MEMORANDUM

TO: 50 Jackson Street, LLC
c/o Mr. Mark Dooling, AIA
Dooling & Company Architects
84 Bowers Street
Newton, MA 02460

FROM: Mr. Jeffrey S. Dirk, P.E., PTOE, FITE
Managing Partner
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Professional Engineer in CT, MA, ME, NH, RI and VA

DATE: May 25, 2021

RE: 8971

SUBJECT: Transportation Impact Assessment
Proposed Multifamily Residential Development – 50 Jackson Street
Newton, Massachusetts

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Assessment (TIA) in order to determine the potential impacts on the transportation infrastructure associated with the proposed redevelopment of the existing commercial uses located at 383-387 Boylston Street (Route 9) in Newton, Massachusetts, to accommodate a multifamily residential development that will be oriented so as to be accessed from Jackson Street and will thereafter be known as 50 Jackson Street (hereafter referred to as the "Project"). This assessment: i) reviews the existing conditions of the transportation infrastructure serving the Project site; ii) qualitatively evaluates the potential impact of the Project along Jackson Street; and iii) provides an evaluation of lines of sight at the Project site driveway intersection with Jackson Street.

This assessment was conducted in general accordance with the Massachusetts Department of Transportation (MassDOT) *Transportation Impact Assessment (TIA) Guidelines* and the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the Institute of Transportation Engineers (ITE)[1] and without consideration of the use of alternative modes of transportation to single-occupancy vehicles (SOVs), the Project is expected to generate approximately 64 vehicle trips on an average weekday (two-way, 24-hour volume), with 4 vehicle trips expected during the weekday morning peak-hour and 6 vehicle trips expected and during the weekday evening peak hour;

2. In comparison to the existing uses that occupy the Project site and that will be removed to accommodate the Project (restaurant and retail space), the Project represents a general reduction in traffic along both Route 9 and Jackson Street and, as such, it can be concluded that the Project will also be less impactful on the transportation infrastructure;

[1] *Trip Generation,* 10th Edition; Institute of Transportation Engineers; Washington, DC; 2017.

3. The closure of the Route 9 access to the Project site will eliminate a conflict point for vehicles, pedestrians and bicyclists, and allow for access to the Project to be reoriented from a high speed arterial roadway to a low speed residential roadway; and

4. Lines of sight at the Project site driveway intersection with Jackson Street were found to exceed or could be made to meet or exceed the recommended minimum distance for the intersection to operate in a safe manner.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with the implementation of the recommendations defined herein.

The following details our assessment of the Project.

PROJECT DESCRIPTION

The Project will entail the construction of a 12-unit multifamily residential development to be located at 50 Jackson Street in Newton, Massachusetts. The Project site (a.k.a. 383-387 Boylston Street) encompasses approximately 0.34± acres of land that is bounded by Jackson Street north; Boylston Street (Route 9) to the south; a commercial property to the east; and a multifamily residential property to the west. Currently, the Project site is occupied by two (2) commercial buildings that contain the Sushi Man and Fortune Panda restaurants and the Fancy Pants clothing store, respectively, both of which will be removed to accommodate the Project. Access to the Project site will be provided by way of a full access driveway that will intersect the south side of Jackson Street parallel to the west property line; the existing driveway that intersects the north side of Route 9 that serves the Project site will be closed in conjunction with the Project resulting in an overall improvement in safety through the elimination of a conflict point on a high speed, high volume roadway.

Imagery ©2021 Google

On-site parking will be provided for 22 vehicles in parking spaces located in a garage beneath the residential building, or a parking ratio of 1.83 parking spaces per unit. Section 5.1.4. *Number of Parking Stalls*, of Chapter 30, *Zoning Ordinance*, of the City of Newton specifies that 2.0 parking spaces per unit is required for a multifamily residential development; however, a parking ratio of 1.25 parking spaces per unit is allowed by Special Permit. The proposed parking ratio (1.83 spaces per unit) is within the range of parking ratios documented by the Institute of Transportation Engineers (ITE) for similar multifamily residential communities.[2] In addition to the on-site parking supply, the Project will result in the creation of additional on-street parking along the Project site frontage on Jackson Street through the elimination of the current wide driveway opening that serves the property and defining a single access point.

EXISTING CONDITIONS

A comprehensive field inventory of existing conditions within the study area was conducted in May 2021. This inventory included the collection of traffic-volume data and vehicle travel speed measurements along Jackson Street, as well as a review of existing pedestrian and bicycle accommodations, public transportation services, and motor vehicle crash data. The following summarizes existing conditions within the study area.

Roadway

Jackson Street

Jackson Street is a two-lane local access roadway under the jurisdiction of the City of Newton that traverses the study area in a general northwest-southeast direction between Boylston Street just west of John Street and Daniel Street, and then in a northeast-southwest direction between Daniel Street and the Parker Street ramp from Boylston Street westbound. In the vicinity of the Project site, Jackson Street provides two 12-foot wide travel lanes separated by a double-yellow centerline with no marked shoulders provided. A posted or regulatory speed limit is not provided and, as such, the statutory speed limit along Jackson Street within the study area is 25 miles per hour (mph) pursuant to MGL c. 90 §17.[3] Prevailing travel speeds measured in April 2021 were found to be 30 mph.[4] Illumination is provided by way of streetlights mounted on wood poles. Land use in the vicinity of the Project site consists of residential and commercial properties, Bowen Elementary School, Newton South High School, and areas of open and wooded space.

Existing Traffic Volumes

In order to determine existing traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts were conducted on Jackson Street in the vicinity of the Project site in April 2021. The ATR counts were on Wednesday, April 28, 2021 through Thursday, April 29, 2021, inclusive, in order to record weekday traffic conditions and vehicle travel speeds (referenced previously) over an extended period.

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[2] *Parking Generation Manual*, 5th Edition; Institute of Transportation Engineers; Washington D.C.; 2019. Observed parking demand ratios for a multifamily housing (mid-rise) residential community were found to range from 0.75 to 2.03 spaces per dwelling unit, with an average parking demand of 1.31 spaces per dwelling unit and an 85th percentile peak parking demand of 1.47 spaces per dwelling unit.

[3] The statutory of "prima facie" speed is defined in M.G.L. Chapter 90, Section 17, as the speed which would be deemed reasonable and proper to operate a motor vehicle. Pursuant to M.G.L. Chapter 90 Section 17C, the City of Newton enacted a citywide speed limit of 25 mph within a thickly settled or business district which became effective on March 13, 2017.

[4] The prevailing travel speed is also known as the 85th percentile vehicle travel speed, or the speed at which 85 percent of the observed vehicles traveled at or below during the observation period.

In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, traffic volume data from MassDOT Continuous Count Station No. AET13 located on I-90 in Boston was reviewed. Based on a review of this data, it was determined that traffic volumes for the month of April are approximately 3.0 percent above average-month conditions and, as such, the April traffic volumes were not adjusted downward in order to provide a conservative (above-average) design condition.

In order to account for the impact on traffic volumes and trip patterns resulting from the "safer-at-home" order and the phased "Reopening Massachusetts" plan that was issued by the Governor on May 18, 2020, in response to the COVID-19 pandemic, traffic-volume data collected at MassDOT Continuous Count Station No. 4119 in April 2021 was compared to April 2019 traffic volumes that were collected at the same location. The 2019 traffic volumes were expanded to 2021 by applying a background traffic growth rate of 1.0 percent per year in order to allow for a comparison of the data. Based on this pre- and post-COVID-19 traffic-volume comparison, the traffic-volume data that was collected as a part of this assessment was adjusted upward by an additional 23.5 percent in order to account for the reduced traffic volumes resulting from the phased "Reopening Massachusetts" plan.

Based on a review of the adjusted (as defined above) traffic count data, Jackson Street in the vicinity of the Project site accommodates approximately 1,853 vehicles per day on an average weekday (two-way, 24-hour volume), with approximately 199 vehicles per hour (vph) during the weekday morning peak hour (8:00 to 9:00 AM) and 161 vph during the weekday afternoon peak hour (2:00 to 3:00 PM).

Pedestrian and Bicycle Facilities

Sidewalks are provided along both sides of Jackson Street within the study area. Crosswalks are provided for crossing Jackson Street to the east of the Project site at the Jackson Street/Langley Road intersection, which is STOP controlled.

Formal bicycle facilities were not identified within the immediate study area and Jackson Street does not provide sufficient width on a continuous basis to accommodate bicycle travel in a standard shared traveled-way configuration (i.e., bicyclists and motor vehicles sharing the traveled-way).[5]

Public Transportation Services

Regularly scheduled public transportation services are provided within the study area by the Massachusetts Bay Transit Authority (MBTA). MBTA bus Route 60 *Kenmore – Chestnut Hill Mall*, provides service along Route 9 between The Mall at Chestnut Hill and Kenmore Station, where connections can be made to other MBTA bus routes and to the Green Line subway system (B, C and D Branches). The closest stop to the Project site for the Route 60 bus is at The Mall at Chestnut Hill (an approximate 12 minute walking distance). In addition to the Route 60 bus, Newton Center Station on the D Branch of the MBTA Green Line subway system is located to the north of the Project site at 72 Union Street (an approximate 18 minute walking distance). The MBTA also operates The Ride paratransit services for eligible persons who cannot use fixed-route transit all or some of the time due to a physical, cognitive, or mental disability in compliance with the Americans with Disabilities Act (ADA).

[5] A minimum combined travel lane and paved shoulder width of 14 feet is required to support bicycle travel in a shared traveled-way condition.

Motor Vehicle Crash Data

A review of the MassDOT statewide High Crash Location List indicated that there were no locations along Jackson Street or Route 9 in the vicinity of the Project site that are included on MassDOT's Highway Safety Improvement Program (HSIP) listing as a high crash location.

Based on a review of the MassDOT motor vehicle crash data, no discernible safety deficiencies were apparent in the vicinity of the Project site.

PROJECT-GENERATED TRAFFIC

As proposed, the Project will entail the construction of a 12-unit multifamily residential community. In order to determine the traffic characteristics of the Project, trip-generation methodologies established by the ITE[6] were used. ITE Land Use Code (LUC) 221, *Multifamily Housing (Mid-Rise)*, was used to develop the base traffic characteristics of the Project.

Transit Use

Given the availability of public transportation services to the Project site (MBTA Green Line subway and Route 60 bus to the north and east of the Project site) and the interconnected network of sidewalks, it is expected that a portion of the residents of the Project will use public transportation services, walk, or bicycle, thereby reducing the volume of traffic that may be associated with the Project. In order to determine the proportion of residents of the Project that may use an alternative mode of transportation to single-occupancy vehicles (SOVs), travel mode data obtained from the 2015-2019 American Community Survey (ACS) for the Census Tract that contains the Project site (Census Tract 3738) was reviewed. Based on a review of this data, the following commuting modes were identified for workers aged 16 or older that reside within the City:

- *Single-Occupant Vehicle:* 67.1%
- *Car/Vanpool/Taxi/Other:* 8.0%
- *Public Transportation:* 12.5%
- *Walk:* 5.0%
- *Bicycle:* 1.6%
- *Worked at Home:* 5.8%

According to the ACS, approximately 33 percent of workers that reside in the Census Tract reported that they used an alternative mode of transportation to SOV to travel to/from work, with approximately 8 percent participating in a car or vanpool, 12 percent using public transportation (transit), 5 percent walking, 2 percent bicycling and 6 percent indicating that they worked at home. That being said, in order to provide conservative (high) traffic volumes from which to assess the potential impact of the Project on the transportation infrastructure, a reduction to the ITE base trip-generation calculations was not applied to account for transit use or the use of alternative modes of transportation to SOVs.

Table 1 summarizes the anticipated traffic characteristics of the Project.

[6]Ibid 1.

Table 1
TRIP-GENERATION SUMMARY

Trip Period	Vehicle Trips		
	Entering	Exiting	Total
Average Weekday	32	32	64
Weekday Morning Peak Hour	1	3	4
Weekday Evening Peak Hour	4	2	6

[a]Based on ITE LUC 221, *Multifamily Housing (Mid-Rise)*; 12 dwelling units.

Project-Generated Traffic Volume Summary

As can be seen in Table 1, the Project is expected to generate approximately 64 vehicle trips on an average weekday (two-way, 24-hour volume, or 32 vehicles entering and 32 exiting), with 4 vehicle trips (1 vehicle entering and 3 exiting) expected during the weekday morning peak hour and 6 vehicle trips (4 vehicles entering and 2 exiting) expected during the weekday evening peak hour.

Table 2 compares the traffic volumes associated with the Project to those of the existing commercial uses that currently occupy the Project site and that will be removed.

Table 2
TRAFFIC-VOLUME COMPARISON

Time Period	Vehicle Trips		
	(A) Proposed Residential Building[a]	(B) Existing Uses[b]	(A-B) Difference
Average Weekday Daily	64	358	-294
Weekday Morning Peak Hour	4	2	+2
Weekday Evening Peak Hour	6	32	-26

[a]Based on ITE LUC 221, *Multifamily Housing (Mid-Rise)*; 12 dwelling units.
[b]Based on ITE LUC 820, *Shopping Center*; 2,433 sf; and LUC 932, *High-Turnover (Sit-Down) Restaurant*; 2,374 sf.

Traffic-Volume Comparison

As can be seen in Table 2, in comparison to the existing uses that occupy the Project site and that will be removed to accommodate the Project, the Project is expected to generate approximately 294 *fewer* vehicle trips on an average weekday, with 2 *additional* vehicle trips expected during the weekday morning peak hour, and 26 *fewer* vehicle trips expected during the weekday evening peak hour.

Based on this comparative analysis, it is clear that the Project will be significantly less impactful on the transportation infrastructure on an average weekday and during the weekday evening peak-hour when compared to the existing uses, with comparable impacts predicted during the weekday morning peak-hour.

SIGHT DISTANCE ASSESSMENT

Sight distance measurements were performed at the Project site driveway intersection with Jackson Street in accordance with MassDOT and American Association of State Highway and Transportation Officials (AASHTO)[7] requirements. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance required by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD or corner sight distance (CSD) is the sight distance required by a driver entering or crossing an intersecting roadway to perceive an on-coming vehicle and safely complete a turning or crossing maneuver with oncoming traffic. In accordance with AASHTO standards, if the measured ISD is at least equal to the required SSD value for the appropriate design speed, the intersection can operate in a safe manner. Table 5 presents the measured SSD and ISD at the subject intersection.

Table 3
SIGHT DISTANCE MEASUREMENTS[a]

Intersection/Sight Distance Measurement	Feet		
	Required Minimum (SSD)	Desirable (ISD)[b]	Measured
Jackson Street at the North (Entrance) Project Site Driveway			
Stopping Sight Distance:			
Jackson Street approaching from the east	200	--	433
Jackson Street approaching from the west	200	--	427
Intersection Sight Distance:			
Looking to the east from the Project Site Driveway	200	290	225
Looking to the west from the Project Site Driveway	200	335	50/200+[c]

[a]Recommended minimum values obtained from *A Policy on Geometric Design of Highways and Streets,* 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018; and based on a 30 mph approach speed along Jackson Street.

[b]Values shown are the intersection sight distance for a vehicle turning right or left exiting a roadway under STOP control such that motorists approaching the intersection on the major street should not need to adjust their travel speed to less than 70 percent of their initial approach speed. The gap time for left-turn movements exiting the Project site was increased by 0.5 seconds in order to account for the additional travel lane that needs to be crossed when exiting.

[c]With the restriction of parking adjacent to the driveway.

