detectors	1	1	1	1	1		
Detector Template					Left		
Leading Detector (ft)	40	40	40	40	20		
Trailing Detector (ft)	0	0	0	0	0		
Detector 1 Position(ft)	0	0	0	0	0		
Detector 1 Size(ft)	40	40	40	40	20		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Turn Type		pm+ov	pm+pt				
Protected Phases	4	2	3	8	2		9
Permitted Phases		4	8				
Detector Phase	4	2	3	8	2		
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	22.0	18.0	10.0	22.0	18.0		22.0
Total Split (s)	45.0	22.0	16.0	61.0	22.0	0.0	25.0
Total Split (%)	41.7%	20.4%	14.8%	56.5%	20.4%	0.0%	23%
Maximum Green (s)	39.0	18.0	10.0	55.0	18.0		19.0
Yellow Time (s)	4.0	3.0	4.0	4.0	3.0		4.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø9
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0		2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	4.0	6.0	6.0	4.0	4.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0
Recall Mode	Max	None	None	Max	None		None
Walk Time (s)							5.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							33
Act Effct Green (s)	40.1	57.9	56.6	56.6	13.7		
Actuated g/C Ratio	0.43	0.63	0.61	0.61	0.15		
v/c Ratio	0.86	0.22	0.85	0.45	0.80		
Control Delay	40.7	1.2	45.9	14.6	47.2		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	40.7	1.2	45.9	14.6	47.2		
LOS	D	A	D	B	D		
Approach Delay	30.6			25.3	47.2		
Approach LOS	C			C	D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 92.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 30.7		Intersection LOS: C	
Intersection Capacity Utilization 73.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Broadway & Cedar Street

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Group Flow (vph)	687	237	254	490	250
v/c Ratio	0.86	0.22	0.85	0.45	0.80
Control Delay	40.7	1.2	45.9	14.6	47.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	1.2	45.9	14.6	47.2
Queue Length 50th (ft)	444	0	105	198	110
Queue Length 95th (ft)	#710	17	#274	300	#219
Internal Link Dist (ft)	257			372	251
Turn Bay Length (ft)					
Base Capacity (vph)	795	1151	300	1089	392
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.86	0.21	0.85	0.45	0.64

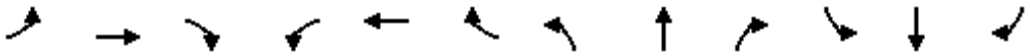
Intersection Summary

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	632	218	234	451	78	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	4.0	6.0	6.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.91	
Flt Protected	1.00	1.00	0.95	1.00	0.98	
Satd. Flow (prot)	1827	1583	1770	1776	1641	
Flt Permitted	1.00	1.00	0.11	1.00	0.98	
Satd. Flow (perm)	1827	1583	206	1776	1641	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	687	237	254	490	85	165
RTOR Reduction (vph)	0	102	0	0	67	0
Lane Group Flow (vph)	687	135	254	490	183	0
Heavy Vehicles (%)	4%	2%	2%	7%	7%	2%
Turn Type		pm+ov	pm+pt			
Protected Phases	4	2	3	8	2	
Permitted Phases		4	8			
Actuated Green, G (s)	40.3	54.0	56.6	56.6	13.7	
Effective Green, g (s)	40.3	54.0	56.6	56.6	13.7	
Actuated g/C Ratio	0.43	0.57	0.60	0.60	0.14	
Clearance Time (s)	6.0	4.0	6.0	6.0	4.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	777	902	293	1060	237	
v/s Ratio Prot	0.38	0.02	c0.09	0.28	c0.11	
v/s Ratio Perm		0.06	c0.42			
v/c Ratio	0.88	0.15	0.87	0.46	0.77	
Uniform Delay, d1	25.1	9.6	22.0	10.6	39.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	13.9	0.0	21.9	1.5	13.3	
Delay (s)	39.1	9.6	43.9	12.1	52.3	
Level of Service	D	A	D	B	D	
Approach Delay (s)	31.5			22.9	52.3	
Approach LOS	C			C	D	

Intersection Summary			
HCM Average Control Delay	30.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	94.8	Sum of lost time (s)	24.5
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	266	14	98	352	70	0	0	0	157	229	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.982						0.965	
Flt Protected		0.993			0.991						0.985	
Satd. Flow (prot)	0	1811	0	0	1819	0	0	0	0	0	1752	0
Flt Permitted		0.885			0.865						0.985	
Satd. Flow (perm)	0	1614	0	0	1588	0	0	0	0	0	1752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			13						25	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		332			332			237			1258	
Travel Time (s)		7.5			7.5			5.4			28.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	7%	0%	2%	2%	2%	2%	2%	3%	2%	5%
Adj. Flow (vph)	52	289	15	107	383	76	0	0	0	171	249	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	356	0	0	566	0	0	0	0	0	567	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2					1	2	
Detector Template	Left	Thru		Left	Thru					Left	Thru	
Leading Detector (ft)	20	100		20	100					20	100	
Trailing Detector (ft)	0	0		0	0					0	0	
Detector 1 Position(ft)	0	0		0	0					0	0	
Detector 1 Size(ft)	20	6		20	6					20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8						6	
Permitted Phases	4			8						6		

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

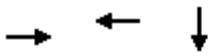
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8					6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0					4.0	4.0	
Minimum Split (s)	10.0	10.0		10.0	10.0					10.0	10.0	
Total Split (s)	32.0	32.0	0.0	32.0	32.0	0.0	0.0	0.0	0.0	24.0	24.0	0.0
Total Split (%)	45.1%	45.1%	0.0%	45.1%	45.1%	0.0%	0.0%	0.0%	0.0%	33.8%	33.8%	0.0%
Maximum Green (s)	28.0	28.0		28.0	28.0					20.0	20.0	
Yellow Time (s)	3.0	3.0		3.0	3.0					3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0					1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0					2.0	2.0	
Recall Mode	Max	Max		Max	Max					None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		28.3			28.3						20.2	
Actuated g/C Ratio		0.45			0.45						0.32	
v/c Ratio		0.49			0.79						0.98	
Control Delay		16.5			26.6						59.5	
Queue Delay		0.0			0.0						0.0	
Total Delay		16.5			26.6						59.5	
LOS		B			C						E	
Approach Delay		16.5			26.6						59.5	
Approach LOS		B			C						E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 71			
Actuated Cycle Length: 63.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 36.7		Intersection LOS: D	
Intersection Capacity Utilization 76.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Highland Avenue & Cedar Street

