

CITY OF SOMERVILLE

Transportation Impact Study

Boynton Gateway

Prepared for
City of Somerville

Prepared by
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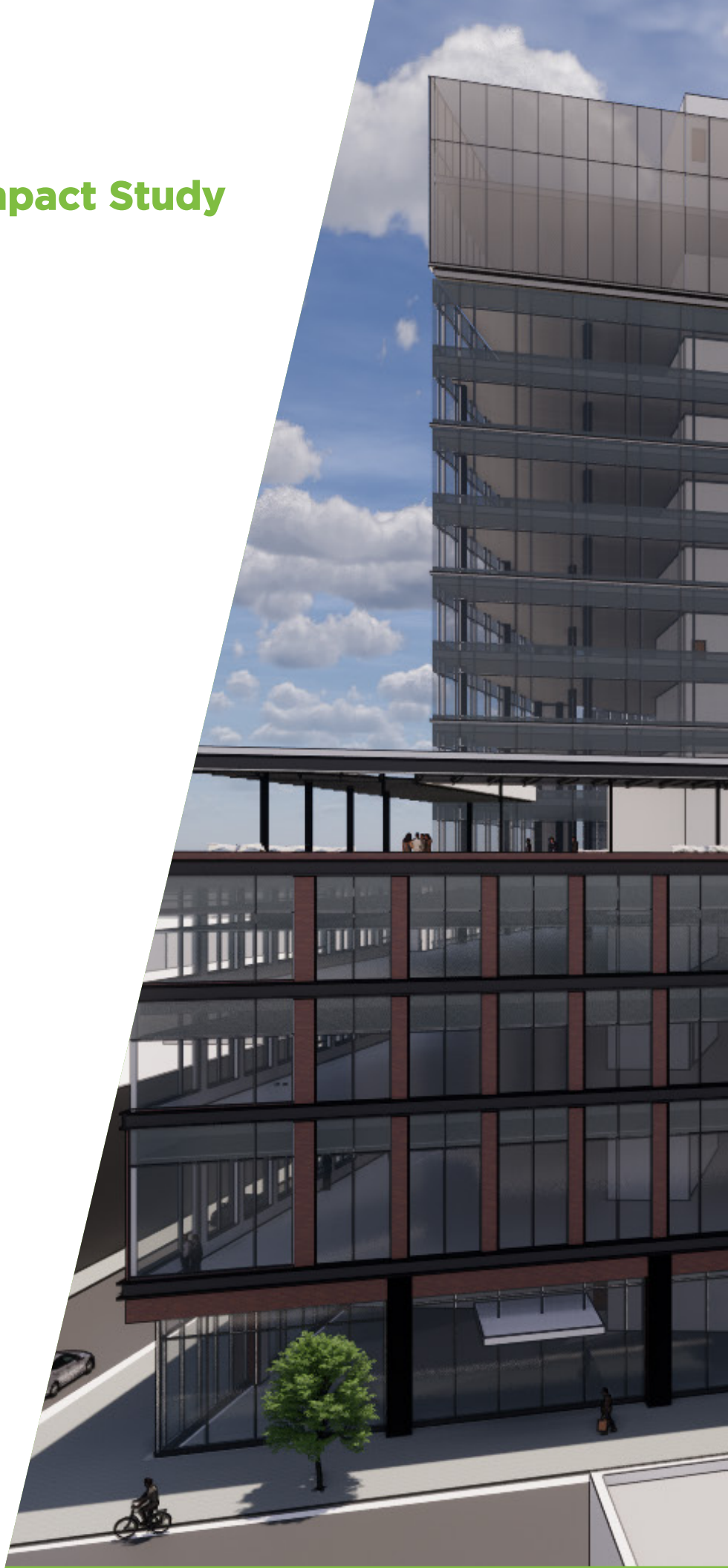




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Introduction

Howard Stein Hudson (HSH) has prepared this Transportation Impact Study (TIS) as part of the City of Somerville development review process to evaluate the transportation impacts of the proposed Boynton Gateway Redevelopment (the “Project” or “Site”) in Somerville, Massachusetts. The study will comply with the TIS scoping letter that was submitted to the City of Somerville Mobility Division and approved on April 16, 2021. Boynton Gateway is a proposed redevelopment located at the northwest edge of the Boynton Yards sub-area. The Project is bound by Columbia Street to the north and east, Webster Avenue and an existing residential building to the west, and Beach Avenue and an existing parking garage to the south (the “Site”). Beach Avenue, a private way, runs through the existing Site. The Project proposes to demolish the existing automobile and storage buildings to construct a new 339,000 square foot (sf) building. The new building will include a four-story mid-rise and 12-story high-rise containing approximately 136,400 sf of lab space, 191,600 sf of office, 1,000 sf of accessory tenant retail space, and 10,000 sf of amenity space. Parking for the Project will be provided in a 180-space underground garage.