As can be seen in Table 3, with the restriction of parking along the south side of Jackson Street adjacent to the Project site driveway, the available lines of sight to and from the Project site driveway will meet or exceed the recommended minimum sight distance to function in a safe manner (SSD) based on a 30 mph approach speed, which is consistent with the prevailing travel speed measured along Jackson Street in the vicinity of the Project site.

[7]*A Policy on Geometric Design of Highway and Streets,* 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2018.

SUMMARY

VAI has completed a detailed assessment of the potential impacts on the transportation infrastructure associated with the proposed redevelopment of the existing commercial uses located at 383-387 Boylston Street (Route 9) in Newton, Massachusetts, to accommodate a multifamily residential development that will be oriented so as to be accessed from Jackson Street and will thereafter be known as 50 Jackson Street. The following specific areas have been evaluated as they relate to the Project: i) existing conditions of the transportation infrastructure serving the Project site; ii) the potential impact of the Project along Jackson Street; and iii) lines of sight at the Project site driveway intersections. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the ITE[8] and without consideration of the use of alternative modes of transportation to single-occupancy vehicles (SOVs), the Project is expected to generate approximately 64 vehicle trips on an average weekday (two-way, 24-hour volume), with 4 vehicle trips expected during the weekday morning peak-hour and 6 vehicle trips expected and during the weekday evening peak hour;

2. In comparison to the existing uses that occupy the Project site and that will be removed to accommodate the Project (restaurant and retail space), the Project represents a general reduction in traffic along both Route 9 and Jackson Street and, as such, it can be concluded that the Project will also be less impactful on the transportation infrastructure;

3. The closure of the Route 9 access to the Project site will eliminate a conflict point for vehicles, pedestrians and bicyclists, and allow for access to the Project to be reoriented from a high speed arterial roadway to a low speed residential roadway; and

4. Lines of sight at the Project site driveway intersection with Jackson Street were found to exceed or could be made to meet or exceed the recommended minimum distance for the intersection to operate in a safe manner.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with the implementation of the recommendations that follow.

RECOMMENDATIONS

Project Access

Access to the Project site will be provided by way of a full access driveway that will intersect the south side of Jackson Street parallel to the west property line; the existing driveway that intersects the north side of Route 9 that serves the Project site will be closed in conjunction with the Project resulting in an overall improvement in safety through the elimination of a conflict point on a high speed, high volume roadway. The following recommendations are offered with respect to the design and operation of the Project site access and internal circulation:

- The Project site driveway should accommodate the turning and maneuvering requirements of the largest anticipated responding emergency vehicle as defined by the Newton Fire Department.

[8]Ibid 1.

- Vehicles exiting the Project site should be placed under stop control.
- All signs and pavement markings to be installed within the Project site should conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).[9]
- The Project site driveway should be designed such that the sidewalk crosses the driveways (pan-type driveway) or ADA-compliant wheelchair ramps should be provided.
- Signs and landscaping to be installed as a part of the Project within the intersection sight triangle areas of the Project site driveway should be designed and maintained so as not to restrict lines of sight.
- On-street parking should be prohibited adjacent to the Project site driveway (both sides) in order to maintain proper sight lines and to accommodate turning maneuvers entering and exiting the driveways.
- Snow windrows within sight triangle areas of the Project site driveway should be promptly removed where such accumulations would impede sight lines.

Transportation Demand Management

In an effort to encourage the use of alternative modes of transportation to single-occupant vehicles, the following Transportation Demand Management (TDM) measures should be implemented as a part of the Project:

- A transportation coordinator should be designated for the Project to coordinate the elements of the TDM program;
- Information regarding public transportation services, maps, schedules, and fare information should be posted in a central location and/or otherwise made available to residents of the Project;
- A "welcome packet" will be provided to residents detailing available public transportation services, bicycle and walking alternatives, and commuter options available;
- Pedestrian accommodations have been incorporated into the Project site and consist of connections to existing sidewalks and ADA-compliant wheelchair ramps (or similar accommodations) at all pedestrian crossings internal to the Project and for crossing the Project site driveway;
- A mail drop will be provided within the building; and
- Secure bicycle parking has been provided within the Project site.

With the implementation of the above recommendations, safe and efficient access can be provided to the Project site and the Project can be accommodated within the confines of the existing transportation infrastructure.

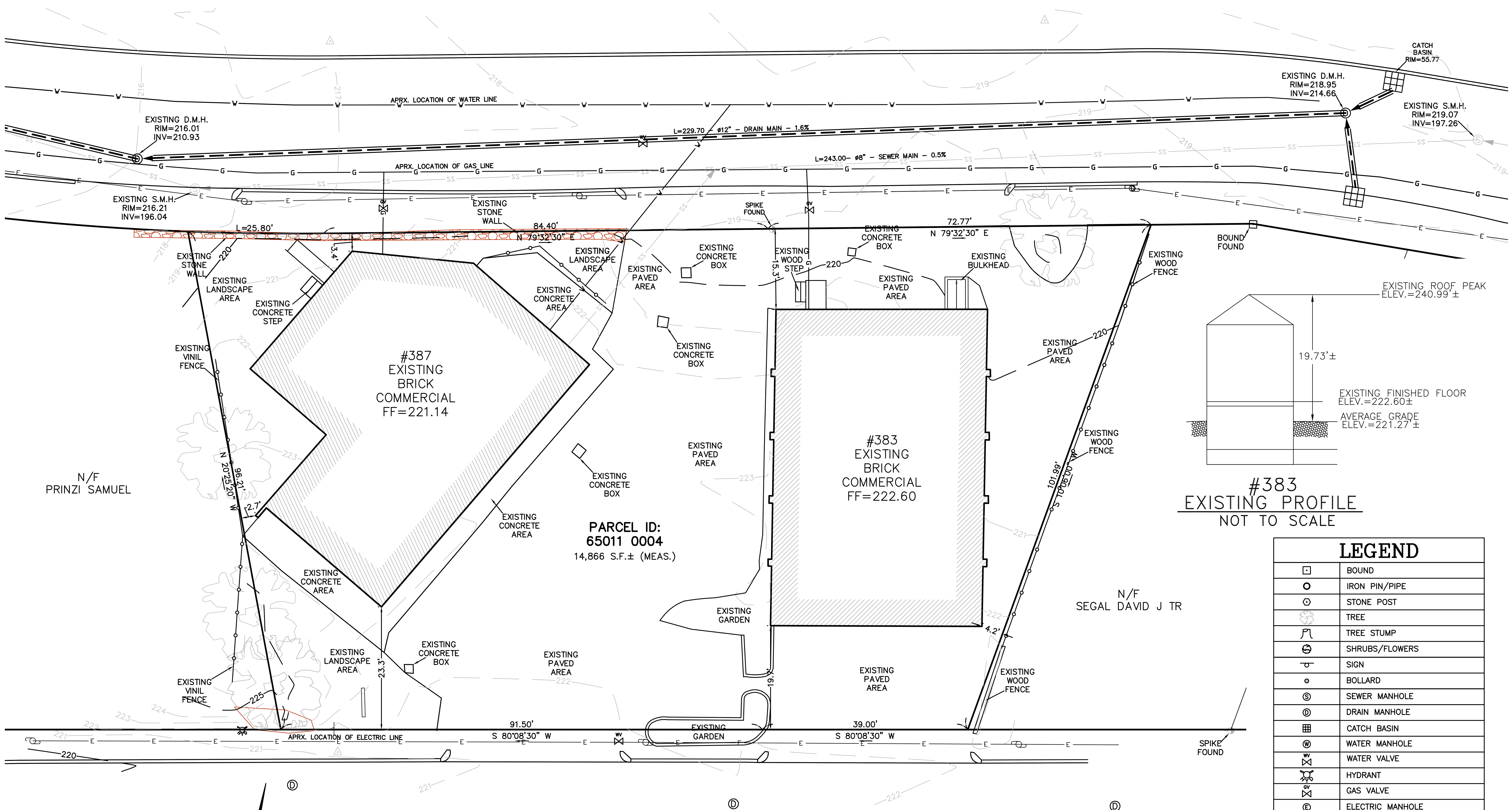
cc: File

[9] *Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, D.C.; 2009.

ATTACHMENTS

PROJECT SITE PLAN
AUTOMATIC TRAFFIC RECORDER COUNT DATA
SEASONAL ADJUSTMENT DATA
COVID-19 ADJUSTMENT DATA
VEHICLE TRAVEL SPEED DATA
PUBLIC TRANSPORTATION SCHEDULE
TRIP-GENERATION CALCULATIONS

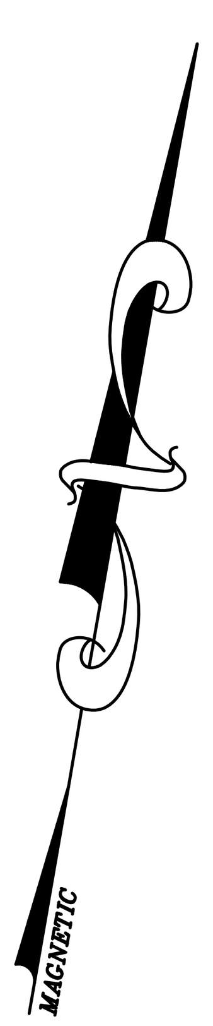
PROJECT SITE PLAN



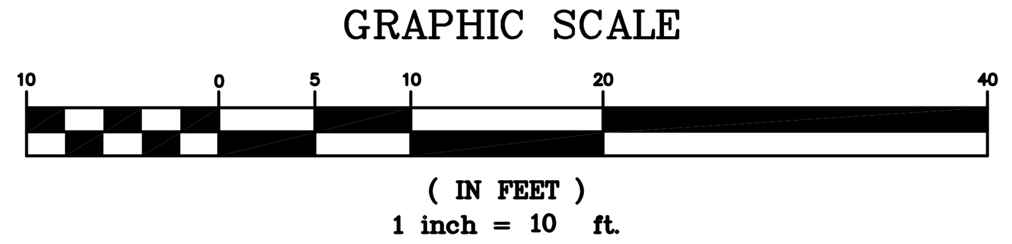
#383
EXISTING PROFILE
NOT TO SCALE

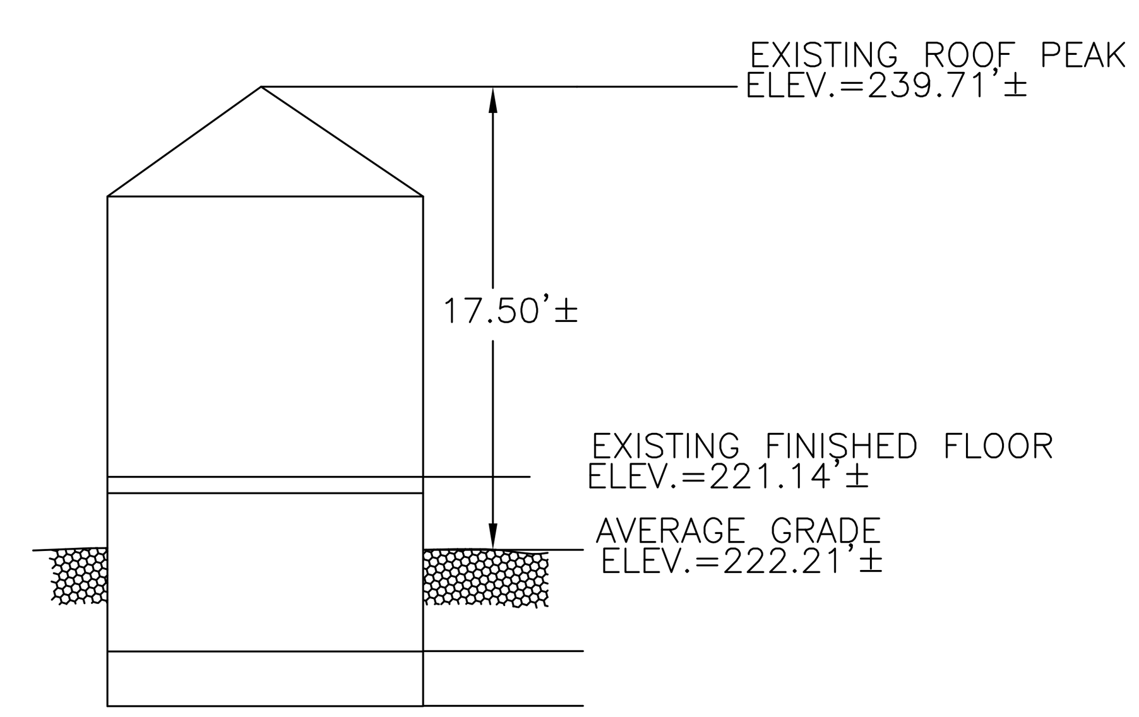
BOYLSTON STREET

(PUBLIC WAY)



GRAPHIC SCALE





#387
EXISTING PROFILE
NOT TO SCALE

NOTES:

1. INFORMATION SHOWN ON THIS PLAN IS THE RESULT OF A FIELD SURVEY PERFORMED BY SPRUHAN ENGINEERING, P.C. AS OF 12-02-2020.

2. DEED REFERENCE: BOOK 67500 PAGE 552
PLAN REFERENCE: BOOK 11763 PG 603
MIDDLESEX REGISTRY OF DEEDS.

3. THIS PLAN IS NOT INTENDED TO BE RECORDED.

4. I CERTIFY THAT THE DWELLING SHOWN IS NOT LOCATED WITHIN A SPECIAL FLOOD HAZARD ZONE. IT IS LOCATED IN ZONE X, ON FLOOD HAZARD BOUNDARY MAP NUMBER 25017C0558E, PANEL NUMBER 0558E, COMMUNITY NUMBER: 250208 DATED 06/04/2010

5. THIS PLAN DOES NOT SHOW ANY UNRECORDED OR UNWRITTEN EASEMENTS WHICH MAY EXIST. A REASONABLE AND DILIGENT ATTEMPT HAS BEEN MADE TO OBSERVE ANY APPARENT USES OF THE LAND; HOWEVER THIS NOT CONSTITUTE A GUARANTEE THAN NO SUCH EASEMENTS EXIST.