Lane Group	ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	15.0
Total Split (s)	15.0
Total Split (%)	21%
Maximum Green (s)	8.0
Yellow Time (s)	6.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	2.0
Recall Mode	None
Walk Time (s)	2.0
Flash Dont Walk (s)	3.0
Pedestrian Calls (#/hr)	51
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

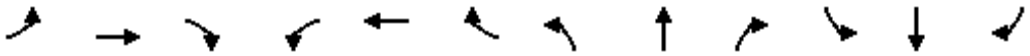


Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	356	566	567
v/c Ratio	0.49	0.79	0.98
Control Delay	16.5	26.6	59.5
Queue Delay	0.0	0.0	0.0
Total Delay	16.5	26.6	59.5
Queue Length 50th (ft)	106	202	~260
Queue Length 95th (ft)	182	#386	#443
Internal Link Dist (ft)	252	252	1178
Turn Bay Length (ft)			
Base Capacity (vph)	724	718	577
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.49	0.79	0.98

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	266	14	98	352	70	0	0	0	157	229	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						1.00	
Frt		0.99			0.98						0.96	
Flt Protected		0.99			0.99						0.99	
Satd. Flow (prot)		1811			1819						1752	
Flt Permitted		0.89			0.87						0.99	
Satd. Flow (perm)		1615			1589						1752	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	289	15	107	383	76	0	0	0	171	249	147
RTOR Reduction (vph)	0	2	0	0	7	0	0	0	0	0	17	0
Lane Group Flow (vph)	0	354	0	0	559	0	0	0	0	0	550	0
Heavy Vehicles (%)	0%	4%	7%	0%	2%	2%	2%	2%	2%	3%	2%	5%
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		28.3			28.3						20.2	
Effective Green, g (s)		28.3			28.3						20.2	
Actuated g/C Ratio		0.43			0.43						0.30	
Clearance Time (s)		4.0			4.0						4.0	
Vehicle Extension (s)		2.0			2.0						2.0	
Lane Grp Cap (vph)		689			678						534	
v/s Ratio Prot												
v/s Ratio Perm		0.22			c0.35						0.31	
v/c Ratio		0.51			0.82						1.03	
Uniform Delay, d1		13.9			16.8						23.0	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		2.7			10.9						46.6	
Delay (s)		16.7			27.7						69.7	
Level of Service		B			C						E	
Approach Delay (s)		16.7			27.7			0.0			69.7	
Approach LOS		B			C			A			E	

Intersection Summary			
HCM Average Control Delay	41.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	66.3	Sum of lost time (s)	17.8
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	41	10	178	0	0	464
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973					
Flt Protected	0.961					
Satd. Flow (prot)	1777	0	1863	0	0	1827
Flt Permitted	0.961					
Satd. Flow (perm)	1777	0	1863	0	0	1827
Link Speed (mph)	30		30			30
Link Distance (ft)	588		1258			563
Travel Time (s)	13.4		28.6			12.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	4%
Adj. Flow (vph)	45	11	193	0	0	504
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	0	193	0	0	504
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	41	10	178	0	0	464
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	45	11	193	0	0	504
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			1258			
pX, platoon unblocked						
vC, conflicting volume	698	193			193	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	698	193			193	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	99			100	
cM capacity (veh/h)	410	853			1392	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	55	193	504
Volume Left	45	0	0
Volume Right	11	0	0
cSH	456	1700	1700
Volume to Capacity	0.12	0.11	0.30
Queue Length 95th (ft)	10	0	0
Control Delay (s)	14.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	14.0	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (vph)	222	6	21	441	12	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996				0.926	
Flt Protected				0.998	0.978	
Satd. Flow (prot)	1839	0	0	1826	1657	0
Flt Permitted				0.998	0.978	
Satd. Flow (perm)	1839	0	0	1826	1657	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	563			454	551	
Travel Time (s)	12.8			10.3	12.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	0%	4%	0%	7%
Adj. Flow (vph)	241	7	23	479	13	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	0	0	502	29	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	222	6	21	441	12	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	241	7	23	479	13	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				785		
pX, platoon unblocked						
vC, conflicting volume			248		770	245
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			248		770	245
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			98		96	98
cM capacity (veh/h)			1330		366	782

Direction, Lane #	NB 1	SB 1	NW 1
Volume Total	248	502	29
Volume Left	0	23	13
Volume Right	7	0	16
cSH	1700	1330	519
Volume to Capacity	0.15	0.02	0.06
Queue Length 95th (ft)	0	1	4
Control Delay (s)	0.0	0.5	12.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.5	12.3
Approach LOS			B

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		49.8%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	28	13	215	30	24	434
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.957		0.983			
Flt Protected	0.967					0.997
Satd. Flow (prot)	1323	0	1829	0	0	1851
Flt Permitted	0.967					0.997
Satd. Flow (perm)	1323	0	1829	0	0	1851
Link Speed (mph)	30		30			30
Link Distance (ft)	95		454			331
Travel Time (s)	2.2		10.3			7.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	31%	37%	2%	3%	9%	2%
Adj. Flow (vph)	30	14	234	33	26	472
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	0	267	0	0	498
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	28	13	215	30	24	434
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	14	234	33	26	472
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						331
pX, platoon unblocked						
vC, conflicting volume	774	250			266	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	774	250			266	
tC, single (s)	6.7	6.6			4.2	
tC, 2 stage (s)						
tF (s)	3.8	3.6			2.3	
p0 queue free %	91	98			98	
cM capacity (veh/h)	322	710			1258	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	45	266	498
Volume Left	30	0	26
Volume Right	14	33	0
cSH	390	1700	1258
Volume to Capacity	0.11	0.16	0.02
Queue Length 95th (ft)	10	0	2
Control Delay (s)	15.4	0.0	0.6
Lane LOS	C		A
Approach Delay (s)	15.4	0.0	0.6
Approach LOS	C		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø9
Lane Configurations							
Volume (vph)	497	166	217	546	131	151	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850			0.928		
Flt Protected			0.950		0.977		
Satd. Flow (prot)	1827	1599	1787	1863	1698	0	
Flt Permitted			0.218		0.977		
Satd. Flow (perm)	1827	1599	410	1863	1698	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		180			46		
Link Speed (mph)	30			30	30		
Link Distance (ft)	337			452	331		
Travel Time (s)	7.7			10.3	7.5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	4%	1%	1%	2%	2%	1%	
Adj. Flow (vph)	540	180	236	593	142	164	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	540	180	236	593	306	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			16	16		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		9	15		15	9	
Number of Detectors	1	1	1	1	1		
Detector Template					Left		
Leading Detector (ft)	40	40	40	40	20		
Trailing Detector (ft)	0	0	0	0	0		
Detector 1 Position(ft)	0	0	0	0	0		
Detector 1 Size(ft)	40	40	40	40	20		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Turn Type		pm+ov	pm+pt				
Protected Phases	4	2	3	8	2		9
Permitted Phases		4	8				
Detector Phase	4	2	3	8	2		
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	22.0	18.0	10.0	22.0	18.0		22.0
Total Split (s)	45.0	22.0	16.0	61.0	22.0	0.0	25.0
Total Split (%)	41.7%	20.4%	14.8%	56.5%	20.4%	0.0%	23%
Maximum Green (s)	39.0	18.0	10.0	55.0	18.0		19.0
Yellow Time (s)	4.0	3.0	4.0	4.0	3.0		4.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø9
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0		2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	4.0	6.0	6.0	4.0	4.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0
Recall Mode	Max	None	None	Max	None		None
Walk Time (s)							5.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							33
Act Effct Green (s)	40.4	61.9	55.8	55.8	17.6		
Actuated g/C Ratio	0.42	0.65	0.58	0.58	0.18		
v/c Ratio	0.70	0.16	0.63	0.55	0.87		
Control Delay	31.5	1.2	20.6	16.9	60.0		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	31.5	1.2	20.6	16.9	60.0		
LOS	C	A	C	B	E		
Approach Delay	23.9			17.9	60.0		
Approach LOS	C			B	E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 95.6			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 27.2		Intersection LOS: C	
Intersection Capacity Utilization 68.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Broadway & Cedar Street