Study Area

Based on coordination with the City of Somerville, the study area (shown in **Figure 1**) consists of three signalized and four unsignalized intersections. The signalized intersections are:

- Webster Avenue/Washington Street/Somerville Avenue (Union Square);
- Somerville Avenue/Prospect Street; and
- Prospect Street/Webster Avenue/Concord Avenue.

The unsignalized study area intersections are:

- Webster Avenue/Columbia Street/Tremont Street;
- Webster Avenue/Newton Street;
- Columbia Street/Windsor Place; and
- Windsor Street/South Street.



Figure 1. *Study Area Intersections*





Methodology

The transportation study and its supporting analyses were conducted as described below:

- The first section includes an inventory of the Existing Conditions such as traffic characteristics, roadway and intersection geometries, existing public transportation, and crash data. Existing counts for vehicles, bicycles, and pedestrians were collected at the study area intersections and adjusted to existing conditions per MassDOT Traffic Impact Assessment guidelines. The transportation data forms the basis for the vehicle, pedestrian, and bicycle analyses and MBTA ridership data serves as the basis for the transit analysis.
- The Build Conditions section summarizes any transportation changes that occur because of the construction of the Project. Expected roadway modifications, as well as pedestrian, bicycle, parking, transit, or any other accommodations associated with the Project, are identified. This section evaluates potential impacts such as Site circulation and project-generated trips by mode. This section also introduces the Design Year Build (2027) Condition which includes the effects of background projects on the area through 2027. The design year was evaluated as 2027, three years after the anticipated completion and occupancy of the building which is estimated for 2024.
- The next section summarizes the transportation impact analyses for the different modes of travel. This section covers transit, bicycle, pedestrian, and motor vehicle analyses for the Existing Condition, Build (2021) Condition, Build (2021) Condition with Mitigation, and Design Year Build (2027) Condition. The Build (2021) Condition includes the Existing Condition plus any net impact due the addition of Project-generated trips. The Build (2021) Condition with Mitigation incorporates any project mitigation work to the Build (2021) Condition. The Design Year Build (2027) Condition includes the Build (2021) Condition with Mitigation plus any growth associated with specific developments (not including the Project).
- The final sections of the transportation study identify any transportation mitigation and Transportation Demand Management (TDM) measures that the Project plans to implement to minimize automobile usage and promote alternative modes of travel.



Existing Conditions

This section includes descriptions of the existing study area network including vehicle, pedestrian, and bicycle conditions. It also includes the intersection traffic controls; peak hour vehicle, pedestrian, and bicycle volumes; existing public transportation; and a summary of the most recent crash data available at the study area intersections.

Roadway Descriptions

Webster Avenue is classified as an urban minor arterial under City of Somerville jurisdiction. It runs north-south between Somerville Avenue/Washington Street to the north and Cambridge Street to the south. Webster Avenue operates as a two-way facility with one lane in each direction. There are a mix of bicycle facilities along the length of Webster Avenue. Between Somerville Avenue and Prospect Street there is a bicycle lane in the southbound direction and share-the-road arrows (sharrows) in the northbound direction. The section between Prospect Street and Elm Street was recently re-stripped to continue the bicycle lanes on each side of the road. The bicycle lanes in this section are buffered and separated from the travel lane with flex-posts at various points. On-street parking is provided on the west side of the road north of Everett Street, on the east side of the road between Everett Street and Newton Street, and on the west side of the road between Elm Street and Columbia Street. Sidewalks are provided on both sides of the road.

Washington Street is a two-way road with one lane in each direction that is under City of Somerville jurisdiction. Washington Street generally runs east-west. Between Beacon Street to the west and Webster Avenue to the east, it is classified as an urban minor arterial. At Union Square, there is a discontinuation of Washington Street that picks up again at the intersection with Prospect Street. Between Prospect Street to the west and Crescent Street to the east, the road is classified as an urban principal arterial. Within the study area, on-street parking is provided on select areas of the road, alternating between the two sides. Sharrows are painted on Washington Street west of Union Square. East of Union Square, bicycle lanes are provided in both directions adjacent to the travel lanes. On some sections of the road, the bicycle facilities are separated and protected by on-street parking. Sidewalks are provided on both sides of the road.