6. FIRST FLOOR ELEVATIONS ARE TAKEN AT THRESHOLD.

7. THE ELEVATIONS SHOWN ARE BASED ON CITY OF NEWTON DATUM.

8. ZONNING DISTRICT – BU1, LOT CREATED AFTER DEC. 7TH 1953

LEGEND

	BOUND
	IRON PIN/PIPE
	STONE POST
	TREE
	TREE STUMP
	SHRUBS/FLOWERS
	SIGN
	BOLLARD
	SEWER MANHOLE
	DRAIN MANHOLE
	CATCH BASIN
	WATER MANHOLE
WV	WATER VALVE
	HYDRANT
GV	GAS VALVE
	ELECTRIC MANHOLE
EL	ELECTRIC HANDHOLE
	UTILITY POLE
	LIGHT POLE
	MANHOLE
148.00	SPOT GRADE
TW	TOP OF WALL
BW	BOTTOM OF WALL
	EXISTING BUILDING
	RETAINING WALL
	STONE WALL
	FENCE
	TREE LINE
S	SEWER LINE
D	DRAIN LINE
W	WATER LINE
G	GAS LINE
E	UNDERGROUND ELECTRIC LINE
OHW	OVERHEAD WIRES
	CONTOUR LINE (MJR)
	CONTOUR LINE (MNR)

Spruhan
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383–387 BOYLSTON STREET
NEWTON
MASSACHUSETTS

SURVEY PLAN

REVISION BLOCK

DESCRIPTION	DATE

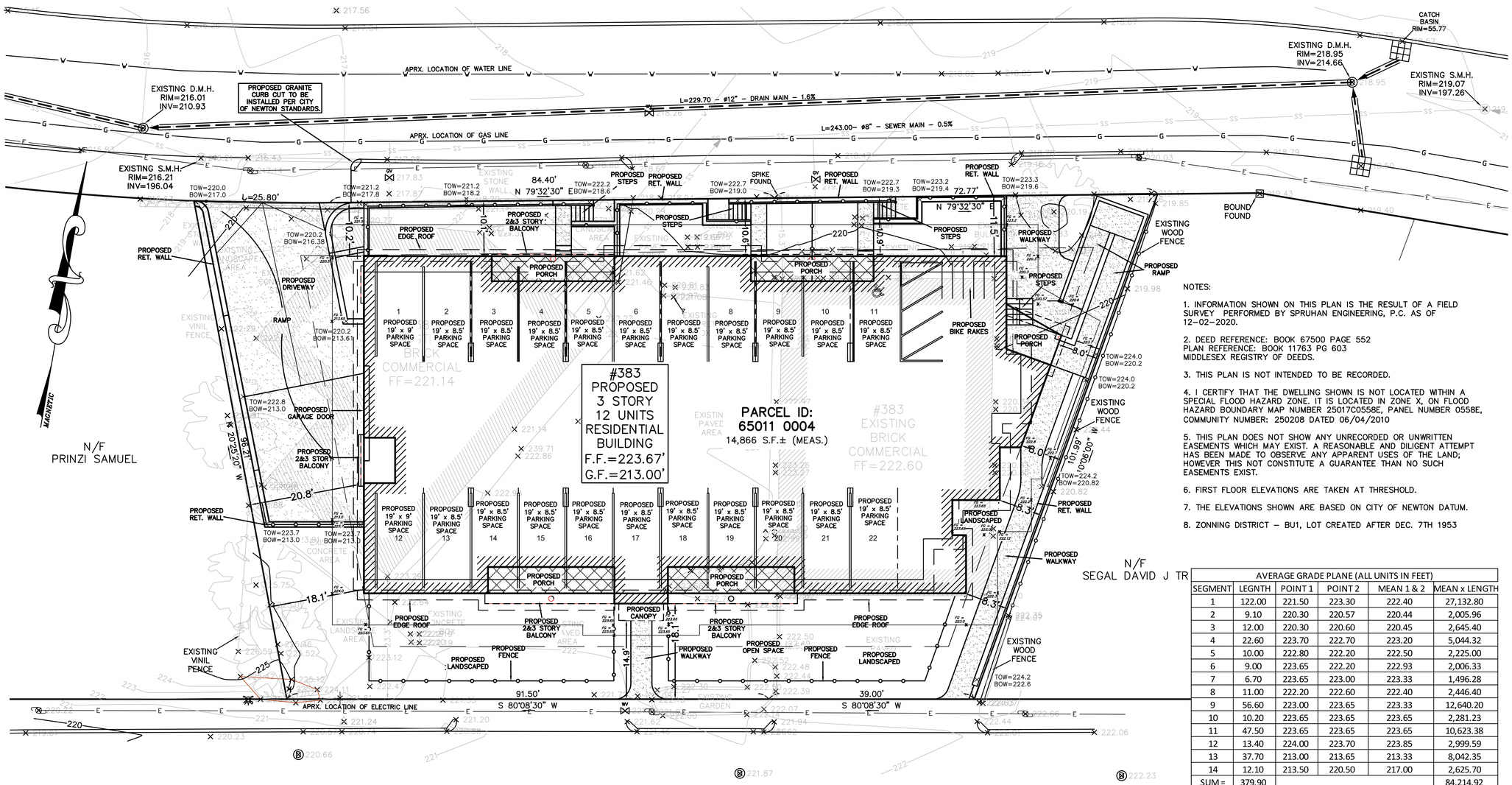
All legal rights including, but not limited to, copyright and design patent rights, in the designs, arrangements and plans shown on this document are the property of Spruhan Engineering, P.C. They may not be used or reused in whole or in part, except in connection with this project, without the prior written consent of Spruhan Engineering, P.C.. Written dimensions on these drawings shall have precedence over scaled dimensions. Contractors shall verify and be responsible for all dimensions and conditions on this project, and Spruhan Engineering, P.C., must be notified of any variation from the dimensions and conditions shown by these drawings.

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER
C.
CHARLTON
NO. 48649
PROFESSIONAL
LAND SURVEYOR

DATE:	12/04/2020
DRAWN BY:	A.G.
CHECKED BY:	E.S
APPROVED BY:	E.S

EXISTING
CONDITIONS

SHEET 1 OF 1



BOYLSTON STREET

(PUBLIC WAY)

ZONING LEGEND

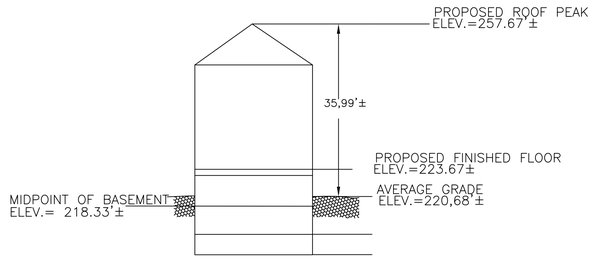
ZONING DISTRICT: BUSINESS 1 (BU 1)
(LOT CREATED AFTER 12/07/1953)

	REQUIRED	EXISTING	PROPOSED
MIN. AREA	10,000 S.F	14,866 S.F.± (MEASURED)	14,866 S.F.± (MEASURED)
MIN. FRONTAGE	–	–	–
MIN. YARD FRONT	10'	3.4'	10.1'
WEST SIDE	1/2 BLDG HEIGHT	2.7'	18.1'
EAST SIDE	1/2 BLDG HEIGHT	4.2'	8'
REAR	1/2 BLDG HEIGHT	–	–
MAX. LOT COV.	–	–	–
MIN. OPEN SPACE	–	–	–
MAX. BLDG. HEIGHT	36'	19.73'±	35.99'±

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.



#383
PROPOSED PROFILE
NOT TO SCALE

* MIDPOINT OF BASEMENT ELEVATION LOWER THAN AVERAGE GRADE ELEVATION THEREFORE PROPOSED BASEMENT MEETS DEFINITION OF BASEMENT

NOTES:

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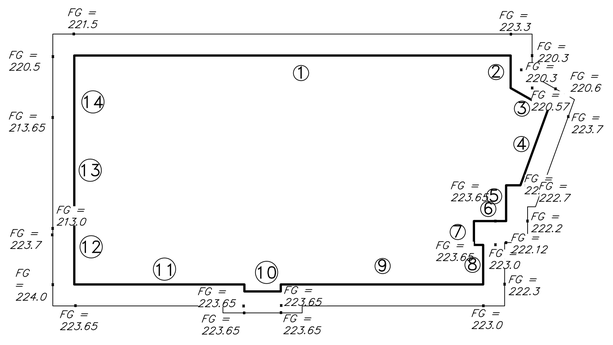
8. ZONNING DISTRICT – BU1, LOT CREATED AFTER DEC. 7TH 1953

AVERAGE GRADE PLANE (ALL UNITS IN FEET)					
SEGMENT	LEGNTH	POINT 1	POINT 2	MEAN 1 & 2	MEAN x LENGTH
1	122.00	221.50	223.30	222.40	27,132.80
2	9.10	220.30	220.57	220.44	2,005.96
3	12.00	220.30	220.60	220.45	2,645.40
4	22.60	223.70	222.70	223.20	5,044.32
5	10.00	222.80	222.20	222.50	2,225.00
6	9.00	223.65	222.20	222.93	2,006.33
7	6.70	223.65	223.00	223.33	1,496.28
8	11.00	222.20	222.60	222.40	2,446.40
9	56.60	223.00	223.65	223.33	12,640.20
10	10.20	223.65	223.65	223.65	2,281.23
11	47.50	223.65	223.65	223.65	10,623.38
12	13.40	224.00	223.70	223.85	2,999.59
13	37.70	213.00	213.65	213.33	8,042.35
14	12.10	213.50	220.50	217.00	2,625.70
SUM =	379.90				84,214.92
OF MEAN x LENGTH/ SUM OF LENGTHS = AVERAGE GRADE PL					**221.68**

AVERAGE GRADE CALCULATION



AVERAGE GRADE PLANE

Spruhan Engineering, P.C.
80 JEWETT ST, (SUITE 1)
NEWTON, MA 02458
Tel: 617-816-0722
Email:espruhan@gmail.com

383–387 BOYLSTON STREET
NEWTON
MASSACHUSETTS

SURVEY PLAN

REVISION BLOCK

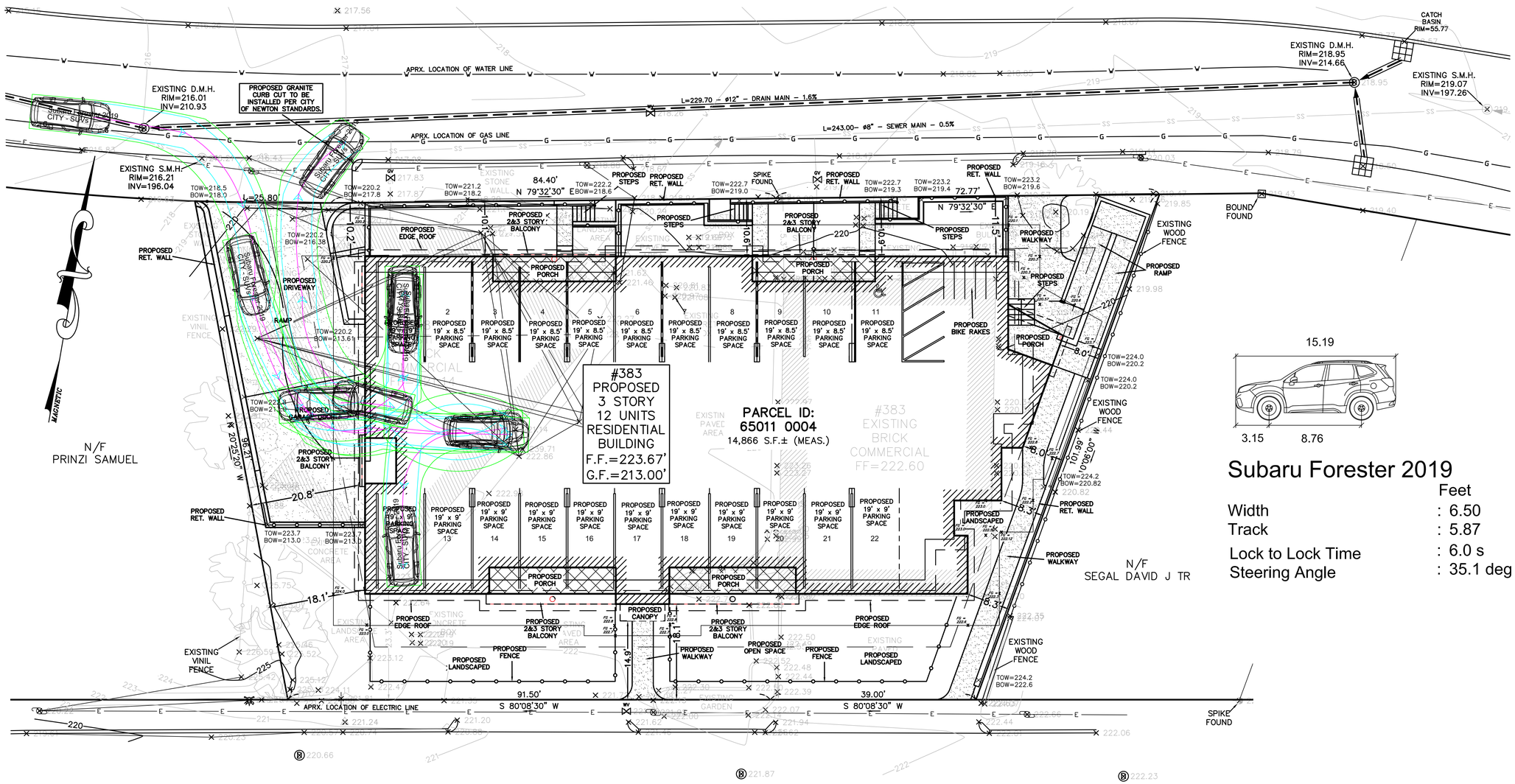
DESCRIPTION	DATE

All legal rights including, but not limited to, copyright and design patent rights, in the designs, arrangements and plans shown on this document are the property of Spruhan Engineering, P.C. They may not be used or reused in whole or in part, except in connection with this project, without the prior written consent of Spruhan Engineering, P.C.. Written dimensions on these drawings shall have precedence over scaled dimensions. Contractors shall verify and be responsible for all dimensions and conditions on this project, and Spruhan Engineering, P.C., must be notified of any variation from the dimensions and conditions shown by these drawings.

DATE:	3/15/2021
DRAWN BY:	D.K.
CHECKED BY:	E.S
APPROVED BY:	E.S

PROPOSED PLOT PLAN

SHEET 1 OF 1



GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

Subaru Forester 2019

	Feet
Width	: 6.50
Track	: 5.87
Lock to Lock Time	: 6.0 s
Steering Angle	: 35.1 deg

Spruhan Engineering, P.C.
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NEWTON, MA 02458
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383–387 BOYLSTON STREET NEWTON MASSACHUSETTS

SURVEY PLAN

REVISION BLOCK

DESCRIPTION	DATE

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DATE:	3/15/2021
DRAWN BY:	D.K.
CHECKED BY:	E.S
APPROVED BY:	E.S

SITE PLAN

SHEET 1 OF 1

AUTOMATIC TRAFFIC RECORDER COUNT DATA

Accurate Counts

978-664-2565

Location : Jackson Street 89710001
Location : West of Langley Road
City/State: Newton, MA

4/28/2021	EB,		Hour Totals		WB,		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	1	9			0	17				
12:15	0	17			0	11				
12:30	1	17			0	11				
12:45	0	14	2	57	0	30	0	69	2	126
1:00	0	22			0	17				
1:15	1	16			0	13				
1:30	0	24			0	20				
1:45	0	19	1	81	1	15	1	65	2	146
2:00	0	17			0	14				
2:15	0	13			0	14				
2:30	0	10			0	6				
2:45	0	19	0	59	0	11	0	45	0	104
3:00	0	15			0	24				
3:15	0	16			0	16				
3:30	0	14			0	17				
3:45	0	13	0	58	0	19	0	76	0	134
4:00	0	24			0	7				
4:15	0	19			0	15				
4:30	0	20			0	21				
4:45	1	14	1	77	0	24	0	67	1	144
5:00	1	15			0	14				
5:15	2	16			0	11				
5:30	1	11			0	16				
5:45	0	23	4	65	0	14	0	55	4	120
6:00	2	19			0	15				
6:15	3	14			3	12				
6:30	6	13			3	12				
6:45	5	12	16	58	2	13	8	52	24	110
7:00	6	9			3	10				
7:15	9	11			3	9				
7:30	13	8			12	7				
7:45	23	11	51	39	17	3	35	29	86	68
8:00	26	6			15	3				
8:15	27	7			34	5				
8:30	17	3			9	7				
8:45	19	7	89	23	13	3	71	18	160	41
9:00	18	7			7	2				
9:15	14	4			6	1				
9:30	13	1			12	3				
9:45	11	4	56	16	13	2	38	8	94	24
10:00	11	2			6	2				
10:15	12	1			13	0				
10:30	5	2			5	3				
10:45	11	1	39	6	6	0	30	5	69	11
11:00	11	0			6	1				
11:15	13	1			13	1				
11:30	11	2			13	1				
11:45	15	0	50	3	12	0	44	3	94	6
Total	309	542			227	492			536	1034
Percent	36.3%	63.7%			31.6%	68.4%			34.1%	65.9%