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Group Flow (vph)	540	180	236	593	306
v/c Ratio	0.70	0.16	0.63	0.55	0.87
Control Delay	31.5	1.2	20.6	16.9	60.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	1.2	20.6	16.9	60.0
Queue Length 50th (ft)	319	0	83	266	176
Queue Length 95th (ft)	#471	15	#131	380	#343
Internal Link Dist (ft)	257			372	251
Turn Bay Length (ft)					
Base Capacity (vph)	773	1109	386	1088	362
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.70	0.16	0.61	0.55	0.85

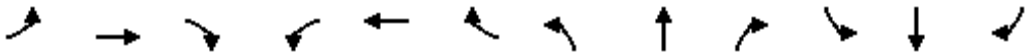
Intersection Summary

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	497	166	217	546	131	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	4.0	6.0	6.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.93	
Flt Protected	1.00	1.00	0.95	1.00	0.98	
Satd. Flow (prot)	1827	1599	1787	1863	1698	
Flt Permitted	1.00	1.00	0.22	1.00	0.98	
Satd. Flow (perm)	1827	1599	409	1863	1698	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	540	180	236	593	142	164
RTOR Reduction (vph)	0	73	0	0	38	0
Lane Group Flow (vph)	540	107	236	593	268	0
Heavy Vehicles (%)	4%	1%	1%	2%	2%	1%
Turn Type		pm+ov	pm+pt			
Protected Phases	4	2	3	8	2	
Permitted Phases		4	8			
Actuated Green, G (s)	40.6	58.2	55.9	55.9	17.6	
Effective Green, g (s)	40.6	58.2	55.9	55.9	17.6	
Actuated g/C Ratio	0.41	0.59	0.57	0.57	0.18	
Clearance Time (s)	6.0	4.0	6.0	6.0	4.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	755	948	363	1061	304	
v/s Ratio Prot	c0.30	0.02	0.06	c0.32	c0.16	
v/s Ratio Perm		0.05	0.31			
v/c Ratio	0.72	0.11	0.65	0.56	0.88	
Uniform Delay, d1	24.0	8.7	14.8	13.4	39.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.7	0.0	3.2	2.1	24.0	
Delay (s)	29.7	8.7	17.9	15.5	63.3	
Level of Service	C	A	B	B	E	
Approach Delay (s)	24.5			16.2	63.3	
Approach LOS	C			B	E	

Intersection Summary			
HCM Average Control Delay	27.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	98.2	Sum of lost time (s)	30.7
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	236	24	32	338	226	0	0	0	86	209	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.949						0.965	
Flt Protected		0.988			0.997						0.989	
Satd. Flow (prot)	0	1822	0	0	1761	0	0	0	0	0	1800	0
Flt Permitted		0.748			0.968						0.989	
Satd. Flow (perm)	0	1380	0	0	1710	0	0	0	0	0	1800	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			51						25	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		332			332			237			1258	
Travel Time (s)		7.5			7.5			5.4			28.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	0%	0%	3%	1%	2%	2%	2%	1%	1%	0%
Adj. Flow (vph)	88	257	26	35	367	246	0	0	0	93	227	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	371	0	0	648	0	0	0	0	0	434	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2					1	2	
Detector Template	Left	Thru		Left	Thru					Left	Thru	
Leading Detector (ft)	20	100		20	100					20	100	
Trailing Detector (ft)	0	0		0	0					0	0	
Detector 1 Position(ft)	0	0		0	0					0	0	
Detector 1 Size(ft)	20	6		20	6					20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8						6	
Permitted Phases	4			8						6		

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

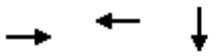
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8					6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0					4.0	4.0	
Minimum Split (s)	10.0	10.0		10.0	10.0					10.0	10.0	
Total Split (s)	32.0	32.0	0.0	32.0	32.0	0.0	0.0	0.0	0.0	24.0	24.0	0.0
Total Split (%)	45.1%	45.1%	0.0%	45.1%	45.1%	0.0%	0.0%	0.0%	0.0%	33.8%	33.8%	0.0%
Maximum Green (s)	28.0	28.0		28.0	28.0					20.0	20.0	
Yellow Time (s)	3.0	3.0		3.0	3.0					3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0					1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0					2.0	2.0	
Recall Mode	Max	Max		Max	Max					None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		28.8			28.8						17.0	
Actuated g/C Ratio		0.48			0.48						0.28	
v/c Ratio		0.56			0.77						0.83	
Control Delay		18.1			23.4						35.2	
Queue Delay		0.0			0.0						0.0	
Total Delay		18.1			23.4						35.2	
LOS		B			C						D	
Approach Delay		18.1			23.4						35.2	
Approach LOS		B			C						D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 71			
Actuated Cycle Length: 60.4			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 25.6		Intersection LOS: C	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Highland Avenue & Cedar Street