Somerville Avenue is classified as an urban principal arterial under City of Somerville jurisdiction. It generally runs east-west between Massachusetts Avenue to the west and Medford Street to the east. It is generally a two-way, two-lane road with turn-lane pockets at select intersections. In the area between Church Street and Union Square, Somerville Avenue is one-way in the eastbound direction with two travel lanes. The westbound direction is provided on Bow Street



with one travel lane. At the eastern limits, Somerville Avenue becomes Somerville Avenue Extension up until Linwood Street. Somerville Avenue Extension provides access onto Route 28 heading southeast. Bicycle lanes are provided in both directions for the length of Somerville Avenue with the facilities at Union Square under construction as of May 2021. The bicycle lanes will be reconstructed to a protected cycle track in both directions from Union Square to Medford Street as part of the Union Square Streetscape Improvements Project. Sidewalks are provided on both sides of the road.

Prospect Street is classified as an urban principal arterial under City of Somerville jurisdiction. It generally runs north-south between Washington Street to the north and Massachusetts Avenue to the south. It is a two-way, two-lane road. Within the study area, on-street parking is provided only on the east side of the road, south of Webster Avenue. Sharrows are provided on the road between Houghton Street and Webster Avenue. Between Webster Avenue and Newton Street, a Bus Bike Only lane is provided in the northbound direction adjacent to an on-street bicycle lane. Sidewalks are provided on both sides of the road.

Concord Avenue is classified as an urban minor arterial under City of Somerville jurisdiction. It generally runs east-west between Beacon Street to the west and Prospect Street to the east. It is a two-way road from Beacon Street up to the Concord Square split where the eastbound direction continues as Concord Avenue while the westbound travel continues on Newton Street. Between the Concord Square island and Prospect Street, Concord Avenue is one-way westbound. In the two-way section, the road has only one lane with on-street parking occupying the remainder of the cross section. Opposing vehicles must give way to one another in this area as the width does not allow for concurrent two-way travel. On-street parking is generally allowed on both sides of the road except along the Concord Square island and on the north side of the road between Wyatt Street and Concord Street. Sidewalks are provided on both sides of the road.

Columbia Street is classified as a local road under City of Somerville jurisdiction. It generally runs north-south between Webster Avenue at Tremont Street to the north and intersects once more with Webster Avenue to the south, about 100 feet north of the intersection with Cambridge Street. It is a two-way road. Columbia Street borders the north and east edges of the Project Site. On-street parking is generally restricted on the west side of the road and unrestricted on the east side. Sidewalks are provided on both sides of the road.

Tremont Street is classified as a local road under City of Somerville jurisdiction. It runs between Webster Avenue to the north and Broadway to the south. It is a one-way, one-lane road that travels in the southbound direction. On-street parking is permitted on both sides of the road. Sidewalks are provided on both sides of the road.



Newton Street is classified as an urban collector under City of Somerville jurisdiction. It runs north-south between Prospect Street to the north and Concord Avenue to the south. It is a one-way, one-lane road for vehicles, but is two-way for bicyclists in the section north of Webster Avenue. South of Webster Avenue it is a two-way, two-lane road. On-street parking is provided for a portion of the street on the east side of the road. Sidewalks are provided on the west side of the road.

Windsor Place is classified as local road under private ownership. It runs east-west from Windsor Street to the east and Columbia Street to the west. Windsor Place is a two-way, two-lane facility. On-street parking is not restricted on either side of the road. Sidewalks are provided on both sides of the road.

Windsor Street is classified as an urban collector for the section between Cambridge Street and Massachusetts Avenue and a local road for the portion between Windsor Place and Cambridge Street. Windsor Street is under the City of Somerville jurisdiction. In general, Windsor Street is a two-way, two-lane facility within in the study area. On-street parking is generally provided along the full length of the road, either on both sides of the road or sometimes on alternating sides of the road. Sidewalks are provided on both sides of the road.