Accurate Counts

978-664-2565

Location : Jackson Street 89710001
Location : West of Langley Road
City/State: Newton, MA

4/29/2021	EB,		Hour Totals		WB,		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	1	17			0	13				
12:15	1	18			1	8				
12:30	1	9			0	12				
12:45	0	17	3	61	0	9	1	42	4	103
1:00	0	6			0	10				
1:15	1	18			0	11				
1:30	0	15			0	11				
1:45	1	11	2	50	0	20	0	52	2	102
2:00	0	15			0	26				
2:15	0	20			0	22				
2:30	0	10			0	7				
2:45	0	32	0	77	0	12	0	67	0	144
3:00	1	18			0	10				
3:15	0	11			1	14				
3:30	0	14			0	12				
3:45	0	10	1	53	0	11	1	47	2	100
4:00	0	15			0	15				
4:15	1	12			0	14				
4:30	0	15			0	9				
4:45	0	13	1	55	0	19	0	57	1	112
5:00	0	19			0	14				
5:15	2	14			0	12				
5:30	0	15			0	16				
5:45	3	13	5	61	0	11	0	53	5	114
6:00	1	7			2	16				
6:15	3	8			3	10				
6:30	1	14			1	10				
6:45	8	10	13	39	2	7	8	43	21	82
7:00	5	6			8	11				
7:15	13	7			2	11				
7:30	15	7			9	2				
7:45	14	9	47	29	17	4	36	28	83	57
8:00	17	4			19	2				
8:15	29	6			33	5				
8:30	22	2			14	3				
8:45	16	7	84	19	13	5	79	15	163	34
9:00	13	5			6	4				
9:15	10	2			8	7				
9:30	12	5			9	1				
9:45	20	5	55	17	6	1	29	13	84	30
10:00	19	2			9	2				
10:15	12	2			3	1				
10:30	6	2			12	1				
10:45	17	2	54	8	7	0	31	4	85	12
11:00	10	1			11	0				
11:15	18	0			14	1				
11:30	12	2			1	0				
11:45	8	1	48	4	12	0	38	1	86	5
Total	313	473			223	422			536	895
Percent	39.8%	60.2%			34.6%	65.4%			37.5%	62.5%
Grand Total	622	1015			450	914			1072	1929
Percent	38.0%	62.0%			33.0%	67.0%			35.7%	64.3%
ADT		ADT: 1,500		AADT: 1,500						

Accurate Counts

978-664-2565

Location : Jackson Street
Location : West of Langley Road
City/State: Newton, MA

89710001

4/26/2021	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	*	*	*	*	2	0	3	1	*	*	*	*	*	*	2	0
1:00	*	*	*	*	1	1	2	0	*	*	*	*	*	*	2	0
2:00	*	*	*	*	0	0	0	0	*	*	*	*	*	*	0	0
3:00	*	*	*	*	0	0	1	1	*	*	*	*	*	*	0	0
4:00	*	*	*	*	1	0	1	0	*	*	*	*	*	*	1	0
5:00	*	*	*	*	4	0	5	0	*	*	*	*	*	*	4	0
6:00	*	*	*	*	16	8	13	8	*	*	*	*	*	*	14	8
7:00	*	*	*	*	51	35	47	36	*	*	*	*	*	*	49	36
8:00	*	*	*	*	89	71	84	79	*	*	*	*	*	*	86	75
9:00	*	*	*	*	56	38	55	29	*	*	*	*	*	*	56	34
10:00	*	*	*	*	39	30	54	31	*	*	*	*	*	*	46	30
11:00	*	*	*	*	50	44	48	38	*	*	*	*	*	*	49	41
12:00 PM	*	*	*	*	57	69	61	42	*	*	*	*	*	*	59	56
1:00	*	*	*	*	81	65	50	52	*	*	*	*	*	*	66	58
2:00	*	*	*	*	59	45	77	67	*	*	*	*	*	*	68	56
3:00	*	*	*	*	58	76	53	47	*	*	*	*	*	*	56	62
4:00	*	*	*	*	77	67	55	57	*	*	*	*	*	*	66	62
5:00	*	*	*	*	65	55	61	53	*	*	*	*	*	*	63	54
6:00	*	*	*	*	58	52	39	43	*	*	*	*	*	*	48	48
7:00	*	*	*	*	39	29	29	28	*	*	*	*	*	*	34	28
8:00	*	*	*	*	23	18	19	15	*	*	*	*	*	*	21	16
9:00	*	*	*	*	16	8	17	13	*	*	*	*	*	*	16	10
10:00	*	*	*	*	6	5	8	4	*	*	*	*	*	*	7	4
11:00	*	*	*	*	3	3	4	1	*	*	*	*	*	*	4	2
Total	0	0	0	0	851	719	786	645	0	0	0	0	0	0	817	680
Day	0		0		1570		1431		0		0		0		1497	
AM Peak					8:00	8:00	8:00	8:00							8:00	8:00
Volume					89	71	84	79							86	75
PM Peak					1:00	3:00	2:00	2:00							2:00	3:00
Volume					81	76	77	67							68	62
Comb Total	0		0		1570		1431		0		0		0		1497	
ADT	ADT: 1,500		AADT: 1,500													

SEASONAL ADJUSTMENT DATA

Massachusetts Highway Department

4119: Monthly Hourly Volume for April 2019

Location ID:	**4119**	**Seasonal Factor Group:**	**U1-Boston**
County:	**Middlesex**	**Daily Factor Group:**	
Functional Class	**1**	**Axle Factor Group:**	**U1-Boston**
Location:	**YANKEE DIVISION HIGHWAY**	**Growth Factor Group:**	

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1	796	469	353	468	1234	5361	11288	13573	13228	12636	10104	9154	9119	9522	12128	12792	12882	13338	11528	7500	4943	3769	2341	1465	179991	Accepted
2	763	429	364	455	1236	5664	11564	14088	13319	13044	10922	9286	9372	10451	12839	13092	12255	13587	12373	7950	5406	4124	2650	1639	186872	Accepted
3	769	442	386	445	1212	5174	10952	13116	12940	13065	11220	9563	9916	10348	13018	13059	12980	13574	12001	8036	5740	4369	2822	1577	186724	Accepted
4	850	534	444	537	1329	5547	11709	14139	13505	12717	11478	10000	10675	10796	12921	13099	13242	13311	12459	8529	6116	4678	3151	1853	193619	Accepted
5	922	605	464	505	1211	5130	11230	14319	13880	12078	10651	10616	11441	12096	13159	13213	13376	13271	11834	8194	5455	4504	3758	2545	194457	Accepted
6	1434	834	577	422	564	1711	3354	5771	8050	9430	10876	12411	13060	12339	12721	12512	12685	12027	10116	7392	5897	5228	4660	3034	167105	Accepted
7	1648	903	567	405	389	702	1821	3628	5199	7576	9280	10691	11720	12317	11996	12304	11353	10886	9174	6874	5555	3890	2444	1507	142829	Accepted
8	746	516	362	488	1235	5247	10506	12174	12016	11293	10842	9304	9100	9329	11864	12081	12248	12965	11324	7041	4969	3547	2199	1479	172875	Accepted
9	789	452	351	516	1343	5677	11608	13766	13425	13254	11090	9724	9901	10129	12634	10771	12625	12904	11572	7894	5341	4082	2628	1500	183976	Accepted
10	829	523	384	516	1286	5609	11465	13824	13626	13483	10869	10008	10133	10313	13020	12946	13430	13676	12416	8300	5891	4408	2892	1724	191571	Accepted
11	879	607	437	528	1326	5828	11885	13647	13342	12882	11530	10015	10254	10961	13266	13104	13713	13426	12420	8741	5935	4783	3281	2090	194880	Accepted
12	1003	657	449	564	1303	5307	11488	14143	13772	12203	10696	10544	11422	11624	13649	13190	12744	13210	11655	8394	5614	4572	3670	2572	194445	Accepted
13	1488	822	631	493	670	1597	3353	5561	7836	9439	10998	11473	12298	12225	12132	11580	12214	11532	9933	7550	5742	5057	4789	3248	162661	Accepted
14	1708	951	607	450	451	846	1822	3219	4989	7135	9046	10532	10668	11356	10436	11084	10678	10160	8365	6519	5065	3677	2791	1755	134310	Accepted
15	899	554	422	538	1253	4204	7896	10374	9912	9236	9137	8930	8815	9031	10612	10815	11588	11594	9169	6136	4413	3416	2370	1429	152743	Accepted
16	760	466	395	533	1352	5757	11327	13535	13335	12870	11255	10288	10469	10715	12932	12574	12900	13352	11620	8062	5485	4317	2710	1612	188621	Accepted
17	799	498	408	486	1215	5653	11137	13623	13535	12494	11371	10918	10678	11424	13034	12836	12619	13485	12394	8440	5779	4567	3093	1734	192220	Accepted
18	934	561	427	529	1270	5401	11381	13149	13538	12542	11006	11096	11011	11395	11619	11724	11930	13034	12555	8653	5769	4658	3245	2044	189471	Accepted
19	1162	653	493	537	1186	4971	10392	12216	12100	11202	11010	11435	12418	12889	13280	12847	12690	12897	10709	7791	5684	4981	4378	2827	190748	Accepted
20	1397	862	555	461	543	1407	2542	4063	5579	7657	9411	10680	11367	10981	11553	11442	11033	9860	7970	5775	5212	4993	4232	2726	142301	Accepted
21	1436	785	551	336	306	546	1066	1922	3323	5918	9000	11937	12921	12660	10845	9921	11196	12509	13503	12818	9572	5557	3289	1869	153786	Accepted
22	882	467	367	492	1249	5778	11850	13943	13378	12970	10933	10010	9914	10445	11396	11213	11878	11771	11164	7715	5221	3696	2287	1444	180463	Accepted
23	764	477	410	532	1270	5560	11196	13142	12910	12303	12071	9906	10195	10771	13160	13412	13189	13349	12577	7968	5518	4141	3000	1717	189538	Accepted
24	880	516	398	509	1275	5720	11879	13982	13739	13028	11976	10486	10502	11205	13325	12926	13183	12884	12917	9063	6223	4610	3290	1832	196348	Accepted
25	946	526	438	531	1403	5845	11677	14052	13309	12938	12715	10921	11170	11945	13042	12570	12918	13135	12968	9019	6266	4804	3586	2171	198895	Accepted
26																										
27	1345	864	574	485	615	1705	3524	5822	7825	9733	11138	12280	12977	12927	12631	12459	12808	11642	9549	7150	5655	5254	4637	3245	166844	Accepted
28	1845	1167	698	447	416	765	1794	3495	4977	7339	9534	11072	12218	12121	11679	11720	11169	10373	8769	6836	5234	3711	2489	1717	141585	Accepted
29	903	517	384	469	1265	5722	11727	13947	13474	12807	10847	9601	9379	9744	12740	12981	13159	13410	11953	7951	5168	3748	2594	1648	186138	Accepted
30	814	494	403	510	1303	5528	11160	12936	12852	12231	11909	10030	8711	10095	13106	13170	13067	13816	12435	7849	5473	4026	2998	1746	186662	Accepted

April Average	**177333.7**
2019 AADT	**171892**
Seasonal Adjustment	**1.031658**

Massachusetts Highway Department
4119: Monthly Hourly Volume for April 2021

Location ID:	**4119**	**Seasonal Factor Group:**	**U1-Boston**
County:	**Middlesex**	**Daily Factor Group:**	
Functional Class	**1**	**Axle Factor Group:**	**U1-Boston**
Location:	**YANKEE DIVISION HIGHWAY**	**Growth Factor Group:**	

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1	737	571	448	549	1112	3779	8576	11193	11562	9694	8797	8736	8975	9750	12094	12138	11110	11242	8058	5386	3697	2798	1925	1330	154257	Accepted
2	718	507	360	466	951	3581	8007	9772	9940	9745	9812	10231	11487	12061	12081	12945	12366	11380	8944	5867	4174	2982	2269	1657	162303	Accepted
3	941	552	394	337	469	1171	2620	4261	5726	7635	9609	11153	11911	11864	11636	11205	10360	9154	7545	5686	4324	3295	2568	1753	136169	Accepted
4	953	531	326	246	287	477	1143	1714	2767	4844	7304	9376	10800	10179	8889	8366	8888	9679	9567	8100	6063	3255	1991	1260	117005	Accepted
5	587	353	314	391	1022	4001	8886	11624	9753	9752	8598	8563	8751	9280	11949	10458	11198	8218	7948	4942	3466	2373	1599	1166	145192	Accepted
6	618	461	407	482	1059	4184	9357	11845	11662	9392	8478	8479	8641	9178	11884	12661	11001	10656	7826	5093	3561	2495	1808	1277	152505	Accepted
7	677	471	393	533	1039	4085	9171	11976	11359	9231	8835	8994	9198	9339	12185	12463	11199	10797	7797	5300	3656	2565	1913	1302	154478	Accepted
8	685	501	374	566	1136	4195	9454	12096	11717	10006	9263	9174	9465	9820	12299	12964	11494	11041	8535	5680	3881	2812	1950	1321	160429	Accepted
9	673	521	428	527	1054	3913	8903	10945	10836	9346	9607	9960	10655	11515	13038	12761	11978	11920	9522	6544	4352	3222	2420	1869	166509	Accepted
10	1052	573	429	416	556	1490	3142	4872	6634	8529	10518	12257	12162	12070	12316	12166	11204	9962	7950	6250	5019	3694	2803	1923	147987	Accepted
11	1114	615	386	289	314	722	1682	2894	3901	5744	7411	8972	9668	9909	9844	9487	8614	7368	6051	4930	3598	2498	1607	1068	108686	Accepted
12	538	351	316	447	990	4082	9073	11677	11132	8654	8133	8309	8363	8989	11347	11907	10798	9748	6888	4673	3263	2283	1480	1071	144512	Accepted
13	671	399	318	443	997	4171	9354	11845	11568	9391	8669	8222	8808	9377	11692	12422	10983	10581	7914	5199	3589	2478	1791	1258	152140	Accepted
14	734	475	433	459	1098	4115	9006	12421	11702	9812	8959	8995	9382	9946	12133	12646	11478	11011	8224	5492	3873	2714	1954	1295	158357	Accepted
15	661	468	434	564	1122	4298	9390	12329	11588	9678	8835	8714	9094	9795	12156	11629	11598	10984	8207	5227	3592	2534	1839	1237	155973	Accepted
16	702	507	392	504	1039	3500	7525	9806	10029	7857	7734	8168	9001	9648	10027	10472	10056	9062	7860	4850	3332	2532	1987	1439	138029	Accepted
17	874	574	380	373	517	1330	2832	4497	5876	7574	9521	10561	11032	11354	11101	10421	9402	8083	6763	4891	3952	3091	2579	1830	129408	Accepted
18	1018	694	385	322	365	718	1625	2798	3751	5758	7920	9051	10982	11507	10195	9919	9281	8457	7152	5311	4151	2761	1990	1276	117387	Accepted
19	675	425	357	417	846	3015	6403	8364	8693	8398	8892	9239	9156	9321	10631	10977	10177	9427	7063	5190	3727	2521	1928	1244	137086	Accepted
20	699	454	446	584	1080	4126	8909	11030	10978	9936	9929	9954	10320	10603	12670	12506	11999	11367	8251	5480	3948	2946	2036	1389	161640	Accepted
21	768	537	397	551	1097	4212	8901	11038	10704	9595	9660	9699	10057	10542	12387	11152	11075	10966	7868	5146	3487	2610	1795	1317	155561	Accepted
22	663	453	364	485	1048	4123	8758	10781	10315	9514	9367	9796	9990	10449	12882	12485	11591	11076	8290	5513	3875	2870	2081	1374	158143	Accepted
23	776	527	413	528	985	3937	8248	10059	9947	9648	10360	10784	11205	11587	13005	12683	12173	12048	9362	6455	4432	3390	2638	1797	166987	Accepted
24	1082	710	429	428	552	1342	3149	4891	6249	7539	10493	11939	12431	12403	11937	11497	10729	9871	8477	6578	5209	4053	3323	2224	147535	Accepted
25	1221	675	436	352	334	589	1385	2247	3136	4926	6780	8282	9456	9197	9221	9165	8297	7441	6077	4592	3612	2620	1788	1166	102995	Accepted
26	612	410	321	466	1065	4336	9244	11738	11219	9000	8412	8244	8288	8741	11378	11791	10280	10382	7256	4986	3558	2482	1790	1207	147206	Accepted
27	675	436	401	546	1120	4316	9454	11817	11425	9720	8600	8588	8849	8890	11870	12690	11129	10774	8263	5479	3897	2802	1994	1338	155073	Accepted
28	749	478	450	542	1130	4074	9033	11846	11845	9986	8900	9090	9810	9747	12180	12620	11704	11561	8547	5465	3862	2606	2065	1389	159679	Accepted
29	696	502	421	520	1143	4156	9356	12036	11761	9870	9056	9540	9790	10150	11081	10632	10750	10841	8153	5151	3526	2625	1885	1380	155021	Accepted
30																										