Lane Group	ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	15.0
Total Split (s)	15.0
Total Split (%)	21%
Maximum Green (s)	8.0
Yellow Time (s)	6.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	2.0
Recall Mode	None
Walk Time (s)	2.0
Flash Dont Walk (s)	3.0
Pedestrian Calls (#/hr)	51
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

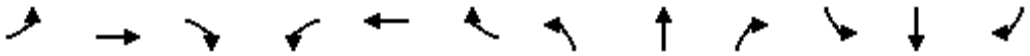
Intersection Summary



Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	371	648	434
v/c Ratio	0.56	0.77	0.83
Control Delay	18.1	23.4	35.2
Queue Delay	0.0	0.0	0.0
Total Delay	18.1	23.4	35.2
Queue Length 50th (ft)	118	224	156
Queue Length 95th (ft)	208	#426	#297
Internal Link Dist (ft)	252	252	1178
Turn Bay Length (ft)			
Base Capacity (vph)	660	841	629
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.56	0.77	0.69

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	236	24	32	338	226	0	0	0	86	209	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						1.00	
Frt		0.99			0.95						0.96	
Flt Protected		0.99			1.00						0.99	
Satd. Flow (prot)		1822			1761						1800	
Flt Permitted		0.75			0.97						0.99	
Satd. Flow (perm)		1379			1710						1800	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	88	257	26	35	367	246	0	0	0	93	227	114
RTOR Reduction (vph)	0	3	0	0	28	0	0	0	0	0	18	0
Lane Group Flow (vph)	0	368	0	0	620	0	0	0	0	0	416	0
Heavy Vehicles (%)	0%	3%	0%	0%	3%	1%	2%	2%	2%	1%	1%	0%
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		28.8			28.8						17.0	
Effective Green, g (s)		28.8			28.8						17.0	
Actuated g/C Ratio		0.45			0.45						0.27	
Clearance Time (s)		4.0			4.0						4.0	
Vehicle Extension (s)		2.0			2.0						2.0	
Lane Grp Cap (vph)		625			776						482	
v/s Ratio Prot												
v/s Ratio Perm		0.27			c0.36						0.23	
v/c Ratio		0.59			0.80						0.86	
Uniform Delay, d1		12.9			14.9						22.1	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		4.0			8.4						14.2	
Delay (s)		17.0			23.3						36.4	
Level of Service		B			C						D	
Approach Delay (s)		17.0			23.3			0.0			36.4	
Approach LOS		B			C			A			D	

Intersection Summary			
HCM Average Control Delay	25.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	17.7
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	16	13	310	0	0	366
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939					
Flt Protected	0.973					
Satd. Flow (prot)	1675	0	1863	0	0	1881
Flt Permitted	0.973					
Satd. Flow (perm)	1675	0	1863	0	0	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	588		1258			563
Travel Time (s)	13.4		28.6			12.8
Peak Hour Factor	0.92	0.92	0.92	0.25	0.92	0.92
Heavy Vehicles (%)	0%	8%	2%	0%	0%	1%
Adj. Flow (vph)	17	14	337	0	0	398
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	0	337	0	0	398
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	16	13	310	0	0	366
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.25	0.92	0.92
Hourly flow rate (vph)	17	14	337	0	0	398
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			1258			
pX, platoon unblocked						
vC, conflicting volume	735	337			337	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	735	337			337	
tC, single (s)	6.4	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.2	
p0 queue free %	96	98			100	
cM capacity (veh/h)	390	692			1234	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	32	337	398
Volume Left	17	0	0
Volume Right	14	0	0
cSH	485	1700	1700
Volume to Capacity	0.07	0.20	0.23
Queue Length 95th (ft)	5	0	0
Control Delay (s)	12.9	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.9	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (vph)	305	9	18	368	1	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996				0.882	
Flt Protected				0.998	0.994	
Satd. Flow (prot)	1856	0	0	1873	1450	0
Flt Permitted				0.998	0.994	
Satd. Flow (perm)	1856	0	0	1873	1450	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	563			454	551	
Travel Time (s)	12.8			10.3	12.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	6%	1%	0%	17%
Adj. Flow (vph)	332	10	20	400	1	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	342	0	0	420	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.0%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	305	9	18	368	1	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	332	10	20	400	1	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				785		
pX, platoon unblocked						
vC, conflicting volume			341		776	336
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			341		776	336
tC, single (s)			4.2		6.4	6.4
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.5
p0 queue free %			98		100	99
cM capacity (veh/h)			1196		363	673

Direction, Lane #	NB 1	SB 1	NW 1
Volume Total	341	420	8
Volume Left	0	20	1
Volume Right	10	0	7
cSH	1700	1196	600
Volume to Capacity	0.20	0.02	0.01
Queue Length 95th (ft)	0	1	1
Control Delay (s)	0.0	0.5	11.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.5	11.1
Approach LOS			B

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		44.0%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	6	3	279	33	13	379
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.960		0.986			
Flt Protected	0.966					0.998
Satd. Flow (prot)	1762	0	1829	0	0	1878
Flt Permitted	0.966					0.998
Satd. Flow (perm)	1762	0	1829	0	0	1878
Link Speed (mph)	30		30			30
Link Distance (ft)	95		454			331
Travel Time (s)	2.2		10.3			7.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	6%	0%	1%
Adj. Flow (vph)	7	3	303	36	14	412
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	339	0	0	426
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.5%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	6	3	279	33	13	379
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	3	303	36	14	412
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						331
pX, platoon unblocked						
vC, conflicting volume	761	321			339	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	761	321			339	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			99	
cM capacity (veh/h)	372	724			1231	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	10	339	426
Volume Left	7	0	14
Volume Right	3	36	0
cSH	444	1700	1231
Volume to Capacity	0.02	0.20	0.01
Queue Length 95th (ft)	2	0	1
Control Delay (s)	13.3	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	13.3	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		40.5%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø9
Lane Configurations							
Volume (vph)	632	218	235	451	79	154	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850			0.911		
Flt Protected			0.950		0.983		
Satd. Flow (prot)	1827	1583	1770	1776	1641	0	
Flt Permitted			0.109		0.983		
Satd. Flow (perm)	1827	1583	203	1776	1641	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		237			78		
Link Speed (mph)	30			30	30		
Link Distance (ft)	337			452	331		
Travel Time (s)	7.7			10.3	7.5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	4%	2%	2%	7%	7%	2%	
Adj. Flow (vph)	687	237	255	490	86	167	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	687	237	255	490	253	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			16	16		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		9	15		15	9	
Number of Detectors	1	1	1	1	1		
Detector Template					Left		
Leading Detector (ft)	40	40	40	40	20		
Trailing Detector (ft)	0	0	0	0	0		
Detector 1 Position(ft)	0	0	0	0	0		
Detector 1 Size(ft)	40	40	40	40	20		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Turn Type		pm+ov	pm+pt				
Protected Phases	4	2	3	8	2		9
Permitted Phases		4	8				
Detector Phase	4	2	3	8	2		
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	22.0	18.0	10.0	22.0	18.0		22.0
Total Split (s)	45.0	22.0	16.0	61.0	22.0	0.0	25.0
Total Split (%)	41.7%	20.4%	14.8%	56.5%	20.4%	0.0%	23%
Maximum Green (s)	39.0	18.0	10.0	55.0	18.0		19.0
Yellow Time (s)	4.0	3.0	4.0	4.0	3.0		4.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø9
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0		2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	4.0	6.0	6.0	4.0	4.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0
Recall Mode	Max	None	None	Max	None		None
Walk Time (s)							5.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							33
Act Effct Green (s)	40.1	58.0	56.6	56.6	13.9		
Actuated g/C Ratio	0.43	0.63	0.61	0.61	0.15		
v/c Ratio	0.87	0.22	0.85	0.45	0.81		
Control Delay	40.9	1.2	46.9	14.7	47.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	40.9	1.2	46.9	14.7	47.6		
LOS	D	A	D	B	D		
Approach Delay	30.7			25.7	47.6		
Approach LOS	C			C	D		