South Street is classified as a local road under City of Somerville jurisdiction. It runs east-west between Windsor Street to the west and Medford Street to the east. West of Hunting Street the road is a two-way, two-lane facility and east of Hunting Street it is a one-way, one-lane westbound road. On-street parking is restricted on the north side of the road. Sidewalks are provided on both sides of the road.

Intersection Descriptions

Webster Avenue/Washington Street/Somerville Avenue (Union Square) is four-legged signalized intersection. The Webster Avenue northbound approach consists of a shared left-turn/through/right-turn lane. The Somerville Avenue southbound approach consists of two exclusive left-turn lanes, a shared through/right-turn lane, a bicycle lane that continues through the intersection, and bicycle box at the approach. The Somerville Avenue westbound approach consists of an exclusive left-turn lane, a through lane, a through bicycle lane, a channelized right-turn lane, and another bicycle lane that continues with the right-turn lane onto Bow Street. The Washington Street eastbound approach consists of a shared left-turn/through lane and an exclusive right-turn lane. On-street parking is generally not permitted at the corners of the intersection on the lanes approaching the intersection. On the Webster Avenue leg in the southbound direction of travel and on the Somerville Avenue leg in the eastbound direction of travel, on-street parking is allowed just past the crosswalks against the curb on the lanes exiting the intersection. Crosswalks and



wheelchair ramps are provided on all approaches of the intersection. Pedestrian signal equipment is provided at all crosswalks.

This intersection has ongoing construction due to the Somerville Avenue improvements therefore some of the proposed elements in that design have been constructed while others are still to be installed. In the finalized design, the intersection will provide two-stage left-turn bicycle boxes for the southbound, eastbound, and westbound directions. In the westbound direction, a bicycle box will be provided across the approach and a bicycle crossing will be provided through the intersection. The receiving travel lane in the northbound direction will have a receiving bicycle lane that ties into the bicycle lane to the north. The on-street parking on the receiving lane in the eastbound direction will be flipped with the bicycle facility to create a parking protected bicycle lane before it transitions into a sidewalk level cycle track. In the final design, the vehicle lane uses on all approaches generally remain the same with the exception of some reduced lane widths and an extended left-turn pocket in the westbound direction.

Somerville Avenue/Prospect Street is a four-legged signalized intersection. The Prospect Street northbound approach consists of an exclusive left-turn lane, a shared through/right-turn lane, and a bicycle lane with a bicycle box across the approach and bicycle crossing through the intersection. The Prospect Street southbound approach consists of a through lane, an exclusive right-turn lane, and a separated, bicycle lane. The Somerville Avenue eastbound and westbound approaches each consist of an exclusive left-turn lane, a shared through/right-turn lane, and a bicycle lane with a bicycle box across the approach and bicycle crossing through the intersection. On-street parking is restricted on all approaches of the intersection. Crosswalks and wheelchair ramps are provided on all approaches of the intersection. Pedestrian signal equipment is provided at all crosswalks.

This intersection has ongoing construction due to the Somerville Avenue improvements therefore some of the proposed elements in that design have been constructed while others are still to be installed. In the finalized design, the intersection will provide separated cycle tracks in the eastbound, westbound, and southbound directions. The eastbound, northbound, and southbound directions will have two-stage left-turn boxes, while in the westbound direction a protected corner island at the northwest corner of the intersection will allow cyclists to wait before proceeding left. The bicycle and pedestrian crossings on the southern leg will be raised. In the final design, the vehicle lane uses on all approaches generally remain the same with the exception of minor lane width modifications.

Prospect Street/Webster Avenue/Concord Avenue is a five-legged signalized intersection with four approaches. The Webster Avenue northbound approach and southbound approach each consist of a left-turn pocket and a shared through/right-turn lane. The southbound approach also has a



bicycle lane and a bicycle box across the approach. The Prospect Street northeast-bound approach is a shared left-turn/through/right-turn lane. The Prospect Street southwest-bound approach is a shared left-turn/through/right-turn lane with right-turn restriction for trucks only. The Concord Avenue leg is one-way away from the intersection. On-street parking is restricted on all approaches of the intersection. Crosswalks, wheelchair ramps, and pedestrian signal equipment are provided across all approaches of the intersection.

Webster Avenue/Columbia Street/Tremont Street is a four-legged unsignalized intersection with three approaches. The Webster Avenue northbound and southbound approaches each consist of a shared left-turn/through/right-turn lane and a bicycle lane. The Columbia Street westbound approach consists of a shared left-turn/through/right-turn lane and is stop controlled. On-street parking is restricted on all approaches leading to the intersection; however, parking is permitted on both sides of the Tremont Street leg exiting the intersection. A wheelchair ramp is provided on the northeast corner of the intersection; no other crosswalks or wheelchair ramps are provided on any of the other approaches.