April Average 146491.4

COVID-19 ADJUSTMENT DATA

2019 Average Count Data – Sta. 4119

April ADT: 177,334

Growth Rate: 1.0%/Year

$177{,}334 \times (1.010^2) = 180{,}898$

2021 Average Count Data – Sta. 4119

April ADT: 146,491

COVID Adjustment

$\frac{180{,}898}{146{,}491} = 1.235$

VEHICLE TRAVEL SPEED DATA

Accurate Counts

978-664-2565

Location : Jackson Street 89710001
Location : West of Langley Road
City/State: Newton, MA
Direction: EB,

4/28/2021 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	
12:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
1:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
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	1	0	0	0	0	0	1
5:00	0	0	0	0	0	0	0	0	0	1	1	2	0	0	4
6:00	0	0	0	0	0	0	0	1	3	7	3	2	0	0	16
7:00	0	0	0	0	1	1	0	10	20	12	5	2	0	0	51
8:00	0	0	0	0	0	1	12	20	32	19	3	2	0	0	89
9:00	0	0	0	1	1	3	4	12	13	16	5	1	0	0	56
10:00	0	0	0	0	1	1	3	6	15	7	6	0	0	0	39
11:00	0	0	0	1	1	2	4	10	14	9	6	2	1	0	50
12:00 PM	0	0	0	0	5	6	2	12	13	14	4	1	0	0	57
1:00	0	0	0	3	1	3	12	16	26	13	6	1	0	0	81
2:00	0	0	1	3	2	1	6	8	16	13	5	2	1	1	59
3:00	0	0	0	0	0	0	2	3	18	22	9	3	1	0	58
4:00	0	0	1	0	0	1	5	11	19	24	14	2	0	0	77
5:00	0	0	0	0	1	1	3	9	13	23	8	6	1	0	65
6:00	0	0	0	0	1	1	2	1	19	18	10	3	3	0	58
7:00	0	0	0	0	0	0	1	6	13	14	4	1	0	0	39
8:00	0	0	0	0	0	0	1	2	9	6	4	1	0	0	23
9:00	0	0	0	0	0	0	1	3	3	6	1	1	1	0	16
10:00	0	0	0	0	0	0	1	2	1	1	0	0	0	1	6
11:00	0	0	0	0	0	0	0	0	1	2	0	0	0	0	3
Total	0	0	2	8	14	21	59	132	249	227	96	32	9	2	851

Percentile	15th	50th	85th	95th
Speed	21.6	26	30.3	33.5

Mean Speed (Average)	26.3
10 MPH Pace Speed	21-30
Number in Pace	639
Percent in Pace	75.1%
Number > 45 MPH	2
Percent > 45 MPH	0.2%

Accurate Counts

978-664-2565

Location : Jackson Street 89710001
Location : West of Langley Road
City/State: Newton, MA
Direction: EB,

4/29/2021 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	
12:00 AM	0	0	0	0	0	0	0	0	0	1	1	1	0	0	3
1:00	0	0	0	0	0	0	0	1	0	1	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	1	0	0	0	1
4:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
5:00	0	0	0	0	1	0	0	0	0	2	2	0	0	0	5
6:00	0	0	0	0	0	0	0	0	5	4	3	1	0	0	13
7:00	0	0	0	0	0	1	0	4	17	14	10	1	0	0	47
8:00	0	0	0	0	1	1	8	17	23	25	6	1	2	0	84
9:00	0	0	0	0	0	1	1	10	13	15	10	4	1	0	55
10:00	0	0	0	0	0	1	1	10	18	16	6	1	1	0	54
11:00	0	0	0	0	0	1	5	4	16	11	9	1	1	0	48
12:00 PM	0	0	0	2	0	5	2	7	13	16	8	7	1	0	61
1:00	0	0	0	0	0	0	1	9	12	16	6	6	0	0	50
2:00	0	0	1	0	1	0	5	6	24	24	10	3	2	1	77
3:00	0	0	0	0	0	0	1	6	16	16	9	3	1	1	53
4:00	0	0	0	0	0	0	1	4	19	20	6	3	2	0	55
5:00	0	0	2	0	2	0	3	6	17	14	15	0	1	1	61
6:00	0	0	0	0	0	1	2	14	8	10	3	0	1	0	39
7:00	0	0	0	0	0	0	1	2	3	12	10	1	0	0	29
8:00	0	0	0	1	0	0	3	3	9	3	0	0	0	0	19
9:00	0	0	0	0	0	0	0	1	7	7	2	0	0	0	17
10:00	0	0	0	0	0	0	1	1	1	2	3	0	0	0	8
11:00	0	0	0	0	0	0	0	1	1	2	0	0	0	0	4
Total	0	0	3	3	5	11	35	106	222	232	120	33	13	3	786
			Percentile	15th	50th	85th	95th								
			Speed	22.9	27.2	31	33.5								
		Mean Speed (Average)		27.4											
		10 MPH Pace Speed		23-32											
		Number in Pace		609											
		Percent in Pace		77.5%											
		Number > 45 MPH		3											
		Percent > 45 MPH		0.4%											
Grand Total	0	0	5	11	19	32	94	238	471	459	216	65	22	5	1637
Stats			Percentile	15th	50th	85th	95th								
			Speed	22.3	26.6	30.3	33.5								
		Mean Speed (Average)		26.8											
		10 MPH Pace Speed		21-30											
		Number in Pace		1236											
		Percent in Pace		75.5%											
		Number > 45 MPH		5											
		Percent > 45 MPH		0.3%											

Accurate Counts

978-664-2565

Location : Jackson Street 89710001
Location : West of Langley Road
City/State: Newton, MA
Direction: WB,

4/28/2021 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
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	0	0	0	0	0	0	0
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00	0	0	0	0	0	0	0	0	3	2	2	1	0	0	8
7:00	0	0	0	0	1	2	2	7	9	7	5	1	1	0	35
8:00	0	0	1	0	1	0	3	10	24	20	8	3	1	0	71
9:00	0	0	1	1	5	4	2	3	9	10	3	0	0	0	38
10:00	0	0	0	1	2	1	3	4	9	7	1	1	1	0	30
11:00	0	0	0	0	2	0	5	7	12	7	8	3	0	0	44
12:00 PM	0	0	0	0	5	2	5	14	19	12	12	0	0	0	69
1:00	0	0	0	0	6	0	9	8	14	17	8	2	1	0	65
2:00	0	0	0	3	2	0	4	7	19	5	5	0	0	0	45
3:00	0	0	0	0	2	5	3	9	24	18	10	2	3	0	76
4:00	0	0	0	0	1	0	4	10	21	19	8	3	0	1	67
5:00	0	0	0	0	0	0	0	8	23	18	2	0	4	0	55
6:00	0	0	1	0	2	1	1	6	12	17	11	0	1	0	52
7:00	0	0	0	0	0	0	0	6	9	11	3	0	0	0	29
8:00	0	0	0	1	2	1	1	2	4	6	1	0	0	0	18
9:00	0	0	0	0	0	1	1	3	0	1	2	0	0	0	8
10:00	0	0	0	0	0	1	0	2	0	2	0	0	0	0	5
11:00	0	0	0	0	0	0	0	0	2	0	1	0	0	0	3
Total	0	0	3	6	31	18	43	106	213	179	91	16	12	1	719

	Percentile	15th	50th	85th	95th
	Speed	21	26	30.3	32.8

Mean Speed (Average)	25.9
10 MPH Pace Speed	21-30
Number in Pace	527
Percent in Pace	73.3%
Number > 45 MPH	1
Percent > 45 MPH	0.1%

Accurate Counts

978-664-2565

Location : Jackson Street 89710001
Location : West of Langley Road
City/State: Newton, MA
Direction: WB,

4/29/2021 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	
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	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	1	0	0	0	0	1
4:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00	0	0	1	0	0	0	0	0	2	2	1	1	1	0	8
7:00	0	0	0	0	1	3	4	4	7	10	4	1	2	0	36
8:00	0	0	0	1	2	0	5	10	26	19	8	5	3	0	79
9:00	0	0	0	0	0	1	0	3	13	5	7	0	0	0	29
10:00	0	0	0	0	1	1	2	3	8	8	6	2	0	0	31
11:00	0	0	0	0	2	0	2	9	8	10	3	3	1	0	38
12:00 PM	0	0	1	1	3	0	4	8	14	8	3	0	0	0	42
1:00	0	0	0	0	1	1	5	10	19	8	6	2	0	0	52
2:00	0	0	1	0	0	1	3	9	15	23	11	3	1	0	67
3:00	0	0	0	1	3	1	5	5	16	12	3	0	1	0	47
4:00	0	0	0	0	0	1	3	7	19	22	4	0	0	1	57
5:00	0	0	0	0	0	3	1	5	23	14	5	1	1	0	53
6:00	0	0	1	0	2	2	4	8	12	9	5	0	0	0	43
7:00	0	0	0	0	0	3	0	7	11	6	1	0	0	0	28
8:00	0	0	0	0	1	0	1	5	4	3	1	0	0	0	15
9:00	0	0	0	0	1	0	1	4	6	1	0	0	0	0	13
10:00	0	0	0	0	0	0	0	0	1	2	1	0	0	0	4
11:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Total	0	0	4	3	17	17	41	97	205	163	69	18	10	1	645
			Percentile	15th	50th	85th	95th								
			Speed	21	26	30.3	32.8								
		Mean Speed (Average)		26.0											
		10 MPH Pace Speed		21-30											
		Number in Pace		487											
		Percent in Pace		75.5%											
		Number > 45 MPH		1											
		Percent > 45 MPH		0.2%											
Grand Total	0	0	7	9	48	35	84	203	418	342	160	34	22	2	1364
Stats			Percentile	15th	50th	85th	95th								
			Speed	21	26	30.3	32.8								
		Mean Speed (Average)		25.9											
		10 MPH Pace Speed		21-30											
		Number in Pace		1014											
		Percent in Pace		74.3%											
		Number > 45 MPH		2											
		Percent > 45 MPH		0.1%											

Accurate Counts

978-664-2565

Location : Jackson Street 89710001
Location : West of Langley Road
City/State: Newton, MA
Direction: Combined

4/28/2021 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	
12:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
1:00	0	0	0	0	0	0	0	0	0	0	1	0	1	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	0	0	0	0
4:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
5:00	0	0	0	0	0	0	0	0	0	1	1	2	0	0	4
6:00	0	0	0	0	0	0	0	1	6	9	5	3	0	0	24
7:00	0	0	0	0	2	3	2	17	29	19	10	3	1	0	86
8:00	0	0	1	0	1	1	15	30	56	39	11	5	1	0	160
9:00	0	0	1	2	6	7	6	15	22	26	8	1	0	0	94
10:00	0	0	0	1	3	2	6	10	24	14	7	1	1	0	69
11:00	0	0	0	1	3	2	9	17	26	16	14	5	1	0	94
12:00 PM	0	0	0	0	10	8	7	26	32	26	16	1	0	0	126
1:00	0	0	0	3	7	3	21	24	40	30	14	3	1	0	146
2:00	0	0	1	6	4	1	10	15	35	18	10	2	1	1	104
3:00	0	0	0	0	2	5	5	12	42	40	19	5	4	0	134
4:00	0	0	1	0	1	1	9	21	40	43	22	5	0	1	144
5:00	0	0	0	0	1	1	3	17	36	41	10	6	5	0	120
6:00	0	0	1	0	3	2	3	7	31	35	21	3	4	0	110
7:00	0	0	0	0	0	0	1	12	22	25	7	1	0	0	68
8:00	0	0	0	1	2	1	2	4	13	12	5	1	0	0	41
9:00	0	0	0	0	0	1	2	6	3	7	3	1	1	0	24
10:00	0	0	0	0	0	1	1	4	1	3	0	0	0	1	11
11:00	0	0	0	0	0	0	0	0	3	2	1	0	0	0	6
Total	0	0	5	14	45	39	102	238	462	406	187	48	21	3	1570

	Percentile	15th	50th	85th	95th
	Speed	21	26	30.3	32.8

Mean Speed (Average)	26.1
10 MPH Pace Speed	21-30
Number in Pace	1166
Percent in Pace	74.3%
Number > 45 MPH	3
Percent > 45 MPH	0.2%

Accurate Counts

978-664-2565

Location : Jackson Street 89710001
Location : West of Langley Road
City/State: Newton, MA
Direction: Combined

4/29/2021 Time	0 - 3 MPH	> 3 - 6 MPH	> 6 - 9 MPH	> 9 - 12 MPH	> 12 - 15 MPH	> 15 - 18 MPH	> 18 - 21 MPH	> 21 - 24 MPH	> 24 - 27 MPH	> 27 - 30 MPH	> 30 - 33 MPH	> 33 - 36 MPH	> 36 - 39 MPH	> 39 MPH	
12:00 AM	0	0	0	0	0	0	1	0	0	1	1	1	0	0	4
1:00	0	0	0	0	0	0	0	1	0	1	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	1	1	0	0	0	2
4:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
5:00	0	0	0	0	1	0	0	0	0	2	2	0	0	0	5
6:00	0	0	1	0	0	0	0	0	7	6	4	2	1	0	21
7:00	0	0	0	0	1	4	4	8	24	24	14	2	2	0	83
8:00	0	0	0	1	3	1	13	27	49	44	14	6	5	0	163
9:00	0	0	0	0	0	2	1	13	26	20	17	4	1	0	84
10:00	0	0	0	0	1	2	3	13	26	24	12	3	1	0	85
11:00	0	0	0	0	2	1	7	13	24	21	12	4	2	0	86
12:00 PM	0	0	1	3	3	5	6	15	27	24	11	7	1	0	103
1:00	0	0	0	0	1	1	6	19	31	24	12	8	0	0	102
2:00	0	0	2	0	1	1	8	15	39	47	21	6	3	1	144
3:00	0	0	0	1	3	1	6	11	32	28	12	3	2	1	100
4:00	0	0	0	0	0	1	4	11	38	42	10	3	2	1	112
5:00	0	0	2	0	2	3	4	11	40	28	20	1	2	1	114
6:00	0	0	1	0	2	3	6	22	20	19	8	0	1	0	82
7:00	0	0	0	0	0	3	1	9	14	18	11	1	0	0	57
8:00	0	0	0	1	1	0	4	8	13	6	1	0	0	0	34
9:00	0	0	0	0	1	0	1	5	13	8	2	0	0	0	30
10:00	0	0	0	0	0	0	1	1	2	4	4	0	0	0	12
11:00	0	0	0	0	0	0	0	1	2	2	0	0	0	0	5
Total	0	0	7	6	22	28	76	203	427	395	189	51	23	4	1431
			Percentile	15th	50th	85th	95th								
			Speed	22.3	26.6	30.3	33.5								
		Mean Speed (Average)		26.8											
		10 MPH Pace Speed		21-30											
		Number in Pace		1084											
		Percent in Pace		75.8%											
		Number > 45 MPH		4											
		Percent > 45 MPH		0.3%											
Grand Total	0	0	12	20	67	67	178	441	889	801	376	99	44	7	3001
Stats			Percentile	15th	50th	85th	95th								
			Speed	21.6	26.6	30.3	33.5								
		Mean Speed (Average)		26.4											
		10 MPH Pace Speed		21-30											
		Number in Pace		2250											
		Percent in Pace		75.0%											
		Number > 45 MPH		7											
		Percent > 45 MPH		0.2%											

