

TRAFFIC-IMPACT AND ACCESS STUDY

**135 GREENMONT AVENUE
DRACUT, MASSACHUSETTS**

Revised March 19, 2024

Prepared for Branco Perego

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TEPP LLC

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CONTENTS

SUMMARY1

 Project Description.....1

 Study Approach1

 Trip Generation.....1

 Capacity Analysis2

INTRODUCTION3

 Project Description.....3

 Study Approach3

EXISTING CONDITIONS.....7

 Introduction.....7

 Physical Conditions7

 Traffic Volumes13

 Vehicle Speeds.....14

 Sight Distances.....14

 Crash History16

 Pedestrians, Bicycles, and Transit19

FUTURE CONDITIONS.....21

 Introduction.....21

 Planned Road Improvements21

 Background-Traffic Growth21

 No-Build Traffic Volumes22

 Trip Generation.....24

 Trip Distribution and Network Assignment25

 Build Traffic Volumes25

 Traffic-Volume Changes25

CAPACITY ANALYSIS.....29

 Introduction.....29

 Methods.....29

Results.....30

CONCLUSION.....35

 Project Description.....35

 Trip Generation.....35

 Capacity Analysis35

APPENDIX

 Appendix A: Project Plan

 Appendix B: Traffic Counts

 Appendix C: Traffic-Volume Adjustments

 Appendix D: Vehicle Speeds

 Appendix E: Crash-Rate Worksheets

 Appendix F: Transit

 Appendix G: Synchro Reports

TABLES

Table 1. Existing streets..... 9

Table 2. Existing intersections..... 10

Table 3. 2023 existing traffic volumes..... 14

Table 4. Vehicle speeds. 16

Table 5. Sight distances. 17

Table 6. Crash history. 18

Table 6. Crash history, continued. 19

Table 7. Background-traffic growth..... 22

Table 8. Calculated trip generation..... 24

Table 9. Trip distribution and network assignment. 25

Table 10. Traffic-volume changes. 28

Table 11. Level-of-service measures for intersections. 30

Table 12. Capacity-analysis summary. 31

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FIGURES

Figure 1. Site location. 4

Figure 2. Study area..... 5

Figure 3. 2023 existing traffic volumes..... 15

Figure 4. 2030 no-build traffic volumes..... 23

Figure 5. Added site trips. 26

Figure 6. 2030 build traffic volumes. 27

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SUMMARY

PROJECT DESCRIPTION

Branco Perego has retained TEPP LLC to prepare this traffic-impact and access study (TIAS) regarding the proposed residential redevelopment at 135 Greenmont Avenue in the Town of Dracut, Massachusetts.

The redevelopment will replace one single-family-detached dwelling unit with 28 single-family-attached dwelling units. Existing and proposed vehicular access is via one unsignalized driveway along the south side of Greenmont Avenue west of Bridge Street.

STUDY APPROACH

The TIAS study area consists of the following intersections:

- Pleasant Street/Greenmont Avenue
- Bridge Street/Pleasant Street/Arlington Street
- Bridge Street/Greenmont Avenue/Green Street
- Greenmont Avenue/driveway

This TIAS analyzes traffic operations for the following time periods:

- weekday AM-street-peak hour
- weekday PM-street-peak hour

The TIAS analyzed traffic operations under the following conditions:

- 2023 existing
- 2030 no build (with background-traffic growth)
- 2030 build (with background-traffic growth and the proposed redevelopment)

Differences in traffic operations between the no-build and build conditions approximate traffic impacts of the proposed redevelopment.

TRIP GENERATION

Added site trips due to the proposed redevelopment are:

- weekday daily, 154 (total of in and out)
- weekday AM-street-peak hour, 8 (2 in and 6 out)
- weekday PM-street-peak hour, 12 (7 in and 5 out)

CAPACITY ANALYSIS

TEPP LLC conducted capacity analysis as relevant:

- for study-area intersections
- under 2023 existing, 2030 no-build, and 2030 build conditions, as described above
- for the weekday AM-street-peak hour and weekday PM-street-peak hour
- to calculate levels of service (LOS), delays, volume-to-capacity ratios (V/C), and/or queues

Capacity-analysis findings, without or with the project, are the:

- Pleasant Street/Greenmont Avenue intersection shows low-to-moderate peak-hour delays
- Bridge Street/Pleasant Street/Arlington Street intersection shows overall low-to-moderate peak-hour delays
- Bridge Street/Greenmont Avenue/Green Street intersection shows low-to-moderate delays for the weekday AM-street-peak hour
- Bridge Street/Greenmont Avenue/Green Street intersection shows low delays to delayed operations for the weekday PM-street-peak hour
- Greenmont Avenue/driveway intersection shows low peak-hour delays

The project does not have a significant impact on overall area traffic operations.

INTRODUCTION

PROJECT DESCRIPTION

Branco Perego has retained TEPP LLC to prepare this TIAS regarding the proposed residential redevelopment at 135 Greenmont Avenue in the Town of Dracut, Massachusetts. Figure 1 shows the site location.

The redevelopment will replace one single-family-detached dwelling unit with 28 single-family-attached dwelling units. Existing and proposed vehicular access is via one unsignalized driveway along the south side of Greenmont Avenue west of Bridge Street.

STUDY APPROACH

Figure 2 shows the TIAS study area. The study area consists of the following intersections:

- Pleasant Street/Greenmont Avenue
- Bridge Street/Pleasant Street/Arlington Street
- Bridge Street/Greenmont Avenue/Green Street
- Greenmont Avenue/driveway

This TIAS analyzes traffic operations for the following time periods:

- weekday AM-street-peak hour
- weekday PM-street-peak hour

The TIAS analyzed traffic operations under the following conditions:

- 2023 existing
- 2030 no build (with background-traffic growth)
- 2030 build (with background-traffic growth and the proposed redevelopment)

Differences in traffic operations between the no-build and build conditions approximate traffic impacts of the proposed redevelopment.

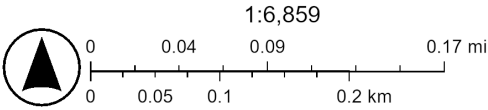


Figure 1. Site location.



3/12/2024

 Study-Area Intersection



Esri Community Maps Contributors, MassGIS, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS

Figure 2. Study area.

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EXISTING CONDITIONS

INTRODUCTION

Existing conditions include:

- physical conditions of the transportation network, roads, and intersections
- traffic volumes
- other relevant information

PHYSICAL CONDITIONS

INTRODUCTION

Figures 1 and 2 show the transportation network, which includes the following existing streets:

- Pleasant Street (Massachusetts Route 113 or MA 113)
- Bridge Street (MA 38)
- Greenmont Avenue

Table 1 includes information on the above streets.

Figure 2 shows the following existing intersections:

- Pleasant Street/Greenmont Avenue
- Bridge Street/Pleasant Street/Arlington Street
- Bridge Street/Greenmont Avenue/Green Street
- Greenmont Avenue/driveway

Table 2 includes information on the above intersections.

PLEASANT STREET

Pleasant Street in the study area:

- is overall oriented approximately east-west
- is an arterial highway, also known as MA 113

- to/from the west, connects with the City of Lowell, Massachusetts, and the Town of Tyngsborough, Massachusetts
- to/from the east, connects with the City of Methuen, Massachusetts, via Arlington Street, also known as MA 113
- has a curvilinear horizontal alignment
- has minor grades
- generally has a two-lane undivided divided cross-section
- has asphaltic cement concrete (ACC) pavement in overall good condition
- has a posted speed limit of 35 miles per hour (mph)
- has sidewalk on the south side
- has luminaires on some utility poles
- has nearby mixed land uses, including a park and a fire station
- is under the jurisdiction of Town of Dracut

BRIDGE STREET

Bridge Street in the study area:

- is overall oriented approximately north-south
- is an arterial highway, also known as MA 38
- to/from the south, connects with the City of Lowell
- to/from the north, connects with the Town of Pelham, New Hampshire
- has a curvilinear horizontal alignment
- has minor grades
- generally has a two-lane undivided divided cross-section
- has ACC pavement in overall fair-to-good condition
- has a posted speed limit of 30 mph
- has utility poles along either side, depending on location
- has luminaires on some utility poles
- has nearby mixed land uses
- is under the jurisdiction of the Town of Dracut

Table 1. Existing streets.

Characteristics	Existing Streets		
	Pleasant Street (Massachusetts Route 113)	Bridge Street (Massachusetts Route 38)	Greenmont Avenue
Approximate Orientation	East-West	North-South	Northeast-Southwest
Jurisdiction	Town of Dracut	Town of Dracut	Town of Dracut
Functional Classification	arterial	arterial	collector
Connections	west, City of Lowell, Massachusetts west, Town of Tyngsborough, Massachusetts east, City of Methuen, Massachusetts, via Arlington Street	south, City of Lowell north, Town of Pelham, New Hampshire	southwest, terminates at Pleasant Street northeast, terminates at Bridge Street
Horizontal Alignment	curvilinear	curvilinear	curvilinear urn about 400 feet (ft) West of Site
Vertical Alignment	minor grades	minor grades	minor grades
General Cross Section	2-lane undivided	2-lane undivided	2-lane undivided
Pavement Type	asphalt-cement concrete (ACC)	ACC	ACC
Pavement Condition	good overall	fair to good overall	fair to good overall
Parking	no parked vehicles observed	few parked vehicles observed	few parked vehicles observed
Speed Limit (miles per hour or mph)	35 posted	30 posted	30 posted
Sidewalk	south side	limited	no
Bicycle Facilities	shared travel lane	shared travel lane	shared travel lane
Transit	Lowell Regional Transit Authority (LRTA) Bus Route 10 runs west of Greenmont Avenue runs east of Bridge Street stops near Pleasant Street	LRTA Bus Route 10 runs south of Greenmont Avenue stops near Lafayette Street	LRTA Bus Route 10 runs along length of street stops near Vermont Street
Utility Poles	south side at Greenmont Avenue north side east of Greenmont Avenue	either side, depending on location	southeast side
Illumination	luminaires on some utility poles	luminaires on some utility poles	luminaires on some utility poles
Land Uses	mixed, park, fire station	mixed	residential, elementary school

Table 2. Existing intersections.

Characteristics	Existing Intersections			
	Pleasant Street/Greenmont Avenue	Bridge Street/Pleasant Street/Arlington Street	Bridge Street/Greenmont Avenue/Green Street	Greenmont Avenue/Driveway
Jurisdiction	Town of Dracut	Town of Dracut	Town of Dracut	Town of Dracut
Configuration	three legs	four legs	offset four legs	three legs
Major-Street Approach Lanes	Pleasant Street EB 1 LT Pleasant Street WB 1 TR	Pleasant Street EB 1 L Pleasant Street EB 1 TR Arlington Street WB 1 L Arlington Street WB 1 TR	Bridge Street NB 1 LTR Bridge Street SB 1 LTR	Greenmont Avenue EB 1 TR Greenmont Avenue WB 1 LT
Minor-Street Approach Lanes	Greenmont Avenue SB 1 LR	Bridge Street NB 1 L Bridge Street NB 1 TR Bridge Street SB 1 L Bridge Street SB 1 TR	Greenmont Avenue EB 1 LTR Green Street WB 1 LTR	Driveway NB 1 LR
Control	two-way STOP Greenmont Avenue SB STOP Sign	signalized fully Actuated Arlington Street WB L protected/permitted Pleasant Street EB R NO TURN ON RED exclusive pedestrian phase	two-way STOP Greenmont Avenue EB STOP Sign Green Street WB STOP without Sign	two-way STOP driveway NB STOP without sign
Marked Crosswalks	no	all legs	no	no
Bicycle Facilities	shared travel lanes	shared travel lanes	shared travel lanes	shared travel lanes
Transit	LRTA Bus Route 10 runs Through Intersection stops near intersection	LRTA Bus Route 10 runs through intersection stops near intersection	LRTA Bus Route 10 runs through intersection	LRTA Bus Route 10 runs through intersection
Illumination	no	yes	yes	yes
Land Uses	residential	commercial, park, church	residential	residential

EB = eastbound, WB = westbound, SB = southbound, NB = northbound, U = U-turn, L = left turn, T = through movement, R = right turn.

GREENMONT AVENUE

Greenmont Avenue in the study area:

- is overall oriented approximately northeast-southwest
- is a collector street
- to/from the southwest, terminates at Pleasant Street
- to/from the northeast, terminates at Bridge Street
- has a curvilinear horizontal alignment including a turn about 400 feet (ft) west of the project site
- has minor grades
- has a two-lane undivided divided cross-section
- has ACC pavement in overall fair-to-good condition
- has a posted speed limit of 30 mph
- has utility poles along either side, depending on location
- has luminaires on some utility poles
- has nearby residential land uses and an elementary school
- is under the jurisdiction of the Town of Dracut

PLEASANT STREET/GREENMONT AVENUE INTERSECTION

This intersection:

- has a three-legged configuration
- has Pleasant Street as the major east-west street and Greenmont Avenue as the minor north leg
- has one-lane approaches
- has a STOP sign on the Greenmont Avenue southbound approach
- has nearby residential land uses
- is under the jurisdiction of the Town of Dracut

BRIDGE STREET/PLEASANT STREET/ARLINGTON STREET INTERSECTION

The intersection:

- has a four-legged configuration
- has Pleasant Street as the major west leg, Arlington Street as the major east leg, and Bridge Street as the minor north and south legs
- on each approach, has one left-turn lane and one through-movement/right-turn lane
- has marked crosswalks on all legs
- is under traffic-signal control, with protected-permitted left turns on the Arlington Street westbound approach and with pedestrian signal indications
- prohibits right turns on red from the Pleasant Street eastbound approach
- is illuminated
- has nearby commercial land uses, a park, and a church
- is under the jurisdiction of the Town of Dracut

BRIDGE STREET/GREENMONT AVENUE/GREEN STREET INTERSECTION

The intersection:

- has an offset four-legged configuration
- has Bridge Street as the major north-south street, Greenmont Avenue as the minor west leg, and Green Street as the minor east leg
- has one-lane approaches
- has a STOP sign on the Greenmont Avenue eastbound approach
- has no STOP sign on the Green Street westbound approach, which operates as if under STOP-sign control
- is illuminated
- has nearby residential land uses
- is under the jurisdiction of the Town of Dracut

GREENMONT AVENUE/DRIVEWAY INTERSECTION

The intersection:

- has a three-legged configuration
- has Greenmont Avenue as the major east-west street and the driveway as the minor south leg
- has one-lane approaches
- has the driveway northbound approach operating as if under STOP-sign control

- is illuminated
- has nearby residential land uses
- is under the jurisdiction of the Town of Dracut

TRAFFIC VOLUMES

TRAFFIC COUNTS

TEPP LLC obtained an automatic traffic recorder (ATR):

- from Tuesday, November 28, 2023, through Wednesday, November 29, 2023
- on Greenmont Avenue west of Bridge Street

TEPP LLC obtained turning movement counts (TMCs):

- from 7:00 to 9:00 AM and 3:00 to 6:00 PM on Tuesday, November 28, 2023
- at the Pleasant Street/Greenmont Avenue intersection
- at the Bridge Street/Pleasant Street/Arlington Street intersection
- at the Bridge Street/Greenmont Avenue/Green Street intersection

The traffic-count data are in Appendix B.

MONTHLY VARIATION

As shown in Appendix C, the Massachusetts Department of Transportation (MassDOT) reported June with volumes about 1 percent greater-than-average month.¹ Conservatively, TEPP LLC did not reduce the ATR and TMCs.

RESULTS

Table 3 and Figure 3 show 2023 existing traffic volumes.²

Greenmont Avenue west of Bridge Street showed about:

- 1,264 weekday-daily vehicles
- 94 vehicles during the weekday AM-street-peak hour, 50-percent eastbound and 50-percent westbound

¹ MassDOT, Statewide Traffic Data Collection, 2019 Weekday Seasonal Factors, Factor Group U4-U7.

² Driveway volumes are calculated.

Table 3. 2023 existing traffic volumes.

Location and Time Period	Vehicles ^a	K-factor ^b	Percent Direction
Greenmont Avenue West of Bridge Street			
Weekday Daily	1,264	---	---
Weekday AM-Street-Peak Hour	94	7.4	50 Eastbound, 50 Westbound
Weekday PM-Street-Peak Hour	156	12.3	62 Eastbound, 38 Westbound

^a Two-way-total volumes.

^b K = hour volume as percent of daily volume.

- 156 vehicles during the weekday PM-street-peak hour, 62-percent eastbound and 38-percent westbound

VEHICLE SPEEDS

The ATR collected vehicle speeds:

- from Tuesday, November 28, 2023, through Wednesday, November 29, 2023
- on Greenmont Avenue west of Bridge Street

The data are in Appendix D and are summarized in Table 2.

Table 4 indicates that on Greenmont Avenue the:

- speed limit was 30 mph
- eastbound mean speed³ was 22 mph and the 85th percentile speed⁴ was 25 mph
- westbound mean speed was 23 mph and the 85th percentile speed was 27 mph

SIGHT DISTANCES

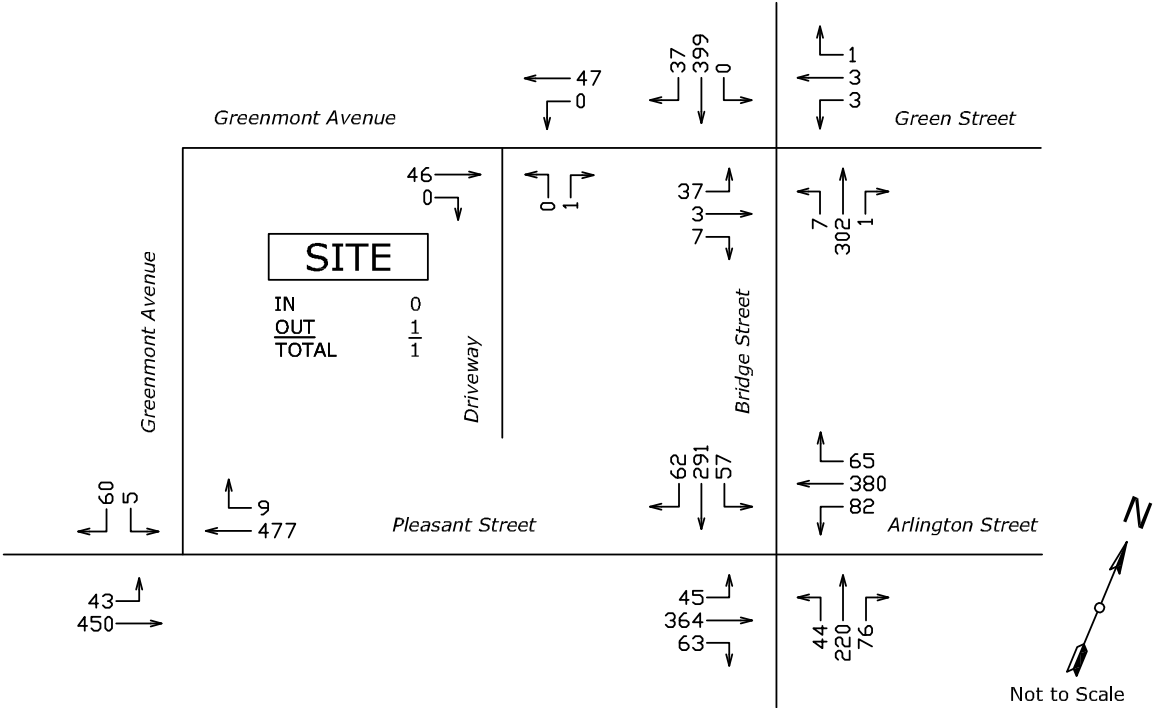
The American Association of State Highway and Transportation Officials (AASHTO) has established authoritative policy for sight distances at unsignalized intersections in terms of:

- stopping sight distance (SSD)
- optional intersection sight distance (ISD)⁵

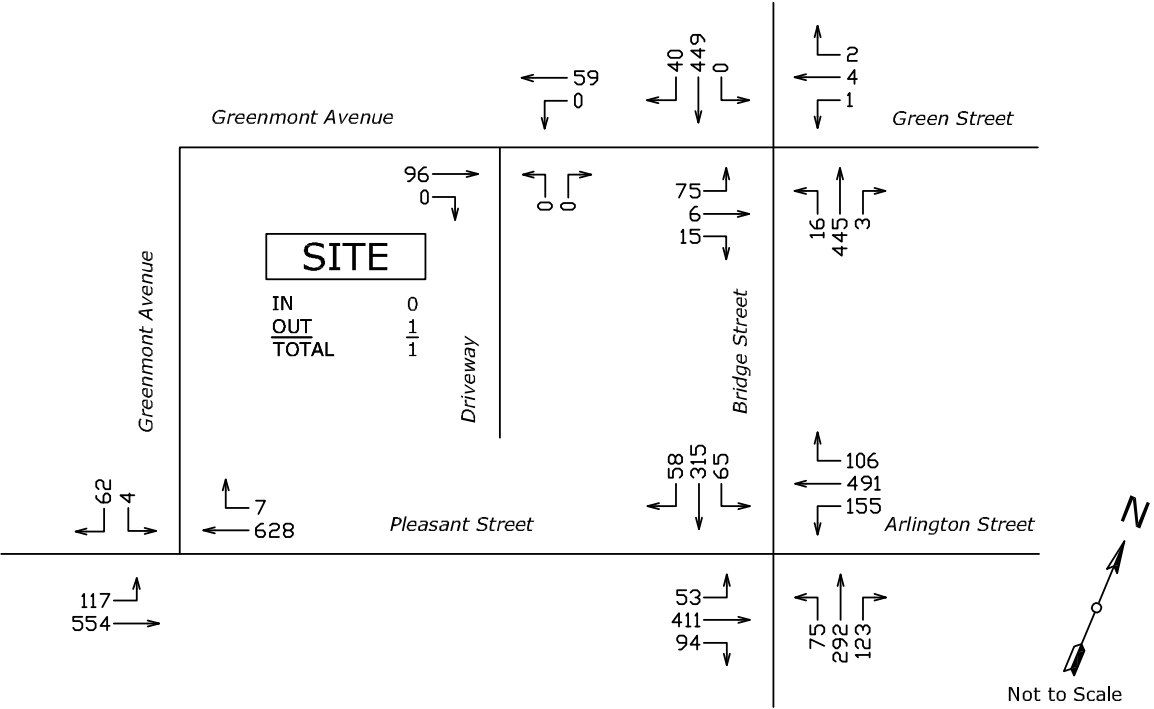
³ Mean speed is the average speed.

⁴ 85th-percentile speed is the speed at which or below 85 percent of vehicles travel.

⁵ AASHTO, *A Policy on Geometric Design of Highways and Streets*, 7th Edition (Washington, DC, 2018), pages 9-35 to 9-36.



Weekday AM-Street-Peak-Hour



Weekday PM-Street-Peak Hour

Figure 3. 2023 existing traffic volumes.

Table 4. Vehicle speeds.

Location and Direction	Speed Limit (mph)	Observed Speeds (mph) ^a		
		Mean ^b	Pace ^c	85 th Percentile ^d
Greenmont Avenue West of Bridge Street				
Eastbound	30	22	15-24	25
Westbound	30	23	18-27	27

^a From ATR from Tuesday, November 28, 2023, through Wednesday, November 29, 2023.

^b Mean speed is the average speed.

^c Pace is the 10-mph range is the 10-mph speed range with the greatest number of observed speeds.

^d 85th-percentile speed is the speed at which or below 85 percent of vehicles travel.

SSD: ⁶

- provides for safety
- enables a driver, on the major road, to perceive and react accordingly to a vehicle entering the major road from a minor road
- is conservative because it encompasses a wide range of brake-reaction times and deceleration rates

Optional ISD: ⁷

- is ordinarily greater than SSD
- may enhance traffic operations
- is not required for safety

Table 5 shows relevant available sight distances at the Greenmont Avenue/driveway intersection that are adequate.

CRASH HISTORY

TEPP LLC obtained crash data from the Massachusetts Department of Transportation (MassDOT) for:

⁶ AASHTO, pages 3-2 to 3-6.

⁷ AASHTO, pages 9-35 to 9-59.

Table 5. Sight distances.

Intersection and View	Available Sight Distance (ft) ^a	Speeds (mph)		
		Limit	SSD For	ISD For
Greenmont Avenue/Driveway Intersection				
Greenmont Avenue to/from West	400+	30	44+	36+
Greenmont Avenue to/from East	400+	30	44+	36+

^a With appropriate routine roadside maintenance.

- 2016 through 2020, the most recent available and finalized 5 years
- the Bridge Street/Greenmont Avenue intersection
- the Bridge Street/Pleasant Street/Arlington Street intersection
- the Bridge Street/Greenmont Avenue/Green Street intersection
- the Greenmont Avenue/driveway intersection

Table 6 is a summary of crash history. MassDOT crash-rate worksheets are in Appendix E.

The Pleasant Street/Greenmont Avenue intersection showed:

- 33 percent of reported crash severities as property-damage only
- 67 percent of reported crash severities with non-fatal injuries
- no reported fatality
- an observed crash rate below MassDOT averages

The Bridge Street/Pleasant Street/Arlington Street intersection showed:

- 69 percent of reported crash severities as property-damage only
- 28 percent of reported crash severities with non-fatal injuries
- 1 reported fatal crash
- an observed crash rate comparable to MassDOT averages

The Bridge Street/Greenmont Avenue intersection showed:

- 100 percent of reported crash severities as property-damage only
- no reported non-fatal injury
- no reported fatality
- an observed crash below MassDOT averages

Table 6. Crash history.

	Intersections, Crash Numbers, and Rates		
	Pleasant Street/ Greenmont Avenue	Bridge Street/ Pleasant Street/ Arlington Street	Bridge Street/ Greenmont Avenue
Years			
2016	1	10	1
2017	0	7	1
2018	1	6	1
2019	1	6	1
<u>2020</u>	<u>3</u>	<u>5</u>	<u>0</u>
Total	6	34	4
Average Per Year	1.20	6.80	0.80
Crash Rates			
This Location	0.22	0.75	0.19
MassDOT District 4 Average ^a	0.57	0.73	0.57
MassDOT State Average ^a	0.57	0.78	0.57
Severity			
Fatal Injury	0	1	0
Non-Fatal Injury	4	8	0
Not Reported	0	3	0
Property-Damage Only	2	20	4
Unknown	0	2	0
Type			
Angle	2	7	1
Sideswipe—Same Direction	0	3	1
Rear End	1	11	2
Rear to Side	0	1	0
Head On	1	5	0
Single-Vehicle	2	3	0
Not Reported	0	3	0
Unknown	0	1	0

Source: MassDOT Crash Portal, accessed August 1, 2023, or December 7, 2023.

^a From <https://www.mass.gov/service-details/intersection-and-roadway-crash-rate-data-for-analysis>, accessed May 2, 2023. MEV = 1,000,000 entering vehicles.

Table 6. Crash history, continued.

	Intersections, Crash Numbers, and Rates		
	Pleasant Street/ Greenmont Avenue	Bridge Street/ Pleasant Street/ Arlington Street	Bridge Street/ Greenmont Avenue
Road Surface			
Dry	4	25	3
Not Reported	0	4	0
Wet	2	5	1
Weather			
Clear	3	21	3
Clear/Clear	0	4	0
Clear/Cloudy	1	1	0
Cloudy	0	4	0
Cloudy/Rain	1	2	0
Not Reported	0	1	0
Rain	1	1	0
Light			
Dawn	0	1	0
Daylight	3	0	2
Dark	1	17	0
Dark—Lighted Road	1	9	2
Dark—Unknown Road Lighting	1	7	0

Source: MassDOT Crash Portal, accessed December 20, 2023.

^a From <https://www.mass.gov/service-details/intersection-and-roadway-crash-rate-data-for-analysis>, accessed May 2, 2023. MEV = 1,000,000 entering vehicles.

No crash was reported at the Greenmont Avenue/driveway intersection.

PEDESTRIANS, BICYCLES, AND TRANSIT

PEDESTRIANS

Low pedestrian volumes were observed.

As Tables 1 and 2 show, pedestrians may walk:

- on sidewalk along the south side of Pleasant Street
- on sidewalk segments along both sides of Bridge Street

- otherwise near the edge of vehicular travelways

As Tables 1 and 2 show, the following study-area intersections include marked crosswalks:

- Pleasant Street/Greenmont Avenue
- Bridge Street/Pleasant Street/Arlington Street

The Bridge Street/Pleasant Street/Arlington Street intersection includes pedestrian signal indications with an exclusive phase.

BICYCLES

Low bicycle volumes were observed. As Tables 1 and 2 show, bicycles and other vehicles may use shoulders or share travel lanes as applicable.

TRANSIT

Transit information is in Appendix F and in Tables 1 and 2.

Lowell Regional Transit Authority operates bus route 10, Dracut/Tyngsborough. The route includes:

- Pleasant Street west of Greenmont Avenue
- Greenmont Avenue
- Bridge Street south of Greenmont Avenue
- Arlington Street east of Bridge Street
- stops near the Greenmont Avenue/Pleasant Street intersection, the Greenmont Avenue/Vermont Avenue intersection, the Bridge Street/Lafayette Street intersection, and the Bridge Street/Pleasant Street/Arlington Street intersection
- connections to and from the west with the Town of Tyngsborough, Massachusetts
- connections to and from the south with the City of Lowell, Massachusetts including Massachusetts Bay Transportation Authority commuter-rail service

FUTURE CONDITIONS

INTRODUCTION

Future conditions include:

- planned road improvements independent of the proposed redevelopment
- future no-build traffic volumes, with background-traffic growth and without the proposed redevelopment
- future build traffic volumes, with background-traffic growth and with the proposed redevelopment

PLANNED ROAD IMPROVEMENTS

No significant planned road improvement in the study area independent of the project applies to this TIAS.

BACKGROUND-TRAFFIC GROWTH

Background-traffic growth:

- is independent of the proposed project
- is related to changes in land development in the immediate area and regional changes in population, economic development, and in travel patterns
- may consider two factors, a general traffic-growth rate and specific planned land developments in the immediate area

As Table 7 shows, background-traffic growth for this TIAS reflects:

- a 1.0-percent annual traffic-growth rate that yields about 7.2-percent growth from 2023 to 2030
- the proposed Dracut senior housing development at 144 Greenmont Avenue⁸

⁸ Letter from Stantec to Dracut Zoning Board of Appeals, Traffic Consulting Peer Review, Proposed Dracut Senior Housing Development, Dracut, Massachusetts, Rev. 1, August 27, 2020.

Table 7. Background-traffic growth.

Project Name and Location Land-Use Types	Land-Use Intensities			
	Variable	Previous	Proposed	Differences
Dracut Senior Housing Development, 144 Greenmont Avenue ^a				
Senior-Attached Housing	dwelling units	0	60	60
Bridge Street Landing Commercial Redevelopment, 5 Arlington Street and 1327 Bridge Street ^b				
Single-Family-Detached Housing	dwelling units	1	1	0
Strip-Retail Plaza	floor area (sf)	0	5,000	5,000
Restaurant	floor area (sf)	3,150	2,315	-885
Genest Street Residential Development, North of Genest Street ^c				
Single-Family-Detached Housing	dwelling units	1	1	0
Single-Family-Attached Housing	dwelling units	0	21	21

sf = square feet.

1.0-percent annual traffic-growth rate that yields about 7.2-percent growth from 2023 to 2030.

^a Stantec.

^b Solli Engineering, LLC.

^c VAI.