Webster Avenue/Newton Street is a four legged unsignalized intersection with three approaches. The Webster Avenue northbound approach consists of a shared left-turn/through/right-turn lane that is also shared with cyclists. The Webster Avenue southbound approach consists of a shared left-turn/through/right-turn and a bicycle lane. The Newton Street eastbound approach consists of a shared left-turn/through/right-turn lane. The eastern leg of the intersection has one eastbound travel lane away from the intersection with sharrows, and a bicycle lane that approaches the intersection in the westbound direction. On-street parking is restricted on all approaches. Crosswalks are provided on all approaches except the northbound approach. Wheelchair ramps are provided at all pedestrian crossings.

Columbia Street/Windsor Place is an unsignalized T-intersection with three approaches. The Columbia Street northbound approach consists of a shared left-turn/right-turn lane and is stop controlled. The Windsor Place westbound approach is a shared left-turn/through lane that is stop controlled. The Columbia Street eastbound approach consists of a shared through/right-turn lane and is an uncontrolled approach. On-street parking is only permitted on the east side of the Columbia Street northbound approach. A crosswalk is provided across the Windsor Place approach. No ADA-compliant wheelchair ramps are provided at the intersection.

Windsor Street/South Street is an unsignalized T-intersection with three approaches. The Windsor Street northbound approach consists of a shared through/right-turn lane and is uncontrolled. The Windsor Street southbound approach is a shared left-turn/through lane that is uncontrolled. The South Street westbound approach consists of a shared left-turn/right-turn lane



and is stop controlled. On-street parking is permitted on the west side of Windsor Street and is restricted on the South Street approach. Crosswalks are provided on the Windsor Street northbound and South Street westbound approaches. No ADA-compliant wheelchair ramps are provided at the intersection.

Existing Traffic Volumes

Existing conditions are typically established through data collection during the a.m. and p.m. peak hours collected in the same year as the submission of the transportation study. The Covid-19 pandemic, however, has reduced vehicle travel, therefore new data was not collected. Traffic data at the study area intersections were sourced from publicly available data from collection efforts for the Union Square Project (October 2017) and Boynton Yard Project (September 2017). Raw count data is included in **Appendix A**. The overall peak hours for the vehicle traffic counts across the study area intersections were identified as 7:30 – 8:30 a.m. and 4:30 – 5:30 p.m.

SEASONAL AND ANNUAL ADJUSTMENTS

To account for variation in traffic volumes throughout the year, data provided by MassDOT were reviewed. The MassDOT 2017 Weekday Seasonal Factors were used to determine the need for seasonal adjustments to the September and October 2017 data. The seasonal adjustment factors in October and September were 0.92 for the respective urban principal arterials (U3), urban minor arterials, collector, and local roads (U4-U7). This indicates that traffic volumes in October and September are generally higher than during an average month of the year. Counts were not seasonally adjusted to provide a more conservative estimate.

Data from 2017 was then grown to 2019 using the MassDOT annual growth factors for the respective types of road classification. For urban principal arterials, the combined factors equaled a 1.8% total increase from 2017 to 2019, while for all other road classifications, the combined factors resulted in no increase. This data will be used to represent Existing Conditions for 2021. Existing Condition vehicle volumes during the a.m. and p.m. peak hours are shown in **Figure 2** and **Figure 3**, respectively.