PUBLIC TRANSPORTATION SCHEDULE

Effective **Mar 14, 2021**

⚠ Schedule Change

60

Chestnut Hill - Kenmore Station

This bus has a snow route.
Active snow routes **mbta.com/alerts/bus**

Omits High and Cypress Streets. Board on Boylston St, or use Green Line at Brookline Hills or Brookline Village

⚠ Information in this timetable is subject to change without notice. Traffic conditions and weather can affect running time.

mbta.com
617-222-3200
617-222-5146 (TTY)

Lost & Found
617-222-1450

60 Weekday

Inbound				Outbound			
Leave Shops at Chestnut Hill	Lv/Arrive Boylston at Tully	Arrive Brookline Village	Arrive Kenmore Station	Leave Kenmore Station	Arrive Brookline Village	Arrive Shops at Chestnut Hill	Arrive Boylston at Tully
.....	5:12A	5:21A	5:31A	.....	4:55A	5:03A	5:07A
.....	5:55	6:05	6:16	5:25A	5:32	5:44	5:52
.....	6:25	6:35	6:47	5:45	5:52	6:04	6:12
.....	6:45	6:56	7:10	6:05	6:12	6:26	6:34
.....	7:10	7:21	7:35	6:30	6:38	6:53	7:01
.....	7:35	7:47	8:02	6:55	7:03	7:18	7:26
.....	8:00	8:12	8:27	7:20	7:28	7:46	7:55
.....	8:25	8:37	8:52	7:45	7:53	8:11	8:20
.....	9:00	9:12	9:27	8:15	8:24	8:42	8:51
.....	9:35	9:47	9:59	8:55	9:04	9:22	9:30
.....	10:45	10:57	11:09	10:05	10:13	10:31	10:39
				11:15	11:23	11:41	11:49
.....	**12:00N**	**12:12P**	**12:24P**				
1:10P	**1:14**	**1:24**	**1:42**	**12:30P**	**12:38P**	**12:59P**	.....
2:05	**2:09**	**2:19**	**2:37**	**1:30**	**1:38**	**1:59**	.....
2:35	**2:39**	**2:49**	**3:07**	**1:55**	**2:03**	**2:27**	.....
3:05	**3:09**	**3:19**	**3:37**	**2:20**	**2:29**	**2:53**	.....
3:35	**3:39**	**3:49**	**4:07**	**2:50**	**2:59**	**3:23**	.....
4:05	**4:09**	**4:19**	**4:37**	**3:20**	**3:29**	**3:53**	.....
4:35	**4:39**	**4:49**	**5:07**	**3:50**	**3:59**	**4:23**	.....
5:05	**5:09**	**5:19**	**5:37**	**4:20**	**4:29**	**4:53**	.....
5:35	**5:39**	**5:50**	**6:08**	**4:50**	**4:59**	**5:23**	.....
6:05	**6:10**	**6:21**	**6:37**	**5:15**	**5:24**	**5:48**	.....
6:30	**6:35**	**6:45**	**7:01**	**5:45**	**5:54**	**6:18**	.....
6:55	**7:00**	**7:10**	**7:24**	**6:15**	**6:24**	**6:48**	.....
7:20	**7:25**	**7:35**	**7:49**	**6:45**	**6:53**	**7:15**	.....
7:45	**7:49**	**7:58**	**8:12**	**7:15**	**7:23**	**7:42**	.....
8:15	**8:19**	**8:28**	**8:42**	**7:45**	**7:52**	**8:10**	.....
8:45	**8:49**	**8:57**	**9:09**	**8:15**	**8:22**	**8:40**	.....
9:15	**9:19**	**9:27**	**9:39**	**8:45**	**8:52**	**9:10**	.....
1:15	**10:19**	**10:27**	**10:39**	**9:45**	**9:51**	**10:08**	.....
11:15	**11:19**	**11:27**	**11:39**	**10:45**	**10:51**	**11:08**	.....
12:06A	.....	12:18A	.....	**11:40**	**11:46**	12:03A	.....

60 Saturday

Inbound			Outbound		
Leave Shops at Chestnut Hill	Arrive Brookline Village	Arrive Kenmore Station	Leave Kenmore Station	Lv/Arrive Brookline Village	Arrive Shops at Chestnut Hill
5:05A	5:15A	5:23A	.....	4:55A	5:02A
6:00	6:12	6:20	5:30A	5:38	5:52
7:00	7:13	7:24	6:30	6:38	6:52
7:30	7:43	7:54	7:00	7:08	7:22
8:00	8:13	8:24	7:30	7:38	7:52
8:30	8:43	8:54	8:00	8:08	8:24
9:00	9:15	9:27	8:30	8:38	8:54
9:35	9:50	10:02	9:00	9:08	9:24
10:10	10:25	10:38	9:35	9:43	9:59
10:45	11:00	11:13	10:10	10:18	10:37
11:20	11:35	11:48	10:45	10:53	11:12
11:55	**12:10P**	**12:23P**	11:20	11:28	11:47
			11:55	**12:03P**	**12:22P**
12:30P	**12:45**	**12:58**			
1:05	**1:20**	**1:33**	**12:30P**	**12:38**	**12:57**
1:45	**2:00**	**2:13**	**1:05**	**1:13**	**1:32**
2:25	**2:40**	**2:53**	**1:45**	**1:53**	**2:12**
3:05	**3:20**	**3:33**	**2:25**	**2:33**	**2:52**
3:45	**4:00**	**4:13**	**3:05**	**3:13**	**3:34**
4:25	**4:40**	**4:58**	**3:45**	**3:53**	**4:14**
5:05	**5:21**	**5:39**	**4:25**	**4:33**	**4:54**
5:40	**5:56**	**6:14**	**5:05**	**5:13**	**5:34**
6:20	**6:36**	**6:54**	**5:45**	**5:53**	**6:14**
6:55	**7:11**	**7:29**	**6:20**	**6:28**	**6:49**
7:30	**7:46**	**8:03**	**7:00**	**7:08**	**7:27**
8:05	**8:19**	**8:34**	**7:35**	**7:43**	**8:02**
8:40	**8:54**	**9:09**	**8:10**	**8:17**	**8:34**
9:10	**9:24**	**9:39**	**8:40**	**8:47**	**9:04**
10:10	**10:24**	**10:39**	**9:40**	**9:47**	**10:04**
11:10	**11:24**	**11:39**	**10:40**	**10:47**	**11:04**
12:00M	12:14A	12:29A	**11:30**	**11:36**	**11:52**
12:50	1:01	.....	12:25A	12:31A	12:47A

60 Sunday

Inbound			Outbound		
Leave Shops at Chestnut Hill	Arrive Brookline Village	Arrive Kenmore Station	Leave Kenmore Station	Arrive Brookline Village	Arrive Shops at Chestnut Hill
6:30A	6:42A	6:52A	6:00A	6:06A	6:23A
Every	***Hour***	***Until***	***Every***	***Hour***	***Until***
11:30	11:44	11:54	11:00	11:06	11:23
12:35P	**12:52P**	**1:04P**	**12:00N**	**12:08P**	**12:28P**
1:45	**2:02**	**2:14**	**1:10**	**1:18**	**1:38**
2:55	**3:12**	**3:24**	**2:20**	**2:28**	**2:48**
4:05	**4:22**	**4:34**	**3:30**	**3:38**	**3:58**
5:15	**5:32**	**5:42**	**4:40**	**4:48**	**5:08**
6:25	**6:42**	**6:52**	**5:50**	**5:58**	**6:18**
7:30	**7:45**	**7:55**	**7:00**	**7:08**	**7:27**
8:30	**8:45**	**8:55**	**8:00**	**8:07**	**8:25**
9:30	**9:45**	**9:55**	**9:00**	**9:07**	**9:25**

All buses are accessible to persons with disabilities

Fare	Local Bus	Bus + Bus	Subway	Bus + Subway
CharlieCard	$1.70	$1.70	$2.40	$2.40
CharlieTicket	$1.70	$1.70	$2.40	$4.10*
Cash-on-Board	$1.70	$3.40	$2.40	$4.10
Student/Youth**	$0.85	$0.85	$1.10	$1.10
Senior/TAP***	$0.85	$0.85	$1.10	$1.10

FREE FARES: Children 11 and under ride free when accompanied by a paying customer; Blind Access CharlieCard holders ride free and if using a guide, the guide rides free.

* Transfers Subway to Silver Line SL4 or SL5 pay $2.40

** Requires Student CharlieCard or Youth CharlieCard. Student CharlieCards available to students through participating middle and high schools. Youth CharlieCards available through community partners across Greater Boston.

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

Route 60
Chestnut Hill-Kenmore Station

Spring/Summer 2021 Holidays
4/19: Sat; 5/31 Sun; 7/4-5 Sun

TRIP-GENERATION CALCULATIONS

COMMUTING CHARACTERISTICS BY SEX

United States Census Bureau

Note: This is a modified view of the original table produced by the U.S. Census Bureau. This download or printed version may have missing information from the original table.

	Middlesex County, Massachusetts		
	Total		Male
Label	Estimate	Margin of Error	
Workers 16 years and over	874,163	±3,047	
MEANS OF TRANSPORTATION TO WORK			
Car, truck, or van	74.0%	±0.3	
Drove alone	67.1%	±0.4	
Carpooled	6.9%	±0.2	
In 2-person carpool	5.3%	±0.2	
In 3-person carpool	1.0%	±0.1	
In 4-or-more person carpool	0.6%	±0.1	
Workers per car, truck, or van	1.05	±0.01	
Public transportation (excluding taxicab)	12.5%	±0.2	
Walked	5.0%	±0.2	
Bicycle	1.6%	±0.1	
Taxicab, motorcycle, or other means	1.1%	±0.1	
Worked from home	5.8%	±0.2	
PLACE OF WORK			
Worked in state of residence	97.4%	±0.1	
Worked in county of residence	67.2%	±0.4	
Worked outside county of residence	30.3%	±0.4	
Worked outside state of residence	2.6%	±0.1	
Living in a place	73.8%	±0.2	
Worked in place of residence	17.5%	±0.3	
Worked outside place of residence	56.2%	±0.3	
Not living in a place	26.2%	±0.2	
Living in 12 selected states	100.0%	±0.1	
Worked in minor civil division of residence	22.8%	±0.3	
Worked outside minor civil division of residence	77.2%	±0.3	
Not living in 12 selected states	0.0%	±0.1	
Workers 16 years and over who did not work from home	823,239	±3,229	
TIME OF DEPARTURE TO GO TO WORK			

12:00 a.m. to 4:59 a.m.	2.1%	±0.1	
5:00 a.m. to 5:29 a.m.	2.6%	±0.1	
5:30 a.m. to 5:59 a.m.	3.5%	±0.2	
6:00 a.m. to 6:29 a.m.	7.8%	±0.2	
6:30 a.m. to 6:59 a.m.	9.3%	±0.2	
7:00 a.m. to 7:29 a.m.	15.0%	±0.3	
7:30 a.m. to 7:59 a.m.	12.9%	±0.3	
8:00 a.m. to 8:29 a.m.	14.9%	±0.3	
8:30 a.m. to 8:59 a.m.	8.6%	±0.2	
9:00 a.m. to 11:59 p.m.	23.3%	±0.3	
⌄ TRAVEL TIME TO WORK			
Less than 10 minutes	8.1%	±0.2	
10 to 14 minutes	9.8%	±0.2	
15 to 19 minutes	11.7%	±0.2	
20 to 24 minutes	12.4%	±0.3	
25 to 29 minutes	6.0%	±0.2	
30 to 34 minutes	15.7%	±0.3	
35 to 44 minutes	10.3%	±0.3	
45 to 59 minutes	13.0%	±0.3	
60 or more minutes	13.0%	±0.3	
Mean travel time to work (minutes)	31.4	±0.2	
⌄ VEHICLES AVAILABLE			
⌄ Workers 16 years and over in households	855,625	±3,075	
No vehicle available	5.4%	±0.2	
1 vehicle available	24.1%	±0.4	
2 vehicles available	44.2%	±0.6	
3 or more vehicles available	26.3%	±0.5	
⌄ PERCENT ALLOCATED			
Means of transportation to work	10.9%	(X)	
Private vehicle occupancy	12.3%	(X)	
Place of work	15.5%	(X)	
Time of departure to go to work	22.1%	(X)	
Travel time to work	15.2%	(X)	
Vehicles available	1.2%	(X)	

Columns

Cell/Column Notes

Table Notes

COMMUTING CHARACTERISTICS BY SEX

Survey/Program:
American Community Survey
Year:
2019
Estimates:
5-Year
Table ID:
S0801

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

Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates

When information is missing or inconsistent, the Census Bureau logically assigns an acceptable value using the response to a related question or questions. If a logical assignment is not possible, data are filled using a statistical process called allocation, which uses a similar individual or household to provide a donor value. The "Allocated" section is the number of respondents who received an allocated value for a particular subject.

2019 ACS data products include updates to several categories of the existing means of transportation question. For more information, see: Change to Means of Transportation.

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

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

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

The 2015-2019 American Community Survey (ACS) data generally reflect the September 2018 Office of Management and Budget (OMB) delineations of metropolitan and micropolitan statistical areas. In certain instances, the names, codes, and boundaries of the principal cities shown in ACS tables may differ from the OMB delineation lists due to differences in the effective dates of the geographic entities.

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

Explanation of Symbols:

> An "**" entry in the margin of error column indicates that either no sample observations or too few sample observations were available to compute a standard error and thus the margin of error. A statistical test is not appropriate.