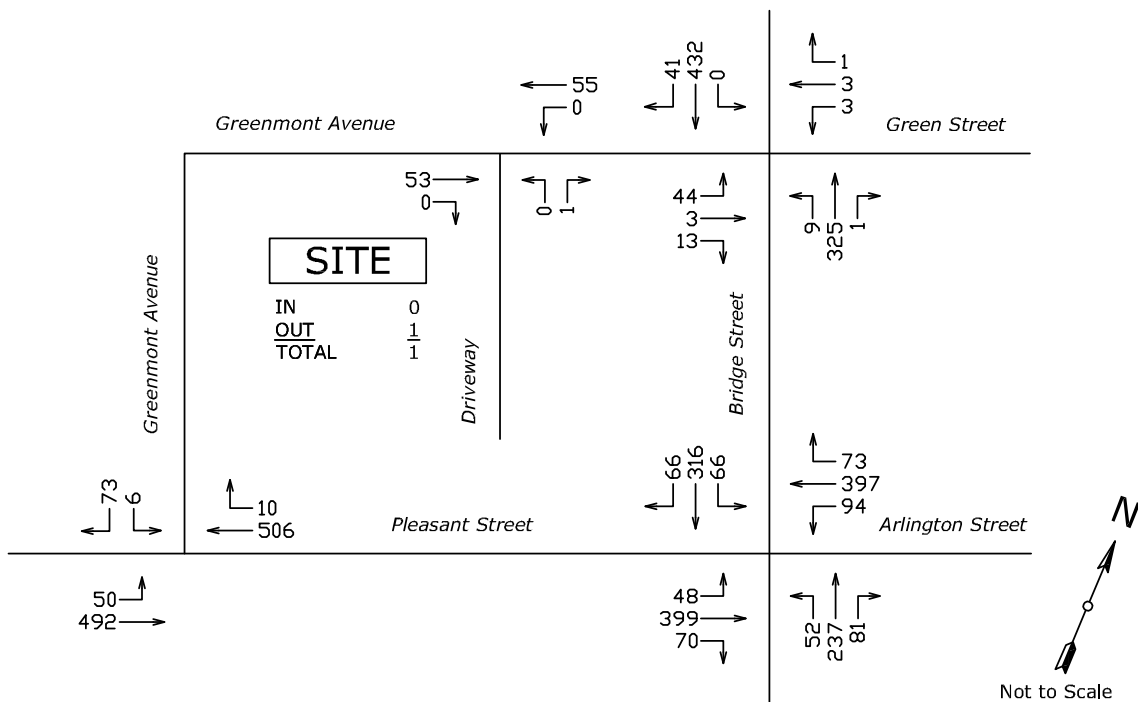
- the proposed Bridge Street Landing commercial redevelopment at 5 Arlington Street and 1327 Bridge Street⁹
- the proposed Genest Street residential development off the northern terminus of Genest Street¹⁰

NO-BUILD TRAFFIC VOLUMES

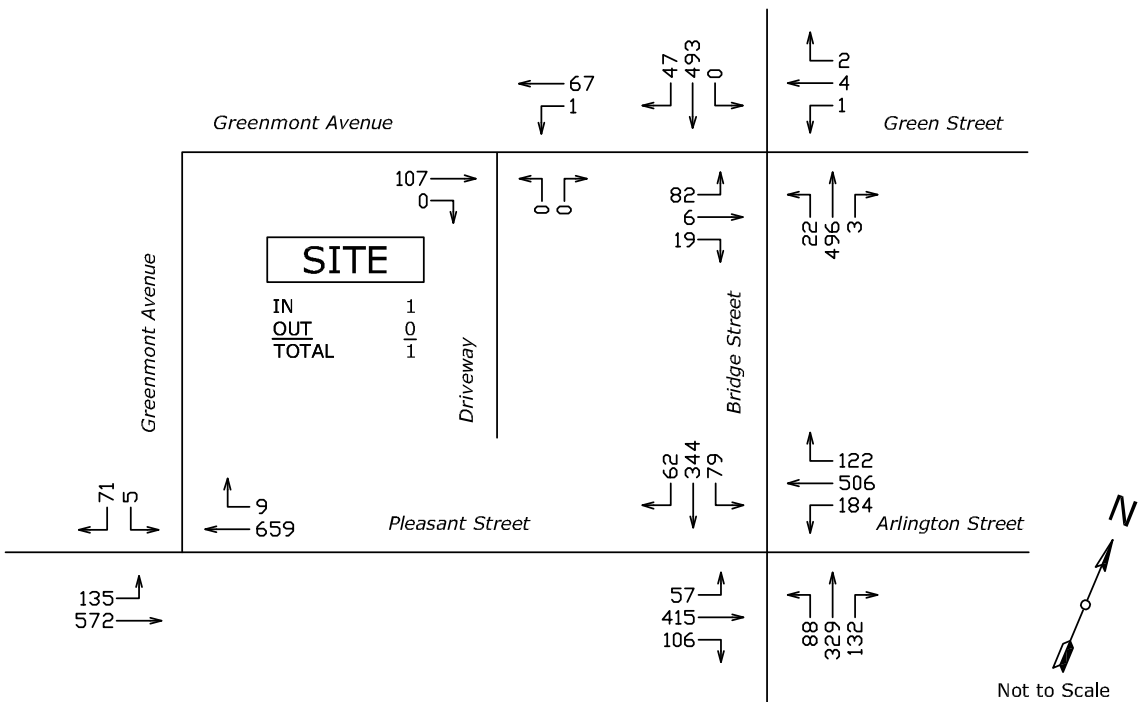
The background-traffic growth described above was applied to 2023 existing traffic volumes. Figure 4 shows resulting 2030 no-build traffic volumes.

⁹ Solli Engineering, LLC, *Traffic Impact Study for the Proposed Strip Mall with Wendy's & Retail Space* (Monroe, Connecticut, prepared November 8, 2023, and updated January 15, 2024). Solli Engineering, LLC, Bridge Street Landing, Proposed Commercial Redevelopment, Permitting Plan Set, January 9, 2024, sheet 2.11.

¹⁰ Vanasse & Associates, Inc. (VAI), *Transportation Impact Assessment, Proposed Residential Development, Genest Street, Dracut, Massachusetts* (Andover, Massachusetts, March 2022).



Weekday AM-Street-Peak-Hour



Weekday PM-Street-Peak Hour

Figure 4. 2030 no-build traffic volumes.

TRIP GENERATION

The Institute of Transportation Engineers (ITE) publishes trip-generation information in the authoritative *Trip Generation Manual*.¹¹ This information is based on empirical data for a variety of land uses including:

- land use 210, single-family-detached housing, based on dwelling units¹²
- land use 220, single-family-attached housing, based on dwelling units¹³

Table 8 shows differences in calculated vehicle-trips due to the project as:

Table 8. Calculated trip generation.

Time Period and Direction	Vehicle-Trips		
	Previous ^a	Proposed ^b	Differences
Weekday Daily	9	163	154
Weekday AM-Street-Peak Hour			
In	0	2	2
Out	1	7	6
Total	1	9	8
Weekday PM-Street-Peak Hour			
In	1	8	7
Out	0	5	5
Total	1	13	12

^a Based on ITE, *Trip Generation Manual*, land use 210, single-family-detached housing, 1 dwelling unit.

^b Based on ITE, *Trip Generation Manual*, land use 220, multifamily housing (low-rise), 28 dwelling units.

- weekday daily, 154 (total of in and out)
- weekday AM-street-peak hour, 8 (2 in and 6 out)
- weekday PM-street-peak hour, 12 (7 in and 5 out)

¹¹ ITE, *Trip Generation Manual*, 11th Edition (Washington DC, September 2021).

¹² ITE, *Trip Generation Manual*, Volume 3, pages 218 to 236.

¹³ ITE, *Trip Generation Manual*, Volume 3, pages 237 to 251.

TRIP DISTRIBUTION AND NETWORK ASSIGNMENT

Trip distribution and network assignment of vehicle trips to and from the site may consider such factors as existing site distribution, travel patterns, population, regional land development, and site accessibility.

Table 9 shows approximate trip distribution and network assignment. Figure 5 shows added site trips due to the project.

Table 9. Trip distribution and network assignment.

Road and Direction	Percent
Pleasant Street to/from West	30
Arlington Street to/from East	30
Bridge Street to/from South	20
<u>Bridge Street to/from North</u>	<u>20</u>
Total	100

BUILD TRAFFIC VOLUMES

Changes in site traffic volumes were superimposed on the no-build traffic volumes to estimate build traffic volumes. Figure 5 shows the resulting 2030 build traffic volumes.

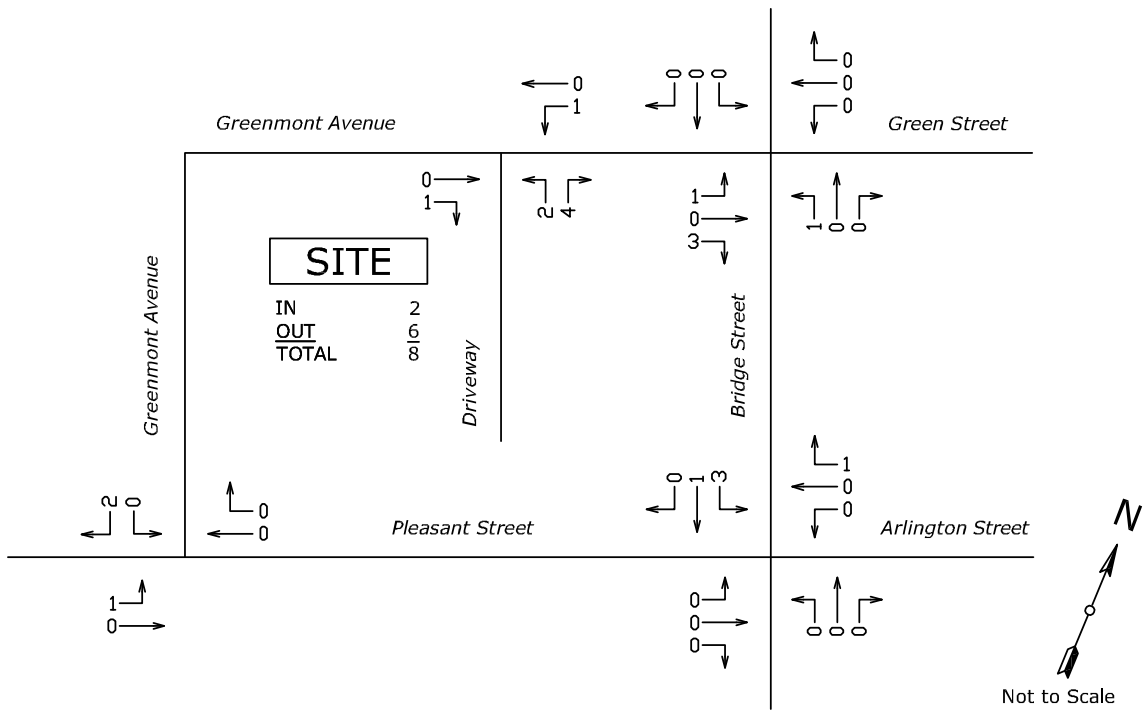
TRAFFIC-VOLUME CHANGES

Table 10 presents calculated traffic-volume changes due to the proposed project for the:

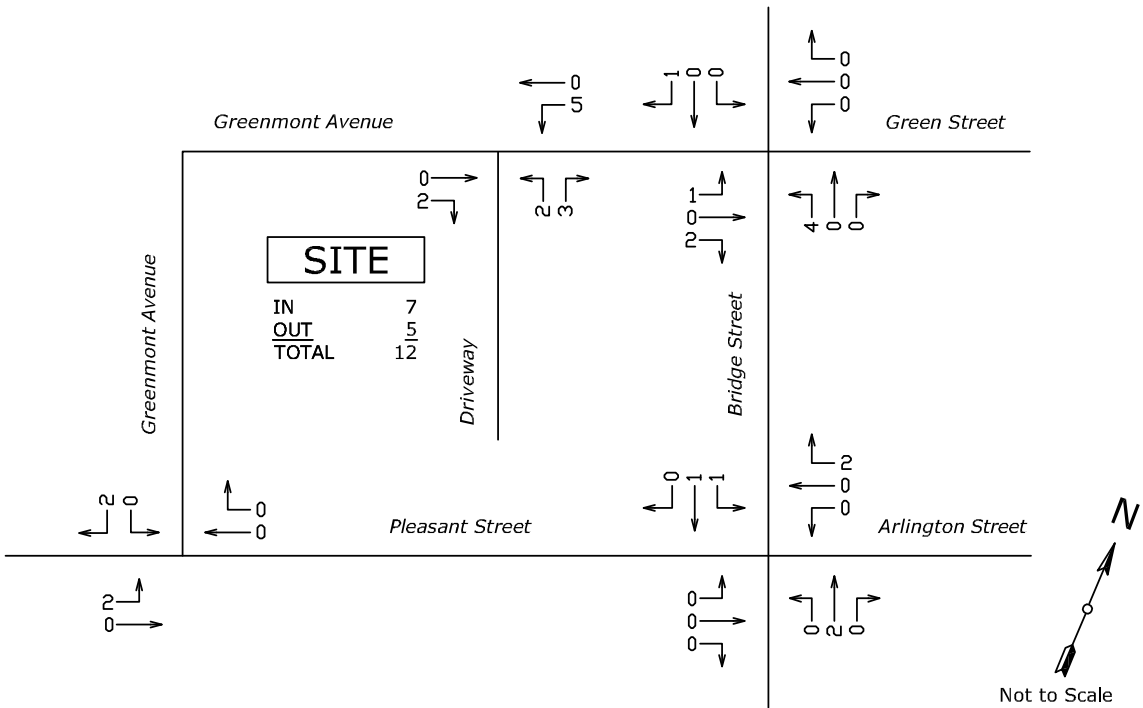
- weekday AM-street-peak hour
- weekday PM-street-peak hour

The tabulated increases on:

- Pleasant Street are 0 to 4 vph (0.0 to 0.3 percent)
- Bridge Street are 1 to 6 vph (0.1 to 0.6 percent)
- Greenmont Avenue are 3 to 8 vph (2.2 to 4.6 percent)

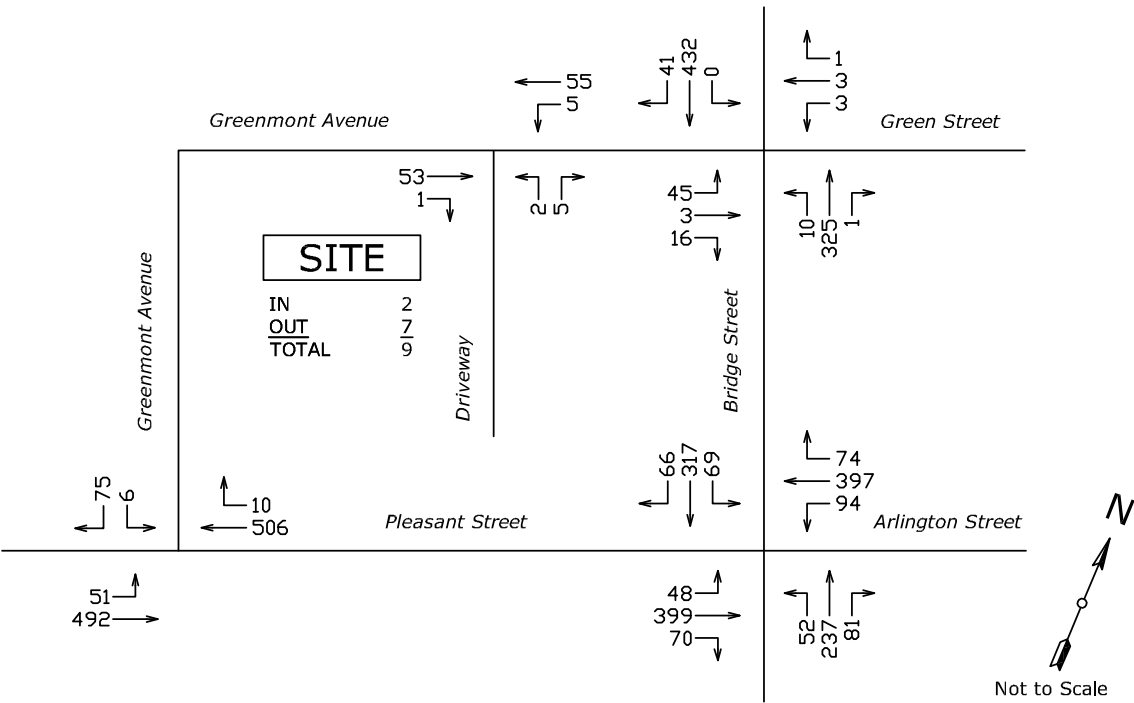


Weekday AM-Street-Peak-Hour

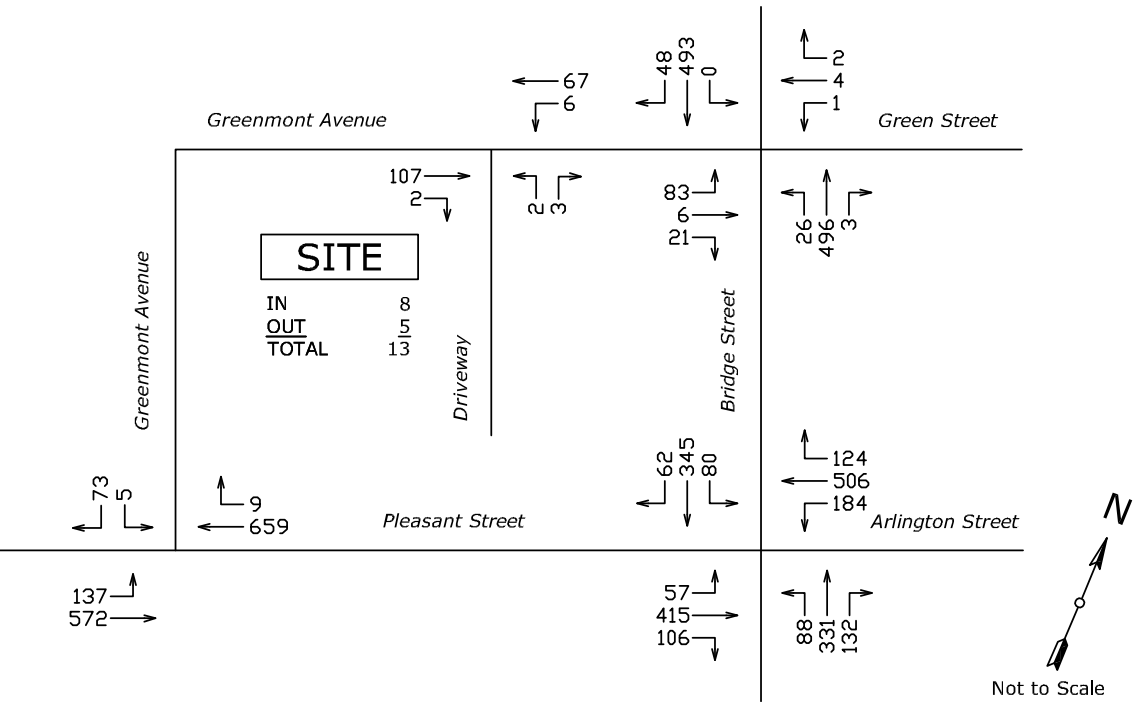


Weekday PM-Street-Peak Hour

Figure 5. Added site trips.



Weekday AM-Street-Peak-Hour



Weekday PM-Street-Peak Hour

Figure 6. 2030 build traffic volumes.

Table 10. Traffic-volume changes.

Location and Time Period	Traffic Volumes ^a				
	2023 Existing	2030 No-Build	2030 Build	Change	Percent Change
Pleasant Street West of Greenmont Avenue					
Weekday AM-Street-Peak Hour	1,030	1,121	1,124	3	0.3
Weekday PM-Street-Peak Hour	1,361	1,437	1,441	4	0.3
Pleasant Street East of Greenmont Avenue					
Weekday AM-Street-Peak Hour	941	1,014	1,014	0	0
Weekday PM-Street-Peak Hour	1,193	1,245	1,245	0	0
Bridge Street South of Greenmont Avenue/Green Street					
Weekday AM-Street-Peak Hour	719	783	787	4	0.5
Weekday PM-Street-Peak Hour	929	1,034	1,040	6	0.6
Bridge Street North of Greenmont Avenue/Green Street					
Weekday AM-Street-Peak Hour	776	843	844	1	0.1
Weekday PM-Street-Peak Hour	1,011	1,120	1,122	2	0.2
Greenmont Avenue West of Site					
Weekday AM-Street-Peak Hour	93	108	111	3	2.8
Weekday PM-Street-Peak Hour	155	174	178	4	2.2
Greenmont Avenue East of Site					
Weekday AM-Street-Peak Hour	94	109	114	5	4.6
Weekday PM-Street-Peak Hour	155	175	183	8	4.6

^a Two-way-total volumes in vph.

CAPACITY ANALYSIS

INTRODUCTION

This TIAS has quantified existing, future-no-build and future-build traffic volumes. Capacity analysis indicates quality of traffic operations. Comparing build conditions to no-build conditions indicates impacts of the proposed alterations on quality of traffic operations.

METHODS

Capacity analysis:

- indicates the quality of traffic operations for transportation facilities
- used methods of the Transportation Research Board (TRB)¹⁴
- used Synchro 11 software.

Method inputs include:

- intersection geometry
- traffic control, such as YIELD sign, two-way STOP sign, all-way STOP sign, roundabout, or signal (including phasing, timing, and progression)
- traffic volumes
- vehicle composition, such as passenger cars and trucks

Method outputs include:

- LOS based on delays in Table 11
- V/C ratios
- vehicle queues

The six LOS are designated A to F. LOS A represents the best or highest operating conditions. LOS F is the lowest but does not necessarily connote failure.

¹⁴ TRB, *Highway Capacity Manual 2000* (Washington DC 2000), *Highway Capacity Manual 2010* (Washington DC, 2010), and *Highway Capacity Manual*, 6th Edition (Washington DC, 2016).

Table 11. Level-of-service measures for intersections.

Level of Service	Control Delay (seconds/vehicle)	
	Unsignalized Intersections ^a	Signalized Intersections
A	≤ 10.0	≤ 10.0
B	> 10.0 and ≤ 15.0	> 10.0 and ≤ 20.0
C	> 15.0 and ≤ 25.0	> 20.0 and ≤ 35.0
D	> 25.0 and ≤ 35.0	> 35.0 and ≤ 55.0
E	> 35.0 and ≤ 50.0	> 55.0 and ≤ 80.0
F	> 50	> 80

From TRB, *Highway Capacity Manual 2010* (Washington DC, 2010).

^a For YIELD sign, two-way STOP sign, or all-way STOP sign, control delay defines LOS. For roundabout approaches and overall intersection, control delay defines LOS. For roundabout lanes with V/C ratio ≤ 1.0 , control delay defines LOS. For roundabout lanes with V/C ratio > 1.0 , LOS is F regardless of control delay.

LOS is a function of traffic volumes and traffic control. Because these volumes can vary, LOS of a transportation facility can differ by time of day, day of the week, or month. For example, a transportation facility with a low LOS during peak hours may have a high LOS during other hours.

The methods are all approximate. In particular, the method for two-way STOP-sign control can be conservative, with observed delays and queuing shorter than those calculated.

RESULTS

Table 12 shows computed LOS, delays, V/C ratios, and/or queues at study-area intersections under the following conditions:

- 2023 existing
- 2030 no build
- 2030 build

The analysis was for the following time periods:

- weekday AM-street-peak hour
- weekday PM-street-peak hour

Reports that give detail and explanation are in Appendix G.

Table 12. Capacity-analysis summary.

Location, Time Period, and Lane Group	2023 Existing				2030 No Build				2030 Build			
	LOS ^a	Delay ^b	V/C ^c	Queue ^d	LOS	Delay	V/C	Queue	LOS	Delay	V/C	Queue
Pleasant Street/Greenmont Avenue Unsignalized Intersection—Weekday AM-Street-Peak Hour												
Pleasant Street EB L	A	8.8	0.050	0.2	A	9.0	0.060	0.2	A	9.0	0.061	0.2
Greenmont Avenue SB LR	B	14.4	0.174	0.6	C	15.7	0.225	0.9	C	15.8	0.231	0.9
Pleasant Street/Greenmont Avenue Unsignalized Intersection—Weekday PM-Street-Peak Hour												
Pleasant Street EB L	A	9.6	0.140	0.5	A	9.9	0.167	0.6	A	9.9	0.170	0.6
Greenmont Avenue SB LR	C	17.1	0.213	0.8	C	19.4	0.271	1.1	C	19.5	0.277	1.1
Bridge Street/Pleasant Street/Arlington Street Signalized Intersection—Weekday AM-Street-Peak Hour												
Pleasant Street EB L	B	15.0	0.13	11/32	B	16.6	0.15	13/35	B	16.6	0.15	13/35
Pleasant Street EB TR	C	25.0	0.84	142/262	C	27.5	0.86	160/305	C	27.5	0.86	160/35
Arlington Street WB L	B	11.9	0.28	14/33	B	13.1	0.34	18/39	B	13.1	0.34	18/39
Arlington Street WB TR	B	10.9	0.59	97/167	B	11.8	0.61	116/193	B	11.9	0.61	116/93
Bridge Street NB L	B	19.5	0.16	11/33	C	23.1	0.21	15/42	C	23.3	0.22	15/42
Bridge Street NB TR	B	15.4	0.51	77/139	B	17.2	0.54	95/162	B	17.2	0.54	94/162
Bridge Street SB L	B	17.7	0.19	16/38	C	20.7	0.24	21/47	C	20.7	0.24	21/47
Bridge Street SB TR	B	18.0	0.64	111/173	C	20.6	0.69	136/205	C	20.8	0.69	138/207
Overall	B	17.1	---	---	B	19.1	---	---	B	19.2	---	---
Bridge Street/Pleasant Street/Arlington Street Signalized Intersection —Weekday PM-Street-Peak Hour												
Pleasant Street EB L	C	20.2	0.20	14/40	C	25.1	0.26	17/50	C	25.2	0.26	17/50
Pleasant Street EB TR	C	29.7	0.88	169/323	D	36.4	0.91	199/370	D	36.3	0.91	199/370
Arlington Street WB L	B	14.5	0.53	31/65	C	21.2	0.69	44/119	C	21.2	0.69	44/119
Arlington Street WB TR	B	14.4	0.75	165/261	B	18.6	0.80	209/322	B	18.8	0.81	210/325
Bridge Street NB L	C	24.6	0.29	23/56	C	27.7	0.35	29/70	C	27.7	0.36	29/70
Bridge Street NB TR	C	25.5	0.76	137/261	C	27.4	0.79	168/306	C	27.6	0.80	169/308
Bridge Street SB L	C	28.2	0.31	19/54	C	33.9	0.41	26/85	C	34.2	0.41	26/87
Bridge Street SB TR	C	20.5	0.63	114/197	C	23.3	0.64	134/222	C	21.2	0.64	134/223
Overall	C	21.7	---	---	C	25.5	---	---	C	25.6	---	---

EB = eastbound, WB = westbound, SB = southbound, NB = northbound, U = U-turn, L = left turn, T = through movement, R = right turn.

^a LOS = level of service.

^b Delay = average delay in seconds per vehicle.

^c V/C = volume/capacity ratio.

^d For signalized intersection, 50th percentile queue in ft/95th percentile queue in ft. For unsignalized intersections, 95th percentile queue in vehicles.

Table 12. Capacity-analysis summary, continued.

Location, Time Period, and Lane Group	2023 Existing				2030 No Build				2030 Build			
	LOS ^a	Delay ^b	V/C ^c	Queue ^d	LOS	Delay	V/C	Queue	LOS	Delay	V/C	Queue
Bridge Street/Greenmont Avenue/Green Street Unsignalized Intersection—Weekday AM-Street-Peak Hour												
Bridge Street NB L	A	8.7	0.008	0.0	A	8.9	0.011	0.0	A	8.9	0.012	0.0
Bridge Street SB L	A	0.0	0.000	0.0	A	0.0	0.000	0.0	A	0.0	0.000	0.0
Greenmont Avenue EB LTR	C	21.5	0.228	0.9	C	24.8	0.313	1.3	C	24.9	0.328	1.4
Green Street WB LTR	C	19.6	0.061	0.2	C	21.7	0.069	0.2	C	21.9	0.069	0.2
Bridge Street/Greenmont Avenue/Green Street Unsignalized Intersection —Weekday PM-Street-Peak Hour												
Bridge Street NB L	A	8.5	0.017	0.1	A	8.7	0.024	0.1	A	8.7	0.029	0.1
Bridge Street SB L	A	0.0	0.000	0.0	A	0.0	0.000	0.0	A	0.0	0.000	0.0
Greenmont Avenue EB LTR	E	41.3	0.584	3.3	F	70.4	0.780	5.3	F	73.8	0.802	5.5
Green Street WB LTR	C	19.2	0.030	0.0	C	22.1	0.036	0.1	C	22.4	0.037	0.1
Greenmont Avenue/Driveway Unsignalized Intersection—Weekday AM-Street-Peak Hour												
Greenmont Avenue WB L	A	0.0	0.000	0.0	A	0.0	0.000	0.0	A	7.3	0.001	0.0
Driveway NB LR	A	8.6	0.001	0.0	A	8.6	0.001	0.0	A	8.8	0.008	0.0
Greenmont Avenue/Driveway Unsignalized Intersection—Weekday PM-Street-Peak Hour												
Greenmont Avenue WB L	A	7.5	0.001	0.0	A	7.5	0.001	0.0	A	7.5	0.005	0.0
Driveway NB LR	A	0.0	0.000	0.0	A	0.0	0.000	0.0	A	9.3	0.007	0.0

EB = eastbound, WB = westbound, SB = southbound, NB = northbound, U = U-turn, L = left turn, T = through movement, R = right turn.

^a LOS = level of service.

^b Delay = average delay in seconds per vehicle.

^c V/C = volume/capacity ratio.

^d For signalized intersection, 50th percentile queue in ft/95th percentile queue in ft. For unsignalized intersections, 95th percentile queue in vehicles.

In summary, without or with the project, the:

- Pleasant Street/Greenmont Avenue intersection shows low-to-moderate peak-hour delays
- Bridge Street/Pleasant Street/Arlington Street intersection shows overall low-to-moderate peak-hour delays
- Bridge Street/Greenmont Avenue/Green Street intersection shows low-to-moderate delays for the weekday AM-street-peak hour
- Bridge Street/Greenmont Avenue/Green Street intersection shows low delays to delayed operations for the weekday PM-street-peak hour
- Greenmont Avenue/driveway intersection shows low peak-hour delays

The project does not have a significant impact on overall area traffic operations.

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CONCLUSION

PROJECT DESCRIPTION

This TIAS regards the proposed residential redevelopment at 135 Greenmont Avenue in the Town of Dracut, Massachusetts. The redevelopment will replace one single-family-detached dwelling unit with 28 single-family-attached dwelling units. Existing and proposed vehicular access is via one unsignalized driveway along the south side of Greenmont Avenue west of Bridge Street.

TRIP GENERATION

Added site trips due to the proposed redevelopment are:

- weekday daily, 154 (total of in and out)
- weekday AM-street-peak hour, 8 (2 in and 6 out)
- weekday PM-street-peak hour, 12 (7 in and 5 out)

CAPACITY ANALYSIS

Capacity-analysis findings, without or with the project, are the:

- Pleasant Street/Greenmont Avenue intersection shows low-to-moderate peak-hour delays
- Bridge Street/Pleasant Street/Arlington Street intersection shows overall low-to-moderate peak-hour delays
- Bridge Street/Greenmont Avenue/Green Street intersection shows low-to-moderate delays for the weekday AM-street-peak hour
- Bridge Street/Greenmont Avenue/Green Street intersection shows low delays to delayed operations for the weekday PM-street-peak hour
- Greenmont Avenue/driveway intersection shows low peak-hour delays

The project does not have a significant impact on overall area traffic operations.

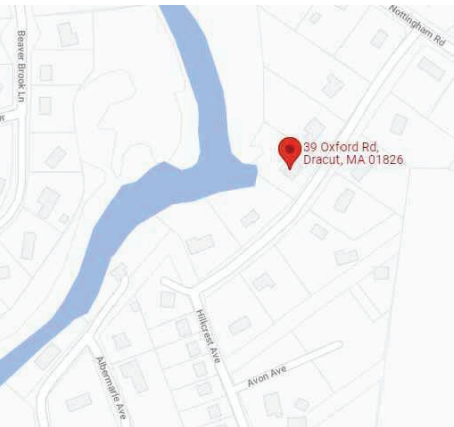
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APPENDIX

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Appendix A: Project Plan

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LEGEND		
EXISTING	PROPOSED	
		GRADE CONTOUR
 WF = 1		BORDERING VEGETATIVE WETLAND FLAGGING
		STONE WALL DRILL HOLE
		CONCRETE BOUND MARKER
TEXT, Text	TEXT, Text	GENERAL TEXT
		50 FT NO BUILD ZONE
		100 FT BVW BUFFER ZONE

EXISTING

PROPOSED

100

100

WF-1

TEXT, Text

TEXT, Text

	GRADE CONTOUR
	BORDERING VEGETATION
	WETLAND FLAGGING
	STONE WALL DRILL
	CONCRETE BOUNDARY
TEXT, Text	GENERAL TEXT
	50 FT NO BUILD ZONE
	100 FT BVW BUFFER

1. **PURPOSE:** This plan is to meet the filing requirements of the Dracut Zoning Board of Appeals to obtain a Comprehensive Permit Application Approval. These Plans shall not be utilized for construction. Construction documents will be issued once the Comprehensive Permit is approved and the documents are requested in writing by the Applicant.
2. **PROPERTY LINES:** Existing property lines shown are from Reference 1A and 2A.
3. **OWNER & APPLICANT:** The subject property shown is owned by Jose Luiz "Branco" Perego; 135 Greenmont Avenue, Dracut, MA as shown by current assessor's records. The applicant is Riverbank Properties.
4. **ZONING:** All lots are within the R-1 (Residential) Zoning District.
5. **TOPOGRAPHY:** Site details shown are the result of an instrument survey performed in February through April 2022. Vertical datum shown is the North American Vertical Datum of 1988 (NAV88).
6. **FLOODPLAIN:** The property is located in a Zone X area and is not located within a 100 Year floodplain area according to the most recent FEMA maps: Map #25017C0141E dated June 4, 2010.
7. **ACEC:** The property is not located within an Area of Critical Environmental Concern.
8. **NHESP:** There are no estimated habitats of rare wildlife or certified vernal pools on the property.
9. **RESOURCE AREA:** Existing resource area flags were identified in the field by this office and the flagging was located by instrument survey as described by Note 5. Permanent sign markers to be installed at BVW Wetflags A1-A6.
10. **LIMIT OF WORK:** The location of the erosion control within the wetland buffer area will be the limit of work line as shown. Erosion Control to be installed 1 ft off of the western and southern property lines.
11. **SOILS:** Soils on the site have been classified in accordance with the USDA Middlesex County Soil Report Version 12, dated February 26, 2010, as 310A - Woodbridge fine sandy loam, 0-3% slopes and 71B - Ridgebury fine sandy loam, 3-8% slopes. See Reference 3A for additional USDA soil information.
12. **UTILITIES:** Known existing underground utilities are shown on the Site Plan. A determination as to the existence of any other underground utilities has not been made and the absence of same is not implied or intended. The contractor shall contact the proper authorities to verify the location of all existing underground utilities and structures prior to construction.
13. **ORDER OF CONDITIONS:** Construction on this site is subject to an Order of Conditions to be issued by the Dracut Conservation Commission and Massachusetts Department of Environmental Protection.
14. **CERTIFICATION:** Certification is made regarding the stated purpose of this plan only, as given in Note 1. This plan shall not be used for the layout of lot lines or structures and shall not be used for any other purpose without the written consent of Cornerstone Land Associates, LLC.