Figure 2. *Existing Condition Traffic Volumes, Weekday a.m. Peak Hour*

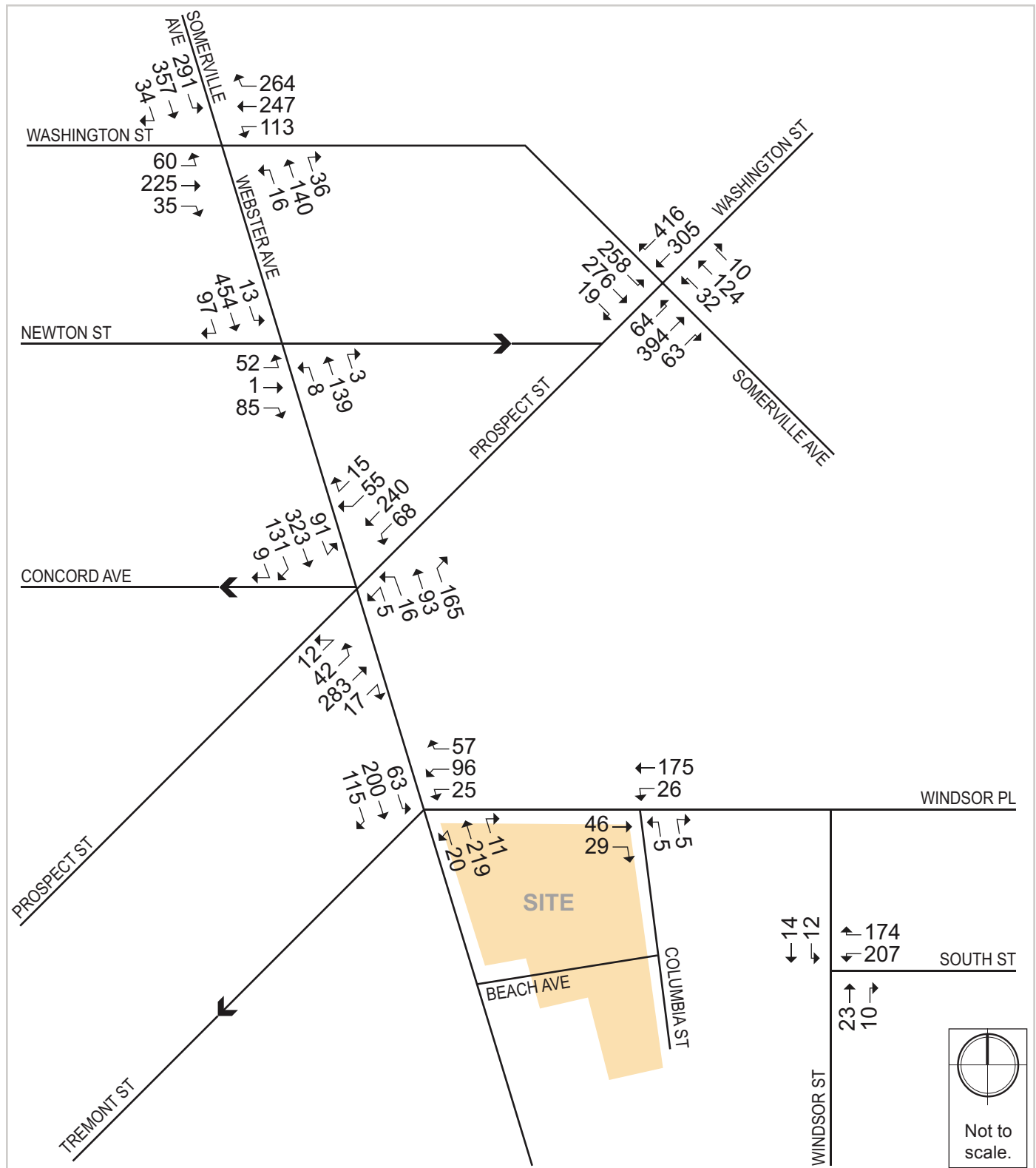
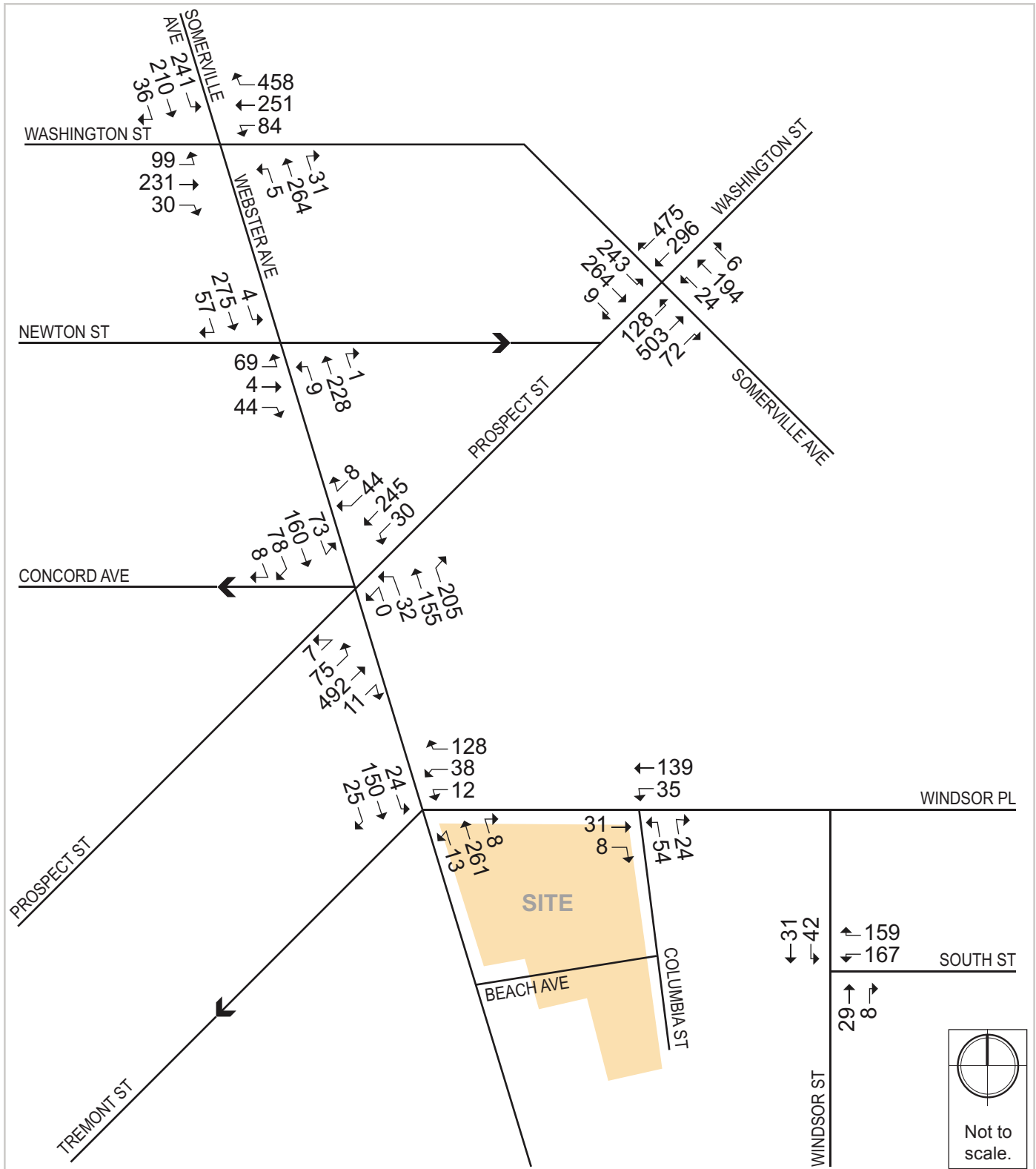