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

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

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

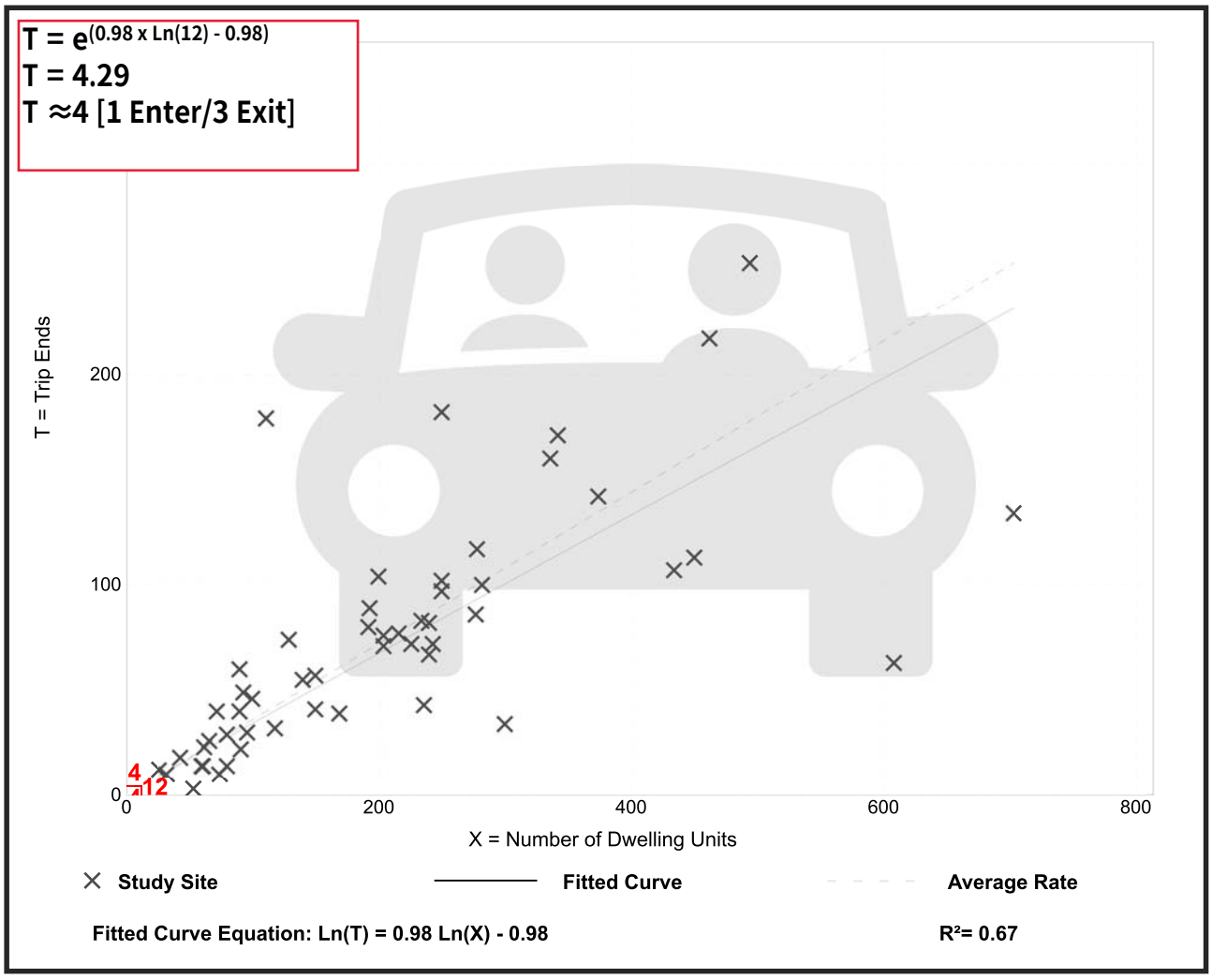
Multifamily Housing (Mid-Rise)
(221)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	53
Avg. Num. of Dwelling Units:	207
Directional Distribution:	26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.06 - 1.61	0.19

Data Plot and Equation



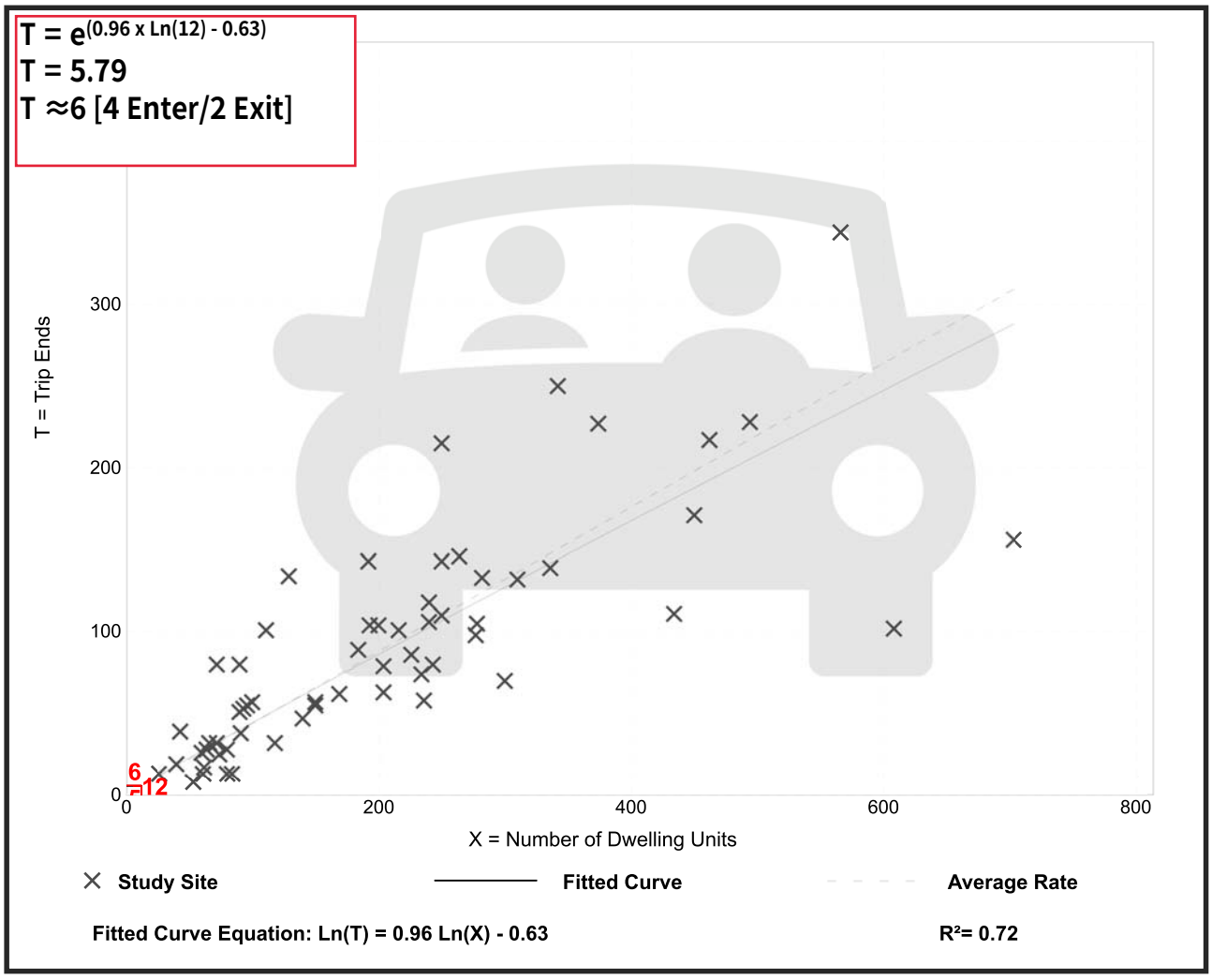
Multifamily Housing (Mid-Rise)
(221)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	60
Avg. Num. of Dwelling Units:	208
Directional Distribution:	61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.15 - 1.11	0.19

Data Plot and Equation



Multifamily Housing (Mid-Rise)
(221)

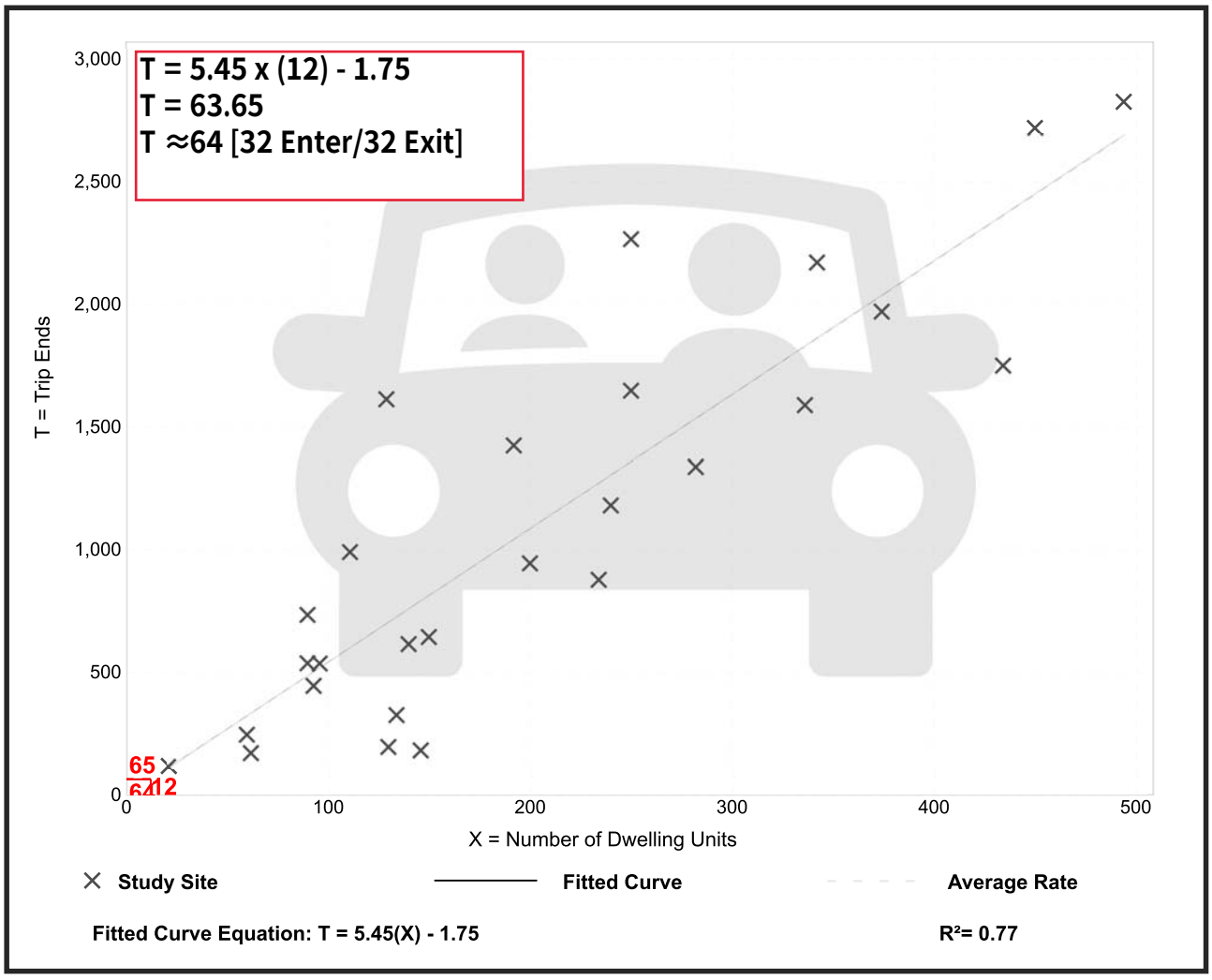
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 27
Avg. Num. of Dwelling Units: 205
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
5.44	1.27 - 12.50	2.03

Data Plot and Equation



Apparel Store
(876)

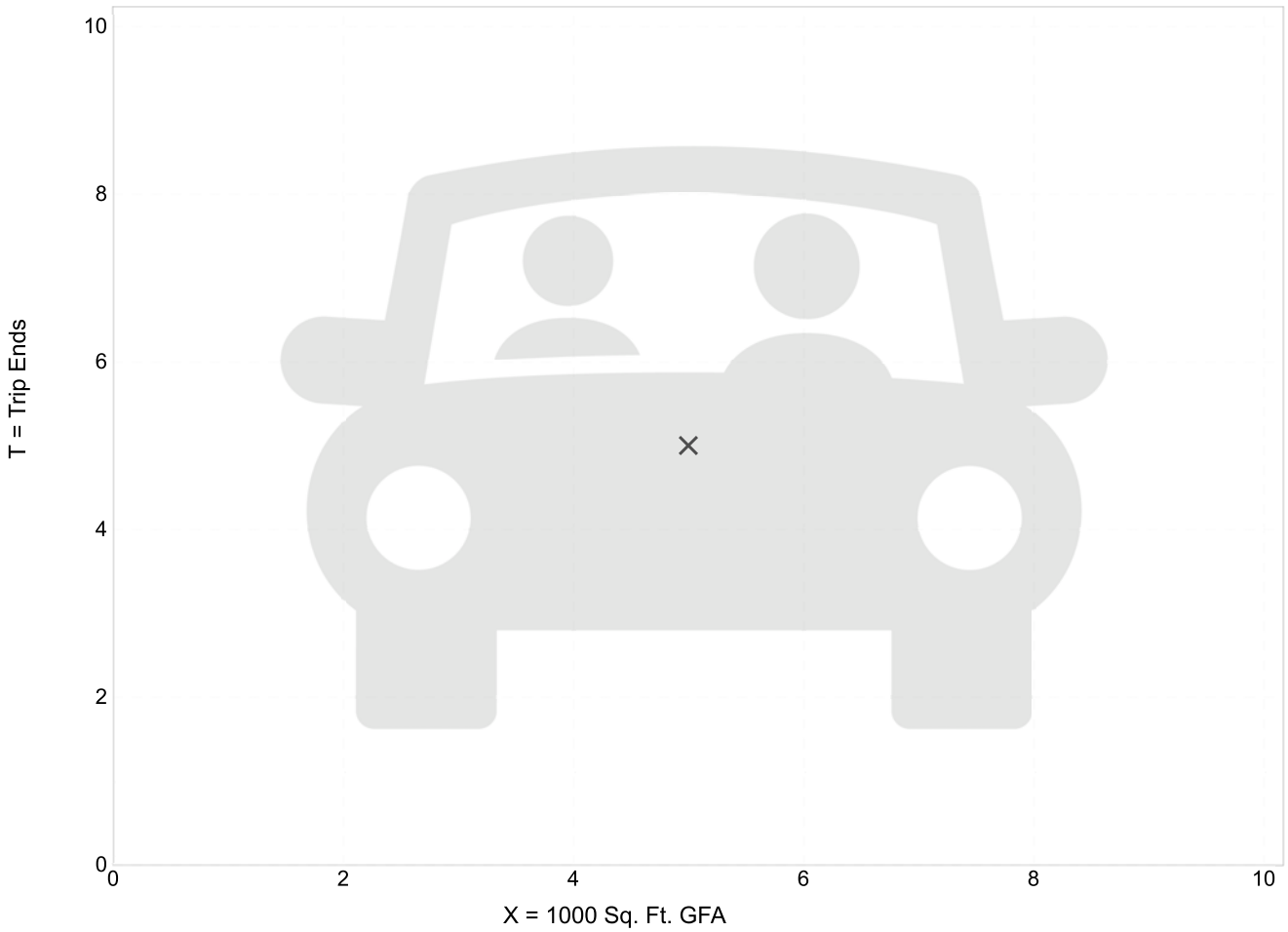
Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	1
Avg. 1000 Sq. Ft. GFA:	5
Directional Distribution:	80% entering, 20% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.00	1.00 - 1.00	*