BY	Design by KML
	Survey by KML/TAJ
	Draft by KML
	Check by JAV/TAJ

CORNERSTONE
Land Associates, LLC
Civil Engineering - Land Planning

25 Dean Avenue - Dracut, MA 01826 - (978) 835-0102
kmconsultants@comcast.net

SCALE: As Shown
DATE: May 18, 2023

PREPARED FOR:
Riverbank Properties
908 Lawrence Street
Lowell, MA 01852

EXISTING CONDITIONS PLAN

135 GREENMONT AVENUE
DRACUT, MASSACHUSETTS

JOB NO.: 2021-235
SHEET: 1 of 8

DRAWING NO.
C-101



APPROVED DRACUT ZONING BOARD OF APPEALS

SIGNATURE

For Registry Use Only

DATE

"I certify that this plan conforms to the Rules and Regulations of the Registers of Deeds of the Commonwealth of Massachusetts."

Signature _____ Date _____

Notice of Appeals

I, _____, being the Town Clerk of the Town of Dracut, hereby certify that notice of this plan has been received and recorded at this office on _____, and no appeal of such has been received during the twenty days next.

Town Clerk _____ Date _____

EXISTING UTILITIES: Cut and Cap Existing Dwellings Services as directed by provider.

P-SMH#1
Rim=101.1'
INVIn=92.5'
INVOut=92.4'

EX-SMH
Rim=101.0'
Brick Shell=92.8'
6" Invert=92.0'

Site Plan

SCALE: 1 in. = 30 ft.

GRAPHIC SCALE (ft)

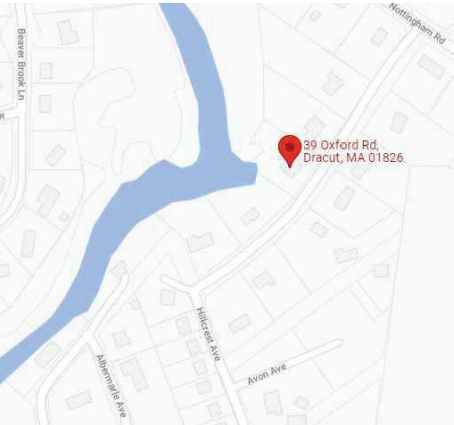


REFERENCES

- DEEDS:
A. Deed Recorded in the Middlesex North District Registry of Deeds in Book 31043 Page 105.
- PLANS:
A. "Plan of Land in Dracut, Mass"; prepared by Dana F. Perkins & Sons, Inc., Civil Engineers & Surveyors; dated June 23, 1966; recorded in the Middlesex North District Registry of Deeds in Book of Plans 104 Page 25.
- DOCUMENTS:
A. Comprehensive Permit Application Submittal for Branco Perego; by Cornerstone Land Consultants, Inc.; dated April 5, 2022.

NOTES

- PURPOSE: This plan is to meet the filing requirements of the Dracut Zoning Board of Appeals to obtain a Comprehensive Permit Application Approval. These Plans shall not be utilized for construction. Construction documents will be issued once the Comprehensive Permit is approved and the documents are requested in writing by the Applicant.
- PROPERTY LINES: Existing property lines shown are from Reference 1A and 2A.
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- NHESP: There are no estimated habitats of rare wildlife or certified vernal pools on the property.
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- LIMIT OF WORK: The location of the erosion control within the wetland buffer area will be the limit of work line as shown. Erosion Control to be installed 1 ft off of the western and southern property lines.
- SOILS: Soils on the site have been classified in accordance with the USDA Middlesex County Soil Report Version 12, dated February 26, 2010, as 310A - Woodbridge fine sandy loam, 0-3% slopes and 71B - Ridgebury fine sandy loam, 3-8% slopes. See Reference 3A for additional USDA soil information.
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- ORDER OF CONDITIONS: Construction on this site is subject to an Order of Conditions to be issued by the Dracut Conservation Commission and Massachusetts Department of Environmental Protection.
- CERTIFICATION: Certification is made regarding the stated purpose of this plan only, as given in Note 1. This plan shall not be used for the layout of lot lines or structures and shall not be used for any other purpose without the written consent of Cornerstone Land Associates, LLC.



Locus Map

Not To Scale

LEGEND

- | | | |
|------------|------------|---------------------------------------|
| EXISTING | PROPOSED | GRADE CONTOUR |
| 100 | 100 | BORDERING VEGETATIVE WETLAND FLAGGING |
| WF-1 | | STONE WALL DRILL HOLE |
| | | CONCRETE BOUND MARKER |
| TEXT, Text | TEXT, Text | GENERAL TEXT |
| | | 50 FT NO BUILD ZONE |
| | | 100 FT BVW BUFFER ZONE |



Design by
KML
Survey by
KML/TAJ
Draft by
KML
Check by
JAV/TAJ

BY

CORNERSTONE
Land Associates, LLC
Civil Engineering - Land Planning

25 Dean Avenue - Dracut, MA 01826 - (978) 835-0102
lncorncast@comcast.net

SCALE: As Shown
DATE: May 18, 2023

PREPARED FOR:
Riverbank Properties
908 Lawrence Street
Lowell, MA 01852

LAYOUT & UTILITIES PLAN
Comprehensive Permit Application
135 GREENMONT AVENUE
DRACUT, MASSACHUSETTS

JOB NO.: 2021-235
SHEET: 2 of 8

DRAWING NO.

C-102

Appendix B: Traffic Counts

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Accurate Counts
978-664-2565

Location : Greenmont Avenue
Location : West of Bridge Street
City/State: Dracut, MA

Site Code: 16650001

11/27/2023	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Week Average	
Time	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,
12:00 AM	*	*	1	2	2	4	*	*	*	*	*	*	*	*	2	3
1:00	*	*	1	2	0	0	*	*	*	*	*	*	*	*	0	1
2:00	*	*	2	0	2	0	*	*	*	*	*	*	*	*	2	0
3:00	*	*	0	1	0	0	*	*	*	*	*	*	*	*	0	0
4:00	*	*	4	3	3	3	*	*	*	*	*	*	*	*	4	3
5:00	*	*	13	4	16	7	*	*	*	*	*	*	*	*	14	6
6:00	*	*	39	19	35	18	*	*	*	*	*	*	*	*	37	18
7:00	*	*	39	27	45	31	*	*	*	*	*	*	*	*	42	29
8:00	*	*	42	39	51	39	*	*	*	*	*	*	*	*	46	39
9:00	*	*	31	20	36	31	*	*	*	*	*	*	*	*	34	26
10:00	*	*	38	23	34	30	*	*	*	*	*	*	*	*	36	26
11:00	*	*	51	35	36	34	*	*	*	*	*	*	*	*	44	34
12:00 PM	*	*	34	35	34	32	*	*	*	*	*	*	*	*	34	34
1:00	*	*	47	33	50	48	*	*	*	*	*	*	*	*	48	40
2:00	*	*	66	43	61	41	*	*	*	*	*	*	*	*	64	42
3:00	*	*	79	61	62	54	*	*	*	*	*	*	*	*	70	58
4:00	*	*	66	61	65	57	*	*	*	*	*	*	*	*	66	59
5:00	*	*	61	54	57	37	*	*	*	*	*	*	*	*	59	46
6:00	*	*	36	44	32	35	*	*	*	*	*	*	*	*	34	40
7:00	*	*	28	19	28	21	*	*	*	*	*	*	*	*	28	20
8:00	*	*	16	20	14	23	*	*	*	*	*	*	*	*	15	22
9:00	*	*	11	9	15	6	*	*	*	*	*	*	*	*	13	8
10:00	*	*	6	5	5	11	*	*	*	*	*	*	*	*	6	8
11:00	*	*	1	3	1	3	*	*	*	*	*	*	*	*	1	3
Total	0	0	712	562	684	565	0	0	0	0	0	0	0	0	699	565
Day	0		1274		1249		0	0	0	0	0	0	0		1264	
AM Peak			11:00	8:00	8:00	8:00									8:00	8:00
Volume			51	39	51	39									46	39
PM Peak			3:00	3:00	4:00	4:00									3:00	4:00
Volume			79	61	65	57									70	59
Comb Total	0		1274		1249		0	0	0	0	0	0	0		1264	
ADT	ADT: 1,264		AADT: 1,264													

Accurate Counts

978-664-2565

N/S Street : Greenmont Avenue

E/W Street : Pleasant Street

City/State : Dracut, MA

Weather : Clear

File Name : 16650001

Site Code : 16650001

Start Date : 11/28/2023

Page No : 1

Groups Printed- Cars - Trucks

	Greenmont Ave From North		Pleasant St From East		Pleasant St From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	3	15	140	4	12	88	262
07:15 AM	0	16	112	1	7	120	256
07:30 AM	1	10	126	1	10	115	263
07:45 AM	1	19	99	3	14	127	263
Total	5	60	477	9	43	450	1044
08:00 AM	0	12	80	7	13	126	238
08:15 AM	0	18	113	7	14	99	251
08:30 AM	0	9	112	1	7	119	248
08:45 AM	0	14	117	0	15	109	255
Total	0	53	422	15	49	453	992
Grand Total	5	113	899	24	92	903	2036
Apprch %	4.2	95.8	97.4	2.6	9.2	90.8	
Total %	0.2	5.6	44.2	1.2	4.5	44.4	
Cars	5	107	881	24	89	879	1985
% Cars	100	94.7	98	100	96.7	97.3	97.5
Trucks	0	6	18	0	3	24	51
% Trucks	0	5.3	2	0	3.3	2.7	2.5

	Greenmont Ave From North			Pleasant St From East			Pleasant St From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	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	3	15	18	140	4	144	12	88	100	262
07:15 AM	0	16	16	112	1	113	7	120	127	256
07:30 AM	1	10	11	126	1	127	10	115	125	263
07:45 AM	1	19	20	99	3	102	14	127	141	263
Total Volume	5	60	65	477	9	486	43	450	493	1044
% App. Total	7.7	92.3		98.1	1.9		8.7	91.3		
PHF	.417	.789	.813	.852	.563	.844	.768	.886	.874	.992
Cars	5	58	63	468	9	477	42	438	480	1020
% Cars	100	96.7	96.9	98.1	100	98.1	97.7	97.3	97.4	97.7
Trucks	0	2	2	9	0	9	1	12	13	24
% Trucks	0	3.3	3.1	1.9	0	1.9	2.3	2.7	2.6	2.3

Accurate Counts

978-664-2565

N/S Street : Greenmont Avenue

E/W Street : Pleasant Street

City/State : Dracut, MA

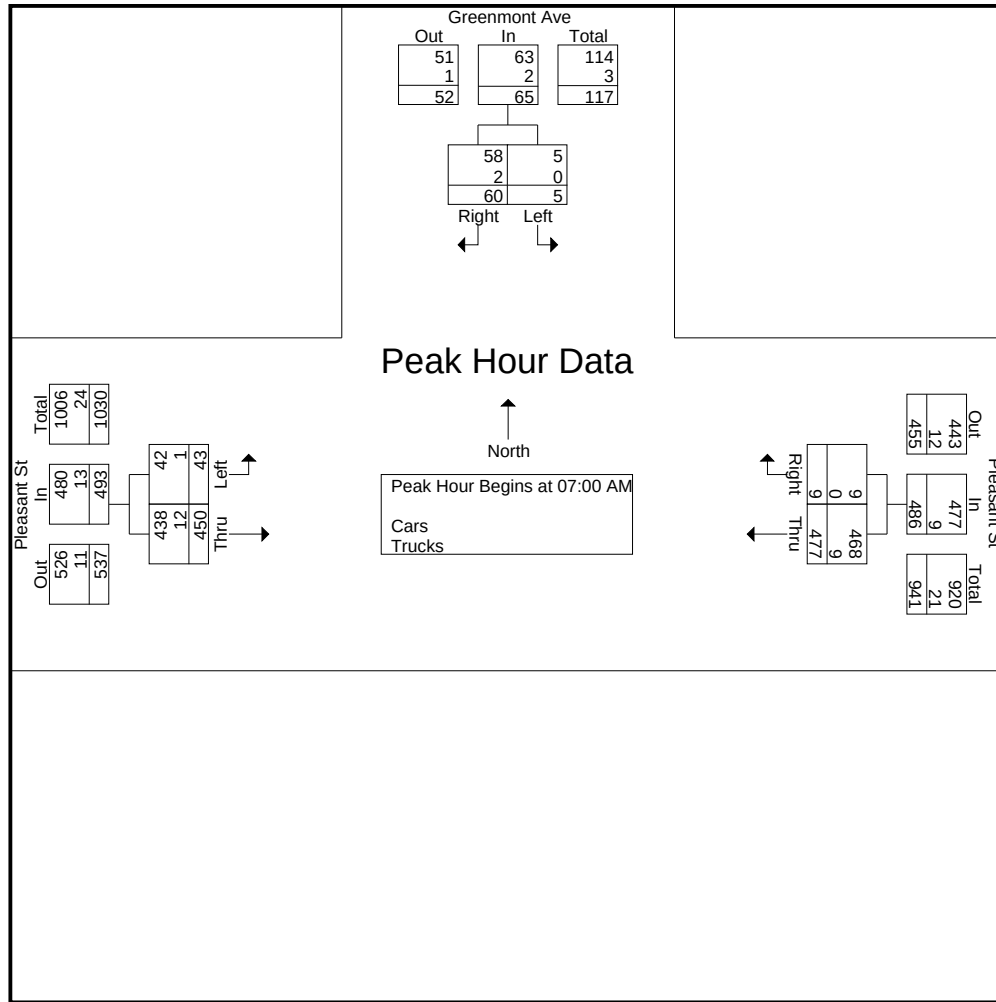
Weather : Clear

File Name : 16650001

Site Code : 16650001

Start Date : 11/28/2023

Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:15 AM		
+0 mins.	3	15	18	140	4	144	7	120	127
+15 mins.	0	16	16	112	1	113	10	115	125
+30 mins.	1	10	11	126	1	127	14	127	141
+45 mins.	1	19	20	99	3	102	13	126	139
Total Volume	5	60	65	477	9	486	44	488	532
% App. Total	7.7	92.3		98.1	1.9		8.3	91.7	
PHF	.417	.789	.813	.852	.563	.844	.786	.961	.943
Cars	5	58	63	468	9	477	43	477	520
% Cars	100	96.7	96.9	98.1	100	98.1	97.7	97.7	97.7
Trucks	0	2	2	9	0	9	1	11	12
% Trucks	0	3.3	3.1	1.9	0	1.9	2.3	2.3	2.3

Accurate Counts

978-664-2565

N/S Street : Greenmont Avenue

E/W Street : Pleasant Street

City/State : Dracut, MA

Weather : Clear

File Name : 16650001

Site Code : 16650001

Start Date : 11/28/2023

Page No : 10

Groups Printed- Bikes Peds

	Greenmont Ave From North			Pleasant St From East			Pleasant St From West			Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	1	0	0	0	0	0	0	1	1
Total	0	0	0	1	0	0	0	0	0	0	1	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	1	0	0	0	1	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	1	1	0	1
Total	0	0	0	0	0	1	0	0	1	2	0	2
Grand Total	0	0	0	1	0	1	0	0	1	2	1	3
Apprch %	0	0		100	0		0	0				
Total %	0	0		100	0		0	0		66.7	33.3	

	Greenmont Ave From North			Pleasant St From East			Pleasant St From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	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	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	1	0	1	0	0	0	1
Total Volume	0	0	0	1	0	1	0	0	0	1
% App. Total	0	0		100	0		0	0		
PHF	.000	.000	.000	.250	.000	.250	.000	.000	.000	.250

Accurate Counts

978-664-2565

N/S Street : Greenmont Avenue

E/W Street : Pleasant Street

City/State : Dracut, MA

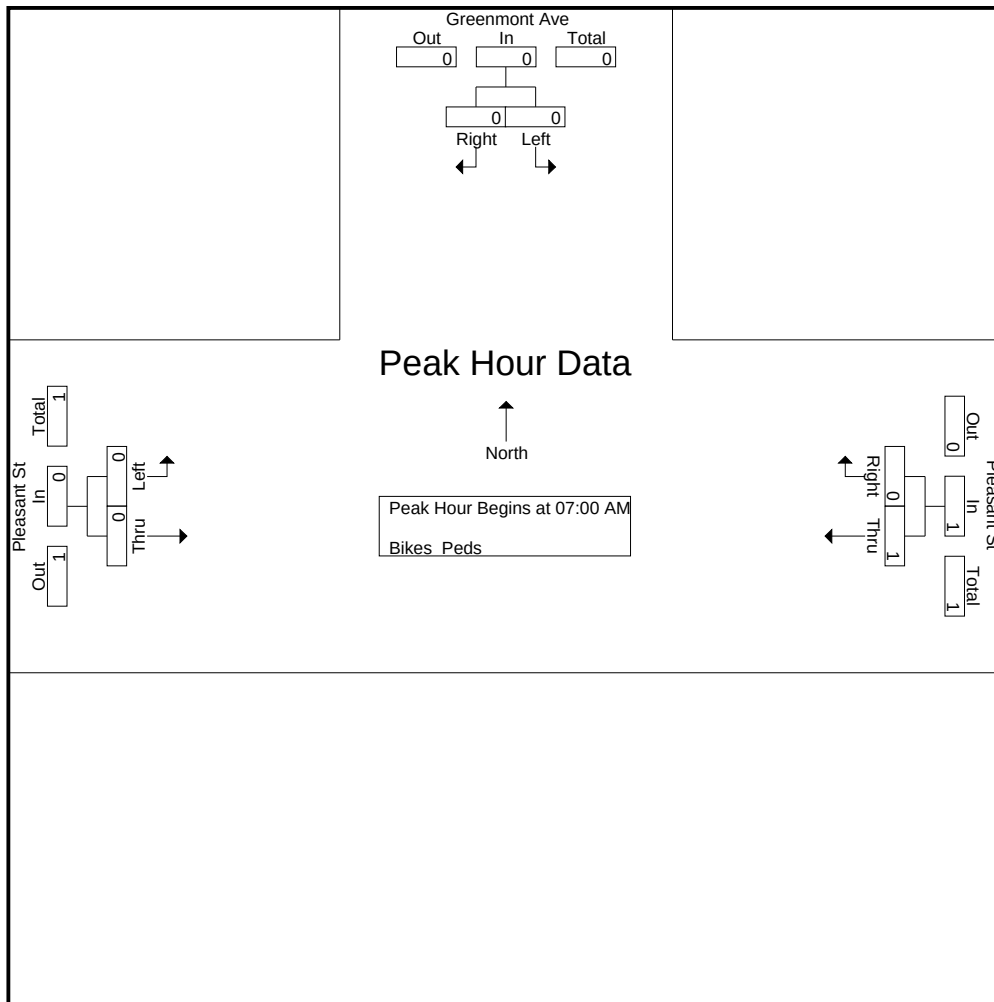
Weather : Clear

File Name : 16650001

Site Code : 16650001

Start Date : 11/28/2023

Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	1	0	1	0	0	0
Total Volume	0	0	0	1	0	1	0	0	0
% App. Total	0	0		100	0		0	0	
PHF	.000	.000	.000	.250	.000	.250	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Greenmont Avenue

E/W Street : Pleasant Street

City/State : Dracut, MA

Weather : Clear

File Name : 16650001

Site Code : 16650001

Start Date : 11/28/2023

Page No : 1

Groups Printed- Cars - Trucks

	Greenmont Ave From North		Pleasant St From East		Pleasant St From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
03:00 PM	4	17	136	2	17	129	305
03:15 PM	6	13	150	2	15	117	303
03:30 PM	2	18	145	2	24	160	351
03:45 PM	0	13	148	3	36	129	329
Total	12	61	579	9	92	535	1288
04:00 PM	2	14	167	0	35	126	344
04:15 PM	0	17	166	2	22	139	346
04:30 PM	2	10	157	4	20	117	310
04:45 PM	3	21	132	5	28	130	319
Total	7	62	622	11	105	512	1319
05:00 PM	1	23	125	3	21	121	294
05:15 PM	3	20	167	1	20	129	340
05:30 PM	1	10	139	4	26	119	299
05:45 PM	1	15	127	1	20	131	295
Total	6	68	558	9	87	500	1228
Grand Total	25	191	1759	29	284	1547	3835
Apprch %	11.6	88.4	98.4	1.6	15.5	84.5	
Total %	0.7	5	45.9	0.8	7.4	40.3	
Cars	24	189	1750	29	280	1531	3803
% Cars	96	99	99.5	100	98.6	99	99.2
Trucks	1	2	9	0	4	16	32
% Trucks	4	1	0.5	0	1.4	1	0.8

	Greenmont Ave From North			Pleasant St From East			Pleasant St From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 03:30 PM										
03:30 PM	2	18	20	145	2	147	24	160	184	351
03:45 PM	0	13	13	148	3	151	36	129	165	329
04:00 PM	2	14	16	167	0	167	35	126	161	344
04:15 PM	0	17	17	166	2	168	22	139	161	346
Total Volume	4	62	66	626	7	633	117	554	671	1370
% App. Total	6.1	93.9		98.9	1.1		17.4	82.6		
PHF	.500	.861	.825	.937	.583	.942	.813	.866	.912	.976
Cars	4	62	66	622	7	629	115	551	666	1361
% Cars	100	100	100	99.4	100	99.4	98.3	99.5	99.3	99.3
Trucks	0	0	0	4	0	4	2	3	5	9
% Trucks	0	0	0	0.6	0	0.6	1.7	0.5	0.7	0.7

Accurate Counts

978-664-2565

N/S Street : Greenmont Avenue

E/W Street : Pleasant Street

City/State : Dracut, MA

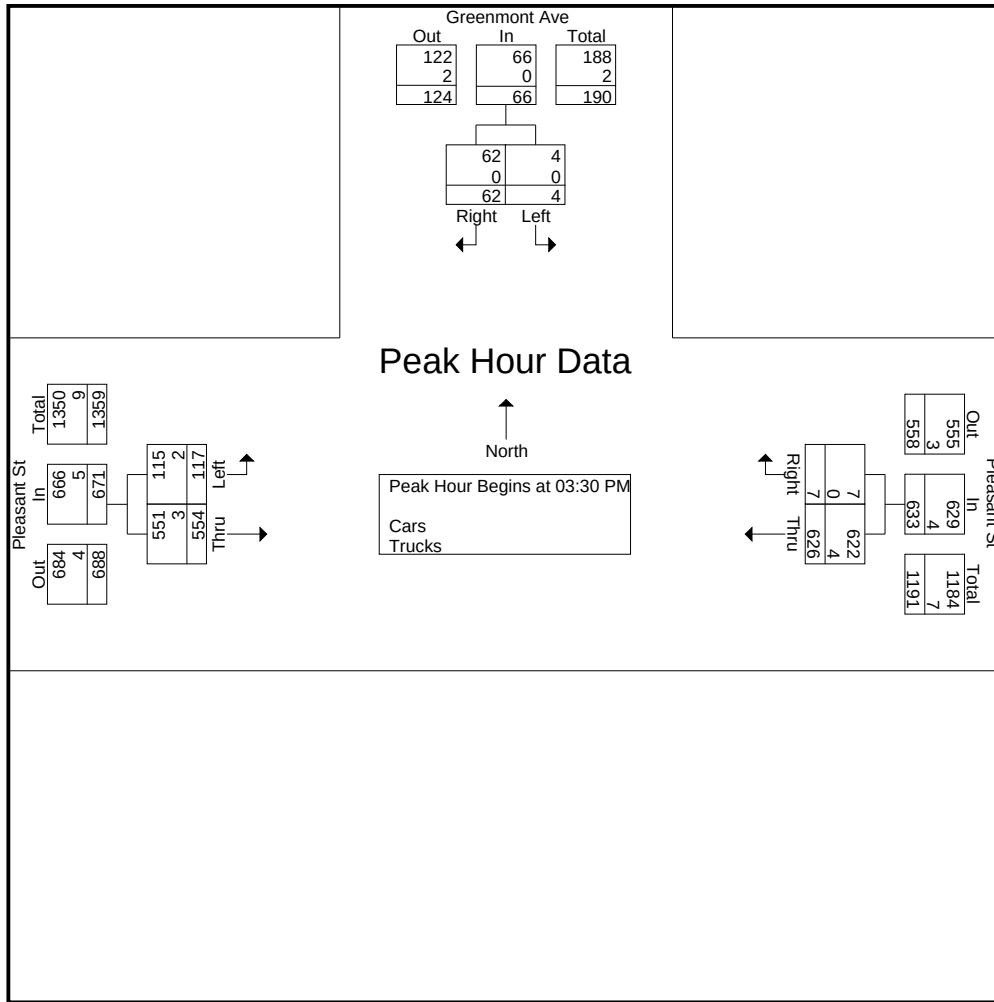
Weather : Clear

File Name : 16650001

Site Code : 16650001

Start Date : 11/28/2023

Page No : 2



Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:30 PM			03:45 PM			03:30 PM		
+0 mins.	2	10	12	148	3	151	24	160	184
+15 mins.	3	21	24	167	0	167	36	129	165
+30 mins.	1	23	24	166	2	168	35	126	161
+45 mins.	3	20	23	157	4	161	22	139	161
Total Volume	9	74	83	638	9	647	117	554	671
% App. Total	10.8	89.2		98.6	1.4		17.4	82.6	
PHF	.750	.804	.865	.955	.563	.963	.813	.866	.912
Cars	9	73	82	634	9	643	115	551	666
% Cars	100	98.6	98.8	99.4	100	99.4	98.3	99.5	99.3
Trucks	0	1	1	4	0	4	2	3	5
% Trucks	0	1.4	1.2	0.6	0	0.6	1.7	0.5	0.7

Accurate Counts

978-664-2565

N/S Street : Greenmont Avenue

E/W Street : Pleasant Street

City/State : Dracut, MA

Weather : Clear

File Name : 16650001

Site Code : 16650001

Start Date : 11/28/2023

Page No : 10

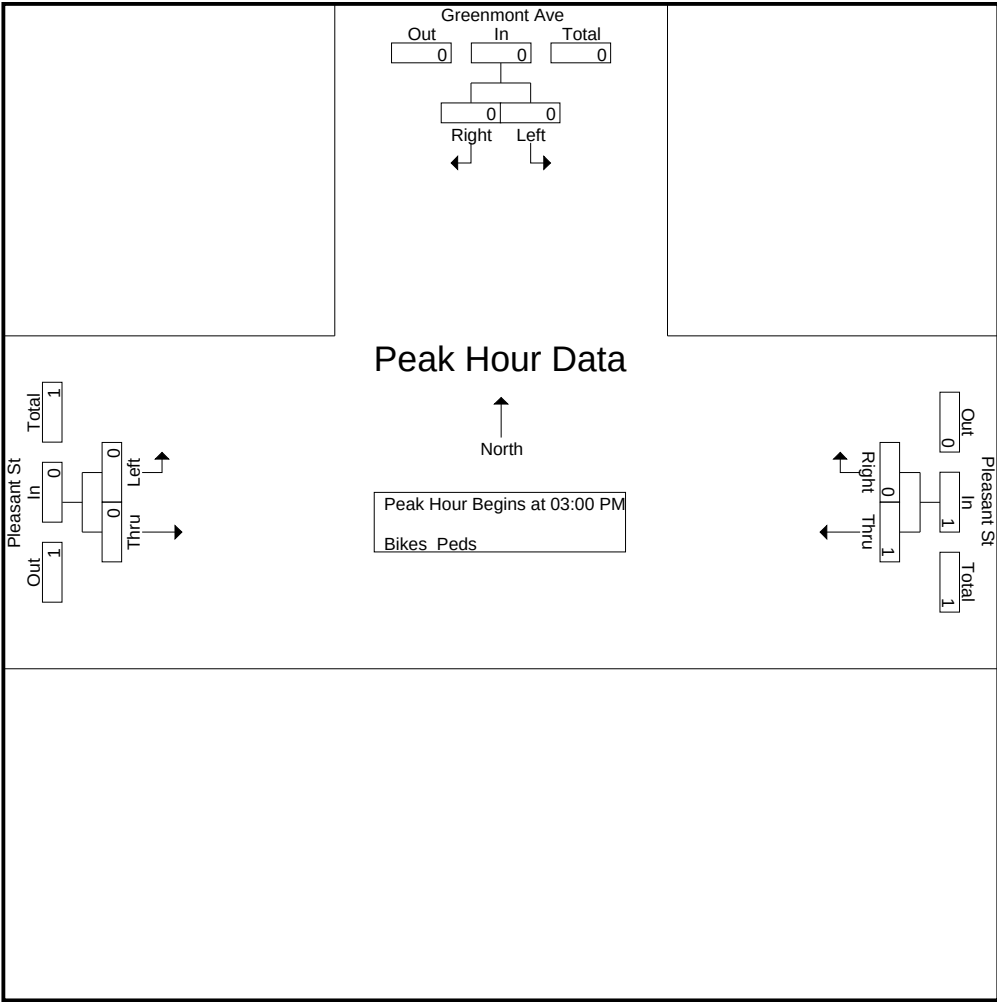
Groups Printed- Bikes Peds

	Greenmont Ave From North			Pleasant St From East			Pleasant St From West					
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds	Exclu. Total	Inclu. Total	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	1	0	0	0	0	0	0	1	1
Total	0	0	0	1	0	0	0	0	0	0	1	1
04:00 PM	0	0	0	0	0	0	0	0	1	1	0	1
04:15 PM	0	0	1	0	0	0	0	0	0	1	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	0	0	0	0	1	2	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	4	4	0	4
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	4	4	0	4
Grand Total	0	0	1	1	0	0	0	0	5	6	1	7
Apprch %	0	0		100	0		0	0				
Total %	0	0		100	0		0	0		85.7	14.3	

	Greenmont Ave From North			Pleasant St From East			Pleasant St From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 03:00 PM										
03:00 PM	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	1	0	1	0	0	0	1
Total Volume	0	0	0	1	0	1	0	0	0	1
% App. Total	0	0		100	0		0	0		
PHF	.000	.000	.000	.250	.000	.250	.000	.000	.000	.250

N/S Street : Greenmont Avenue
E/W Street : Pleasant Street
City/State : Dracut, MA
Weather : Clear

File Name : 16650001
Site Code : 16650001
Start Date : 11/28/2023
Page No : 11



Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:00 PM			03:00 PM			03:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	1	0	1	0	0	0
Total Volume	0	0	0	1	0	1	0	0	0
% App. Total	0	0		100	0		0	0	
PHF	.000	.000	.000	.250	.000	.250	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Bridge Street
E/W Street : Arlington St / Pleasant St
City/State : Dracut, MA
Weather : Clear

File Name : 16650003
Site Code : 16650003
Start Date : 11/28/2023
Page No : 1

Groups Printed- Cars - Trucks

	Bridge St From North			Arlington St From East			Bridge St From South			Pleasant St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	8	79	21	20	115	14	12	31	6	9	59	15	389
07:15 AM	18	74	10	25	85	11	18	47	22	14	100	13	437
07:30 AM	19	91	12	21	101	14	9	54	20	11	83	19	454
07:45 AM	14	58	14	16	76	16	10	64	22	11	92	13	406
Total	59	302	57	82	377	55	49	196	70	45	334	60	1686
08:00 AM	10	60	8	24	72	16	12	43	14	16	105	13	393
08:15 AM	14	82	21	21	88	20	9	59	20	7	84	18	443
08:30 AM	13	67	13	22	88	14	12	52	17	12	91	19	420
08:45 AM	9	57	16	22	95	12	6	55	26	14	76	17	405
Total	46	266	58	89	343	62	39	209	77	49	356	67	1661
Grand Total	105	568	115	171	720	117	88	405	147	94	690	127	3347
Apprch %	13.3	72.1	14.6	17	71.4	11.6	13.8	63.3	23	10.3	75.7	13.9	
Total %	3.1	17	3.4	5.1	21.5	3.5	2.6	12.1	4.4	2.8	20.6	3.8	
Cars	102	560	113	169	714	110	85	397	144	91	680	125	3290
% Cars	97.1	98.6	98.3	98.8	99.2	94	96.6	98	98	96.8	98.6	98.4	98.3
Trucks	3	8	2	2	6	7	3	8	3	3	10	2	57
% Trucks	2.9	1.4	1.7	1.2	0.8	6	3.4	2	2	3.2	1.4	1.6	1.7