Figure 3. *Existing Condition Traffic Volumes, Weekday p.m. Peak Hour*





Existing Public Transportation

The Project Site is located near many public transportation options and will have access to more with the future MBTA Green Line Extension. The Site is one mile (a 20-minute walk) from the MBTA Red Line Station at Central Square and the Green Line Station at Lechmere. The MBTA operates six bus routes within a quarter mile (five-minute walk) from the Project and an additional three bus routes within a half mile (ten-minute walk). The following routes and bus stops are closest to the Project:

- **Route 69** bus stops are on Cambridge Street at Norfolk Street. The outbound stop, traveling westbound, is on the near side of the intersection and the inbound stop, traveling eastbound, is on the far side of the intersection. These stops are approximately 990 feet away (5-minute walk) from the Project.
- **Route 80** and **Route 88** bus stops are on McGrath Highway at Poplar Street (inbound) and Somerville Avenue at Medford Street (outbound). The outbound stop, traveling westbound, and inbound stop, traveling southbound, are on the far side of their respective intersections. These stops are approximately 3,100 feet away (15-minute walk) from the Project.
- **Route 83** bus stops are on Hampshire Street at Inman Street. The outbound stop, traveling northwest bound, is on the near side of the intersection and the inbound stop, traveling southeast bound, is on the far side of the intersection. These stops are approximately 2,100 feet away (10-minute walk) from the Project.
- **Route 85** bus stops are on Webster Avenue at Columbia Street (outbound) and Webster Avenue at Norfolk Street (inbound). The outbound stop, traveling northbound, and the inbound stop, traveling southbound, are on the near side of their respective intersections. These stops are approximately 200 feet away (1-minute walk) from the Project.
- **Route 86** and **Route 87** bus stops are on Somerville Avenue at Stone Avenue and Somerville Avenue at Prospect Street. Both bus stops are located mid-block and at an unsignalized pedestrian crossing. The stop in the westbound direction serves Route 87 outbound and Route 86 inbound, while the eastbound stop serves Route 87 inbound and Route 86 outbound. These stops are approximately 1,560 to 1,980 feet away (7- to 9-minute walk) from the Project.
- **Route 91** bus stops are on Prospect Street at Webster Avenue (outbound) and Prospect Street at Oak Street (inbound). The outbound stop, traveling northbound, and the inbound stop, traveling southbound, are on the near side of their respective intersections. These stops are approximately 550 to 800 feet away (3- to 4-minute walk) from the Project. Existing transit data for this bus is prior to the current route alignment, therefore the closest bus stops in the former sequence are used in the transit analysis.