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 92.4			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 31.0		Intersection LOS: C	
Intersection Capacity Utilization 73.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Broadway & Cedar Street

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Group Flow (vph)	687	237	255	490	253
v/c Ratio	0.87	0.22	0.85	0.45	0.81
Control Delay	40.9	1.2	46.9	14.7	47.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	40.9	1.2	46.9	14.7	47.6
Queue Length 50th (ft)	447	0	107	200	113
Queue Length 95th (ft)	#710	17	#277	300	#223
Internal Link Dist (ft)	257			372	251
Turn Bay Length (ft)					
Base Capacity (vph)	793	1150	299	1087	391
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.87	0.21	0.85	0.45	0.65

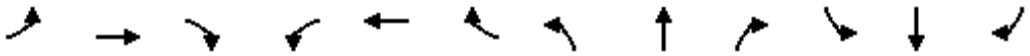
Intersection Summary

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	632	218	235	451	79	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	4.0	6.0	6.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.91	
Flt Protected	1.00	1.00	0.95	1.00	0.98	
Satd. Flow (prot)	1827	1583	1770	1776	1641	
Flt Permitted	1.00	1.00	0.11	1.00	0.98	
Satd. Flow (perm)	1827	1583	204	1776	1641	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	687	237	255	490	86	167
RTOR Reduction (vph)	0	102	0	0	67	0
Lane Group Flow (vph)	687	135	255	490	186	0
Heavy Vehicles (%)	4%	2%	2%	7%	7%	2%
Turn Type		pm+ov	pm+pt			
Protected Phases	4	2	3	8	2	
Permitted Phases		4	8			
Actuated Green, G (s)	40.3	54.2	56.6	56.6	13.9	
Effective Green, g (s)	40.3	54.2	56.6	56.6	13.9	
Actuated g/C Ratio	0.42	0.57	0.60	0.60	0.15	
Clearance Time (s)	6.0	4.0	6.0	6.0	4.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	775	903	291	1058	240	
v/s Ratio Prot	0.38	0.02	c0.09	0.28	c0.11	
v/s Ratio Perm		0.06	c0.43			
v/c Ratio	0.89	0.15	0.88	0.46	0.78	
Uniform Delay, d1	25.2	9.6	22.4	10.7	39.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	14.2	0.0	23.6	1.5	13.4	
Delay (s)	39.4	9.6	46.0	12.2	52.4	
Level of Service	D	A	D	B	D	
Approach Delay (s)	31.8			23.7	52.4	
Approach LOS	C			C	D	

Intersection Summary			
HCM Average Control Delay	31.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	266	14	98	352	70	0	0	0	158	230	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.982						0.965	
Flt Protected		0.993			0.991						0.985	
Satd. Flow (prot)	0	1811	0	0	1819	0	0	0	0	0	1752	0
Flt Permitted		0.885			0.865						0.985	
Satd. Flow (perm)	0	1614	0	0	1588	0	0	0	0	0	1752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			13						25	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		332			332			237			1258	
Travel Time (s)		7.5			7.5			5.4			28.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	7%	0%	2%	2%	2%	2%	2%	3%	2%	5%
Adj. Flow (vph)	52	289	15	107	383	76	0	0	0	172	250	147
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	356	0	0	566	0	0	0	0	0	569	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2					1	2	
Detector Template	Left	Thru		Left	Thru					Left	Thru	
Leading Detector (ft)	20	100		20	100					20	100	
Trailing Detector (ft)	0	0		0	0					0	0	
Detector 1 Position(ft)	0	0		0	0					0	0	
Detector 1 Size(ft)	20	6		20	6					20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8						6	
Permitted Phases	4			8						6		

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

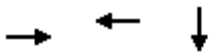
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8					6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0					4.0	4.0	
Minimum Split (s)	10.0	10.0		10.0	10.0					10.0	10.0	
Total Split (s)	32.0	32.0	0.0	32.0	32.0	0.0	0.0	0.0	0.0	24.0	24.0	0.0
Total Split (%)	45.1%	45.1%	0.0%	45.1%	45.1%	0.0%	0.0%	0.0%	0.0%	33.8%	33.8%	0.0%
Maximum Green (s)	28.0	28.0		28.0	28.0					20.0	20.0	
Yellow Time (s)	3.0	3.0		3.0	3.0					3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0					1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0					2.0	2.0	
Recall Mode	Max	Max		Max	Max					None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		28.3			28.3						20.2	
Actuated g/C Ratio		0.45			0.45						0.32	
v/c Ratio		0.49			0.79						0.99	
Control Delay		16.5			26.6						60.3	
Queue Delay		0.0			0.0						0.0	
Total Delay		16.5			26.6						60.3	
LOS		B			C						E	
Approach Delay		16.5			26.6						60.3	
Approach LOS		B			C						E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 71			
Actuated Cycle Length: 63.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 37.1		Intersection LOS: D	
Intersection Capacity Utilization 76.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Highland Avenue & Cedar Street

Lane Group	ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	15.0
Total Split (s)	15.0
Total Split (%)	21%
Maximum Green (s)	8.0
Yellow Time (s)	6.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	2.0
Recall Mode	None
Walk Time (s)	2.0
Flash Dont Walk (s)	3.0
Pedestrian Calls (#/hr)	51
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary