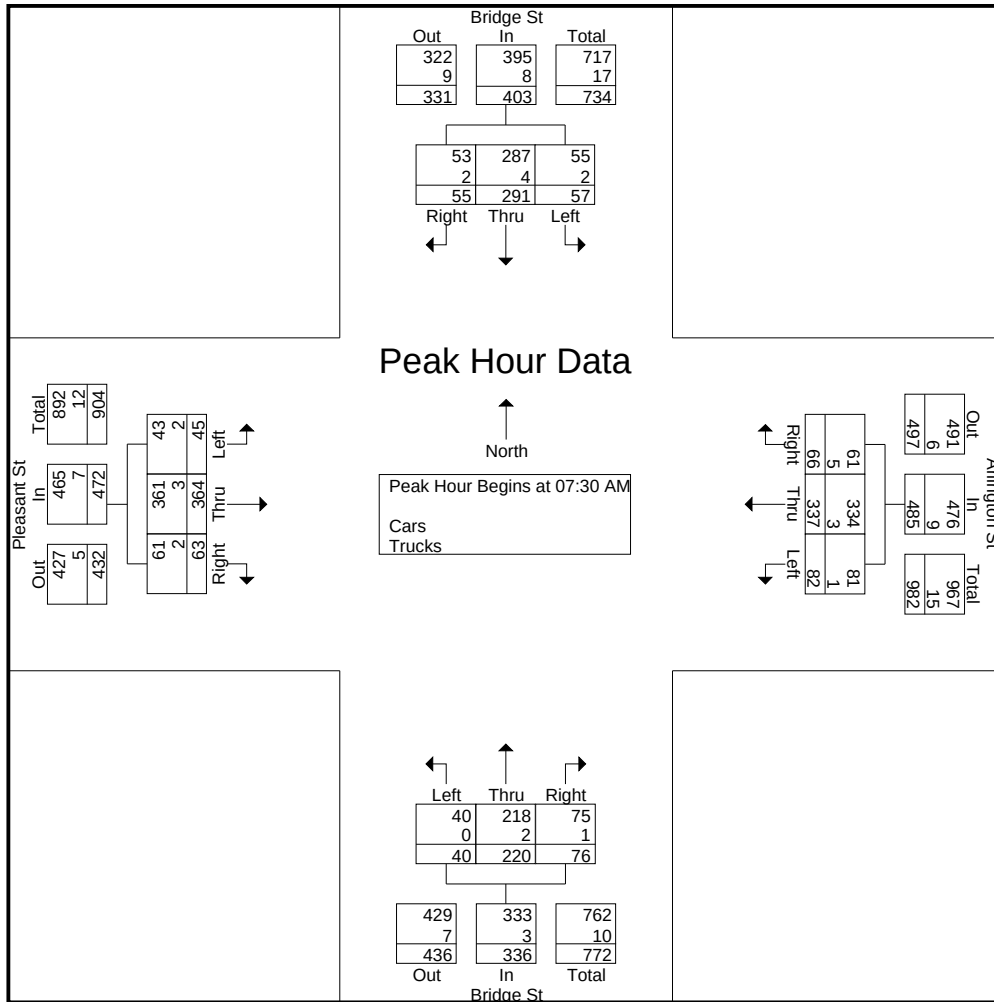
	Bridge St From North				Arlington St From East				Bridge St From South				Pleasant St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	19	91	12	122	21	101	14	136	9	54	20	83	11	83	19	113	454
07:45 AM	14	58	14	86	16	76	16	108	10	64	22	96	11	92	13	116	406
08:00 AM	10	60	8	78	24	72	16	112	12	43	14	69	16	105	13	134	393
08:15 AM	14	82	21	117	21	88	20	129	9	59	20	88	7	84	18	109	443
Total Volume	57	291	55	403	82	337	66	485	40	220	76	336	45	364	63	472	1696
% App. Total	14.1	72.2	13.6		16.9	69.5	13.6		11.9	65.5	22.6		9.5	77.1	13.3		
PHF	.750	.799	.655	.826	.854	.834	.825	.892	.833	.859	.864	.875	.703	.867	.829	.881	.934
Cars	55	287	53	395	81	334	61	476	40	218	75	333	43	361	61	465	1669
% Cars	96.5	98.6	96.4	98.0	98.8	99.1	92.4	98.1	100	99.1	98.7	99.1	95.6	99.2	96.8	98.5	98.4
Trucks	2	4	2	8	1	3	5	9	0	2	1	3	2	3	2	7	27
% Trucks	3.5	1.4	3.6	2.0	1.2	0.9	7.6	1.9	0	0.9	1.3	0.9	4.4	0.8	3.2	1.5	1.6

Accurate Counts

978-664-2565

N/S Street : Bridge Street
E/W Street : Arlington St / Pleasant St
City/State : Dracut, MA
Weather : Clear

File Name : 16650003
Site Code : 16650003
Start Date : 11/28/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:30 AM				07:15 AM			
+0 mins.	8	79	21	108	20	115	14	149	9	54	20	83	14	100	13	127
+15 mins.	18	74	10	102	25	85	11	121	10	64	22	96	11	83	19	113
+30 mins.	19	91	12	122	21	101	14	136	12	43	14	69	11	92	13	116
+45 mins.	14	58	14	86	16	76	16	108	9	59	20	88	16	105	13	134
Total Volume	59	302	57	418	82	377	55	514	40	220	76	336	52	380	58	490
% App. Total	14.1	72.2	13.6		16	73.3	10.7		11.9	65.5	22.6		10.6	77.6	11.8	
PHF	.776	.830	.679	.857	.820	.820	.859	.862	.833	.859	.864	.875	.813	.905	.763	.914
Cars	58	297	56	411	81	374	53	508	40	218	75	333	51	373	56	480
% Cars	98.3	98.3	98.2	98.3	98.8	99.2	96.4	98.8	100	99.1	98.7	99.1	98.1	98.2	96.6	98
Trucks	1	5	1	7	1	3	2	6	0	2	1	3	1	7	2	10
% Trucks	1.7	1.7	1.8	1.7	1.2	0.8	3.6	1.2	0	0.9	1.3	0.9	1.9	1.8	3.4	2

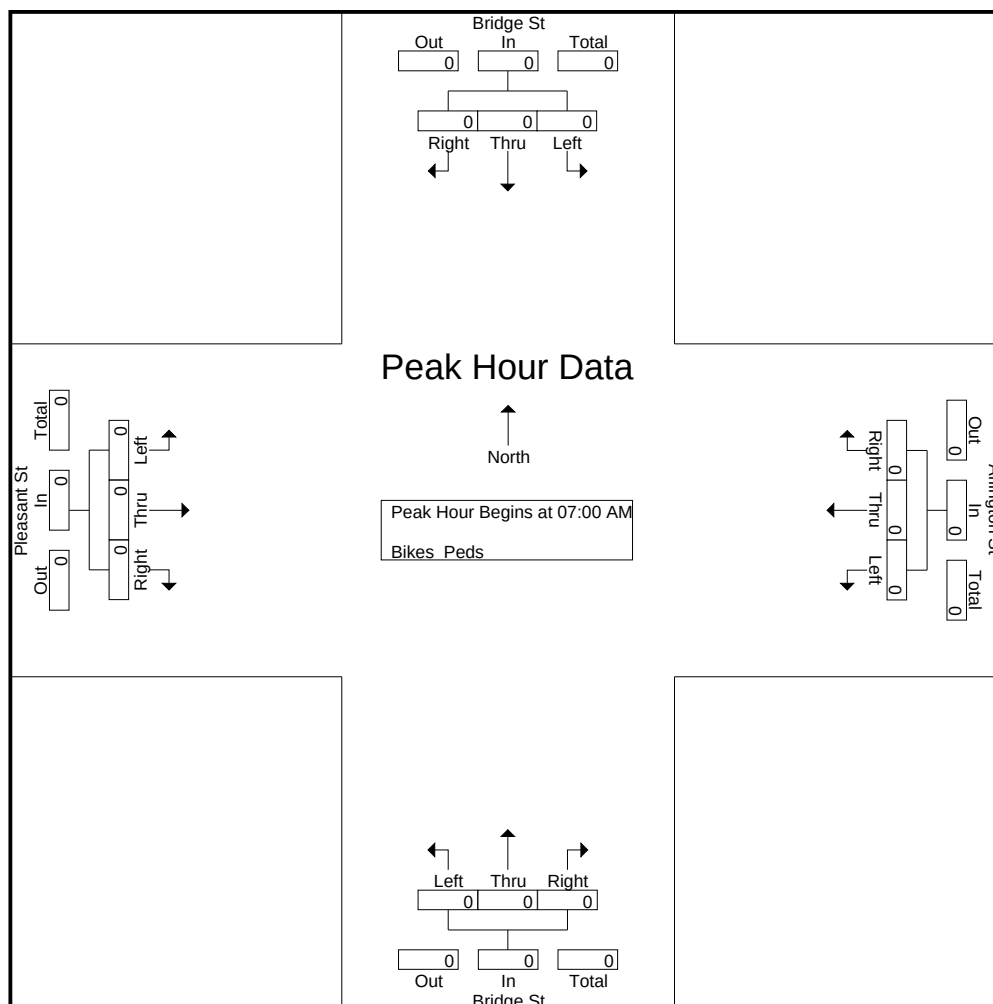
978-664-2565

File Name : 16650003
Site Code : 16650003
Start Date : 11/28/2023
Page No : 10

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978-664-2565

File Name : 16650003
Site Code : 16650003
Start Date : 11/28/2023
Page No : 11



Peak Hour for Each Approach Begins at:

Peak Hour for Each Approach Begins at:																
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Bridge Street
E/W Street : Arlington St / Pleasant St
City/State : Dracut, MA
Weather : Clear

File Name : 16650003
Site Code : 16650003
Start Date : 11/28/2023
Page No : 1

Groups Printed- Cars - Trucks

	Bridge St From North			Arlington St From East			Bridge St From South			Pleasant St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
03:00 PM	9	63	19	29	105	26	16	75	20	14	90	13	479
03:15 PM	26	76	14	30	125	24	14	77	28	8	90	25	537
03:30 PM	23	77	11	37	111	31	18	61	31	13	107	23	543
03:45 PM	18	84	15	30	112	27	18	67	30	15	97	30	543
Total	76	300	59	126	453	108	66	280	109	50	384	91	2102
04:00 PM	15	70	12	50	141	24	23	86	30	10	108	18	587
04:15 PM	9	84	20	38	127	24	16	78	32	15	99	23	565
04:30 PM	21	47	16	27	120	32	22	88	24	14	91	16	518
04:45 PM	15	80	12	35	111	19	18	59	32	8	92	24	505
Total	60	281	60	150	499	99	79	311	118	47	390	81	2175
05:00 PM	17	75	9	30	106	34	18	81	32	21	91	11	525
05:15 PM	5	72	17	25	121	23	31	71	27	9	96	27	524
05:30 PM	14	84	14	27	100	14	17	66	27	22	79	12	476
05:45 PM	16	81	21	35	81	15	25	75	29	13	105	19	515
Total	52	312	61	117	408	86	91	293	115	65	371	69	2040
Grand Total	188	893	180	393	1360	293	236	884	342	162	1145	241	6317
Apprch %	14.9	70.8	14.3	19.2	66.5	14.3	16.1	60.5	23.4	10.5	74	15.6	
Total %	3	14.1	2.8	6.2	21.5	4.6	3.7	14	5.4	2.6	18.1	3.8	
Cars	183	890	177	390	1355	284	236	875	339	161	1130	239	6259
% Cars	97.3	99.7	98.3	99.2	99.6	96.9	100	99	99.1	99.4	98.7	99.2	99.1
Trucks	5	3	3	3	5	9	0	9	3	1	15	2	58
% Trucks	2.7	0.3	1.7	0.8	0.4	3.1	0	1	0.9	0.6	1.3	0.8	0.9

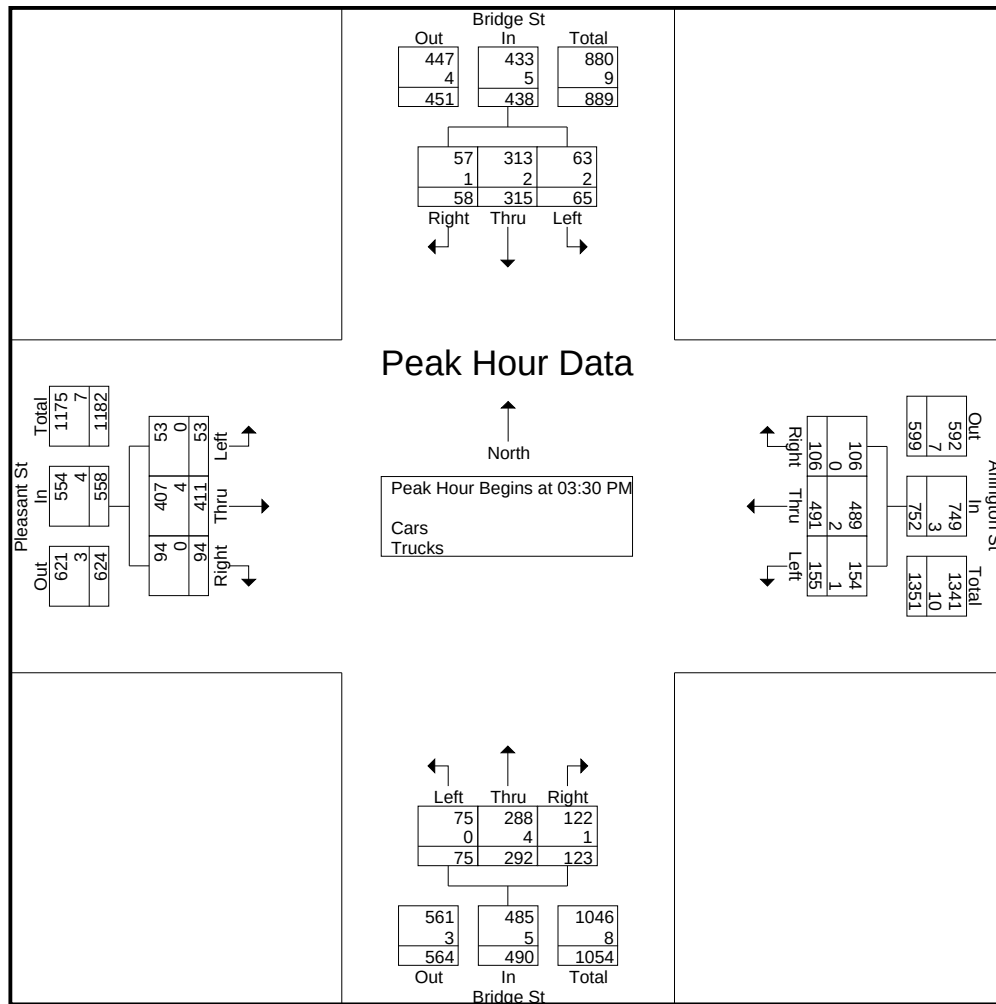
	Bridge St From North				Arlington St From East				Bridge St From South				Pleasant St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	23	77	11	111	37	111	31	179	18	61	31	110	13	107	23	143	543
03:45 PM	18	84	15	117	30	112	27	169	18	67	30	115	15	97	30	142	543
04:00 PM	15	70	12	97	50	141	24	215	23	86	30	139	10	108	18	136	587
04:15 PM	9	84	20	113	38	127	24	189	16	78	32	126	15	99	23	137	565
Total Volume	65	315	58	438	155	491	106	752	75	292	123	490	53	411	94	558	2238
% App. Total	14.8	71.9	13.2		20.6	65.3	14.1		15.3	59.6	25.1		9.5	73.7	16.8		
PHF	.707	.938	.725	.936	.775	.871	.855	.874	.815	.849	.961	.881	.883	.951	.783	.976	.953
Cars	63	313	57	433	154	489	106	749	75	288	122	485	53	407	94	554	2221
% Cars	96.9	99.4	98.3	98.9	99.4	99.6	100	99.6	100	98.6	99.2	99.0	100	99.0	100	99.3	99.2
Trucks	2	2	1	5	1	2	0	3	0	4	1	5	0	4	0	4	17
% Trucks	3.1	0.6	1.7	1.1	0.6	0.4	0	0.4	0	1.4	0.8	1.0	0	1.0	0	0.7	0.8

Accurate Counts

978-664-2565

N/S Street : Bridge Street
E/W Street : Arlington St / Pleasant St
City/State : Dracut, MA
Weather : Clear

File Name : 16650003
Site Code : 16650003
Start Date : 11/28/2023
Page No : 2



Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:15 PM				03:30 PM				03:45 PM				03:30 PM			
+0 mins.	26	76	14	116	37	111	31	179	18	67	30	115	13	107	23	143
+15 mins.	23	77	11	111	30	112	27	169	23	86	30	139	15	97	30	142
+30 mins.	18	84	15	117	50	141	24	215	16	78	32	126	10	108	18	136
+45 mins.	15	70	12	97	38	127	24	189	22	88	24	134	15	99	23	137
Total Volume	82	307	52	441	155	491	106	752	79	319	116	514	53	411	94	558
% App. Total	18.6	69.6	11.8		20.6	65.3	14.1		15.4	62.1	22.6		9.5	73.7	16.8	
PHF	.788	.914	.867	.942	.775	.871	.855	.874	.859	.906	.906	.924	.883	.951	.783	.976
Cars	79	306	51	436	154	489	106	749	79	316	115	510	53	407	94	554
% Cars	96.3	99.7	98.1	98.9	99.4	99.6	100	99.6	100	99.1	99.1	99.2	100	99	100	99.3
Trucks	3	1	1	5	1	2	0	3	0	3	1	4	0	4	0	4
% Trucks	3.7	0.3	1.9	1.1	0.6	0.4	0	0.4	0	0.9	0.9	0.8	0	1	0	0.7

Accurate Counts

978-664-2565

N/S Street : Bridge Street
E/W Street : Arlington St / Pleasant St
City/State : Dracut, MA
Weather : Clear

File Name : 16650003
Site Code : 16650003
Start Date : 11/28/2023
Page No : 10

Groups Printed- Bikes Peds

	Bridge St From North				Arlington St From East				Bridge St From South				Pleasant St From West				Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	5
03:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2	0	2
03:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	1	8	0	8
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	1	0	0	0	6	0	1	0	0	0	0	0	1	8	1	9
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	6	0	1	0	0	0	0	0	1	8	1	9
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1
05:30 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	3	0	3
Grand Total	0	0	0	1	0	0	0	15	0	1	0	1	0	0	0	2	19	1	20
Apprch %	0	0	0		0	0	0		0	100	0		0	0	0				
Total %	0	0	0		0	0	0		0	100	0		0	0	0		95	5	

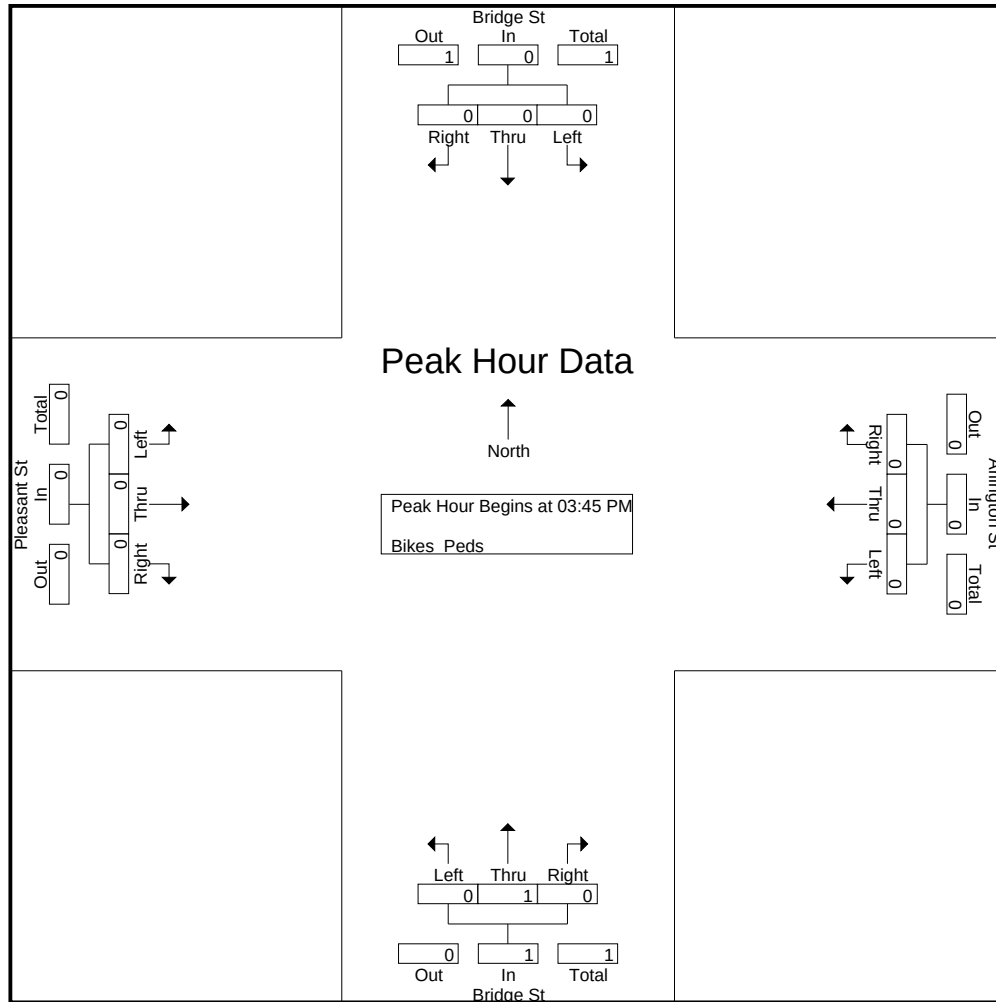
	Bridge St From North				Arlington St From East				Bridge St From South				Pleasant St From West						
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total			Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 03:45 PM																			
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0			1
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0				
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000		.250

Accurate Counts

978-664-2565

N/S Street : Bridge Street
E/W Street : Arlington St / Pleasant St
City/State : Dracut, MA
Weather : Clear

File Name : 16650003
Site Code : 16650003
Start Date : 11/28/2023
Page No : 11



Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:00 PM				03:00 PM				03:45 PM				03:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : Bridge Street
E/W Street : Green St / Greenmont Ave
City/State : Dracut, MA
Weather : Clear

File Name : 16650004
Site Code : 16650004
Start Date : 11/28/2023
Page No : 1

Groups Printed- Cars - Trucks

	Bridge St From North			Green St From East			Bridge St From South			Greenmont Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	103	2	0	2	0	1	56	0	8	1	3	176
07:15 AM	0	90	4	0	0	0	0	73	0	8	0	5	180
07:30 AM	0	123	10	1	0	0	0	70	1	5	1	2	213
07:45 AM	0	84	7	0	0	1	2	87	0	11	1	4	197
Total	0	400	23	1	2	1	3	286	1	32	3	14	766
08:00 AM	0	94	9	0	1	0	2	65	0	7	0	0	178
08:15 AM	0	98	11	2	2	0	3	80	0	14	1	1	212
08:30 AM	0	93	4	1	2	0	1	84	0	8	2	3	198
08:45 AM	0	78	7	0	1	1	1	77	0	8	2	2	177
Total	0	363	31	3	6	1	7	306	0	37	5	6	765
Grand Total	0	763	54	4	8	2	10	592	1	69	8	20	1531
Apprch %	0	93.4	6.6	28.6	57.1	14.3	1.7	98.2	0.2	71.1	8.2	20.6	
Total %	0	49.8	3.5	0.3	0.5	0.1	0.7	38.7	0.1	4.5	0.5	1.3	
Cars	0	740	54	3	7	2	8	567	1	66	8	18	1474
% Cars	0	97	100	75	87.5	100	80	95.8	100	95.7	100	90	96.3
Trucks	0	23	0	1	1	0	2	25	0	3	0	2	57
% Trucks	0	3	0	25	12.5	0	20	4.2	0	4.3	0	10	3.7

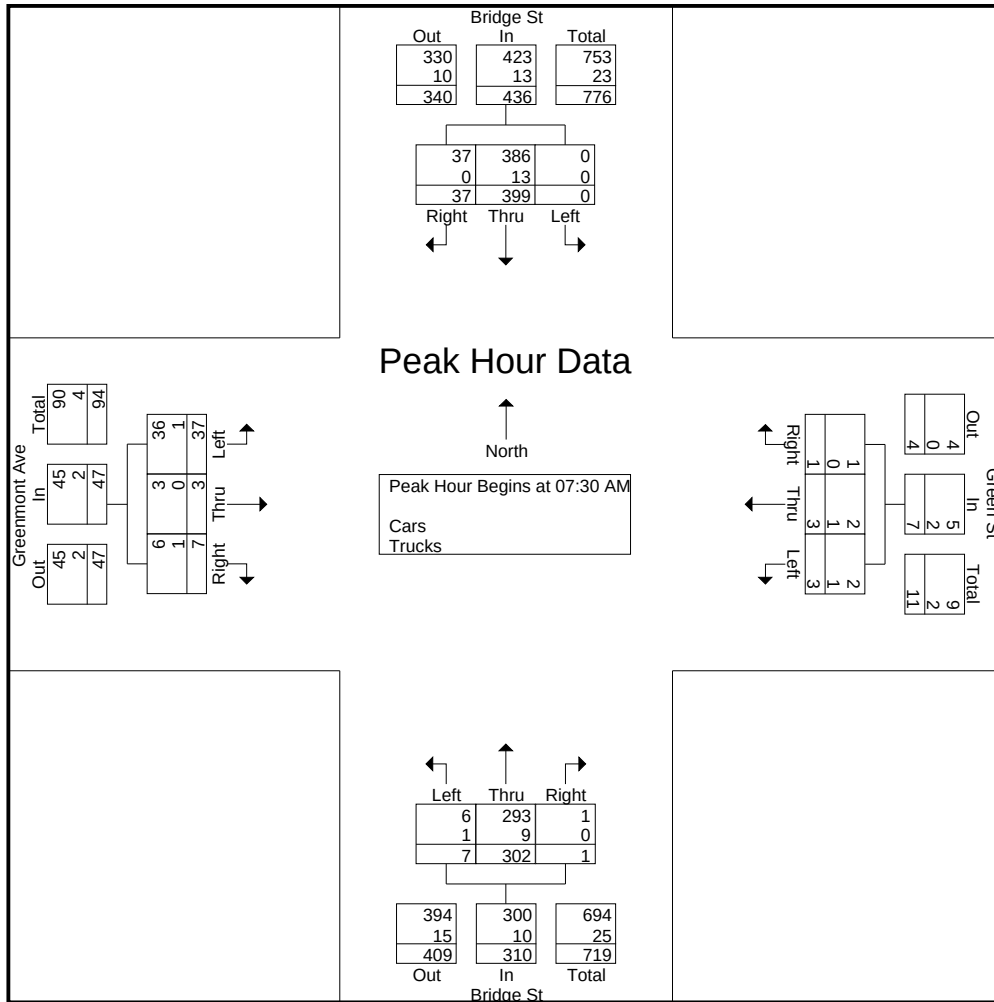
	Bridge St From North				Green St From East				Bridge St From South				Greenmont Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	123	10	133	1	0	0	1	0	70	1	71	5	1	2	8	213
07:45 AM	0	84	7	91	0	0	1	1	2	87	0	89	11	1	4	16	197
08:00 AM	0	94	9	103	0	1	0	1	2	65	0	67	7	0	0	7	178
08:15 AM	0	98	11	109	2	2	0	4	3	80	0	83	14	1	1	16	212
Total Volume	0	399	37	436	3	3	1	7	7	302	1	310	37	3	7	47	800
% App. Total	0	91.5	8.5		42.9	42.9	14.3		2.3	97.4	0.3		78.7	6.4	14.9		
PHF	.000	.811	.841	.820	.375	.375	.250	.438	.583	.868	.250	.871	.661	.750	.438	.734	.939
Cars	0	386	37	423	2	2	1	5	6	293	1	300	36	3	6	45	773
% Cars	0	96.7	100	97.0	66.7	66.7	100	71.4	85.7	97.0	100	96.8	97.3	100	85.7	95.7	96.6
Trucks	0	13	0	13	1	1	0	2	1	9	0	10	1	0	1	2	27
% Trucks	0	3.3	0	3.0	33.3	33.3	0	28.6	14.3	3.0	0	3.2	2.7	0	14.3	4.3	3.4

Accurate Counts

978-664-2565

N/S Street : Bridge Street
E/W Street : Green St / Greenmont Ave
City/State : Dracut, MA
Weather : Clear

File Name : 16650004
Site Code : 16650004
Start Date : 11/28/2023
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM				08:00 AM				07:45 AM				07:45 AM			
+0 mins.	0	123	10	133	0	1	0	1	2	87	0	89	11	1	4	16
+15 mins.	0	84	7	91	2	2	0	4	2	65	0	67	7	0	0	7
+30 mins.	0	94	9	103	1	2	0	3	3	80	0	83	14	1	1	16
+45 mins.	0	98	11	109	0	1	1	2	1	84	0	85	8	2	3	13
Total Volume	0	399	37	436	3	6	1	10	8	316	0	324	40	4	8	52
% App. Total	0	91.5	8.5		30	60	10		2.5	97.5	0		76.9	7.7	15.4	
PHF	.000	.811	.841	.820	.375	.750	.250	.625	.667	.908	.000	.910	.714	.500	.500	.813
Cars	0	386	37	423	2	5	1	8	7	307	0	314	39	4	7	50
% Cars	0	96.7	100	97	66.7	83.3	100	80	87.5	97.2	0	96.9	97.5	100	87.5	96.2
Trucks	0	13	0	13	1	1	0	2	1	9	0	10	1	0	1	2
% Trucks	0	3.3	0	3	33.3	16.7	0	20	12.5	2.8	0	3.1	2.5	0	12.5	3.8

978-664-2565

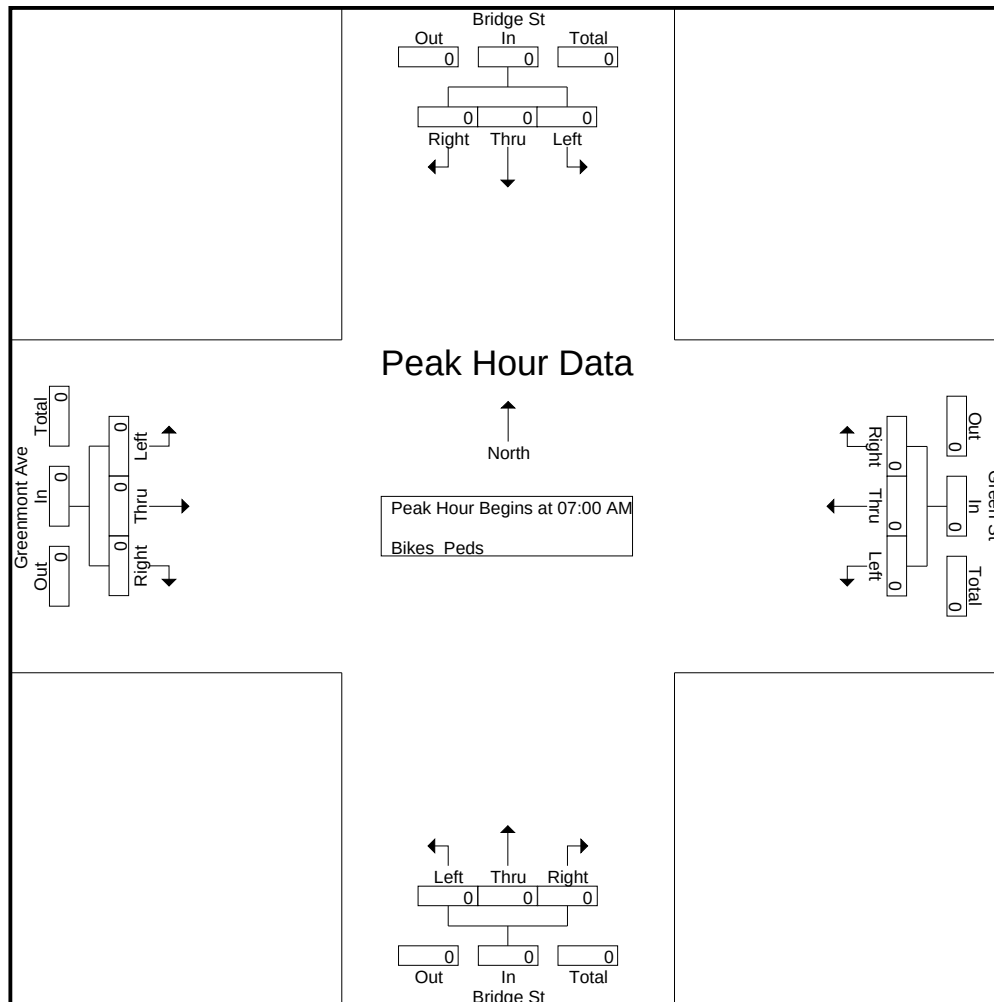
File Name : 16650004
Site Code : 16650004
Start Date : 11/28/2023
Page No : 10