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= **

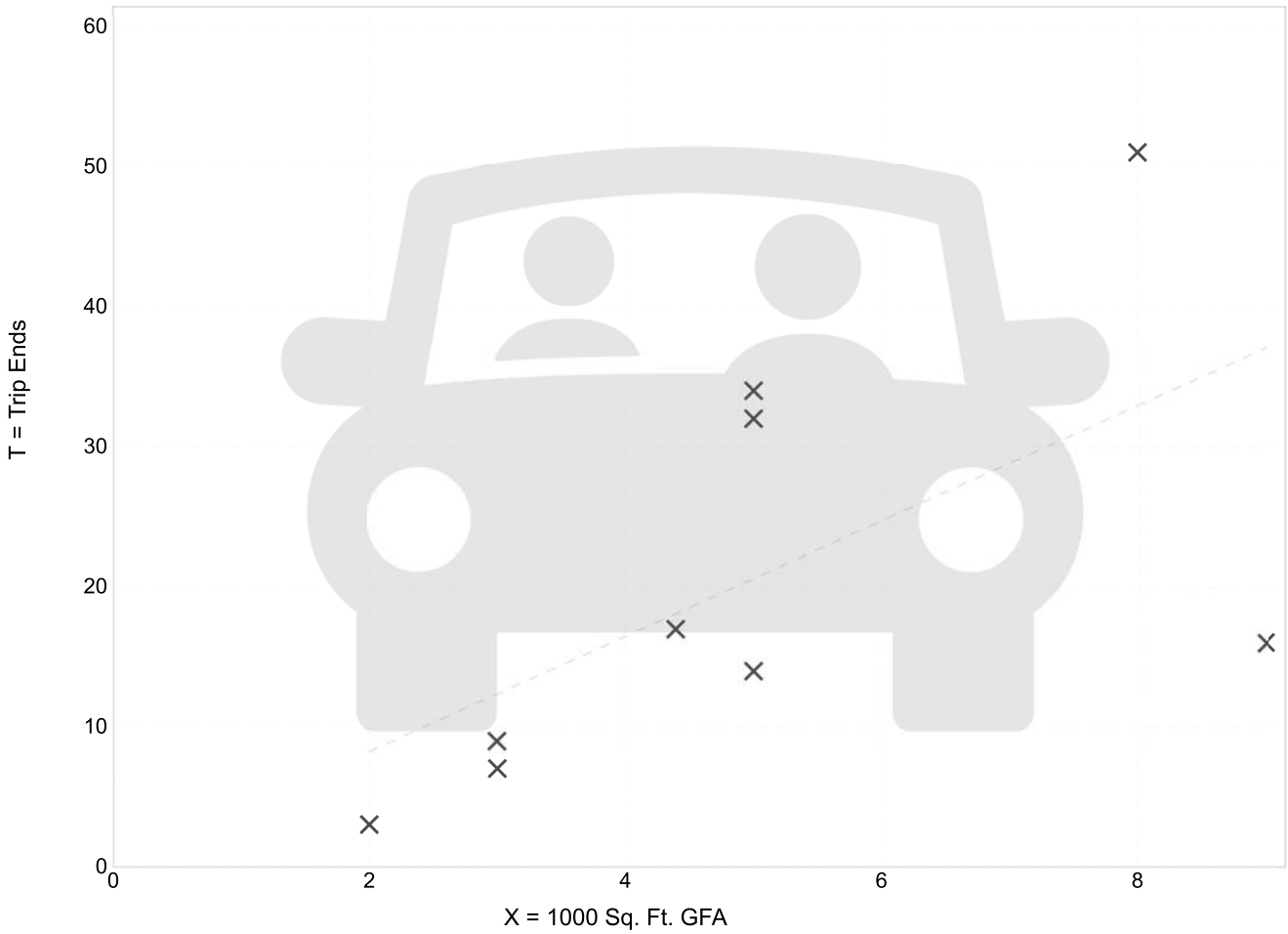
Apparel Store
(876)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	9
Avg. 1000 Sq. Ft. GFA:	5
Directional Distribution:	51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
4.12	1.50 - 6.80	2.18

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= **

Apparel Store
(876)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

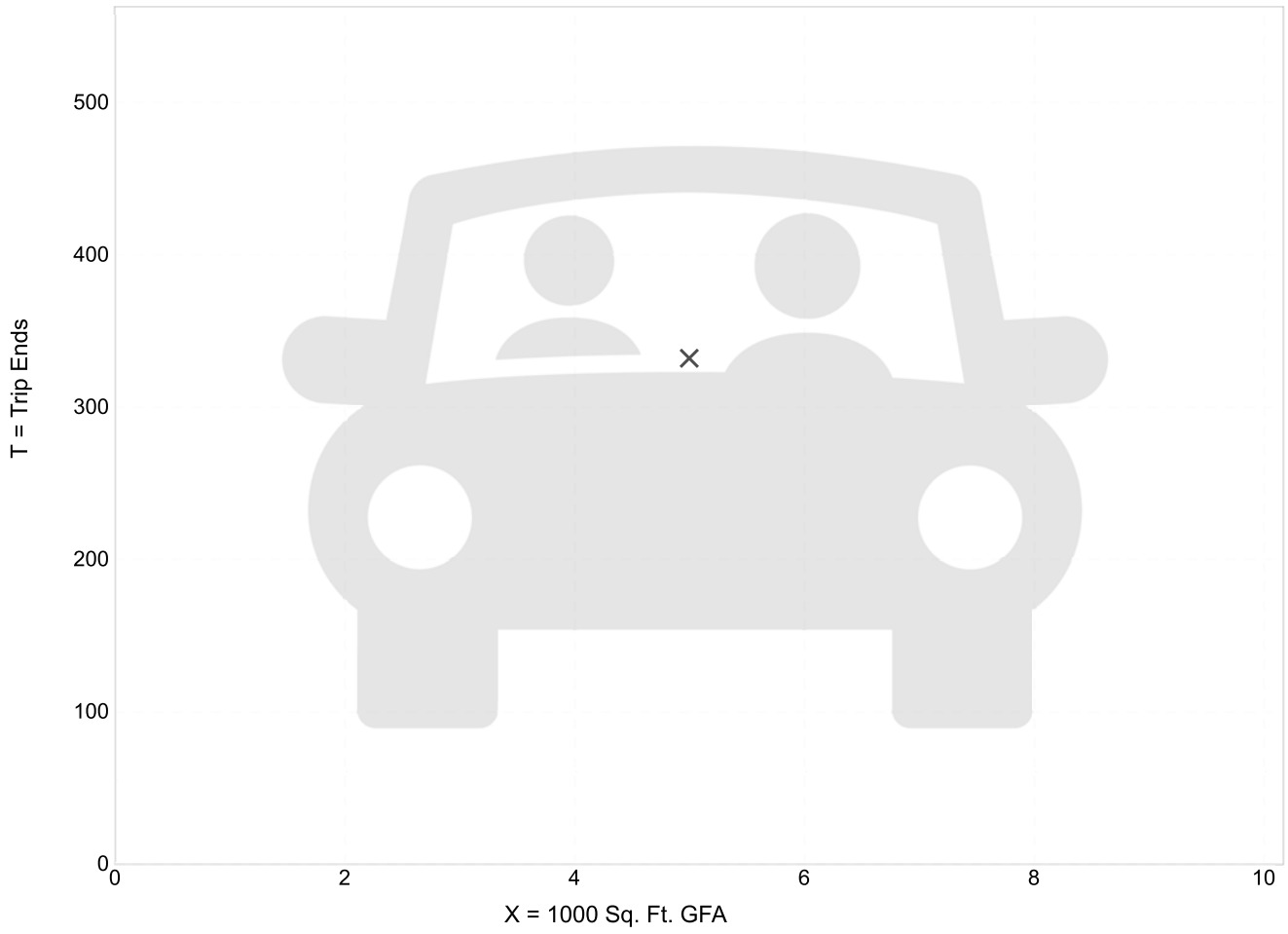
Setting/Location: **General Urban/Suburban**
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
66.40	66.40 - 66.40	*

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= **

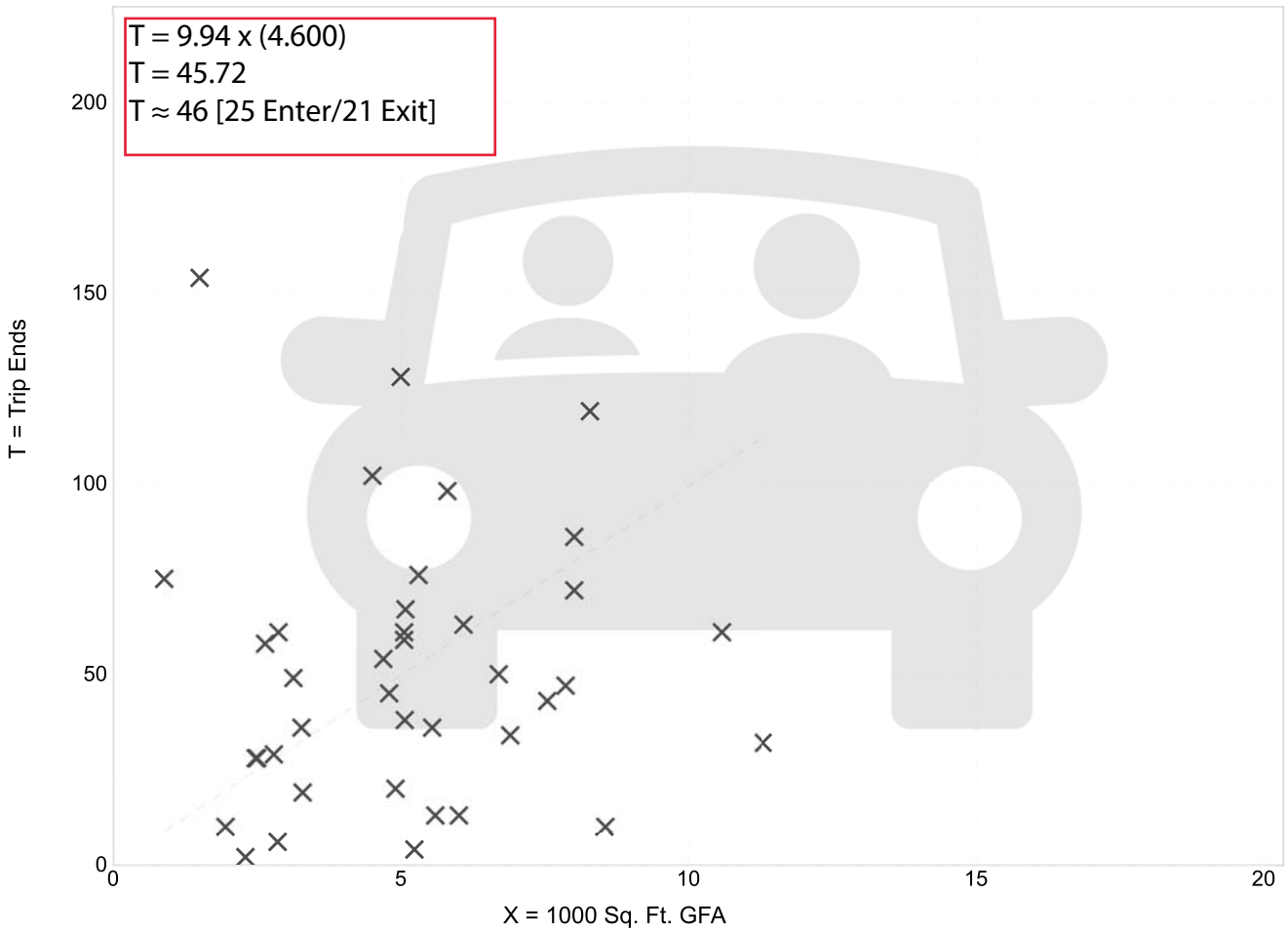
High-Turnover (Sit-Down) Restaurant
(932)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	39
Avg. 1000 Sq. Ft. GFA:	5
Directional Distribution:	55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.94	0.76 - 102.39	11.33

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= ****

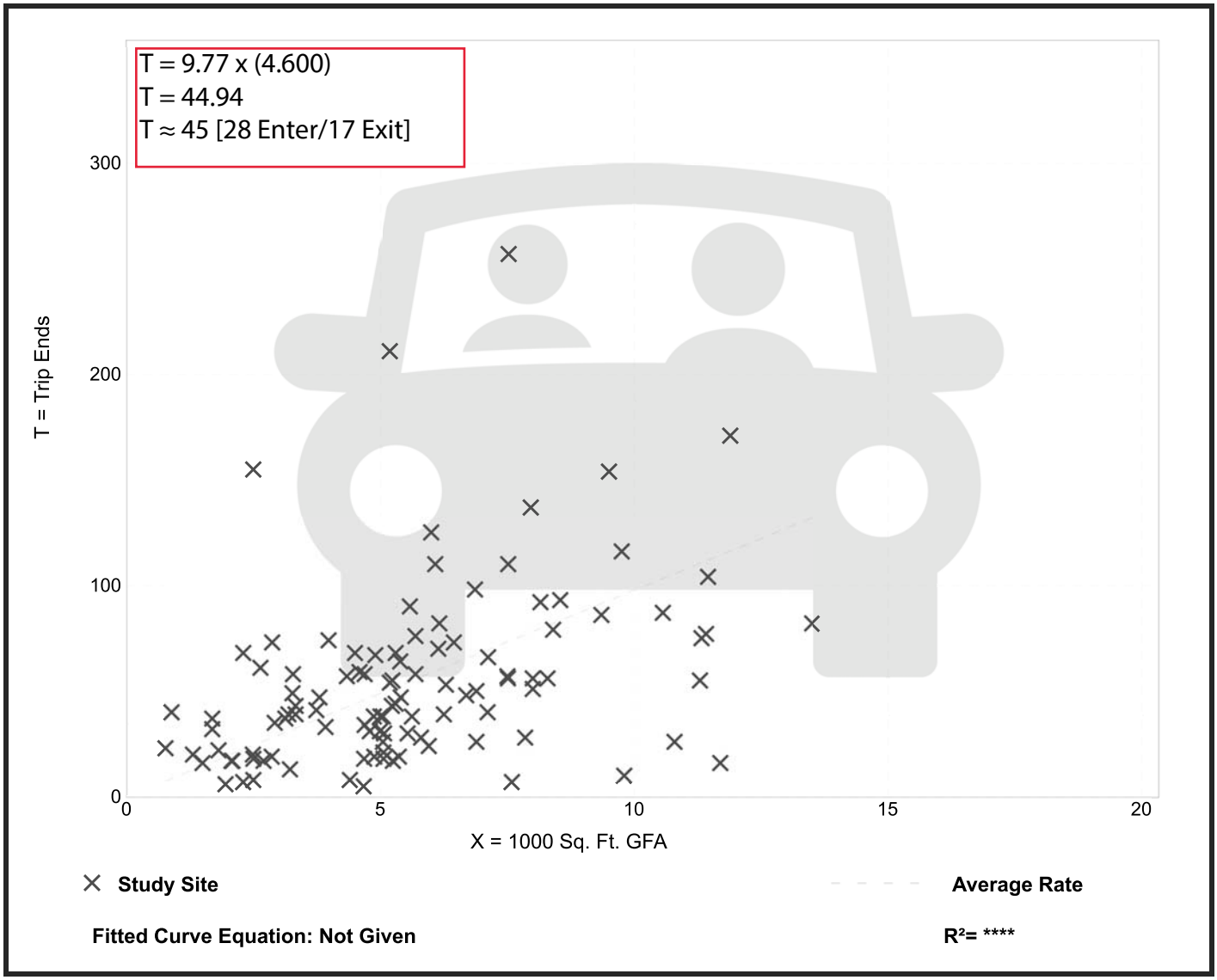
High-Turnover (Sit-Down) Restaurant
(932)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	107
Avg. 1000 Sq. Ft. GFA:	6
Directional Distribution:	62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.77	0.92 - 62.00	7.37

Data Plot and Equation



High-Turnover (Sit-Down) Restaurant
(932)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 50
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
112.18	13.04 - 742.41	72.51

Data Plot and Equation