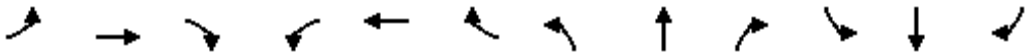


Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	356	566	569
v/c Ratio	0.49	0.79	0.99
Control Delay	16.5	26.6	60.3
Queue Delay	0.0	0.0	0.0
Total Delay	16.5	26.6	60.3
Queue Length 50th (ft)	106	202	~262
Queue Length 95th (ft)	182	#386	#446
Internal Link Dist (ft)	252	252	1178
Turn Bay Length (ft)			
Base Capacity (vph)	724	718	577
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.49	0.79	0.99

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	266	14	98	352	70	0	0	0	158	230	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						1.00	
Frt		0.99			0.98						0.97	
Flt Protected		0.99			0.99						0.99	
Satd. Flow (prot)		1811			1819						1753	
Flt Permitted		0.89			0.87						0.99	
Satd. Flow (perm)		1615			1589						1753	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	289	15	107	383	76	0	0	0	172	250	147
RTOR Reduction (vph)	0	2	0	0	7	0	0	0	0	0	17	0
Lane Group Flow (vph)	0	354	0	0	559	0	0	0	0	0	552	0
Heavy Vehicles (%)	0%	4%	7%	0%	2%	2%	2%	2%	2%	3%	2%	5%
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		28.3			28.3						20.2	
Effective Green, g (s)		28.3			28.3						20.2	
Actuated g/C Ratio		0.43			0.43						0.30	
Clearance Time (s)		4.0			4.0						4.0	
Vehicle Extension (s)		2.0			2.0						2.0	
Lane Grp Cap (vph)		689			678						534	
v/s Ratio Prot												
v/s Ratio Perm		0.22			c0.35						0.31	
v/c Ratio		0.51			0.82						1.03	
Uniform Delay, d1		13.9			16.8						23.0	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		2.7			10.9						47.7	
Delay (s)		16.7			27.7						70.7	
Level of Service		B			C						E	
Approach Delay (s)		16.7			27.7			0.0			70.7	
Approach LOS		B			C			A			E	

Intersection Summary			
HCM Average Control Delay	41.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	66.3	Sum of lost time (s)	17.8
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	41	10	178	0	0	466
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973					
Flt Protected	0.961					
Satd. Flow (prot)	1777	0	1863	0	0	1827
Flt Permitted	0.961					
Satd. Flow (perm)	1777	0	1863	0	0	1827
Link Speed (mph)	30		30			30
Link Distance (ft)	588		1258			563
Travel Time (s)	13.4		28.6			12.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	0%	0%	4%
Adj. Flow (vph)	45	11	193	0	0	507
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	0	193	0	0	507
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.5%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	41	10	178	0	0	466
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	45	11	193	0	0	507
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			1258			
pX, platoon unblocked						
vC, conflicting volume	700	193			193	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	700	193			193	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	99			100	
cM capacity (veh/h)	409	853			1392	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	55	193	507
Volume Left	45	0	0
Volume Right	11	0	0
cSH	455	1700	1700
Volume to Capacity	0.12	0.11	0.30
Queue Length 95th (ft)	10	0	0
Control Delay (s)	14.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	14.0	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	34.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (vph)	225	6	21	442	12	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996				0.926	
Flt Protected				0.998	0.978	
Satd. Flow (prot)	1839	0	0	1826	1657	0
Flt Permitted				0.998	0.978	
Satd. Flow (perm)	1839	0	0	1826	1657	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	563			454	551	
Travel Time (s)	12.8			10.3	12.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	0%	4%	0%	7%
Adj. Flow (vph)	245	7	23	480	13	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	252	0	0	503	29	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.0%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	225	6	21	442	12	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	245	7	23	480	13	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				785		
pX, platoon unblocked						
vC, conflicting volume			251		774	248
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			251		774	248
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			98		96	98
cM capacity (veh/h)			1326		363	779

Direction, Lane #	NB 1	SB 1	NW 1
Volume Total	251	503	29
Volume Left	0	23	13
Volume Right	7	0	16
cSH	1700	1326	516
Volume to Capacity	0.15	0.02	0.06
Queue Length 95th (ft)	0	1	5
Control Delay (s)	0.0	0.5	12.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.5	12.4
Approach LOS			B

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		50.0%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	28	13	218	30	24	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.957		0.984			
Flt Protected	0.967					0.997
Satd. Flow (prot)	1323	0	1831	0	0	1851
Flt Permitted	0.967					0.997
Satd. Flow (perm)	1323	0	1831	0	0	1851
Link Speed (mph)	30		30			30
Link Distance (ft)	95		454			331
Travel Time (s)	2.2		10.3			7.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	31%	37%	2%	3%	9%	2%
Adj. Flow (vph)	30	14	237	33	26	473
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	0	270	0	0	499
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	28	13	218	30	24	435
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	14	237	33	26	473
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						331
pX, platoon unblocked						
vC, conflicting volume	778	253			270	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	778	253			270	
tC, single (s)	6.7	6.6			4.2	
tC, 2 stage (s)						
tF (s)	3.8	3.6			2.3	
p0 queue free %	90	98			98	
cM capacity (veh/h)	320	707			1255	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	45	270	499
Volume Left	30	0	26
Volume Right	14	33	0
cSH	387	1700	1255
Volume to Capacity	0.12	0.16	0.02
Queue Length 95th (ft)	10	0	2
Control Delay (s)	15.5	0.0	0.6
Lane LOS	C		A
Approach Delay (s)	15.5	0.0	0.6
Approach LOS	C		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø9
Lane Configurations							
Volume (vph)	497	168	220	546	132	153	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850			0.927		
Flt Protected			0.950		0.977		
Satd. Flow (prot)	1827	1599	1787	1863	1696	0	
Flt Permitted			0.215		0.977		
Satd. Flow (perm)	1827	1599	404	1863	1696	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		183			46		
Link Speed (mph)	30			30	30		
Link Distance (ft)	337			452	331		
Travel Time (s)	7.7			10.3	7.5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	4%	1%	1%	2%	2%	1%	
Adj. Flow (vph)	540	183	239	593	143	166	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	540	183	239	593	309	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	12			12	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			16	16		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		9	15		15	9	
Number of Detectors	1	1	1	1	1		
Detector Template					Left		
Leading Detector (ft)	40	40	40	40	20		
Trailing Detector (ft)	0	0	0	0	0		
Detector 1 Position(ft)	0	0	0	0	0		
Detector 1 Size(ft)	40	40	40	40	20		
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		
Turn Type		pm+ov	pm+pt				
Protected Phases	4	2	3	8	2		9
Permitted Phases		4	8				
Detector Phase	4	2	3	8	2		
Switch Phase							
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0
Minimum Split (s)	22.0	18.0	10.0	22.0	18.0		22.0
Total Split (s)	45.0	22.0	16.0	61.0	22.0	0.0	25.0
Total Split (%)	41.7%	20.4%	14.8%	56.5%	20.4%	0.0%	23%
Maximum Green (s)	39.0	18.0	10.0	55.0	18.0		19.0
Yellow Time (s)	4.0	3.0	4.0	4.0	3.0		4.0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø9
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0		2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	4.0	6.0	6.0	4.0	4.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0
Recall Mode	Max	None	None	Max	None		None
Walk Time (s)							5.0
Flash Dont Walk (s)							11.0
Pedestrian Calls (#/hr)							33
Act Effct Green (s)	40.3	62.0	55.8	55.8	17.8		
Actuated g/C Ratio	0.42	0.65	0.58	0.58	0.19		
v/c Ratio	0.70	0.17	0.64	0.55	0.88		
Control Delay	31.7	1.2	21.2	17.0	60.0		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	31.7	1.2	21.2	17.0	60.0		
LOS	C	A	C	B	E		
Approach Delay	24.0			18.2	60.0		
Approach LOS	C			B	E		