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978-664-2565

N/S Street : Bridge Street
E/W Street : Green St / Greenmont Ave
City/State : Dracut, MA
Weather : Clear

File Name : 16650004
Site Code : 16650004
Start Date : 11/28/2023
Page No : 11



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

[illegible]

Accurate Counts

978-664-2565

N/S Street : Bridge Street
E/W Street : Green St / Greenmont Ave
City/State : Dracut, MA
Weather : Clear

File Name : 16650004
Site Code : 16650004
Start Date : 11/28/2023
Page No : 1

Groups Printed- Cars - Trucks

	Bridge St From North			Green St From East			Bridge St From South			Greenmont Ave From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
03:00 PM	1	100	9	1	0	0	4	107	0	14	0	1	237
03:15 PM	0	106	12	0	0	1	7	104	1	11	2	2	246
03:30 PM	0	119	9	0	0	2	6	99	1	16	1	6	259
03:45 PM	0	110	13	1	1	0	3	114	0	22	2	6	272
Total	1	435	43	2	1	3	20	424	2	63	5	15	1014
04:00 PM	0	99	9	0	2	0	4	125	1	29	3	1	273
04:15 PM	0	121	9	0	1	0	3	107	1	9	0	2	253
04:30 PM	0	81	10	0	0	0	5	118	2	16	1	0	233
04:45 PM	0	96	18	0	0	0	3	79	0	16	0	2	214
Total	0	397	46	0	3	0	15	429	4	70	4	5	973
05:00 PM	0	92	14	0	0	0	5	128	0	17	0	3	259
05:15 PM	0	99	9	0	0	0	4	98	0	12	1	4	227
05:30 PM	0	115	6	1	0	0	5	88	0	16	2	3	236
05:45 PM	0	107	9	0	1	0	5	101	2	10	0	3	238
Total	0	413	38	1	1	0	19	415	2	55	3	13	960
Grand Total	1	1245	127	3	5	3	54	1268	8	188	12	33	2947
Apprch %	0.1	90.7	9.2	27.3	45.5	27.3	4.1	95.3	0.6	80.7	5.2	14.2	
Total %	0	42.2	4.3	0.1	0.2	0.1	1.8	43	0.3	6.4	0.4	1.1	
Cars	1	1237	126	3	5	3	51	1246	8	187	11	31	2909
% Cars	100	99.4	99.2	100	100	100	94.4	98.3	100	99.5	91.7	93.9	98.7
Trucks	0	8	1	0	0	0	3	22	0	1	1	2	38
% Trucks	0	0.6	0.8	0	0	0	5.6	1.7	0	0.5	8.3	6.1	1.3

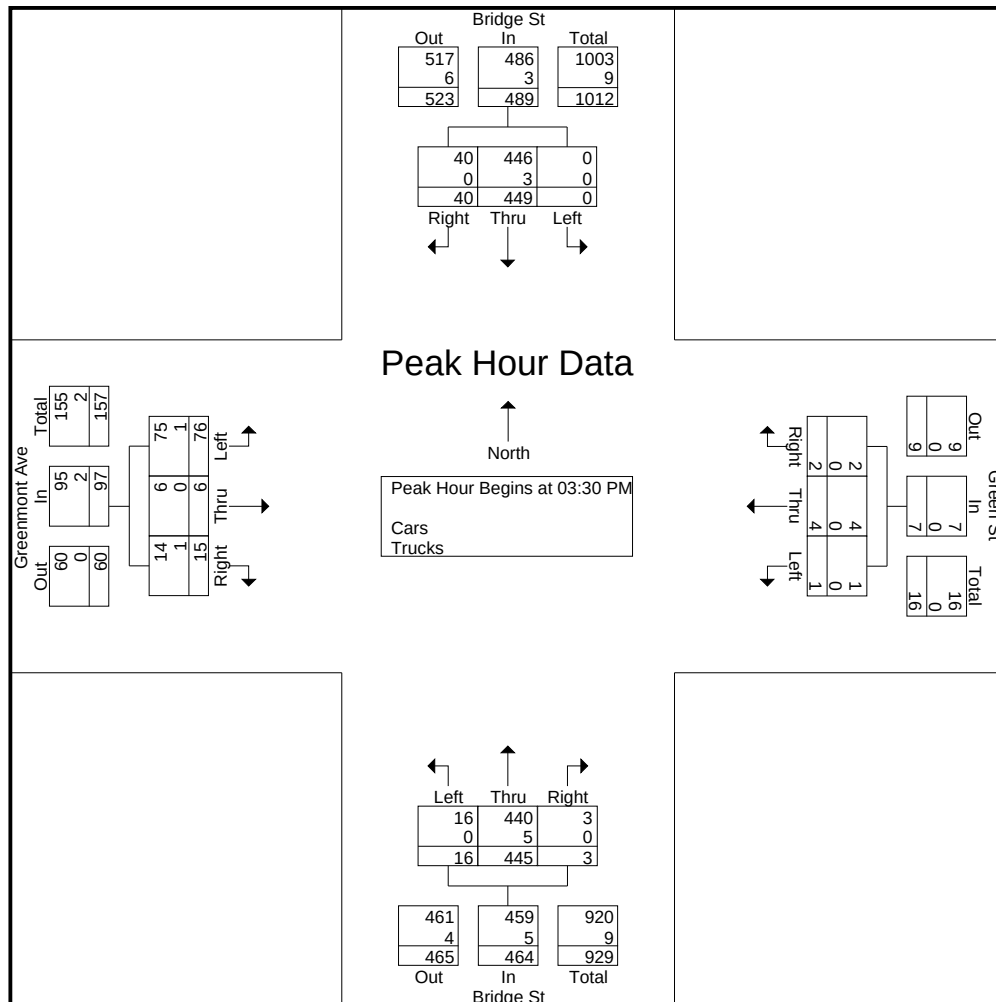
	Bridge St From North				Green St From East				Bridge St From South				Greenmont Ave From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	0	119	9	128	0	0	2	2	6	99	1	106	16	1	6	23	259
03:45 PM	0	110	13	123	1	1	0	2	3	114	0	117	22	2	6	30	272
04:00 PM	0	99	9	108	0	2	0	2	4	125	1	130	29	3	1	33	273
04:15 PM	0	121	9	130	0	1	0	1	3	107	1	111	9	0	2	11	253
Total Volume	0	449	40	489	1	4	2	7	16	445	3	464	76	6	15	97	1057
% App. Total	0	91.8	8.2		14.3	57.1	28.6		3.4	95.9	0.6		78.4	6.2	15.5		
PHF	.000	.928	.769	.940	.250	.500	.250	.875	.667	.890	.750	.892	.655	.500	.625	.735	.968
Cars	0	446	40	486	1	4	2	7	16	440	3	459	75	6	14	95	1047
% Cars	0	99.3	100	99.4	100	100	100	100	100	98.9	100	98.9	98.7	100	93.3	97.9	99.1
Trucks	0	3	0	3	0	0	0	0	0	5	0	5	1	0	1	2	10
% Trucks	0	0.7	0	0.6	0	0	0	0	0	1.1	0	1.1	1.3	0	6.7	2.1	0.9

Accurate Counts

978-664-2565

N/S Street : Bridge Street
E/W Street : Green St / Greenmont Ave
City/State : Dracut, MA
Weather : Clear

File Name : 16650004
Site Code : 16650004
Start Date : 11/28/2023
Page No : 2



Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:30 PM				03:15 PM				03:45 PM				03:15 PM			
+0 mins.	0	119	9	128	0	0	1	1	3	114	0	117	11	2	2	15
+15 mins.	0	110	13	123	0	0	2	2	4	125	1	130	16	1	6	23
+30 mins.	0	99	9	108	1	1	0	2	3	107	1	111	22	2	6	30
+45 mins.	0	121	9	130	0	2	0	2	5	118	2	125	29	3	1	33
Total Volume	0	449	40	489	1	3	3	7	15	464	4	483	78	8	15	101
% App. Total	0	91.8	8.2		14.3	42.9	42.9		3.1	96.1	0.8		77.2	7.9	14.9	
PHF	.000	.928	.769	.940	.250	.375	.375	.875	.750	.928	.500	.929	.672	.667	.625	.765
Cars	0	446	40	486	1	3	3	7	15	459	4	478	77	8	14	99
% Cars	0	99.3	100	99.4	100	100	100	100	100	98.9	100	99	98.7	100	93.3	98
Trucks	0	3	0	3	0	0	0	0	0	5	0	5	1	0	1	2
% Trucks	0	0.7	0	0.6	0	0	0	0	0	1.1	0	1	1.3	0	6.7	2

Accurate Counts

978-664-2565

N/S Street : Bridge Street
E/W Street : Green St / Greenmont Ave
City/State : Dracut, MA
Weather : Clear

File Name : 16650004
Site Code : 16650004
Start Date : 11/28/2023
Page No : 10

Groups Printed- Bikes Peds

	Bridge St From North				Green St From East				Bridge St From South				Greenmont Ave From West				Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
03:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
Total	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	1	2
04:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	2
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	2	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Grand Total	0	2	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2	4	6
Apprch %	0	100	0		0	100	0		0	100	0		0	0	0				
Total %	0	50	0		0	25	0		0	25	0		0	0	0		33.3	66.7	

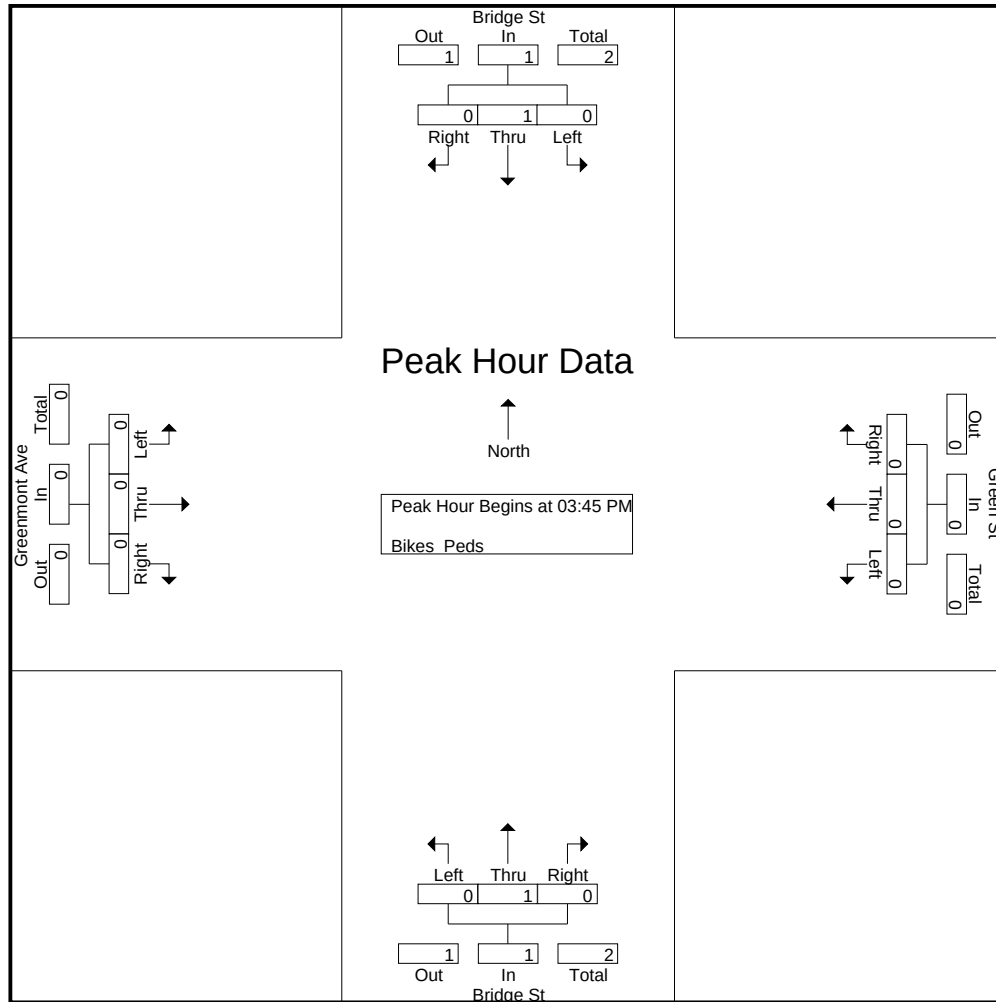
	Bridge St From North				Green St From East				Bridge St From South				Greenmont Ave From West				Int. Total
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:45 PM																	
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
% App. Total	0	100	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.500

Accurate Counts

978-664-2565

N/S Street : Bridge Street
E/W Street : Green St / Greenmont Ave
City/State : Dracut, MA
Weather : Clear

File Name : 16650004
Site Code : 16650004
Start Date : 11/28/2023
Page No : 11



Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:45 PM				03:00 PM				03:15 PM				03:00 PM			
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0
Total Volume	0	1	0	1	0	1	0	1	0	1	0	1	0	0	0	0
% App. Total	0	100	0		0	100	0		0	100	0		0	0	0	
PHF	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.000	.000	.000	.000

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Appendix C: Traffic-Volume Adjustments

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Massachusetts Highway Department
Statewide Traffic Data Collection
2019 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
R1	1.22	1.14	1.12	1.06	1.00	0.96	0.87	0.85	0.96	0.99	1.04	1.12	0.85
R2	0.95	0.96	0.98	0.97	0.97	0.93	0.97	0.94	0.96	0.90	0.92	0.93	0.96
R3	1.15	1.06	1.07	1.00	0.89	0.88	0.89	0.89	0.95	0.92	1.02	1.01	0.97
R4-R7	1.09	1.09	1.11	1.02	0.96	0.92	0.89	0.89	0.99	0.98	1.09	1.13	0.98
U1-Boston	1.03	1.01	0.98	0.94	0.94	0.92	0.95	0.93	0.94	0.94	0.97	1.04	0.96
U1-Essex	1.09	1.06	1.03	0.99	0.94	0.90	0.88	0.86	0.93	0.94	0.99	1.06	0.93
U1-Southeast	1.06	1.05	1.01	0.97	0.95	0.93	0.93	0.90	0.94	0.94	0.98	1.04	0.98
U1-West	1.19	1.14	1.09	0.95	0.92	0.89	0.89	0.86	0.91	0.95	0.97	1.07	0.84
U1-Worcester	1.02	1.04	0.97	0.94	0.93	0.91	0.95	0.91	0.93	0.92	0.95	1.10	0.88
U2	1.01	1.00	0.94	0.93	0.91	0.89	0.93	0.90	0.90	0.91	0.94	1.02	0.99
U3	1.06	1.03	0.98	0.94	0.93	0.91	0.95	0.91	0.92	0.93	0.97	1.00	0.98
U4-U7	1.01	1.00	0.95	0.92	0.88	0.86	0.92	0.91	0.92	0.94	0.99	1.04	0.99
Rec - East	1.04	1.16	1.12	0.98	0.92	0.88	0.77	0.81	0.94	1.02	1.08	1.12	0.99
Rec - West	1.30	1.23	1.32	1.18	0.95	0.82	0.70	0.69	0.97	0.96	1.16	1.15	0.98

Round off:

0-999 = 10

>1000 = 100

U = Urban

R = Rural

1 - Interstate

2 - Freeway and Expressway

3 - Other Principal Arterial

4 - Minor Arterial

5 - Major Collector

6 - Minor Collector

7 - Local Road and Street

Recreational - East Group - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations 7014,7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108 and 7178), Martha's Vineyard and Nantucket.

Recreational - West Group - Continuous Stations 2 and 189 including stations 1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113,1114, 1116,2196,2197 and 2198.

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Appendix D: Vehicle Speeds

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Accurate Counts
978-664-2565

Location : Greenmont Avenue
Location : West of Bridge Street
City/State: Dracut, MA
Direction: EB,

Site Code: 16650001

11/28/2023	0 3	3 6	6 9	9 12	12 15	15 18	18 21	21 24	24 27	27 30	30 33	33 36	36 39	39	Total
Time	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	
12:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
1:00	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
2:00	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	1	0	0	3	0	0	0	0	0	0	4
5:00	0	0	0	0	0	2	3	2	4	1	0	0	0	1	13
6:00	0	0	0	0	1	7	12	8	5	4	0	1	1	0	39
7:00	0	0	0	2	2	5	11	9	5	1	2	1	1	0	39
8:00	0	0	0	0	2	11	10	11	4	4	0	0	0	0	42
9:00	0	0	0	0	3	3	9	6	5	2	3	0	0	0	31
10:00	0	0	0	0	5	6	9	8	8	2	0	0	0	0	38
11:00	0	0	0	0	4	11	13	7	9	4	3	0	0	0	51
12:00 PM	0	0	0	0	2	8	8	7	4	3	1	1	0	0	34
1:00	0	0	0	0	5	8	7	16	9	1	1	0	0	0	47
2:00	0	0	0	1	5	9	15	20	12	3	1	0	0	0	66
3:00	0	0	0	0	6	11	21	14	19	4	1	2	1	0	79
4:00	0	0	0	0	7	6	21	15	8	6	1	0	1	1	66
5:00	0	0	1	3	4	14	14	12	9	2	2	0	0	0	61
6:00	0	0	0	1	4	10	9	7	3	0	2	0	0	0	36
7:00	0	0	0	0	2	6	15	2	2	0	1	0	0	0	28
8:00	0	0	0	0	2	2	3	3	4	2	0	0	0	0	16
9:00	0	0	0	1	2	2	3	3	0	0	0	0	0	0	11
10:00	0	0	0	0	2	0	1	2	0	0	1	0	0	0	6
11:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	1	8	59	121	186	158	110	39	19	5	4	2	712

Percentile	15th	50th	85th	95th
S eed	16	20	25	30
Mean S eed Average	21 4			
10 MP Pace S eed	15 24			
umber in Pace	500			
Percent in Pace	70 2			
umber 21 MP	337			
Percent 21 MP	47 3			

Accurate Counts
978-664-2565

Location : Greenmont Avenue
Location : West of Bridge Street
City/State: Dracut, MA
Direction: EB,

Site Code: 16650001

11/29/2023	0 3	3 6	6 9	9 12	12 15	15 18	18 21	21 24	24 27	27 30	30 33	33 36	36 39	39	Total
Time	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	
12:00 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	1	1	1	0	0	0	0	0	0	3
5:00	0	0	0	0	0	1	5	6	2	1	1	0	0	0	16
6:00	0	0	0	0	1	4	7	8	6	6	1	0	0	2	35
7:00	0	0	0	0	1	6	2	10	12	8	4	2	0	0	45
8:00	0	0	0	0	1	5	7	11	10	10	4	3	0	0	51
9:00	0	0	0	0	1	4	5	9	8	5	3	0	0	1	36
10:00	0	0	0	0	1	3	9	6	9	5	0	1	0	0	34
11:00	0	0	0	0	0	3	8	5	6	5	6	3	0	0	36
12:00 PM	0	0	0	0	4	1	4	12	6	6	0	0	1	0	34
1:00	0	0	0	0	1	5	9	15	6	6	4	1	1	1	50
2:00	0	0	0	0	0	7	9	13	13	10	8	1	0	0	61
3:00	0	0	0	0	0	2	8	18	13	8	8	2	1	1	62
4:00	0	0	0	0	1	6	14	22	11	5	4	1	0	1	65
5:00	0	0	0	0	1	1	11	8	16	12	6	1	0	1	57
6:00	0	0	0	0	0	4	3	11	6	7	0	1	0	0	32
7:00	0	0	0	1	0	1	6	9	7	1	3	0	0	0	28
8:00	0	0	0	1	0	2	3	1	2	4	0	0	0	1	14
9:00	0	0	0	0	0	3	0	4	3	3	1	1	0	0	15
10:00	0	0	0	0	0	0	0	1	3	1	0	0	0	0	5
11:00	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	0	2	12	59	112	171	141	103	54	17	3	8	2	684

Percentile		15th	50th	85th	95th
Mean	S eed	16	20	26	30
10 MP	Average	21 5			
	Pace S eed	15 24			
	umber in Pace	457			
	Percent in Pace	66 8			
	umber 21 MP	328			
	Percent 21 MP	48 0			

Grand Total	0	3	20	118	233	357	299	213	93	36	8	12	4	1396
Stats	Percentile		15th	50th	85th	95th								
	Seed		16	20	25	30								
Mean Seed Average			21.5											
10 MP Pace Seed			15.24											
umber in Pace			957											
Percent in Pace			68.6											
umber 21 MP			665											
Percent 21 MP			47.6											

Accurate Counts
978-664-2565

Location : Greenmont Avenue
Location : West of Bridge Street
City/State: Dracut, MA
Direction: WB,

Site Code: 16650001

11/28/2023	0 3	3 6	6 9	9 12	12 15	15 18	18 21	21 24	24 27	27 30	30 33	33 36	36 39	39	Total
Time	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	
12:00 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
1:00	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
4:00	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
5:00	0	0	0	0	0	0	0	3	1	0	0	0	0	0	4
6:00	0	0	0	0	2	1	4	10	1	1	0	0	0	0	19
7:00	0	0	0	0	1	1	5	10	7	2	1	0	0	0	27
8:00	0	0	0	0	0	2	9	12	9	3	2	1	1	0	39
9:00	0	0	0	1	0	0	1	8	6	3	1	0	0	0	20
10:00	0	0	0	1	1	2	6	5	4	2	2	0	0	0	23
11:00	0	0	0	0	2	2	8	10	8	4	1	0	0	0	35
12:00 PM	0	0	0	0	1	1	8	13	6	5	0	1	0	0	35
1:00	0	0	0	0	1	1	4	13	4	5	4	1	0	0	33
2:00	0	0	0	0	1	4	8	15	10	4	1	0	0	0	43
3:00	0	0	0	1	3	3	11	18	14	10	1	0	0	0	61
4:00	0	0	0	1	2	6	10	20	14	6	0	0	0	2	61
5:00	0	0	0	0	1	6	15	14	14	3	1	0	0	0	54
6:00	0	0	0	0	1	4	8	21	10	0	0	0	0	0	44
7:00	0	0	0	0	1	1	9	3	4	1	0	0	0	0	19
8:00	0	0	0	0	0	2	7	5	4	2	0	0	0	0	20
9:00	0	0	0	0	0	1	3	0	3	2	0	0	0	0	9
10:00	0	0	0	0	0	0	2	1	1	1	0	0	0	0	5
11:00	0	0	0	0	0	0	1	0	1	1	0	0	0	0	3
Total	0	0	0	4	17	37	120	186	122	55	14	4	1	2	562

Percentile	15th	50th	85th	95th
S eed	19	22	27	30
Mean S eed Average	23.2			
10 MP Pace S eed	18.27			
umber in Pace	446			
Percent in Pace	79.4			
umber 21 MP	384			
Percent 21 MP	68.3			

Accurate Counts
978-664-2565

Location : Greenmont Avenue
Location : West of Bridge Street
City/State: Dracut, MA
Direction: WB,

Site Code: 16650001

11/29/2023	0 3	3 6	6 9	9 12	12 15	15 18	18 21	21 24	24 27	27 30	30 33	33 36	36 39	39	Total
Time	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	MP	
12:00 AM	0	0	0	0	0	0	0	3	0	1	0	0	0	0	4
1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	2	1	0	0	0	0	3
5:00	0	0	0	0	0	0	0	2	3	0	2	0	0	0	7
6:00	0	0	0	1	0	1	3	8	5	0	0	0	0	0	18
7:00	0	0	0	0	2	3	2	9	8	5	2	0	0	0	31
8:00	0	0	0	0	1	7	9	10	7	3	1	1	0	0	39
9:00	0	0	0	0	1	4	5	9	7	3	2	0	0	0	31
10:00	0	0	0	0	0	2	6	9	6	6	1	0	0	0	30
11:00	0	0	0	0	1	1	7	15	4	4	1	1	0	0	34
12:00 PM	0	0	0	0	2	4	6	10	7	1	1	1	0	0	32
1:00	0	0	0	0	1	4	9	13	13	6	2	0	0	0	48
2:00	0	0	0	0	2	1	7	19	7	4	1	0	0	0	41
3:00	0	0	0	0	4	0	9	21	12	3	4	1	0	0	54
4:00	0	0	1	0	0	5	15	15	16	1	3	0	0	1	57
5:00	0	0	0	0	2	1	10	14	8	1	1	0	0	0	37
6:00	0	0	0	1	3	1	10	7	10	3	0	0	0	0	35
7:00	0	0	0	0	2	2	6	7	3	1	0	0	0	0	21
8:00	0	0	1	0	3	1	5	8	3	2	0	0	0	0	23
9:00	0	0	0	0	0	0	0	2	4	0	0	0	0	0	6
10:00	0	0	0	0	0	0	1	5	3	2	0	0	0	0	11
11:00	0	0	0	0	0	0	1	0	0	2	0	0	0	0	3
Total	0	0	2	2	24	37	111	186	128	49	21	4	0	1	565

Percentile		15th	50th	85th	95th
Mean	S eed	18	22	27	30
10 MP	Average	22.9			
	Pace S eed	18.27			
	umber in Pace	441			
	Percent in Pace	78.1			
	umber 21 MP	389			
	Percent 21 MP	68.8			

Grand Total	0	2	6	41	74	231	372	250	104	35	8	1	3	1127
Stats	Percentile		15th	50th	85th	95th								
	Seed		19	22	27	30								
Mean Seed Average			23.1											
10 MP Pace Seed			18.27											
Number in Pace			887											
Percent in Pace			78.7											
Number 21 MP			773											
Percent 21 MP			68.6											

Appendix E: Crash-Rate Worksheets

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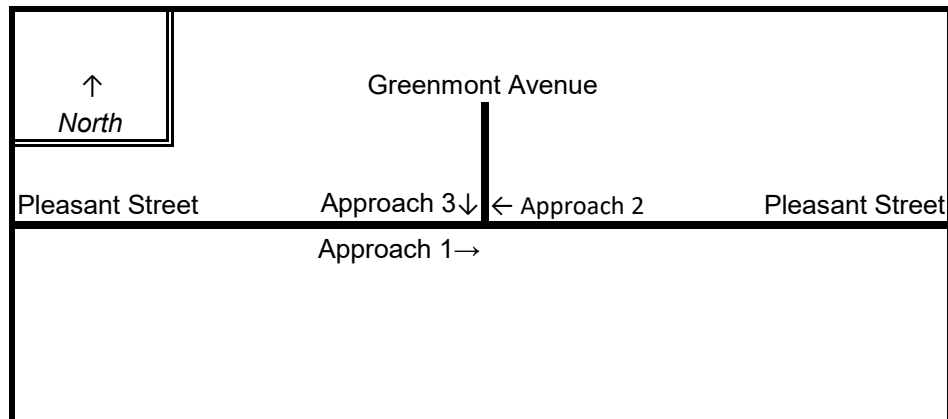
INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Dracut MA COUNT DATE : 2023
 DISTRICT : 4 UNSIGNALIZED : ☒ SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Pleasant Street
 MINOR STREET(S) : Greenmont Avenue

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	Eastbound	Westbound	Southbound			
PEAK HOURLY VOLUMES (AM/PM) :	671	635	66			1,372

"K" FACTOR :

0.090

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

15,244

TOTAL # OF CRASHES :

6

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

1.20

CRASH RATE CALCULATION :

0.22

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

Comments : _____

Project Title & Date: 1665 Perego, Branco--Dracut MA 12-22-2023

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Dracut MA COUNT DATE : 2023

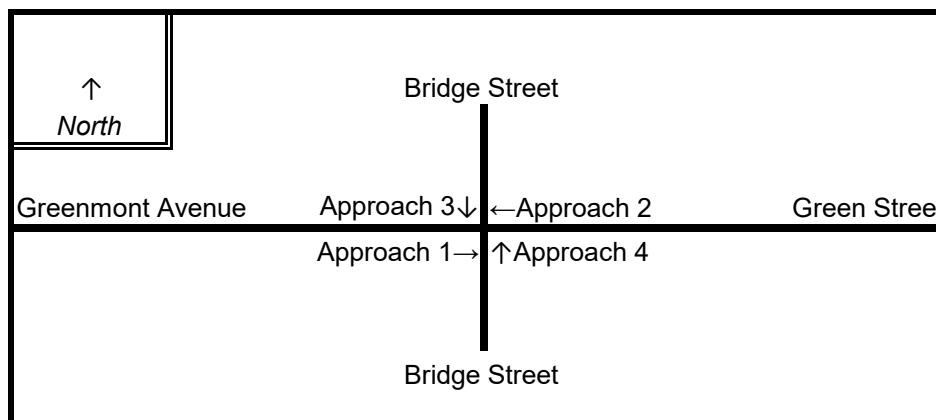
DISTRICT : 4 UNSIGNALIZED : ☒ SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Bridge Street

MINOR STREET(S) : Greenmont Avenue

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	Eastbound	Westbound	Southbound	Northbound		
PEAK HOURLY VOLUMES (AM/PM) :	96	7	489	464		1,056

" K " FACTOR :

0.090

INTERSECTION ADT (V) = TOTAL DAILY
APPROACH VOLUME :

11,733

TOTAL # OF CRASHES :

4

OF
YEARS :

5

AVERAGE # OF
CRASHES PER YEAR (A) :

0.80

CRASH RATE CALCULATION :

0.19

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

Comments : _____

Project Title & Date: 1665 Perego, Branco--Dracut MA 12-22-2023

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Dracut MA COUNT DATE : 2023

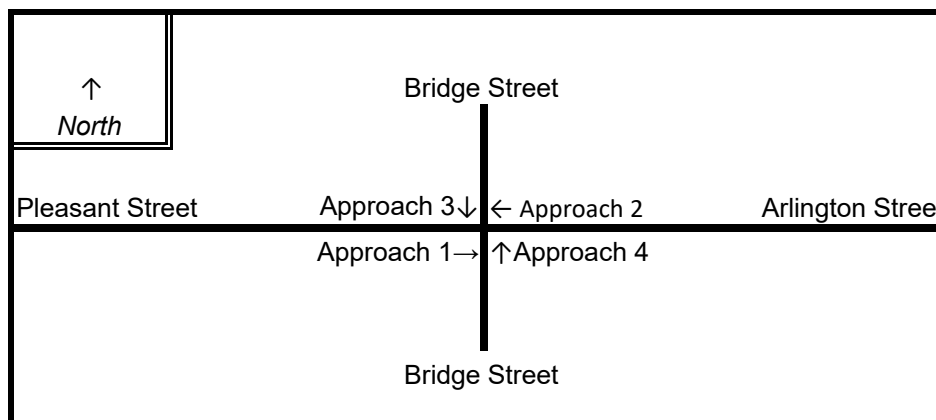
DISTRICT : 4 UNSIGNALIZED : ☐ SIGNALIZED : ☒

~ INTERSECTION DATA ~

MAJOR STREET : Pleasant Street/Arlington Street

MINOR STREET(S) : Bridge Street

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	Eastbound	Westbound	Southbound	Northbound		
PEAK HOURLY VOLUMES (AM/PM) :	558	752	438	490		2,238

" K " FACTOR :

0.090

INTERSECTION ADT (V) = TOTAL DAILY
APPROACH VOLUME :

24,867

TOTAL # OF CRASHES :

34

OF
YEARS :

5

AVERAGE # OF
CRASHES PER YEAR (A) :

6.80

CRASH RATE CALCULATION :

0.75

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

Comments : _____

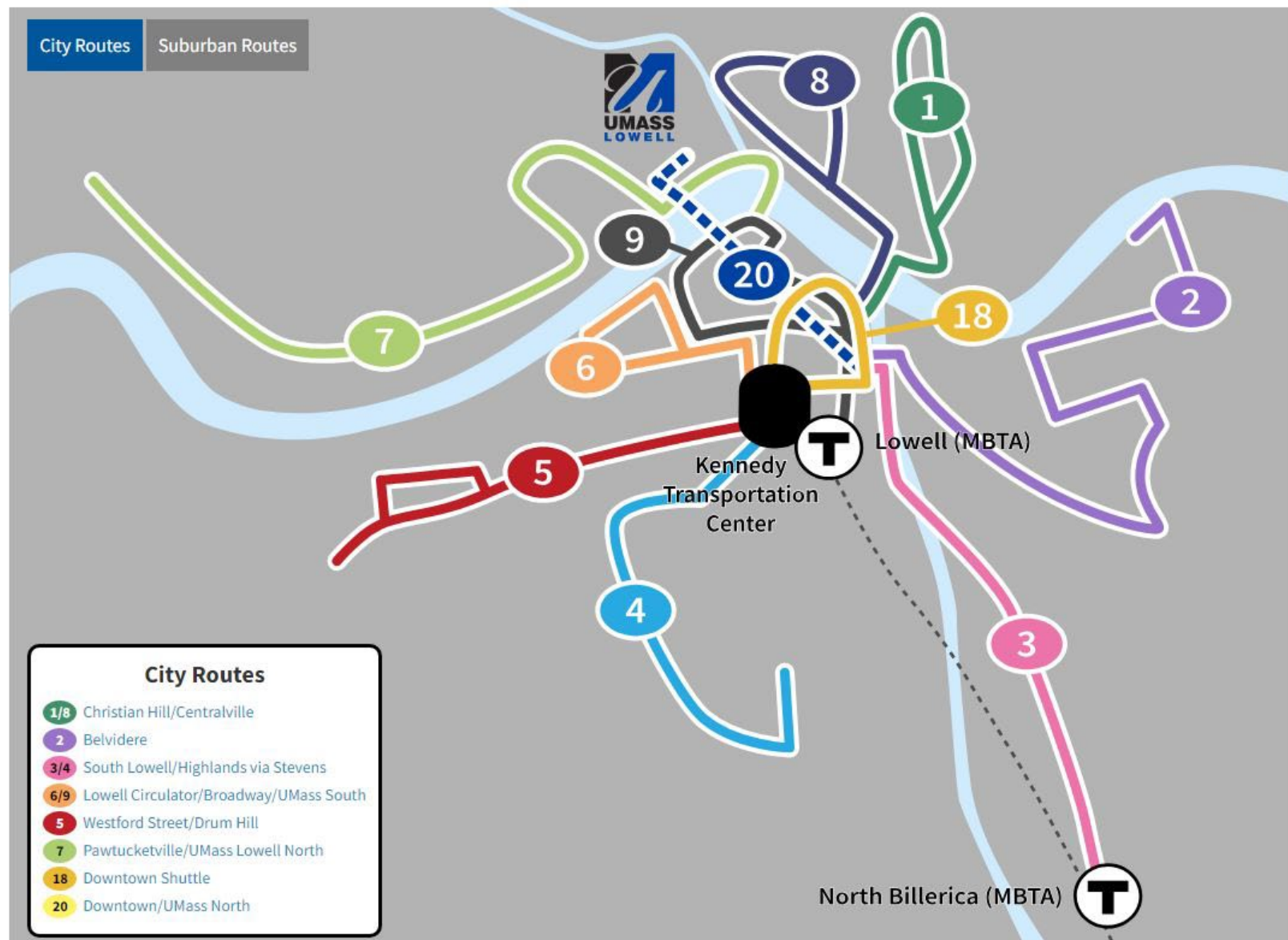
Project Title & Date: 1665 Perego, Branco--Dracut MA 12-22-2023

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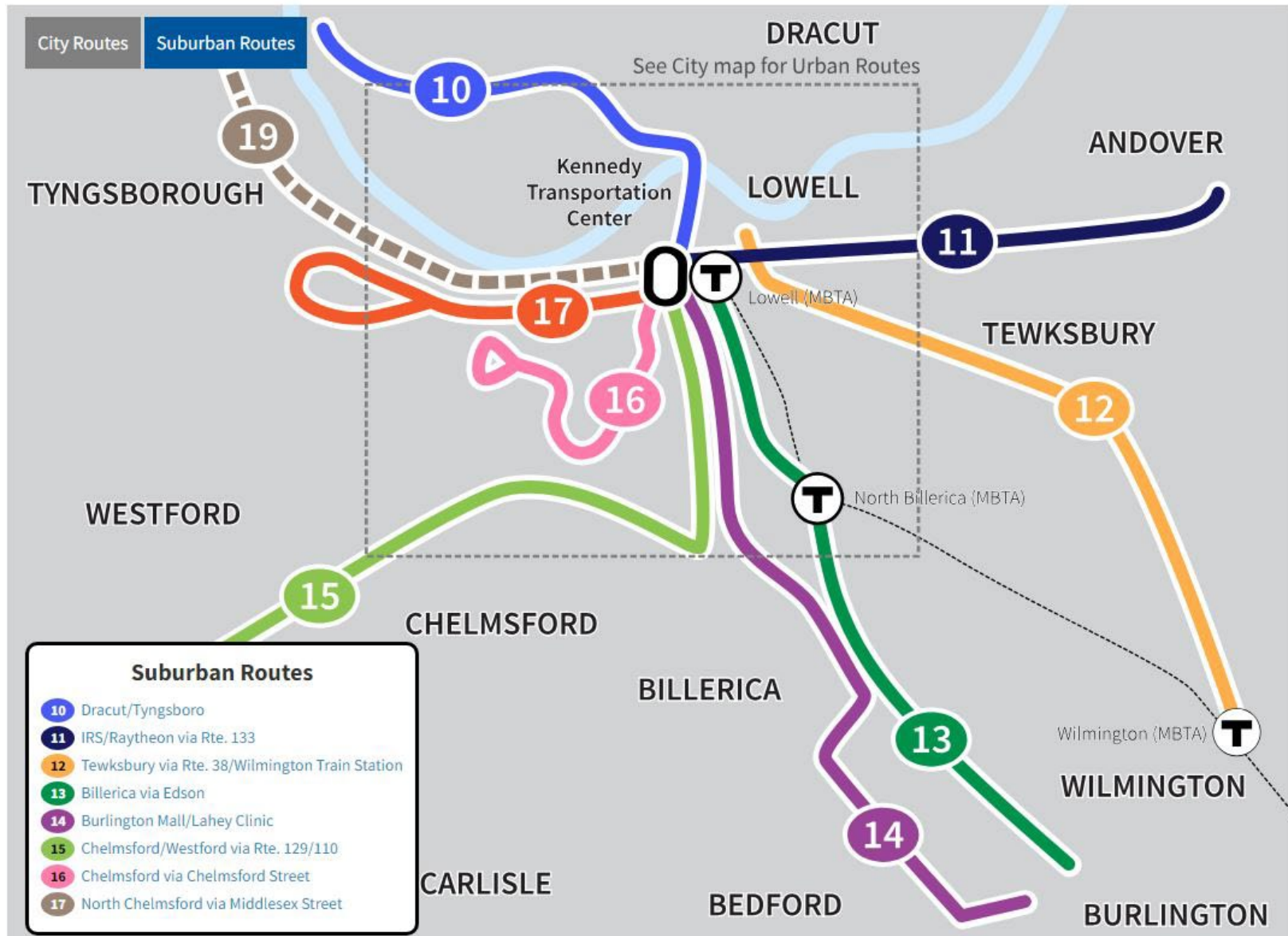
Appendix F: Transit

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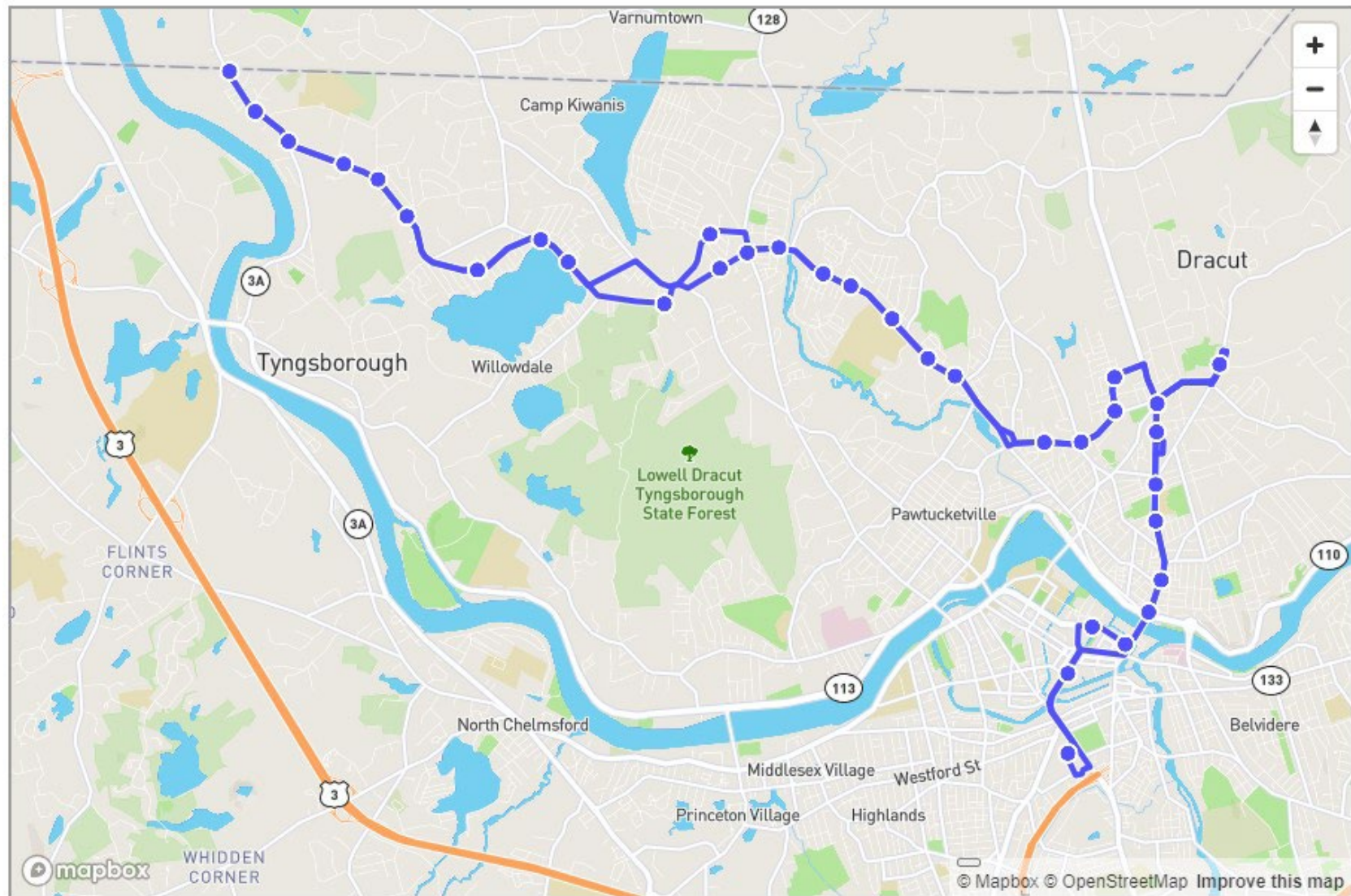
Lowell Regional Transit System Map



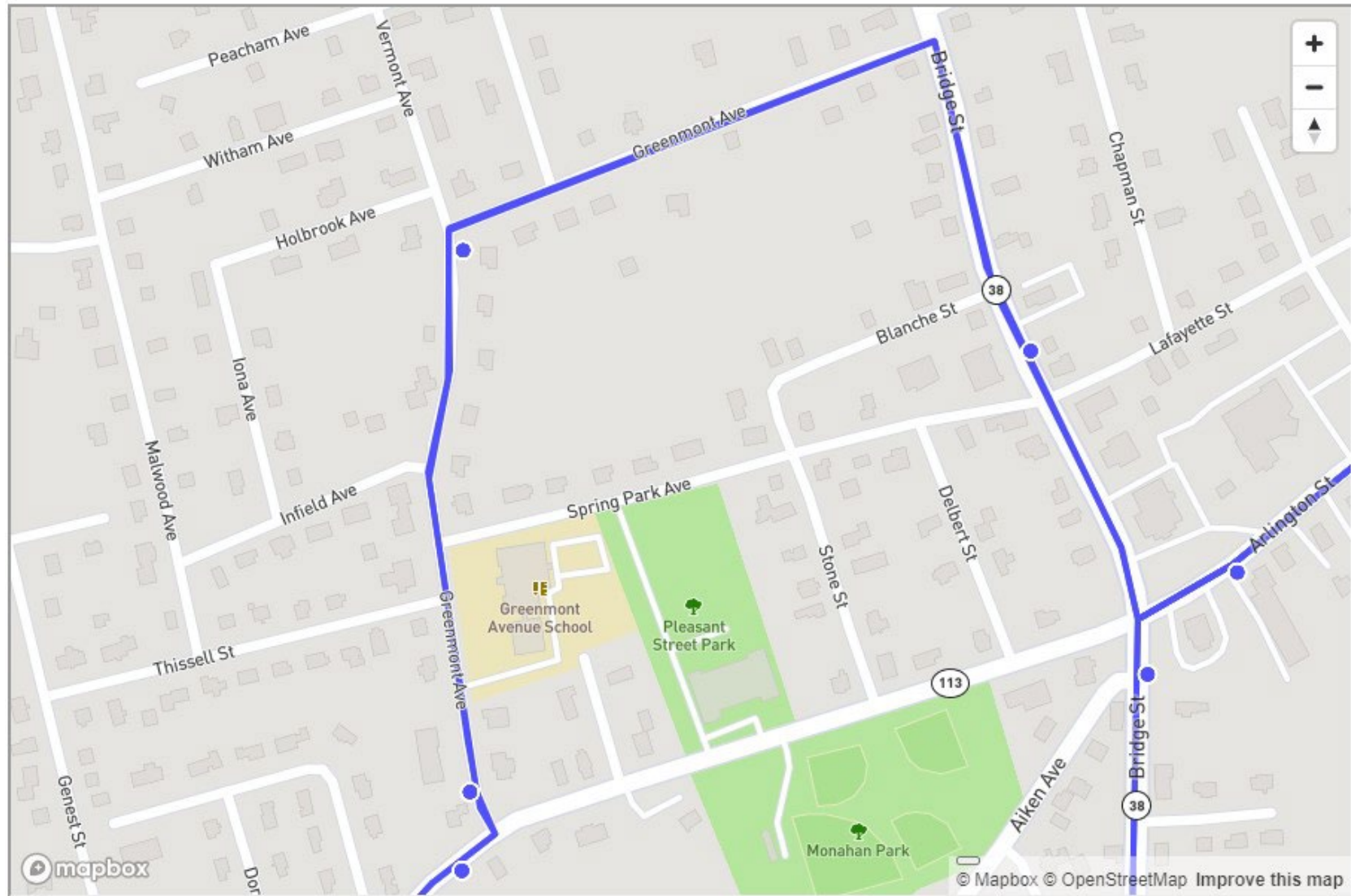
Lowell Regional Transit System Map



Route Map

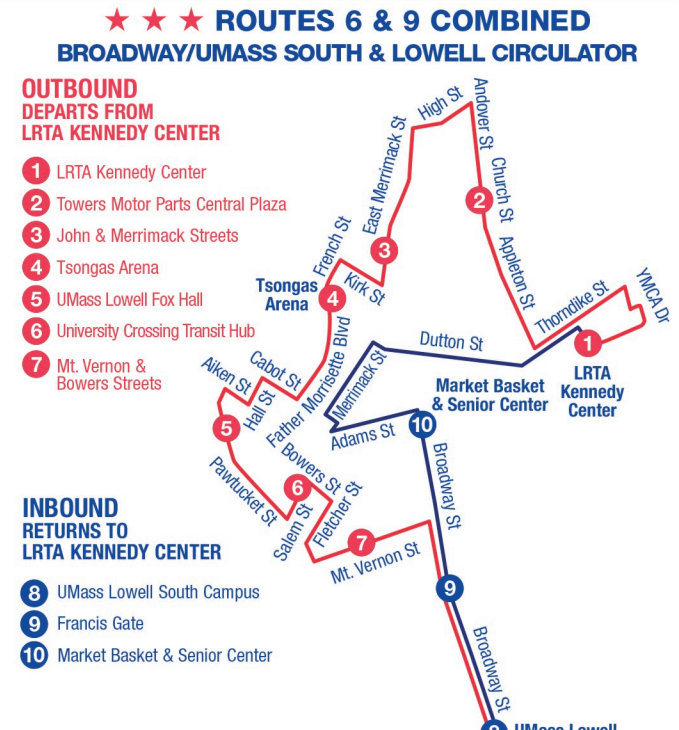


Route Map



		★ ROUTES 1 & 8 COMBINED INTO ONE ROUTE			★★ ROUTES 3 & 4 COMBINED INTO ONE ROUTE			★★★ ROUTES 6 & 9 COMBINED INTO ONE ROUTE			LRTA MONDAY THROUGH FRIDAY SCHEDULE									
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	20
		CHRISTIAN HILL	BELVIDERE	SOUTH LOWELL	HIGHLANDS VIA STEVENS	WESTFORD STREET/ DRUM HILL	BROADWAY/ UMASS SOUTH	PAWTUCKETVILLE/ UMASS NORTH	CENTRALVILLE	LOWELL CIRCULATOR	DRACUT/ TYNGSBORO	IRS/ RAYTHEON VIA RTE. 133	TEWKSBURY VIA RTE. 38	BILLERICA VIA EDSON	BURLINGTON MALL/ LAHEY CLINIC	CHELMSFORD/ WESTFORD VIA RTES. 129/110	CHELMSFORD VIA CHELMSFORD STREET	NORTH CHELMSFORD VIA MIDDLESEX	DOWNTOWN SHUTTLE	DOWNTOWN/ UMASS NORTH
OUTBOUND	LEAVING KENNEDY CENTER	★ AM 6:00 7:00 8:00 9:00 10:00 11:00	AM 6:15 7:45 8:45 9:45 10:45 11:45	★ ★ AM 6:00 7:00 8:00 9:00 10:00 11:00	★ ★ SEE ROUTE 3 FOR TIMES	AM 6:00 7:00 8:45 9:45 10:45 11:45	★ ★ ★ AM 7:00 8:00 9:00 10:00 11:00	AM 6:00 6:45 7:45 8:45 9:45 10:45 11:45	★ SEE ROUTE 1 FOR TIMES	★ ★ ★ SEE ROUTE 6 FOR TIMES	AM 6:35 7:35 8:30 9:30 10:30 11:30	AM 6:00 7:00	AM 7:00 8:00 9:00 10:00 11:00	AM 6:30 7:30 8:30 9:30 10:30 11:30	AM 6:00 7:00 8:00 9:00 10:00 11:00	AM 6:45 8:00 9:30 11:00	AM 6:15 C 6:40 C 7:10 8:00 9:00 10:00 11:00	AM 6:20 7:00 8:00 9:00 10:00 11:00	AM 5:45 SERVICE RUNS EVERY 30 MINUTES	AM 7:30 UM SERVICE RUNS EVERY 20 MINUTES
		PM 12:00 1:00 2:00 3:00 4:00 5:00 6:00	PM 12:45 1:45 2:40 S,P,1 3:00 4:00 5:00 6:00	PM 12:00 1:00 2:00 2:40 S,P,E	BOARD BUS AT BAY A2 2:40 S,P 2:40 S,P	PM 12:45 1:45 2:40 S,P,3 3:00 4:00 5:00 5:45 R 6:55 R	PM 12:00 1:00 2:00 3:00 4:00 5:00 6:00	PM 12:45 1:45 2:40 S,P,5 3:00 4:00 5:00 5:50 6:50	BOARD BUS AT BAY A1	BOARD BUS AT BAY B1	PM 12:30 1:30 2:30 3:30 4:30 5:30	PM 3:00 4:00	PM 12:00 1:00 2:00 3:00 4:00 5:00 6:00	PM 12:30 1:30 2:30 3:00 4:00 5:30	PM 12:00 1:00 2:00 3:00 4:00 5:00 6:00	PM 12:30 2:00 3:30 5:00 6:30	PM 12:00 1:00 2:00 2:40 S,P,E 3:00 4:00 5:00 6:00	PM 12:00 1:00 2:00 2:40 S,P,E 3:00 4:00 5:00 6:00	PM LAST SHUTTLE FROM KENNEDY CENTER DEPARTS 6:45 PM	PM NO SERVICE
INBOUND	TO KENNEDY CENTER	AM 6:20 7:20 8:15 9:15 10:15 11:15	AM 6:50 7:05 S 8:20 9:20 10:20 11:20	AM 6:25 7:20 D 7:25 8:25 9:25 10:25 11:25	SEE ROUTE 3 FOR TIMES 7:15 S	AM 6:20 7:05 S,B,E 8:20 9:20 10:20 11:05	AM 7:20 8:20 9:20 10:20 11:20	AM 6:30 7:00 S 7:05 S 7:20 8:20 9:20 10:20 11:20	SEE ROUTE 1 FOR TIMES	SEE ROUTE 6 FOR TIMES	AM 7:20 8:20 9:15 10:15 11:15	AM 6:30 7:30	AM 7:45 8:45 9:45 10:45 11:45	AM 7:10 7:10 S,E 8:10 9:10 10:10 11:10	AM 7:00 8:00 8:55 9:55 10:55 11:55	AM 7:30 8:45 10:15 11:45	AM 6:25 C 6:50 C 7:05 S,E 7:45 8:45 9:45 10:45 11:45	AM 7:00 7:40 I 8:40 9:40 10:40 11:40	AM 6:00 SERVICE RUNS EVERY 30 MINUTES	AM 7:50 UM SERVICE RUNS EVERY 20 MINUTES
		PM 12:15 1:15 2:15 3:15 4:15 5:15 6:15	PM 12:20 1:20 2:20 3:20 4:20 5:20 6:20 7:20	PM 12:25 1:25 2:25 3:25 4:25 5:25 6:25	BOARD BUS AT BAY A2	PM 12:05 1:05 2:05 3:05 4:05 5:05 6:15 7:15	PM 12:20 1:20 2:20 3:20 4:20 5:20 6:20	PM 12:20 1:20 2:20 3:20 4:20 5:20 6:25 7:25	BOARD BUS AT BAY A1	BOARD BUS AT BAY B1	PM 12:15 1:15 2:15 3:15 4:15 5:15 6:15	PM 3:30 4:30	PM 12:45 1:45 2:45 3:45 4:45 5:45 6:45	PM 12:10 1:10 2:10 3:10 4:10 5:10 6:10	PM 12:55 1:55 2:45 3:55 4:55 5:55 6:55	PM 1:15 2:45 4:15 5:45 7:15	PM 12:45 1:45 2:45 3:45 4:45 5:45 6:45	PM 12:40 I,W 1:40 2:40 I 3:40 I 4:40 5:40 6:40	PM LAST SHUTTLE FROM DOWNTOWN DEPARTS 7:00 PM	PM NO SERVICE

1 Starts at Andover St./Ends at River Rd.
2 Starts at High St./Ends at Wentworth Ave.
3 Starts at Stevens St./Ends at Technology Drive Lowell
4 Starts at Chelmsford St. & Westford St./Ends at Stevens St.
5 Starts at Woodward Ave./Ends at G Lowell Yokes
6 Starts at University Ave./Ends at McAvine School
B Starts at Princeton Blvd. & Baldwin St.
C Starts/Terminates at the Radisson (Does Not Service Meadow Brook Center)
D Drop Students at Washington Savings Bank
E Starts/Terminates at Lowell Line
I Service on Innovation Academy School Days Only
P On School Days Leaves from Paige & Kirk
R No Service to Research Place
S Supplemental Service on School Days Only (Does Not Service Kennedy Center)
W Service Wednesday School Days Only
UM Service on UMass Lowell School Days Only



WHERE TO GET YOUR RELOADABLE CHARLIECARD AND RENEW YOUR LRTA MONTHLY PASSES

You must be issued a **Reloadable CharlieCard** before you can purchase any LRTA Monthly Passes at these locations:

LRTA GALLAGHER TERMINAL (115 Thorndike Street, Lowell)
All LRTA Monthly Passes can be purchased on the last 5 days of each month until the 18th day of the following month at the following locations:

TICKET VENDING MACHINE (INSIDE LOBBY)
Also Issues Adult CharlieCards.

RIDER INFORMATION BOOTH (KENNEDY CENTER)
Regular Hours: Monday - Friday: 8 AM to 4 PM
Extended Hours last 2 and first 2 business days of each month:
Monday - Friday: 6 AM to 6 PM

Also Issues Adult & Student CharlieCards.

To Get Your Student CharlieCard bring a valid Student ID or Class Schedule from your school.

LRTA DISPATCH OFFICE (100 Hale Street, Lowell)

Monday - Friday: 7 AM to 7 PM

Issues Adult & Student CharlieCards.

LOWELL HIGH SCHOOL CAFETERIA

LHS Students can go to the LHS Cafeteria the last and first school day of each month from 10:40 AM to 1:40 PM during the school year. **(YOUR CHARLIECARD IS RELOADABLE)**

Issues Student CharlieCards and Purchase Student Passes

LRTA ROAD RUNNER OFFICE (978-459-0152)

113 Thorndike Street, Lowell, MA 01852

(Located next to the Kennedy Center)

Monday - Friday: 9 AM to Noon

Issues Senior CharlieCards & CharlieCards for Persons with Disabilities/TAP.

Monthly Passes cannot be purchased at this location.

TWO WAYS TO GET YOUR SENIOR CHARLIECARD

1) In Person at LRTA Road Runner Office

- Bring Photo ID that includes Date of Birth (Must be 60+ years)
- Must Fill Out an Application. Applications are available at the LRTA Road Runner Office or online at LRTA.com

2) Mail Your Application to the LRTA Road Runner Office

113 Thorndike Street, Lowell, MA 01852

THREE WAYS TO GET YOUR CHARLIECARD FOR PERSONS WITH DISABILITIES/TAP

1) In Person at LRTA Road Runner Office

- First time applicants for the TAP ID, or applicants with expired TAP ID Cards need to fill out an application. Applications are available at the LRTA Road Runner Office or online at LRTA.com
- The LRTA will process your application within 14 days of receipt.
- Once approved, you will need to bring a photo ID.

2) Apply Online at MBTA.com

3) Mail Your Application to the LRTA Road Runner Office

113 Thorndike Street, Lowell, MA 01852

For More Detailed Info visit LRTA.com

BLIND ACCESS CHARLIECARD

These cards are issued by the MBTA.

You can apply online or in person for a Blind Access CharlieCard.

For more info visit

www.mbta.com/fares/reduced/blind-access-charliecard

LRTA FARE RATES

BUS FARES

City/Local/Shuttle	Full Fare	\$1.25
	Reduced Fare	\$.60
Suburban	Full Fare	\$1.85
	Reduced Fare	\$.90

TRANSFERS REQUEST TRANSFER BEFORE PAYING

- Issued on Inbound Routes Only
- Accepted on Outbound Routes Only
- FREE to the Downtown Shuttle Outbound
- FREE from the Downtown Shuttle Inbound to Local Routes

In-Town	Full Fare	\$.25
	Reduced Fare	\$.10
Suburban	Full Fare	\$.50
	Reduced Fare	\$.25

LRTA MONTHLY PASSES STORED ON YOUR CHARLIECARD

RIDE
SYSTEMWIDE
UNLIMITED

ADULT PASS for Adult CharlieCard	\$44
STUDENT PASS for Student CharlieCard	\$25
SENIOR PASS for Senior CharlieCard	\$25
PERSONS WITH DISABILITIES PASS for Persons with Disabilities/TAP CharlieCard	\$25

CHARLIECARD INFORMATION

Stored Value Minimum First Time Purchase: \$5

LRTA FARE CATEGORIES

FULL FARE Persons from 13 to 59 Years of Age

Students: Elementary, Middle and High School students up to and including Grade 12 can purchase an LRTA Monthly Pass at a discounted rate.

Students without the LRTA Monthly Pass pay Full Fare

REDUCED FARE

Senior Citizens	Persons with Disabilities	Children
60 Years of Age	With Statewide Transportation	6 to 12 Years of Age
or Older with I.D. Access Pass (TAP) or Medicare Card.		

Children 5 and Under Ride Free

Must be accompanied by an adult.

TO CATCH A BUS...

1) USE AN LRTA DESIGNATED BUS STOP

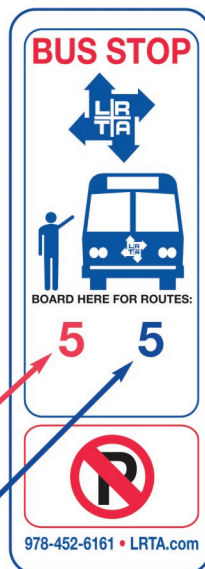
The bus will pick you up and take you to your destination. Please raise your hand to alert driver.

2) WAVE YOUR HAND ALONG ANY LRTA BUS ROUTE

Simply wave your hand in order to alert the driver to stop. You need to be at a safe location on the same side of the street as the bus. We encourage you to be at a bus stop.



Outbound
Inbound



DAILY BUS SCHEDULES MONDAY - FRIDAY

EFFECTIVE NOVEMBER 7, 2022



BUS INFORMATION: 978-452-6161

Service updates and changes
will be posted on LRTA.com

LRTA DOWNTOWN SHUTTLE



The LRTA offers a Shuttle between
DOWNTOWN LOWELL (JOHN & MERRIMACK STREETS)
&
ROBERT B. KENNEDY BUS TRANSFER CENTER

Monday - Friday:

5:45 am - 7:00 pm Every 30 minutes

First Shuttle departs Downtown Lowell at 6:00 AM

Last Shuttle departs Downtown Lowell at 7:00 PM

Saturday: 7:15 am - 7:00 pm Every 30 minutes

First Shuttle departs Downtown Lowell at 7:30 AM

Last Shuttle departs Downtown Lowell at 7:00 PM

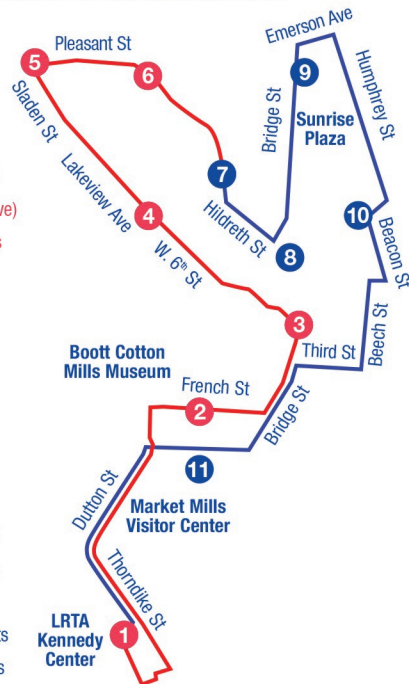
		★ ROUTES 1 & 8 COMBINED INTO ONE ROUTE			★★ ROUTES 3 & 4 COMBINED INTO ONE ROUTE		★★★ ROUTES 6 & 9 COMBINED INTO ONE ROUTE			LRTA SATURDAY SCHEDULE										
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	20
		CHRISTIAN HILL	BELVIDERE	SOUTH LOWELL	HIGHLANDS VIA STEVENS	WESTFORD STREET/ DRUM HILL	BROADWAY/ UMASS SOUTH	PAWTUCKETVILLE/ UMASS NORTH	CENTRALVILLE	LOWELL CIRCULATOR	DRACUT/ TYNGSBORO	IRS/ RAYTHEON VIA RTE. 133	TEWKSBURY VIA RTE. 38	BILLERICA VIA EDSON	BURLINGTON MALL/ LAHEY CLINIC	CHELMSFORD/ WESTFORD VIA RTES. 129/110	CHELMSFORD VIA CHELMSFORD STREET	NORTH CHELMSFORD VIA MIDDLESEX	DOWNTOWN SHUTTLE	DOWNTOWN/ UMASS NORTH
OUTBOUND	LEAVING KENNEDY CENTER	★ AM 8:00 9:00 10:00 11:00	AM 7:45 8:45 9:45 10:45 11:45	★★ AM 8:00 9:00 10:00 11:00	★★ SEE ROUTE 3 FOR TIMES	AM 7:45 R 8:45 R 9:45 R 10:45 R 11:45 R	★★★ AM 8:00 9:00 10:00 11:00	AM 7:45 8:45 9:45 10:45 11:45	★ SEE ROUTE 1 FOR TIMES	★★★ SEE ROUTE 6 FOR TIMES	AM 8:30 9:30 10:30 11:30	NO SATURDAY SERVICE	AM 7:00 8:00 9:00 10:00 11:00	AM 7:30 8:30 9:30 10:30 11:30	AM 8:00 9:30 10:00 11:00	AM 8:00 9:00 10:00 11:00	AM 8:00 9:00 10:00 11:00	AM 7:15 EVERY 30 MINUTES	NO SATURDAY SERVICE	
		PM 12:00 1:00 2:00 3:00 4:00 5:00	PM 12:45 1:45 2:45 3:45 4:45 5:45	PM 12:00 1:00 2:00 3:00 4:00 5:00	BOARD BUS AT BAY A2	PM 12:45 R 1:45 R 2:45 R 3:45 R 4:45 R 5:55 R	PM 12:00 1:00 2:00 3:00 4:00 5:00	PM 12:45 1:45 2:45 3:45 4:50 5:50	BOARD BUS AT BAY A1	BOARD BUS AT BAY B1	PM 12:30 1:30 2:30 3:30 4:30 5:30		PM 12:00 1:00 2:00 3:00 4:00 5:00	PM 12:30 1:30 2:00 3:30 4:30 5:00	PM 12:00 1:00 2:00 3:00 4:00 5:00	PM 12:30 1:00 2:00 3:00 4:00 5:00	PM 12:00 1:00 2:00 3:00 4:00 5:00	PM LAST SHUTTLE FROM KENNEDY CENTER DEPARTS 6:45 PM		
INBOUND	TO KENNEDY CENTER	AM 8:15 9:15 10:15 11:15	AM 8:20 9:20 10:20 11:20	AM 8:25 9:25 10:25 11:25	SEE ROUTE 3 FOR TIMES	AM 8:05 9:05 10:05 11:05	AM 8:20 9:20 10:20 11:20	AM 8:20 9:20 10:20 11:20	SEE ROUTE 1 FOR TIMES	SEE ROUTE 6 FOR TIMES	AM 9:15 10:15 11:15	NO SATURDAY SERVICE	AM 7:45 8:45 9:45 10:45 11:45	AM 8:10 9:10 10:10 11:10	AM 8:55 9:55 10:55 11:55	AM 8:45 9:45 10:45 11:45	AM 8:45 9:45 10:45 11:45	AM 7:40 8:40 9:40 10:40 11:40	AM 7:30 EVERY 30 MINUTES	NO SATURDAY SERVICE
		PM 12:15 1:15 2:15 3:15 4:15 5:15	PM 12:20 1:20 2:20 3:20 4:20 5:20 6:20	PM 12:25 1:25 2:25 3:25 4:25 5:25	BOARD BUS AT BAY A2	PM 12:05 1:05 2:05 3:05 4:05 5:05 6:15	PM 12:20 1:20 2:20 3:20 4:20 5:20	PM 12:20 1:20 2:20 3:20 4:20 5:20 6:25	BOARD BUS AT BAY A1	BOARD BUS AT BAY B1	PM 12:15 1:15 2:15 3:15 4:15 5:15 6:15		PM 12:45 1:45 2:45 3:45 4:45 5:45	PM 12:10 1:10 2:10 3:10 4:10 5:10	PM 12:55 1:55 2:55 3:55 4:55 5:55	PM 1:15 2:45 4:15 5:45	PM 12:45 1:45 2:45 3:45 4:45 5:45	PM 12:40 1:40 2:40 3:40 4:40 5:40	PM LAST SHUTTLE FROM DOWNTOWN DEPARTS 7:00 PM	