Intersection Summary			
Area Type:	Other		
Cycle Length: 108			
Actuated Cycle Length: 95.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 27.4		Intersection LOS: C	
Intersection Capacity Utilization 68.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Broadway & Cedar Street

Lane Group	EBT	EBR	WBL	WBT	NBL
Lane Group Flow (vph)	540	183	239	593	309
v/c Ratio	0.70	0.17	0.64	0.55	0.88
Control Delay	31.7	1.2	21.2	17.0	60.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	1.2	21.2	17.0	60.0
Queue Length 50th (ft)	319	0	84	266	179
Queue Length 95th (ft)	#471	15	#137	380	#348
Internal Link Dist (ft)	257			372	251
Turn Bay Length (ft)					
Base Capacity (vph)	768	1106	381	1085	361
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.70	0.17	0.63	0.55	0.86

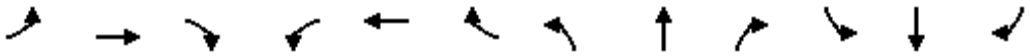
Intersection Summary

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	497	168	220	546	132	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	4.0	6.0	6.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.93	
Flt Protected	1.00	1.00	0.95	1.00	0.98	
Satd. Flow (prot)	1827	1599	1787	1863	1698	
Flt Permitted	1.00	1.00	0.21	1.00	0.98	
Satd. Flow (perm)	1827	1599	404	1863	1698	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	540	183	239	593	143	166
RTOR Reduction (vph)	0	75	0	0	38	0
Lane Group Flow (vph)	540	108	239	593	271	0
Heavy Vehicles (%)	4%	1%	1%	2%	2%	1%
Turn Type		pm+ov	pm+pt			
Protected Phases	4	2	3	8	2	
Permitted Phases		4	8			
Actuated Green, G (s)	40.4	58.2	55.8	55.8	17.8	
Effective Green, g (s)	40.4	58.2	55.8	55.8	17.8	
Actuated g/C Ratio	0.41	0.59	0.57	0.57	0.18	
Clearance Time (s)	6.0	4.0	6.0	6.0	4.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	
Lane Grp Cap (vph)	750	946	361	1056	307	
v/s Ratio Prot	c0.30	0.02	0.06	c0.32	c0.16	
v/s Ratio Perm		0.05	0.31			
v/c Ratio	0.72	0.11	0.66	0.56	0.88	
Uniform Delay, d1	24.3	8.8	15.0	13.5	39.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.9	0.0	3.5	2.2	24.0	
Delay (s)	30.2	8.8	18.5	15.7	63.3	
Level of Service	C	A	B	B	E	
Approach Delay (s)	24.8			16.5	63.3	
Approach LOS	C			B	E	

Intersection Summary			
HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	30.8
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	236	24	32	338	227	0	0	0	86	210	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		100	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.949						0.965	
Flt Protected		0.988			0.997						0.989	
Satd. Flow (prot)	0	1823	0	0	1761	0	0	0	0	0	1800	0
Flt Permitted		0.744			0.968						0.989	
Satd. Flow (perm)	0	1372	0	0	1710	0	0	0	0	0	1800	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			51						25	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		332			332			237			1258	
Travel Time (s)		7.5			7.5			5.4			28.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	0%	0%	3%	1%	2%	2%	2%	1%	1%	0%
Adj. Flow (vph)	89	257	26	35	367	247	0	0	0	93	228	114
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	372	0	0	649	0	0	0	0	0	435	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2					1	2	
Detector Template	Left	Thru		Left	Thru					Left	Thru	
Leading Detector (ft)	20	100		20	100					20	100	
Trailing Detector (ft)	0	0		0	0					0	0	
Detector 1 Position(ft)	0	0		0	0					0	0	
Detector 1 Size(ft)	20	6		20	6					20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0					0.0	0.0	
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8						6	
Permitted Phases	4			8						6		

Lane Group	ø9
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

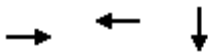
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8					6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0					4.0	4.0	
Minimum Split (s)	10.0	10.0		10.0	10.0					10.0	10.0	
Total Split (s)	32.0	32.0	0.0	32.0	32.0	0.0	0.0	0.0	0.0	24.0	24.0	0.0
Total Split (%)	45.1%	45.1%	0.0%	45.1%	45.1%	0.0%	0.0%	0.0%	0.0%	33.8%	33.8%	0.0%
Maximum Green (s)	28.0	28.0		28.0	28.0					20.0	20.0	
Yellow Time (s)	3.0	3.0		3.0	3.0					3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0					1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0					2.0	2.0	
Recall Mode	Max	Max		Max	Max					None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		28.7			28.7						17.0	
Actuated g/C Ratio		0.48			0.48						0.28	
v/c Ratio		0.57			0.77						0.83	
Control Delay		18.2			23.5						35.4	
Queue Delay		0.0			0.0						0.0	
Total Delay		18.2			23.5						35.4	
LOS		B			C						D	
Approach Delay		18.2			23.5						35.4	
Approach LOS		B			C						D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 71			
Actuated Cycle Length: 60.4			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 25.7		Intersection LOS: C	
Intersection Capacity Utilization 74.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Highland Avenue & Cedar Street