R No Service to Research Place

★ ROUTES 1 & 8 COMBINED CHRISTIAN HILL & CENTRALVILLE

OUTBOUND DEPARTS FROM LRTA KENNEDY CENTER

- 1 LRTA Kennedy Center
- 2 French & John Streets
- 3 Bridge & West 6th Streets
- 4 Lowell Provision (Aiken Ave)
- 5 Sladen & Pleasant Streets
- 6 Shop & Save



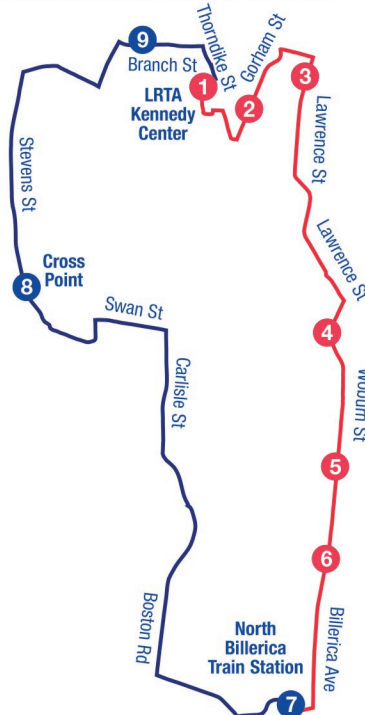
INBOUND RETURNS TO LRTA KENNEDY CENTER

- 7 Hildreth Street & Lily Ave
- 8 Hildreth & Bridge Streets
- 9 Sunrise Plaza
- 10 Beacon & Methuen Streets
- 11 Merrimack & John Streets

★★ ROUTES 3 & 4 COMBINED SOUTH LOWELL & HIGHLANDS VIA STEVENS

OUTBOUND DEPARTS FROM LRTA KENNEDY CENTER

- 1 LRTA Kennedy Center
- 2 Lowell Superior Court
- 3 Church & Lawrence Streets
- 4 Riverside School
- 5 Riverview Commerce Center
- 6 Billerica Business Center



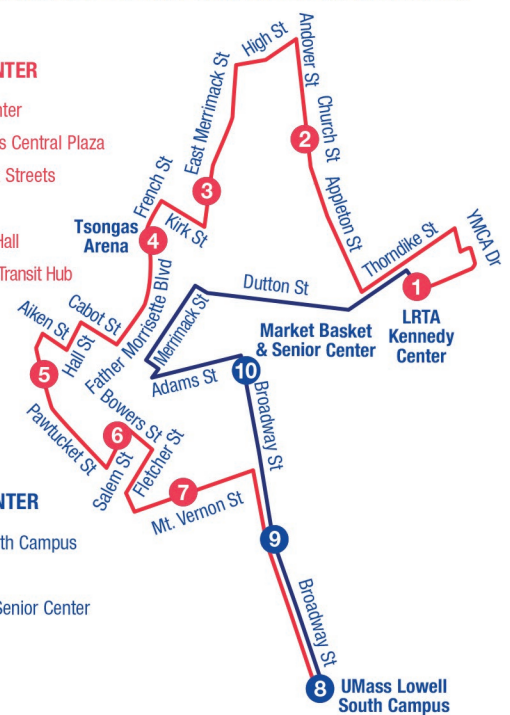
INBOUND RETURNS TO LRTA KENNEDY CENTER

- 7 North Billerica Train Station
- 8 Cross Point
- 9 The Boy's Club

★★★ ROUTES 6 & 9 COMBINED BROADWAY/UMASS SOUTH & LOWELL CIRCULATOR

OUTBOUND DEPARTS FROM LRTA KENNEDY CENTER

- 1 LRTA Kennedy Center
- 2 Towers Motor Parts Central Plaza
- 3 John & Merrimack Streets
- 4 Tsongas Arena
- 5 UMass Lowell Fox Hall
- 6 University Crossing Transit Hub
- 7 Mt. Vernon & Bowers Streets



INBOUND RETURNS TO LRTA KENNEDY CENTER

- 8 UMass Lowell South Campus
- 9 Francis Gate
- 10 Market Basket & Senior Center

WHERE TO GET YOUR RELOADABLE CHARLIECARD AND RENEW YOUR LRTA MONTHLY PASSES

You must be issued a **Reloadable CharlieCard** before you can purchase any LRTA Monthly Passes at these locations:

LRTA GALLAGHER TERMINAL (115 Thorndike Street, Lowell)
All LRTA Monthly Passes can be purchased on the last 5 days of each month until the 18th day of the following month at the following locations:

TICKET VENDING MACHINE (INSIDE LOBBY)
Also Issues Adult CharlieCards.

RIDER INFORMATION BOOTH (KENNEDY CENTER)
Regular Hours: Monday - Friday: 8 AM to 4 PM
Extended Hours last 2 and first 2 business days of each month:
Monday - Friday: 6 AM to 6 PM

Also Issues Adult & Student CharlieCards.

To Get Your Student CharlieCard bring a valid Student ID or Class Schedule from your school.

LRTA DISPATCH OFFICE (100 Hale Street, Lowell)

Monday - Friday: 7 AM to 7 PM

Issues Adult & Student CharlieCards.

LOWELL HIGH SCHOOL CAFETERIA

LHS Students can go to the LHS Cafeteria the last and first school day of each month from 10:40 AM to 1:40 PM during the school year. **(YOUR CHARLIECARD IS RELOADABLE)**

Issues Student CharlieCards and Purchase Student Passes

LRTA ROAD RUNNER OFFICE (978-459-0152)

113 Thorndike Street, Lowell, MA 01852

(Located next to the Kennedy Center)

Monday - Friday: 9 AM to Noon

Issues Senior CharlieCards & CharlieCards for Persons with Disabilities/TAP.

Monthly Passes cannot be purchased at this location.

TWO WAYS TO GET YOUR SENIOR CHARLIECARD

1) In Person at LRTA Road Runner Office

- Bring Photo ID that includes Date of Birth (Must be 60+ years)
- Must Fill Out an Application. Applications are available at the LRTA Road Runner Office or online at LRTA.com

2) Mail Your Application to the LRTA Road Runner Office

113 Thorndike Street, Lowell, MA 01852

THREE WAYS TO GET YOUR CHARLIECARD FOR PERSONS WITH DISABILITIES/TAP

1) In Person at LRTA Road Runner Office

- First time applicants for the TAP ID, or applicants with expired TAP ID Cards need to fill out an application. Applications are available at the LRTA Road Runner Office or online at LRTA.com
- The LRTA will process your application within 14 days of receipt.
- Once approved, you will need to bring a photo ID.

2) Apply Online at MBTA.com

3) Mail Your Application to the LRTA Road Runner Office

113 Thorndike Street, Lowell, MA 01852

For More Detailed Info visit LRTA.com

BLIND ACCESS CHARLIECARD

These cards are issued by the MBTA.

You can apply online or in person for a Blind Access CharlieCard.

For more info visit

www.mbta.com/fares/reduced/blind-access-charliecard

LRTA FARE RATES

BUS FARES

City/Local/Shuttle	Full Fare	\$1.25
	Reduced Fare	\$.60
Suburban	Full Fare	\$1.85
	Reduced Fare	\$.90

TRANSFERS REQUEST TRANSFER BEFORE PAYING

- Issued on Inbound Routes Only
- Accepted on Outbound Routes Only
- FREE to the Downtown Shuttle Outbound
- FREE from the Downtown Shuttle Inbound to Local Routes

In-Town	Full Fare	\$.25
	Reduced Fare	\$.10
Suburban	Full Fare	\$.50
	Reduced Fare	\$.25

LRTA MONTHLY PASSES STORED ON YOUR CHARLIECARD

RIDE
SYSTEMWIDE
UNLIMITED

ADULT PASS for Adult CharlieCard	\$44
STUDENT PASS for Student CharlieCard	\$25
SENIOR PASS for Senior CharlieCard	\$25
PERSONS WITH DISABILITIES PASS for Persons with Disabilities/TAP CharlieCard	\$25
CHARLIECARD INFORMATION Stored Value Minimum First Time Purchase:	\$5

LRTA FARE CATEGORIES

FULL FARE Persons from 13 to 59 Years of Age

Students: Elementary, Middle and High School students up to and including Grade 12 can purchase an LRTA Monthly Pass at a discounted rate.

Students without the LRTA Monthly Pass pay Full Fare

REDUCED FARE

Senior Citizens 60 Years of Age
Persons with Disabilities With Statewide Transportation
Children 6 to 12 Years of Age or Older with I.D. Access Pass (TAP) or Medicare Card.

Children 5 and Under Ride Free

Must be accompanied by an adult.

TO CATCH A BUS...

1) USE AN LRTA DESIGNATED BUS STOP

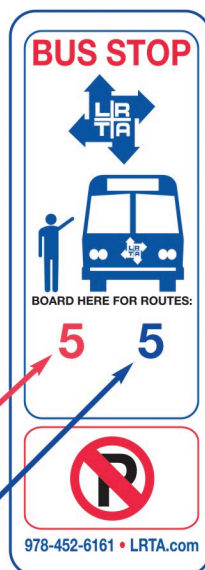
The bus will pick you up and take you to your destination. Please raise your hand to alert driver.

2) WAVE YOUR HAND ALONG ANY LRTA BUS ROUTE

Simply wave your hand in order to alert the driver to stop. You need to be at a safe location on the same side of the street as the bus. We encourage you to be at a bus stop.



Outbound
Inbound



SATURDAY BUS SCHEDULES

EFFECTIVE NOVEMBER 7, 2022



BUS INFORMATION: 978-452-6161

Service updates and changes
will be posted on LRTA.com

LRTA DOWNTOWN SHUTTLE



The LRTA offers a Shuttle between
DOWNTOWN LOWELL (JOHN & MERRIMACK STREETS)
&
ROBERT B. KENNEDY BUS TRANSFER CENTER

Monday - Friday:

5:45 am - 7:00 pm Every 30 minutes

First Shuttle departs Downtown Lowell at 6:00 AM
Last Shuttle departs Downtown Lowell at 7:00 PM

Saturday: 7:15 am - 7:00 pm Every 30 minutes

First Shuttle departs Downtown Lowell at 7:30 AM
Last Shuttle departs Downtown Lowell at 7:00 PM

Appendix G: Synchro Reports

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Intersection

Int Delay, s/veh 1.3

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 43 450 477 9 5 60

Future Vol, veh/h 43 450 477 9 5 60

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 87 87 84 84 81 81

Heavy Vehicles, % 2 3 0 3 2 0

Mvmt Flow 49 517 568 11 6 74

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 579 0 - 0 1189 574

Stage 1 - - - - 574 -

Stage 2 - - - - 615 -

Critical Hdwy 4.12 - - - 6.42 6.2

Critical Hdwy Stg 1 - - - - 5.42 -

Critical Hdwy Stg 2 - - - - 5.42 -

Follow-up Hdwy 2.218 - - - 3.518 3.3

Pot Cap-1 Maneuver 995 - - - 208 522

Stage 1 - - - - 563 -

Stage 2 - - - - 539 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 995 - - - 194 522

Mov Cap-2 Maneuver - - - - 194 -

Stage 1 - - - - 524 -

Stage 2 - - - - 539 -

Approach EB WB SB

HCM Control Delay, s 0.8 0 14.4

HCM LOS B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 995 - - - 462

HCM Lane V/C Ratio 0.05 - - - 0.174

HCM Control Delay (s) 8.8 0 - - 14.4

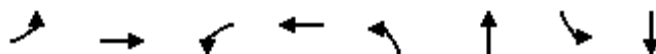
HCM Lane LOS A A - - B

HCM 95th %tile Q(veh) 0.2 - - - 0.6

Timings

2: Bridge Street & Pleasant Street/Arlington Street

03/15/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	45	364	82	380	44	220	57	291
Future Volume (vph)	45	364	82	380	44	220	57	291
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5	9.5	32.0	23.0	23.0	23.0	23.0
Total Split (%)	40.9%	40.9%	17.3%	58.2%	41.8%	41.8%	41.8%	41.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	16.1	16.1	21.2	21.2	18.9	18.9	18.9	18.9
Actuated g/C Ratio	0.33	0.33	0.43	0.43	0.38	0.38	0.38	0.38
v/c Ratio	0.17	0.77	0.29	0.63	0.19	0.47	0.21	0.60
Control Delay	14.9	26.7	10.0	13.8	15.2	14.8	15.0	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	26.7	10.0	13.8	15.2	14.8	15.0	18.0
LOS	B	C	B	B	B	B	B	B
Approach Delay		25.6		13.2		14.9		17.6
Approach LOS		C		B		B		B

Intersection Summary

Cycle Length: 55

Actuated Cycle Length: 49.3

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 17.8

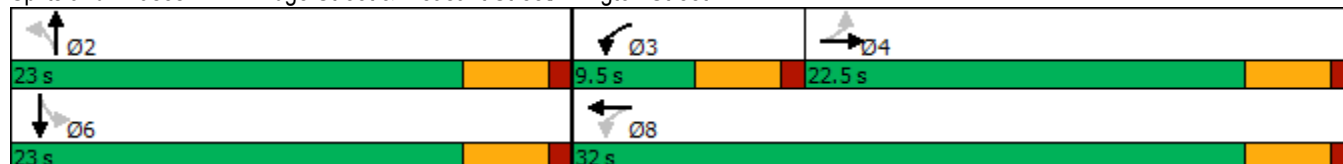
Intersection LOS: B

Intersection Capacity Utilization 66.4%

ICU Level of Service C

Analysis Period (min) 15

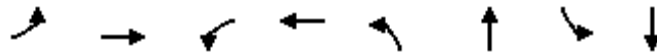
Splits and Phases: 2: Bridge Street & Pleasant Street/Arlington Street



Queues

2: Bridge Street & Pleasant Street/Arlington Street

03/15/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	459	92	500	50	336	69	426
v/c Ratio	0.17	0.77	0.29	0.63	0.19	0.47	0.21	0.60
Control Delay	14.9	26.7	10.0	13.8	15.2	14.8	15.0	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	26.7	10.0	13.8	15.2	14.8	15.0	18.0
Queue Length 50th (ft)	11	132	14	97	11	77	16	111
Queue Length 95th (ft)	32	#262	33	167	33	139	38	173
Internal Link Dist (ft)		1364		678		563		1208
Turn Bay Length (ft)	80		100		100		80	
Base Capacity (vph)	327	685	312	1048	265	715	330	712
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.67	0.29	0.48	0.19	0.47	0.21	0.60

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

2: Bridge Street & Pleasant Street/Arlington Street

03/15/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	364	63	82	380	65	44	220	76	57	291	62
Future Volume (veh/h)	45	364	63	82	380	65	44	220	76	57	291	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1885	1856	1885	1885	1781	1900	1885	1885	1841	1885	1841
Adj Flow Rate, veh/h	48	391	68	92	427	73	50	250	86	69	351	75
Peak Hour Factor	0.93	0.93	0.93	0.89	0.89	0.89	0.88	0.88	0.88	0.83	0.83	0.83
Percent Heavy Veh, %	4	1	3	1	1	8	0	1	1	4	1	4
Cap, veh/h	367	465	81	330	718	123	310	489	168	367	549	117
Arrive On Green	0.30	0.30	0.30	0.07	0.46	0.46	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	884	1564	272	1795	1569	268	977	1341	461	1028	1506	322
Grp Volume(v), veh/h	48	0	459	92	0	500	50	0	336	69	0	426
Grp Sat Flow(s),veh/h/ln	884	0	1836	1795	0	1837	977	0	1802	1028	0	1827
Q Serve(g_s), s	2.2	0.0	11.9	1.6	0.0	10.3	2.3	0.0	7.4	2.9	0.0	9.8
Cycle Q Clear(g_c), s	4.3	0.0	11.9	1.6	0.0	10.3	12.1	0.0	7.4	10.2	0.0	9.8
Prop In Lane	1.00		0.15	1.00		0.15	1.00		0.26	1.00		0.18
Lane Grp Cap(c), veh/h	367	0	546	330	0	841	310	0	657	367	0	666
V/C Ratio(X)	0.13	0.00	0.84	0.28	0.00	0.59	0.16	0.00	0.51	0.19	0.00	0.64
Avail Cap(c_a), veh/h	418	0	652	378	0	996	310	0	657	367	0	666
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.9	0.0	16.7	11.5	0.0	10.2	18.3	0.0	12.6	16.6	0.0	13.3
Incr Delay (d2), s/veh	0.2	0.0	8.3	0.5	0.0	0.7	1.1	0.0	2.8	1.1	0.0	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	5.6	0.6	0.0	3.4	0.6	0.0	3.0	0.7	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.0	0.0	25.0	11.9	0.0	10.9	19.5	0.0	15.4	17.7	0.0	18.0
LnGrp LOS	B	A	C	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h	507			592			386			495		
Approach Delay, s/veh	24.1			11.1			15.9			18.0		
Approach LOS	C			B			B			B		
Timer - Assigned Phs	2		3	4		6		8				
Phs Duration (G+Y+Rc), s	23.0		8.1	19.6		23.0		27.7				
Change Period (Y+Rc), s	4.5		4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	18.5		5.0	18.0		18.5		27.5				
Max Q Clear Time (g_c+I1), s	14.1		3.6	13.9		12.2		12.3				
Green Ext Time (p_c), s	0.9		0.0	1.2		1.6		2.9				
Intersection Summary												
HCM 6th Ctrl Delay	17.1											
HCM 6th LOS	B											

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	37	3	7	3	3	1	7	302	1	0	399	37
Future Vol, veh/h	37	3	7	3	3	1	7	302	1	0	399	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	44	44	44	87	87	87	82	82	82
Heavy Vehicles, %	3	0	14	33	33	0	14	3	0	0	3	0
Mvmt Flow	51	4	10	7	7	2	8	347	1	0	487	45

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	878	874	510	881	896	348	532	0	0	348	0	0
Stage 1	510	510	-	364	364	-	-	-	-	-	-	-
Stage 2	368	364	-	517	532	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.34	7.43	6.83	6.2	4.24	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.43	5.83	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.43	5.83	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.426	3.797	4.297	3.3	2.326	-	-	2.2	-	-
Pot Cap-1 Maneuver	267	290	540	236	249	700	977	-	-	1222	-	-
Stage 1	544	541	-	596	573	-	-	-	-	-	-	-
Stage 2	650	627	-	489	478	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	258	287	540	228	247	700	977	-	-	1222	-	-
Mov Cap-2 Maneuver	258	287	-	228	247	-	-	-	-	-	-	-
Stage 1	539	541	-	590	567	-	-	-	-	-	-	-
Stage 2	634	621	-	477	478	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	21.5		19.6		0.2		0	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	977	-	-	282	262	1222	-	-
HCM Lane V/C Ratio	0.008	-	-	0.228	0.061	-	-	-
HCM Control Delay (s)	8.7	0	-	21.5	19.6	0	-	-
HCM Lane LOS	A	A	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.9	0.2	0	-	-

HCM 6th TWSC
4: Driveway & Greenmont Avenue

03/15/2024

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	46	0	0	47	0	1
Future Vol, veh/h	46	0	0	47	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	73	73	90	90
Heavy Vehicles, %	4	0	0	4	0	0
Mvmt Flow	63	0	0	64	0	1
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	63	0	127	63
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	64	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1553	-	872	1007
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	964	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1553	-	872	1007
Mov Cap-2 Maneuver	-	-	-	-	872	-
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	964	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		8.6	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	1007	-	-	1553	-	
HCM Lane V/C Ratio	0.001	-	-	-	-	
HCM Control Delay (s)	8.6	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Intersection

Int Delay, s/veh 1.8

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 117 554 628 7 4 62

Future Vol, veh/h 117 554 628 7 4 62

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 91 91 94 94 82 82

Heavy Vehicles, % 2 0 0 0 1 0

Mvmt Flow 129 609 668 7 5 76

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 675 0 - 0 1539 672

Stage 1 - - - - 672 -

Stage 2 - - - - 867 -

Critical Hdwy 4.12 - - - 6.41 6.2

Critical Hdwy Stg 1 - - - - 5.41 -

Critical Hdwy Stg 2 - - - - 5.41 -

Follow-up Hdwy 2.218 - - - 3.509 3.3

Pot Cap-1 Maneuver 916 - - - 128 459

Stage 1 - - - - 509 -

Stage 2 - - - - 413 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 916 - - - 101 459

Mov Cap-2 Maneuver - - - - 101 -

Stage 1 - - - - 401 -

Stage 2 - - - - 413 -

Approach EB WB SB

HCM Control Delay, s 1.7 0 17.1

HCM LOS C

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 916 - - - 378

HCM Lane V/C Ratio 0.14 - - - 0.213

HCM Control Delay (s) 9.6 0 - - 17.1

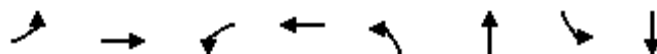
HCM Lane LOS A A - - C

HCM 95th %tile Q(veh) 0.5 - - - 0.8

Timings

2: Bridge Street & Pleasant Street/Arlington Street

03/15/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	53	411	155	491	75	292	65	315
Future Volume (vph)	53	411	155	491	75	292	65	315
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	26.0	26.0	9.6	35.6	24.4	24.4	24.4	24.4
Total Split (%)	43.3%	43.3%	16.0%	59.3%	40.7%	40.7%	40.7%	40.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	19.7	19.7	26.9	26.9	20.2	20.2	20.2	20.2
Actuated g/C Ratio	0.35	0.35	0.48	0.48	0.36	0.36	0.36	0.36
v/c Ratio	0.28	0.83	0.63	0.76	0.34	0.71	0.37	0.59
Control Delay	18.4	31.2	19.7	17.7	20.0	23.4	22.7	20.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	31.2	19.7	17.7	20.0	23.4	22.7	20.0
LOS	B	C	B	B	B	C	C	C
Approach Delay		30.0		18.1		22.9		20.4
Approach LOS		C		B		C		C

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 56.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 22.4

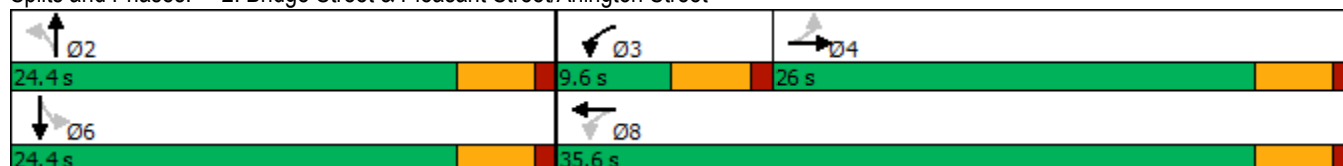
Intersection LOS: C

Intersection Capacity Utilization 78.5%

ICU Level of Service D

Analysis Period (min) 15

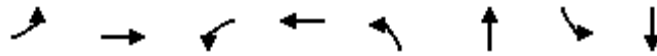
Splits and Phases: 2: Bridge Street & Pleasant Street/Arlington Street



Queues

2: Bridge Street & Pleasant Street/Arlington Street

03/15/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	56	532	178	686	85	472	69	397
v/c Ratio	0.28	0.83	0.63	0.76	0.34	0.71	0.37	0.59
Control Delay	18.4	31.2	19.7	17.7	20.0	23.4	22.7	20.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.4	31.2	19.7	17.7	20.0	23.4	22.7	20.0
Queue Length 50th (ft)	14	169	31	165	23	137	19	114
Queue Length 95th (ft)	40	#323	#65	261	56	#261	54	197
Internal Link Dist (ft)		1364		678		563		1208
Turn Bay Length (ft)	80		100		100		80	
Base Capacity (vph)	221	710	284	1049	252	669	185	669
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.75	0.63	0.65	0.34	0.71	0.37	0.59

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

2: Bridge Street & Pleasant Street/Arlington Street

03/15/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	411	94	155	491	106	75	292	123	65	315	58
Future Volume (veh/h)	53	411	94	155	491	106	75	292	123	65	315	58
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1885	1900	1885	1900	1900	1900	1885	1885	1856	1885	1870
Adj Flow Rate, veh/h	56	433	99	178	564	122	85	332	140	69	335	62
Peak Hour Factor	0.95	0.95	0.95	0.87	0.87	0.87	0.88	0.88	0.88	0.94	0.94	0.94
Percent Heavy Veh, %	0	1	0	1	0	0	0	1	1	3	1	2
Cap, veh/h	279	494	113	334	755	163	289	434	183	226	534	99
Arrive On Green	0.33	0.33	0.33	0.09	0.50	0.50	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	768	1485	339	1795	1514	327	1003	1259	531	914	1547	286
Grp Volume(v), veh/h	56	0	532	178	0	686	85	0	472	69	0	397
Grp Sat Flow(s),veh/h/ln	768	0	1824	1795	0	1841	1003	0	1790	914	0	1834
Q Serve(g_s), s	3.6	0.0	15.9	3.5	0.0	17.2	4.5	0.0	13.5	4.2	0.0	10.4
Cycle Q Clear(g_c), s	11.2	0.0	15.9	3.5	0.0	17.2	14.9	0.0	13.5	17.7	0.0	10.4
Prop In Lane	1.00		0.19	1.00		0.18	1.00		0.30	1.00		0.16
Lane Grp Cap(c), veh/h	279	0	606	334	0	919	289	0	617	226	0	633
V/C Ratio(X)	0.20	0.00	0.88	0.53	0.00	0.75	0.29	0.00	0.76	0.31	0.00	0.63
Avail Cap(c_a), veh/h	310	0	680	334	0	993	289	0	617	226	0	633
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.8	0.0	18.1	12.9	0.0	11.5	22.0	0.0	16.8	24.7	0.0	15.8
Incr Delay (d2), s/veh	0.3	0.0	11.6	1.6	0.0	2.9	2.6	0.0	8.7	3.5	0.0	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	7.8	1.3	0.0	6.4	1.2	0.0	6.4	1.1	0.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	0.0	29.7	14.5	0.0	14.4	24.6	0.0	25.5	28.2	0.0	20.5
LnGrp LOS	C	A	C	B	A	B	C	A	C	C	A	C
Approach Vol, veh/h	588			864			557			466		
Approach Delay, s/veh	28.8			14.5			25.4			21.6		
Approach LOS	C			B			C			C		
Timer - Assigned Phs	2		3	4		6		8				
Phs Duration (G+Y+Rc), s	24.4		9.6	23.7		24.4		33.3				
Change Period (Y+Rc), s	4.5		4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	19.9		5.1	21.5		19.9		31.1				
Max Q Clear Time (g_c+I1), s	16.9		5.5	17.9		19.7		19.2				
Green Ext Time (p_c), s	1.0		0.0	1.3		0.1		3.8				
Intersection Summary												
HCM 6th Ctrl Delay				21.7								
HCM 6th LOS				C								

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	75	6	15	1	4	2	16	445	3	0	449	40
Future Vol, veh/h	75	6	15	1	4	2	16	445	3	0	449	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	88	88	88	89	89	89	94	94	94
Heavy Vehicles, %	1	0	7	0	0	0	0	1	0	0	1	0
Mvmt Flow	103	8	21	1	5	2	18	500	3	0	478	43

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1041	1039	500	1052	1059	502	521	0	0	503	0	0
Stage 1	500	500	-	538	538	-	-	-	-	-	-	-
Stage 2	541	539	-	514	521	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.5	6.27	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.11	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4	3.363	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	209	232	561	206	226	573	1056	-	-	1072	-	-
Stage 1	555	546	-	531	526	-	-	-	-	-	-	-
Stage 2	527	525	-	547	535	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	201	226	561	190	221	573	1056	-	-	1072	-	-
Mov Cap-2 Maneuver	201	226	-	190	221	-	-	-	-	-	-	-
Stage 1	542	546	-	518	513	-	-	-	-	-	-	-
Stage 2	508	512	-	519	535	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	41.3		19.2		0.3		0	
HCM LOS	E		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1056	-	-	225	261	1072	-
HCM Lane V/C Ratio	0.017	-	-	0.584	0.03	-	-
HCM Control Delay (s)	8.5	0	-	41.3	19.2	0	-
HCM Lane LOS	A	A	-	E	C	A	-
HCM 95th %tile Q(veh)	0.1	-	-	3.3	0.1	0	-

HCM 6th TWSC
4: Driveway & Greenmont Avenue

03/15/2024

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	96	0	1	59	0	0
Future Vol, veh/h	96	0	1	59	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	88	88	90	90
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	132	0	1	67	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	132	0	201	132
Stage 1	-	-	-	-	132	-
Stage 2	-	-	-	-	69	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1466	-	792	923
Stage 1	-	-	-	-	899	-
Stage 2	-	-	-	-	959	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1466	-	791	923
Mov Cap-2 Maneuver	-	-	-	-	791	-
Stage 1	-	-	-	-	899	-
Stage 2	-	-	-	-	958	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.1		0	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	1466	-	
HCM Lane V/C Ratio	-	-	-	0.001	-	
HCM Control Delay (s)	0	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Intersection

Int Delay, s/veh 1.5

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 50 492 506 10 6 73

Future Vol, veh/h 50 492 506 10 6 73

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 87 87 84 84 81 81

Heavy Vehicles, % 2 3 0 3 2 0

Mvmt Flow 57 566 602 12 7 90

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 614 0 - 0 1288 608

Stage 1 - - - - 608 -

Stage 2 - - - - 680 -

Critical Hdwy 4.12 - - - 6.42 6.2

Critical Hdwy Stg 1 - - - - 5.42 -

Critical Hdwy Stg 2 - - - - 5.42 -

Follow-up Hdwy 2.218 - - - 3.518 3.3

Pot Cap-1 Maneuver 965 - - - 181 499

Stage 1 - - - - 543 -

Stage 2 - - - - 503 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 965 - - - 165 499

Mov Cap-2 Maneuver - - - - 165 -

Stage 1 - - - - 496 -

Stage 2 - - - - 503 -

Approach EB WB SB

HCM Control Delay, s 0.8 0 15.7

HCM LOS C

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 965 - - - 433

HCM Lane V/C Ratio 0.06 - - - 0.225

HCM Control Delay (s) 9 0 - - 15.7

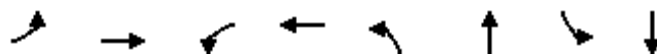
HCM Lane LOS A A - - C

HCM 95th %tile Q(veh) 0.2 - - - 0.9

Timings

2: Bridge Street & Pleasant Street/Arlington Street

03/18/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	48	399	94	397	52	237	66	316
Future Volume (vph)	48	399	94	397	52	237	66	316
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	25.4	25.4	9.5	34.9	25.1	25.1	25.1	25.1
Total Split (%)	42.3%	42.3%	15.8%	58.2%	41.8%	41.8%	41.8%	41.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	18.5	18.5	25.7	25.7	21.0	21.0	21.0	21.0
Actuated g/C Ratio	0.33	0.33	0.46	0.46	0.38	0.38	0.38	0.38
v/c Ratio	0.18	0.83	0.37	0.62	0.26	0.52	0.27	0.66
Control Delay	15.7	31.8	11.8	14.1	18.4	17.2	17.5	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	31.8	11.8	14.1	18.4	17.2	17.5	21.6
LOS	B	C	B	B	B	B	B	C
Approach Delay		30.3		13.7		17.4		21.0
Approach LOS		C		B		B		C

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 55.9

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 20.5

Intersection LOS: C

Intersection Capacity Utilization 70.3%

ICU Level of Service C

Analysis Period (min) 15

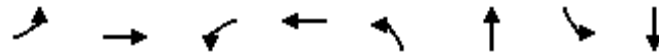
Splits and Phases: 2: Bridge Street & Pleasant Street/Arlington Street

25.1 s	25.4 s	9.5 s	25.4 s
25.1 s	34.9 s		

Queues

2: Bridge Street & Pleasant Street/Arlington Street

03/18/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	52	504	106	528	59	361	80	461
v/c Ratio	0.18	0.83	0.37	0.62	0.26	0.52	0.27	0.66
Control Delay	15.7	31.8	11.8	14.1	18.4	17.2	17.5	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	31.8	11.8	14.1	18.4	17.2	17.5	21.6
Queue Length 50th (ft)	13	160	18	116	15	94	21	136
Queue Length 95th (ft)	35	#305	39	193	42	162	47	205
Internal Link Dist (ft)		1364		678		563		1208
Turn Bay Length (ft)	80		100		100		80	
Base Capacity (vph)	326	700	283	1019	223	700	295	698
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.72	0.37	0.52	0.26	0.52	0.27	0.66

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

2: Bridge Street & Pleasant Street/Arlington Street

03/18/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	399	70	94	397	73	52	237	81	66	316	66
Future Volume (veh/h)	48	399	70	94	397	73	52	237	81	66	316	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1885	1856	1885	1885	1781	1900	1885	1885	1841	1885	1841
Adj Flow Rate, veh/h	52	429	75	106	446	82	59	269	92	80	381	80
Peak Hour Factor	0.93	0.93	0.93	0.89	0.89	0.89	0.88	0.88	0.88	0.83	0.83	0.83
Percent Heavy Veh, %	4	1	3	1	1	8	0	1	1	4	1	4
Cap, veh/h	351	499	87	313	731	134	275	494	169	339	556	117
Arrive On Green	0.32	0.32	0.32	0.07	0.47	0.47	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	861	1563	273	1795	1549	285	946	1343	459	1004	1511	317
Grp Volume(v), veh/h	52	0	504	106	0	528	59	0	361	80	0	461
Grp Sat Flow(s),veh/h/ln	861	0	1836	1795	0	1834	946	0	1802	1004	0	1828
Q Serve(g_s), s	2.7	0.0	14.4	2.0	0.0	12.0	3.2	0.0	8.9	3.8	0.0	11.9
Cycle Q Clear(g_c), s	6.1	0.0	14.4	2.0	0.0	12.0	15.1	0.0	8.9	12.7	0.0	11.9
Prop In Lane	1.00		0.15	1.00		0.16	1.00		0.25	1.00		0.17
Lane Grp Cap(c), veh/h	351	0	586	313	0	865	275	0	663	339	0	672
V/C Ratio(X)	0.15	0.00	0.86	0.34	0.00	0.61	0.21	0.00	0.54	0.24	0.00	0.69
Avail Cap(c_a), veh/h	397	0	685	344	0	995	275	0	663	339	0	672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	0.0	17.9	12.5	0.0	11.0	21.4	0.0	14.0	19.0	0.0	15.0
Incr Delay (d2), s/veh	0.2	0.0	9.6	0.6	0.0	0.9	1.8	0.0	3.2	1.6	0.0	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	6.9	0.7	0.0	4.2	0.8	0.0	3.7	1.0	0.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.6	0.0	27.5	13.1	0.0	11.8	23.1	0.0	17.2	20.7	0.0	20.6
LnGrp LOS	B	A	C	B	A	B	C	A	B	C	A	C
Approach Vol, veh/h	556			634			420			541		
Approach Delay, s/veh	26.5			12.1			18.0			20.6		
Approach LOS	C			B			B			C		
Timer - Assigned Phs	2		3	4		6		8				
Phs Duration (G+Y+Rc), s	25.1		8.5	22.4		25.1		30.9				
Change Period (Y+Rc), s	4.5		4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	20.6		5.0	20.9		20.6		30.4				
Max Q Clear Time (g_c+I1), s	17.1		4.0	16.4		14.7		14.0				
Green Ext Time (p_c), s	0.8		0.0	1.4		1.7		3.2				
Intersection Summary												
HCM 6th Ctrl Delay	19.1											
HCM 6th LOS	B											

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	44	3	13	3	3	1	9	325	1	0	432	41
Future Vol, veh/h	44	3	13	3	3	1	9	325	1	0	432	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	44	44	44	87	87	87	82	82	82
Heavy Vehicles, %	3	0	14	33	33	0	14	3	0	0	3	0
Mvmt Flow	60	4	18	7	7	2	10	374	1	0	527	50

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	951	947	552	958	972	375	577	0	0	375	0	0
Stage 1	552	552	-	395	395	-	-	-	-	-	-	-
Stage 2	399	395	-	563	577	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.34	7.43	6.83	6.2	4.24	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.43	5.83	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.43	5.83	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.426	3.797	4.297	3.3	2.326	-	-	2.2	-	-
Pot Cap-1 Maneuver	239	263	511	209	224	676	940	-	-	1195	-	-
Stage 1	516	518	-	573	554	-	-	-	-	-	-	-
Stage 2	625	608	-	460	455	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	230	260	511	197	221	676	940	-	-	1195	-	-
Mov Cap-2 Maneuver	230	260	-	197	221	-	-	-	-	-	-	-
Stage 1	509	518	-	566	547	-	-	-	-	-	-	-
Stage 2	607	600	-	440	455	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	24.8		21.7		0.2		0	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	940	-	-	263 231	1195	-	-
HCM Lane V/C Ratio	0.011	-	-	0.313 0.069	-	-	-
HCM Control Delay (s)	8.9	0	-	24.8 21.7	0	-	-
HCM Lane LOS	A	A	-	C C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.3 0.2	0	-	-

HCM 6th TWSC
4: Driveway & Greenmont Avenue

03/18/2024

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	51	0	0	55	0	1
Future Vol, veh/h	51	0	0	55	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	73	73	90	90
Heavy Vehicles, %	4	0	0	4	0	0
Mvmt Flow	70	0	0	75	0	1
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	70	0	145	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	75	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1544	-	852	998
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	953	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1544	-	852	998
Mov Cap-2 Maneuver	-	-	-	-	852	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	953	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		8.6	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	998	-	-	1544	-	
HCM Lane V/C Ratio	0.001	-	-	-	-	
HCM Control Delay (s)	8.6	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Intersection

Int Delay, s/veh 2.1

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 135 572 659 9 5 71

Future Vol, veh/h 135 572 659 9 5 71

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 91 91 94 94 82 82

Heavy Vehicles, % 2 0 0 0 1 0

Mvmt Flow 148 629 701 10 6 87

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 711 0 - 0 1631 706

Stage 1 - - - - 706 -

Stage 2 - - - - 925 -

Critical Hdwy 4.12 - - - 6.41 6.2

Critical Hdwy Stg 1 - - - - 5.41 -

Critical Hdwy Stg 2 - - - - 5.41 -

Follow-up Hdwy 2.218 - - - 3.509 3.3

Pot Cap-1 Maneuver 888 - - - 112 439

Stage 1 - - - - 491 -

Stage 2 - - - - 388 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 888 - - - 83 439

Mov Cap-2 Maneuver - - - - 83 -

Stage 1 - - - - 365 -

Stage 2 - - - - 388 -

Approach EB WB SB

HCM Control Delay, s 1.9 0 19.4

HCM LOS C

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 888 - - - 342

HCM Lane V/C Ratio 0.167 - - - 0.271

HCM Control Delay (s) 9.9 0 - - 19.4

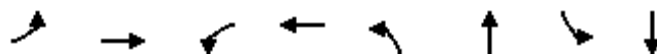
HCM Lane LOS A A - - C

HCM 95th %tile Q(veh) 0.6 - - - 1.1

Timings

2: Bridge Street & Pleasant Street/Arlington Street

03/19/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	57	415	184	506	88	329	79	344
Future Volume (vph)	57	415	184	506	88	329	79	344
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	27.0	27.0	10.0	37.0	28.0	28.0	28.0	28.0
Total Split (%)	41.5%	41.5%	15.4%	56.9%	43.1%	43.1%	43.1%	43.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	21.4	21.4	31.5	31.5	23.5	23.5	23.5	23.5
Actuated g/C Ratio	0.33	0.33	0.49	0.49	0.37	0.37	0.37	0.37
v/c Ratio	0.37	0.90	0.78	0.78	0.43	0.77	0.54	0.63
Control Delay	23.7	40.7	32.9	20.6	23.0	26.4	33.4	21.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	40.7	32.9	20.6	23.0	26.4	33.4	21.4
LOS	C	D	C	C	C	C	C	C
Approach Delay		39.0		23.4		25.9		23.3
Approach LOS		D		C		C		C

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 64

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 27.5

Intersection LOS: C

Intersection Capacity Utilization 83.2%

ICU Level of Service E

Analysis Period (min) 15

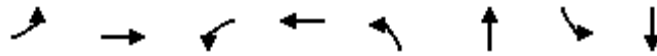
Splits and Phases: 2: Bridge Street & Pleasant Street/Arlington Street

Ø2		Ø3	Ø4
28 s		10 s	27 s
Ø6		Ø8	
28 s		37 s	

Queues

2: Bridge Street & Pleasant Street/Arlington Street

03/19/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	549	211	722	100	524	84	432
v/c Ratio	0.37	0.90	0.78	0.78	0.43	0.77	0.54	0.63
Control Delay	23.7	40.7	32.9	20.6	23.0	26.4	33.4	21.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	40.7	32.9	20.6	23.0	26.4	33.4	21.4
Queue Length 50th (ft)	17	199	44	209	29	168	26	134
Queue Length 95th (ft)	50	#370	#119	322	70	#306	#85	222
Internal Link Dist (ft)		1364		678		563		1208
Turn Bay Length (ft)	80		100		100		80	
Base Capacity (vph)	172	643	271	951	232	684	155	684
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.85	0.78	0.76	0.43	0.77	0.54	0.63

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

2: Bridge Street & Pleasant Street/Arlington Street

03/19/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	415	106	184	506	122	88	329	132	79	344	62
Future Volume (veh/h)	57	415	106	184	506	122	88	329	132	79	344	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1885	1900	1885	1900	1900	1900	1885	1885	1856	1885	1870
Adj Flow Rate, veh/h	60	437	112	211	582	140	100	374	150	84	366	66
Peak Hour Factor	0.95	0.95	0.95	0.87	0.87	0.87	0.88	0.88	0.88	0.94	0.94	0.94
Percent Heavy Veh, %	0	1	0	1	0	0	0	1	1	3	1	2
Cap, veh/h	231	482	124	307	725	174	282	472	189	207	573	103
Arrive On Green	0.33	0.33	0.33	0.09	0.49	0.49	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	743	1447	371	1795	1480	356	971	1280	513	871	1554	280
Grp Volume(v), veh/h	60	0	549	211	0	722	100	0	524	84	0	432
Grp Sat Flow(s),veh/h/ln	743	0	1818	1795	0	1836	971	0	1793	871	0	1835
Q Serve(g_s), s	4.7	0.0	18.4	4.7	0.0	21.1	6.0	0.0	16.6	6.1	0.0	12.4
Cycle Q Clear(g_c), s	15.8	0.0	18.4	4.7	0.0	21.1	18.4	0.0	16.6	22.7	0.0	12.4
Prop In Lane	1.00		0.20	1.00		0.19	1.00		0.29	1.00		0.15
Lane Grp Cap(c), veh/h	231	0	606	307	0	900	282	0	661	207	0	676
V/C Ratio(X)	0.26	0.00	0.91	0.69	0.00	0.80	0.35	0.00	0.79	0.41	0.00	0.64
Avail Cap(c_a), veh/h	246	0	642	307	0	936	282	0	661	207	0	676
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.5	0.0	20.3	14.9	0.0	13.7	24.2	0.0	17.9	28.1	0.0	16.6
Incr Delay (d2), s/veh	0.6	0.0	16.1	6.3	0.0	4.9	3.5	0.0	9.5	5.8	0.0	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	9.7	2.2	0.0	8.5	1.6	0.0	7.9	1.5	0.0	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.1	0.0	36.4	21.2	0.0	18.6	27.7	0.0	27.4	33.9	0.0	21.2
LnGrp LOS	C	A	D	C	A	B	C	A	C	C	A	C
Approach Vol, veh/h	609				933				624			
Approach Delay, s/veh	35.2				19.2				27.4			
Approach LOS	D				B				C			
Timer - Assigned Phs	2			3		4		6		8		
Phs Duration (G+Y+Rc), s	28.0			10.0		25.7		28.0		35.7		
Change Period (Y+Rc), s	4.5			4.5		4.5		4.5		4.5		
Max Green Setting (Gmax), s	23.5			5.5		22.5		23.5		32.5		
Max Q Clear Time (g_c+I1), s	20.4			6.7		20.4		24.7		23.1		
Green Ext Time (p_c), s	1.2			0.0		0.9		0.0		3.5		
Intersection Summary												
HCM 6th Ctrl Delay				25.5								
HCM 6th LOS				C								

Intersection												
Int Delay, s/veh	8.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	82	6	19	1	4	2	22	496	3	0	493	47
Future Vol, veh/h	82	6	19	1	4	2	22	496	3	0	493	47
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	88	88	88	89	89	89	94	94	94
Heavy Vehicles, %	1	0	7	0	0	0	0	1	0	0	1	0
Mvmt Flow	112	8	26	1	5	2	25	557	3	0	524	50

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1161	1159	549	1175	1183	559	574	0	0	560	0	0
Stage 1	549	549	-	609	609	-	-	-	-	-	-	-
Stage 2	612	610	-	566	574	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.5	6.27	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.11	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4	3.363	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	173	197	526	170	191	532	1009	-	-	1021	-	-
Stage 1	522	520	-	486	488	-	-	-	-	-	-	-
Stage 2	482	488	-	513	506	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	164	190	526	152	184	532	1009	-	-	1021	-	-
Mov Cap-2 Maneuver	164	190	-	152	184	-	-	-	-	-	-	-
Stage 1	503	520	-	469	470	-	-	-	-	-	-	-
Stage 2	458	470	-	480	506	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	70.4		22.1		0.4		0	
HCM LOS	F		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1009	-	-	188 218	1021	-	-
HCM Lane V/C Ratio	0.024	-	-	0.78 0.036	-	-	-
HCM Control Delay (s)	8.7	0	-	70.4 22.1	0	-	-
HCM Lane LOS	A	A	-	F C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	5.3 0.1	0	-	-

HCM 6th TWSC
4: Driveway & Greenmont Avenue

03/19/2024

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	107	0	1	67	0	0
Future Vol, veh/h	107	0	1	67	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	88	88	90	90
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	147	0	1	76	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	147
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1447
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1447
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1447	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	0	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection

Int Delay, s/veh 1.6

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 51 492 506 10 6 75

Future Vol, veh/h 51 492 506 10 6 75

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 87 87 84 84 81 81

Heavy Vehicles, % 2 3 0 3 2 0

Mvmt Flow 59 566 602 12 7 93

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 614 0 - 0 1292 608

Stage 1 - - - - 608 -

Stage 2 - - - - 684 -

Critical Hdwy 4.12 - - - 6.42 6.2

Critical Hdwy Stg 1 - - - - 5.42 -

Critical Hdwy Stg 2 - - - - 5.42 -

Follow-up Hdwy 2.218 - - - 3.518 3.3

Pot Cap-1 Maneuver 965 - - - 180 499

Stage 1 - - - - 543 -

Stage 2 - - - - 501 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 965 - - - 164 499

Mov Cap-2 Maneuver - - - - 164 -

Stage 1 - - - - 495 -

Stage 2 - - - - 501 -

Approach EB WB SB

HCM Control Delay, s 0.8 0 15.8

HCM LOS C

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 965 - - - 433

HCM Lane V/C Ratio 0.061 - - - 0.231

HCM Control Delay (s) 9 0 - - 15.8

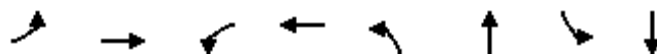
HCM Lane LOS A A - - C

HCM 95th %tile Q(veh) 0.2 - - - 0.9

Timings

2: Bridge Street & Pleasant Street/Arlington Street

03/18/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	48	399	94	397	52	237	66	317
Future Volume (vph)	48	399	94	397	52	237	66	317
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	25.4	25.4	9.5	34.9	25.1	25.1	25.1	25.1
Total Split (%)	42.3%	42.3%	15.8%	58.2%	41.8%	41.8%	41.8%	41.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	18.5	18.5	25.7	25.7	21.0	21.0	21.0	21.0
Actuated g/C Ratio	0.33	0.33	0.46	0.46	0.38	0.38	0.38	0.38
v/c Ratio	0.18	0.83	0.37	0.63	0.27	0.52	0.27	0.67
Control Delay	15.7	31.8	11.8	14.1	18.5	17.2	17.5	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	31.8	11.8	14.1	18.5	17.2	17.5	21.8
LOS	B	C	B	B	B	B	B	C
Approach Delay		30.3		13.7		17.4		21.2
Approach LOS		C		B		B		C

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 55.9

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 20.6

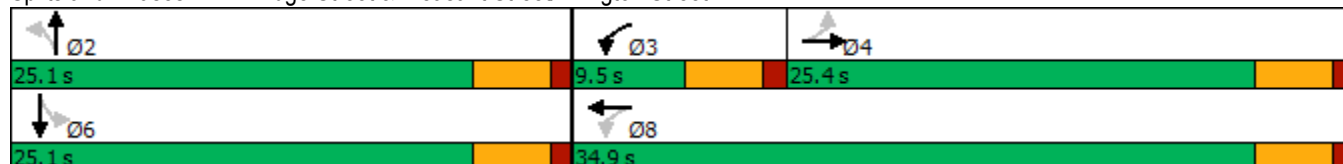
Intersection LOS: C

Intersection Capacity Utilization 70.5%

ICU Level of Service C

Analysis Period (min) 15

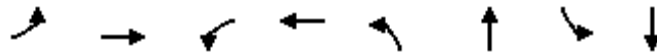
Splits and Phases: 2: Bridge Street & Pleasant Street/Arlington Street



Queues

2: Bridge Street & Pleasant Street/Arlington Street

03/18/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	52	504	106	529	59	361	80	465
v/c Ratio	0.18	0.83	0.37	0.63	0.27	0.52	0.27	0.67
Control Delay	15.7	31.8	11.8	14.1	18.5	17.2	17.5	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	31.8	11.8	14.1	18.5	17.2	17.5	21.8
Queue Length 50th (ft)	13	160	18	116	15	94	21	138
Queue Length 95th (ft)	35	#305	39	193	42	162	47	207
Internal Link Dist (ft)		1364		678		563		1208
Turn Bay Length (ft)	80		100		100		80	
Base Capacity (vph)	325	700	283	1018	219	700	295	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.72	0.37	0.52	0.27	0.52	0.27	0.67

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

2: Bridge Street & Pleasant Street/Arlington Street

03/18/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	399	70	94	397	74	52	237	81	66	317	69
Future Volume (veh/h)	48	399	70	94	397	74	52	237	81	66	317	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1885	1856	1885	1885	1781	1900	1885	1885	1841	1885	1841
Adj Flow Rate, veh/h	52	429	75	106	446	83	59	269	92	80	382	83
Peak Hour Factor	0.93	0.93	0.93	0.89	0.89	0.89	0.88	0.88	0.88	0.83	0.83	0.83
Percent Heavy Veh, %	4	1	3	1	1	8	0	1	1	4	1	4
Cap, veh/h	350	499	87	313	729	136	272	494	169	339	552	120
Arrive On Green	0.32	0.32	0.32	0.07	0.47	0.47	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	861	1563	273	1795	1546	288	942	1343	459	1004	1500	326
Grp Volume(v), veh/h	52	0	504	106	0	529	59	0	361	80	0	465
Grp Sat Flow(s),veh/h/ln	861	0	1836	1795	0	1833	942	0	1802	1004	0	1826
Q Serve(g_s), s	2.7	0.0	14.4	2.0	0.0	12.0	3.2	0.0	8.9	3.8	0.0	12.1
Cycle Q Clear(g_c), s	6.1	0.0	14.4	2.0	0.0	12.0	15.3	0.0	8.9	12.7	0.0	12.1
Prop In Lane	1.00		0.15	1.00		0.16	1.00		0.25	1.00		0.18
Lane Grp Cap(c), veh/h	350	0	586	313	0	865	272	0	663	339	0	672
V/C Ratio(X)	0.15	0.00	0.86	0.34	0.00	0.61	0.22	0.00	0.54	0.24	0.00	0.69
Avail Cap(c_a), veh/h	396	0	685	344	0	995	272	0	663	339	0	672
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	0.0	17.9	12.5	0.0	11.0	21.5	0.0	14.0	19.0	0.0	15.0
Incr Delay (d2), s/veh	0.2	0.0	9.6	0.6	0.0	0.9	1.8	0.0	3.2	1.6	0.0	5.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	6.9	0.7	0.0	4.2	0.8	0.0	3.7	1.0	0.0	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.6	0.0	27.5	13.1	0.0	11.9	23.3	0.0	17.2	20.7	0.0	20.8
LnGrp LOS	B	A	C	B	A	B	C	A	B	C	A	C
Approach Vol, veh/h	556			635			420			545		
Approach Delay, s/veh	26.5			12.1			18.1			20.8		
Approach LOS	C			B			B			C		
Timer - Assigned Phs	2		3	4		6		8				
Phs Duration (G+Y+Rc), s	25.1		8.5	22.4		25.1		30.9				
Change Period (Y+Rc), s	4.5		4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	20.6		5.0	20.9		20.6		30.4				
Max Q Clear Time (g_c+I1), s	17.3		4.0	16.4		14.7		14.0				
Green Ext Time (p_c), s	0.8		0.0	1.4		1.7		3.2				
Intersection Summary												
HCM 6th Ctrl Delay	19.2											
HCM 6th LOS	B											

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	45	3	16	3	3	1	10	325	1	0	432	41
Future Vol, veh/h	45	3	16	3	3	1	10	325	1	0	432	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	44	44	44	87	87	87	82	82	82
Heavy Vehicles, %	3	0	14	33	33	0	14	3	0	0	3	0
Mvmt Flow	62	4	22	7	7	2	11	374	1	0	527	50
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	953	949	552	962	974	375	577	0	0	375	0	0
Stage 1	552	552	-	397	397	-	-	-	-	-	-	-
Stage 2	401	397	-	565	577	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.5	6.34	7.43	6.83	6.2	4.24	-	-	4.1	-	-
Critical Hdwy Stg 1	6.13	5.5	-	6.43	5.83	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.5	-	6.43	5.83	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4	3.426	3.797	4.297	3.3	2.326	-	-	2.2	-	-
Pot Cap-1 Maneuver	238	262	511	207	223	676	940	-	-	1195	-	-
Stage 1	516	518	-	571	553	-	-	-	-	-	-	-
Stage 2	624	607	-	459	455	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	229	258	511	194	220	676	940	-	-	1195	-	-
Mov Cap-2 Maneuver	229	258	-	194	220	-	-	-	-	-	-	-
Stage 1	508	518	-	562	545	-	-	-	-	-	-	-
Stage 2	605	598	-	436	455	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	24.9		21.9		0.3		0					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	940	-	-	267	229	1195	-	-				
HCM Lane V/C Ratio	0.012	-	-	0.328	0.069	-	-	-				
HCM Control Delay (s)	8.9	0	-	24.9	21.9	0	-	-				
HCM Lane LOS	A	A	-	C	C	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	1.4	0.2	0	-	-				

HCM 6th TWSC

4: Driveway & Greenmont Avenue

03/18/2024

Intersection

Int Delay, s/veh 0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	53	1	1	55	2	5
Future Vol, veh/h	53	1	1	55	2	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	73	73	90	90
Heavy Vehicles, %	4	0	0	4	0	0
Mvmt Flow	73	1	1	75	2	6

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	74
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1538
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1538
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	946	-	-	1538	-
HCM Lane V/C Ratio	0.008	-	-	0.001	-
HCM Control Delay (s)	8.8	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th TWSC
1: Pleasant Street & Greenmont Avenue

03/19/2024

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	137	572	659	9	5	73
Future Vol, veh/h	137	572	659	9	5	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	94	94	82	82
Heavy Vehicles, %	2	0	0	0	1	0
Mvmt Flow	151	629	701	10	6	89

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	711	0	0 1637 706
Stage 1	-	-	- 706 -
Stage 2	-	-	- 931 -
Critical Hdwy	4.12	-	- 6.41 6.2
Critical Hdwy Stg 1	-	-	- 5.41 -
Critical Hdwy Stg 2	-	-	- 5.41 -
Follow-up Hdwy	2.218	-	- 3.509 3.3
Pot Cap-1 Maneuver	888	-	- 111 439
Stage 1	-	-	- 491 -
Stage 2	-	-	- 385 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	888	-	- 82 439
Mov Cap-2 Maneuver	-	-	- 82 -
Stage 1	-	-	- 363 -
Stage 2	-	-	- 385 -

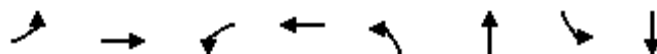
Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	19.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	888	-	-	-	343
HCM Lane V/C Ratio	0.17	-	-	-	0.277
HCM Control Delay (s)	9.9	0	-	-	19.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.6	-	-	-	1.1

Timings

2: Bridge Street & Pleasant Street/Arlington Street

03/19/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	57	415	184	506	88	331	80	345
Future Volume (vph)	57	415	184	506	88	331	80	345
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	27.0	27.0	10.0	37.0	28.0	28.0	28.0	28.0
Total Split (%)	41.5%	41.5%	15.4%	56.9%	43.1%	43.1%	43.1%	43.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)	21.4	21.4	31.5	31.5	23.5	23.5	23.5	23.5
Actuated g/C Ratio	0.33	0.33	0.49	0.49	0.37	0.37	0.37	0.37
v/c Ratio	0.37	0.90	0.78	0.79	0.43	0.77	0.56	0.63
Control Delay	24.0	40.7	32.9	20.8	23.2	26.6	34.6	21.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	40.7	32.9	20.8	23.2	26.6	34.6	21.4
LOS	C	D	C	C	C	C	C	C
Approach Delay		39.1		23.5		26.0		23.6
Approach LOS		D		C		C		C

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 64

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 27.6

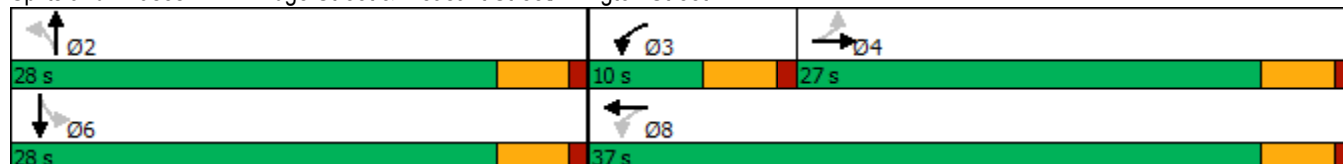
Intersection LOS: C

Intersection Capacity Utilization 83.4%

ICU Level of Service E

Analysis Period (min) 15

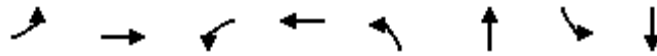
Splits and Phases: 2: Bridge Street & Pleasant Street/Arlington Street



Queues

2: Bridge Street & Pleasant Street/Arlington Street

03/19/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	549	211	725	100	526	85	433
v/c Ratio	0.37	0.90	0.78	0.79	0.43	0.77	0.56	0.63
Control Delay	24.0	40.7	32.9	20.8	23.2	26.6	34.6	21.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	40.7	32.9	20.8	23.2	26.6	34.6	21.4
Queue Length 50th (ft)	17	199	44	210	29	169	26	134
Queue Length 95th (ft)	50	#370	#119	325	70	#308	#87	223
Internal Link Dist (ft)		1364		678		563		1208
Turn Bay Length (ft)	80		100		100		80	
Base Capacity (vph)	170	643	271	950	230	684	153	684
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.85	0.78	0.76	0.43	0.77	0.56	0.63

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

2: Bridge Street & Pleasant Street/Arlington Street

03/19/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	415	106	184	506	124	88	331	132	80	345	62
Future Volume (veh/h)	57	415	106	184	506	124	88	331	132	80	345	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1900	1885	1900	1885	1900	1900	1900	1885	1885	1856	1885	1870
Adj Flow Rate, veh/h	60	437	112	211	582	143	100	376	150	85	367	66
Peak Hour Factor	0.95	0.95	0.95	0.87	0.87	0.87	0.88	0.88	0.88	0.94	0.94	0.94
Percent Heavy Veh, %	0	1	0	1	0	0	0	1	1	3	1	2
Cap, veh/h	229	482	124	307	722	177	282	473	189	206	573	103
Arrive On Green	0.33	0.33	0.33	0.09	0.49	0.49	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	741	1447	371	1795	1473	362	970	1282	511	870	1555	280
Grp Volume(v), veh/h	60	0	549	211	0	725	100	0	526	85	0	433
Grp Sat Flow(s),veh/h/ln	741	0	1818	1795	0	1835	970	0	1793	870	0	1835
Q Serve(g_s), s	4.7	0.0	18.4	4.7	0.0	21.2	6.1	0.0	16.7	6.2	0.0	12.4
Cycle Q Clear(g_c), s	16.0	0.0	18.4	4.7	0.0	21.2	18.5	0.0	16.7	22.9	0.0	12.4
Prop In Lane	1.00		0.20	1.00		0.20	1.00		0.29	1.00		0.15
Lane Grp Cap(c), veh/h	229	0	606	307	0	899	282	0	661	206	0	676
V/C Ratio(X)	0.26	0.00	0.91	0.69	0.00	0.81	0.36	0.00	0.80	0.41	0.00	0.64
Avail Cap(c_a), veh/h	244	0	642	307	0	936	282	0	661	206	0	676
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.6	0.0	20.3	14.9	0.0	13.7	24.3	0.0	18.0	28.2	0.0	16.6
Incr Delay (d2), s/veh	0.6	0.0	16.1	6.3	0.0	5.1	3.5	0.0	9.6	6.0	0.0	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	9.7	2.2	0.0	8.6	1.6	0.0	7.9	1.6	0.0	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.2	0.0	36.3	21.2	0.0	18.8	27.7	0.0	27.6	34.2	0.0	21.2
LnGrp LOS	C	A	D	C	A	B	C	A	C	C	A	C
Approach Vol, veh/h	609			936			626			518		
Approach Delay, s/veh	35.3			19.3			27.6			23.4		
Approach LOS	D			B			C			C		
Timer - Assigned Phs	2		3	4		6		8				
Phs Duration (G+Y+Rc), s	28.0		10.0	25.7		28.0		35.7				
Change Period (Y+Rc), s	4.5		4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	23.5		5.5	22.5		23.5		32.5				
Max Q Clear Time (g_c+I1), s	20.5		6.7	20.4		24.9		23.2				
Green Ext Time (p_c), s	1.2		0.0	0.9		0.0		3.5				
Intersection Summary												
HCM 6th Ctrl Delay	25.6											
HCM 6th LOS	C											

Intersection												
Int Delay, s/veh	8.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	83	6	21	1	4	2	26	496	3	0	493	48
Future Vol, veh/h	83	6	21	1	4	2	26	496	3	0	493	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	88	88	88	89	89	89	94	94	94
Heavy Vehicles, %	1	0	7	0	0	0	0	1	0	0	1	0
Mvmt Flow	114	8	29	1	5	2	29	557	3	0	524	51
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1170	1168	550	1185	1192	559	575	0	0	560	0	0
Stage 1	550	550	-	617	617	-	-	-	-	-	-	-
Stage 2	620	618	-	568	575	-	-	-	-	-	-	-
Critical Hdwy	7.11	6.5	6.27	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.11	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.11	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.509	4	3.363	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	171	195	525	167	189	532	1008	-	-	1021	-	-
Stage 1	521	519	-	481	484	-	-	-	-	-	-	-
Stage 2	477	484	-	511	506	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	162	187	525	148	181	532	1008	-	-	1021	-	-
Mov Cap-2 Maneuver	162	187	-	148	181	-	-	-	-	-	-	-
Stage 1	499	519	-	461	464	-	-	-	-	-	-	-
Stage 2	451	464	-	475	506	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	73.8		22.4		0.4		0					
HCM LOS	F		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1008	-	-	188	215	1021	-	-				
HCM Lane V/C Ratio	0.029	-	-	0.802	0.037	-	-	-				
HCM Control Delay (s)	8.7	0	-	73.8	22.4	0	-	-				
HCM Lane LOS	A	A	-	F	C	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	5.5	0.1	0	-	-				

HCM 6th TWSC
4: Driveway & Greenmont Avenue

03/19/2024

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	107	2	6	67	2	3
Future Vol, veh/h	107	2	6	67	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	73	73	88	88	90	90
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	147	3	7	76	2	3
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	150	0	239	149
Stage 1	-	-	-	-	149	-
Stage 2	-	-	-	-	90	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1444	-	754	903
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	939	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1444	-	750	903
Mov Cap-2 Maneuver	-	-	-	-	750	-
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	934	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.6		9.3	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	835	-	-	1444	-	
HCM Lane V/C Ratio	0.007	-	-	0.005	-	
HCM Control Delay (s)	9.3	-	-	7.5	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	