Lane Group	ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	15.0
Total Split (s)	15.0
Total Split (%)	21%
Maximum Green (s)	8.0
Yellow Time (s)	6.0
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	2.0
Recall Mode	None
Walk Time (s)	2.0
Flash Dont Walk (s)	3.0
Pedestrian Calls (#/hr)	51
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

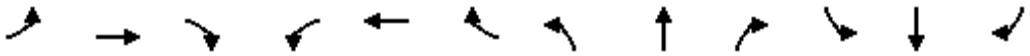
Intersection Summary



Lane Group	EBT	WBT	SBT
Lane Group Flow (vph)	372	649	435
v/c Ratio	0.57	0.77	0.83
Control Delay	18.2	23.5	35.4
Queue Delay	0.0	0.0	0.0
Total Delay	18.2	23.5	35.4
Queue Length 50th (ft)	118	225	156
Queue Length 95th (ft)	210	#427	#299
Internal Link Dist (ft)	252	252	1178
Turn Bay Length (ft)			
Base Capacity (vph)	656	840	628
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.57	0.77	0.69

Intersection Summary

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



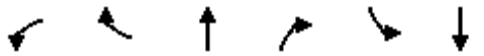
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	236	24	32	338	227	0	0	0	86	210	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0						4.0	
Lane Util. Factor		1.00			1.00						1.00	
Frt		0.99			0.95						0.96	
Flt Protected		0.99			1.00						0.99	
Satd. Flow (prot)		1822			1761						1800	
Flt Permitted		0.74			0.97						0.99	
Satd. Flow (perm)		1371			1709						1800	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	89	257	26	35	367	247	0	0	0	93	228	114
RTOR Reduction (vph)	0	3	0	0	28	0	0	0	0	0	18	0
Lane Group Flow (vph)	0	369	0	0	621	0	0	0	0	0	417	0
Heavy Vehicles (%)	0%	3%	0%	0%	3%	1%	2%	2%	2%	1%	1%	0%
Turn Type	Perm			Perm						Perm		
Protected Phases		4			8						6	
Permitted Phases	4			8						6		
Actuated Green, G (s)		28.7			28.7						17.0	
Effective Green, g (s)		28.7			28.7						17.0	
Actuated g/C Ratio		0.45			0.45						0.27	
Clearance Time (s)		4.0			4.0						4.0	
Vehicle Extension (s)		2.0			2.0						2.0	
Lane Grp Cap (vph)		621			774						483	
v/s Ratio Prot												
v/s Ratio Perm		0.27			c0.36						0.23	
v/c Ratio		0.59			0.80						0.86	
Uniform Delay, d1		13.0			14.9						22.1	
Progression Factor		1.00			1.00						1.00	
Incremental Delay, d2		4.1			8.6						14.2	
Delay (s)		17.1			23.5						36.3	
Level of Service		B			C						D	
Approach Delay (s)		17.1			23.5			0.0			36.3	
Approach LOS		B			C			A			D	

Intersection Summary			
HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	63.4	Sum of lost time (s)	17.7
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	16	13	312	0	0	367
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.939					
Flt Protected	0.973					
Satd. Flow (prot)	1675	0	1863	0	0	1881
Flt Permitted	0.973					
Satd. Flow (perm)	1675	0	1863	0	0	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	588		1258			563
Travel Time (s)	13.4		28.6			12.8
Peak Hour Factor	0.92	0.92	0.92	0.25	0.92	0.92
Heavy Vehicles (%)	0%	8%	2%	0%	0%	1%
Adj. Flow (vph)	17	14	339	0	0	399
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	0	339	0	0	399
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	16	13	312	0	0	367
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.25	0.92	0.92
Hourly flow rate (vph)	17	14	339	0	0	399
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			1258			
pX, platoon unblocked						
vC, conflicting volume	738	339			339	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	738	339			339	
tC, single (s)	6.4	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.2	
p0 queue free %	96	98			100	
cM capacity (veh/h)	388	690			1231	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	32	339	399
Volume Left	17	0	0
Volume Right	14	0	0
cSH	483	1700	1700
Volume to Capacity	0.07	0.20	0.23
Queue Length 95th (ft)	5	0	0
Control Delay (s)	13.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.0	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (vph)	308	9	18	373	1	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996				0.882	
Flt Protected				0.998	0.994	
Satd. Flow (prot)	1856	0	0	1873	1450	0
Flt Permitted				0.998	0.994	
Satd. Flow (perm)	1856	0	0	1873	1450	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	563			454	551	
Travel Time (s)	12.8			10.3	12.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	6%	1%	0%	17%
Adj. Flow (vph)	335	10	20	405	1	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	345	0	0	425	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Volume (veh/h)	308	9	18	373	1	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	335	10	20	405	1	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				785		
pX, platoon unblocked						
vC, conflicting volume			345		784	340
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			345		784	340
tC, single (s)			4.2		6.4	6.4
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.5
p0 queue free %			98		100	99
cM capacity (veh/h)			1192		359	670

Direction, Lane #	NB 1	SB 1	NW 1
Volume Total	345	425	8
Volume Left	0	20	1
Volume Right	10	0	7
cSH	1700	1192	596
Volume to Capacity	0.20	0.02	0.01
Queue Length 95th (ft)	0	1	1
Control Delay (s)	0.0	0.5	11.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.5	11.1
Approach LOS			B

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		44.3%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	6	3	282	33	13	384
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.960		0.986			
Flt Protected	0.966					0.998
Satd. Flow (prot)	1762	0	1829	0	0	1878
Flt Permitted	0.966					0.998
Satd. Flow (perm)	1762	0	1829	0	0	1878
Link Speed (mph)	30		30			30
Link Distance (ft)	95		454			331
Travel Time (s)	2.2		10.3			7.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	2%	6%	0%	1%
Adj. Flow (vph)	7	3	307	36	14	417
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	343	0	0	431
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	6	3	282	33	13	384
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	3	307	36	14	417
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						331
pX, platoon unblocked						
vC, conflicting volume	770	324			342	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	770	324			342	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			99	
cM capacity (veh/h)	367	721			1228	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	10	342	432
Volume Left	7	0	14
Volume Right	3	36	0
cSH	439	1700	1228
Volume to Capacity	0.02	0.20	0.01
Queue Length 95th (ft)	2	0	1
Control Delay (s)	13.4	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	13.4	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		40.7%	ICU Level of Service
Analysis Period (min)		15	