- **Route CT2** bus stops are on Prospect Street at Bennett Court (outbound) and Cambridge Street at Columbia Street (inbound). The outbound stop, traveling northbound, is at the mid-block, and the inbound stop, traveling eastbound, is at the far side of the intersection. These stops are approximately 970 to 1,060 feet away (5-minute walk) from the Project.

The existing nearby transit services within a half mile radius are shown in **Figure 4** and a summary of their service destinations, peak hour frequency, and total ridership is provided in **Table 1**.

Table 1. Transit Service Summary

Bus Route	Route Description	Peak Hour Headway (min.)		Ridership*		
		Weekday	Weekend	Weekday	Saturday	Sunday
69	Harvard Square – Lechmere Station	10-20	20-40	2,731	1,436	836
80	Arlington Center – Lechmere Station	20-35	30-60	1,622	902	566
83	Rindge Avenue – Central Square, Cambridge	20-25	25-60	1,828	940	560
85	Spring Hill – Kendall/MIT Station	40-50	-	586	-	-
86	Sullivan Square Station – Reservoir Station	8-18	30-60	6,227	3,122	2,151
87	Clarendon Hill or Arlington Center – Lechmere Station	16-20	30-40	3,682	2,480	1,307
88	Clarendon Hill – Lechmere Station	16-20	20-40	3,813	2,128	1,398
91	Sullivan Square Station – Central Square, Cambridge	25-30	20-60	1,439	1,472	747
CT2	Sullivan Square Station – Ruggles Station	25-35	-	1,951	-	-

* Ridership is based on Fall 2019 boarding data from the MBTA using APC (automatic passenger counters).

GREEN LINE EXTENSION

Central Square Station on the MBTA Red Line and Lechmere Station on the MBTA Green Line are approximately one-mile (20-minute walk) from the Project. The MBTA is extending Green Line service to Union Square Station, 0.1 miles (three-minute walk) from the Project. The new East Somerville Station on the Green Line will also be about 0.6 miles (12-minute walk) from the Project. New stops on the Green Line will add service for the Somerville, Cambridge, and Medford areas. The estimated completion of the Green Line Extension is October 2021 for the Union Square branch and December 2021 for the Medford branch. The future Green Line service will provide quicker and more reliable transit options into downtown Boston, making public transportation a more desirable mode of travel for the neighborhood.



Existing Pedestrian Conditions

The roadways within the study area include Webster Avenue, Prospect Street, Washington Street, Somerville Avenue, Concord Avenue, Columbia Street, Tremont Street, Windsor Street/Windsor Place, South Street, and Norfolk Street. All roadways within the study area have sidewalks on both sides of the road. The sidewalks adjacent to the Project Site are generally in fair to poor condition. Existing Pedestrian Level of Traffic Stress (PLTS) is provided in the Transportation Impact Analysis section.

Webster Avenue: On Webster Avenue from Beach Avenue to Columbia Street, the sidewalk on the east side of the road is approximately eight-feet-wide and in poor condition with patchwork and crumbling concrete.

Columbia Street: On Columbia Street between Webster Avenue and Windsor Place, the sidewalk on the south side of the road is approximately five-feet-wide and in fair condition except for a section of driveway that is in poor condition at the northeast corner of the Site. On Columbia Street east of the Project Site, the sidewalk on the west side of the road is approximately five-feet-wide and in fair condition except for the driveways at the northeast corner of the Site that are in poor condition.

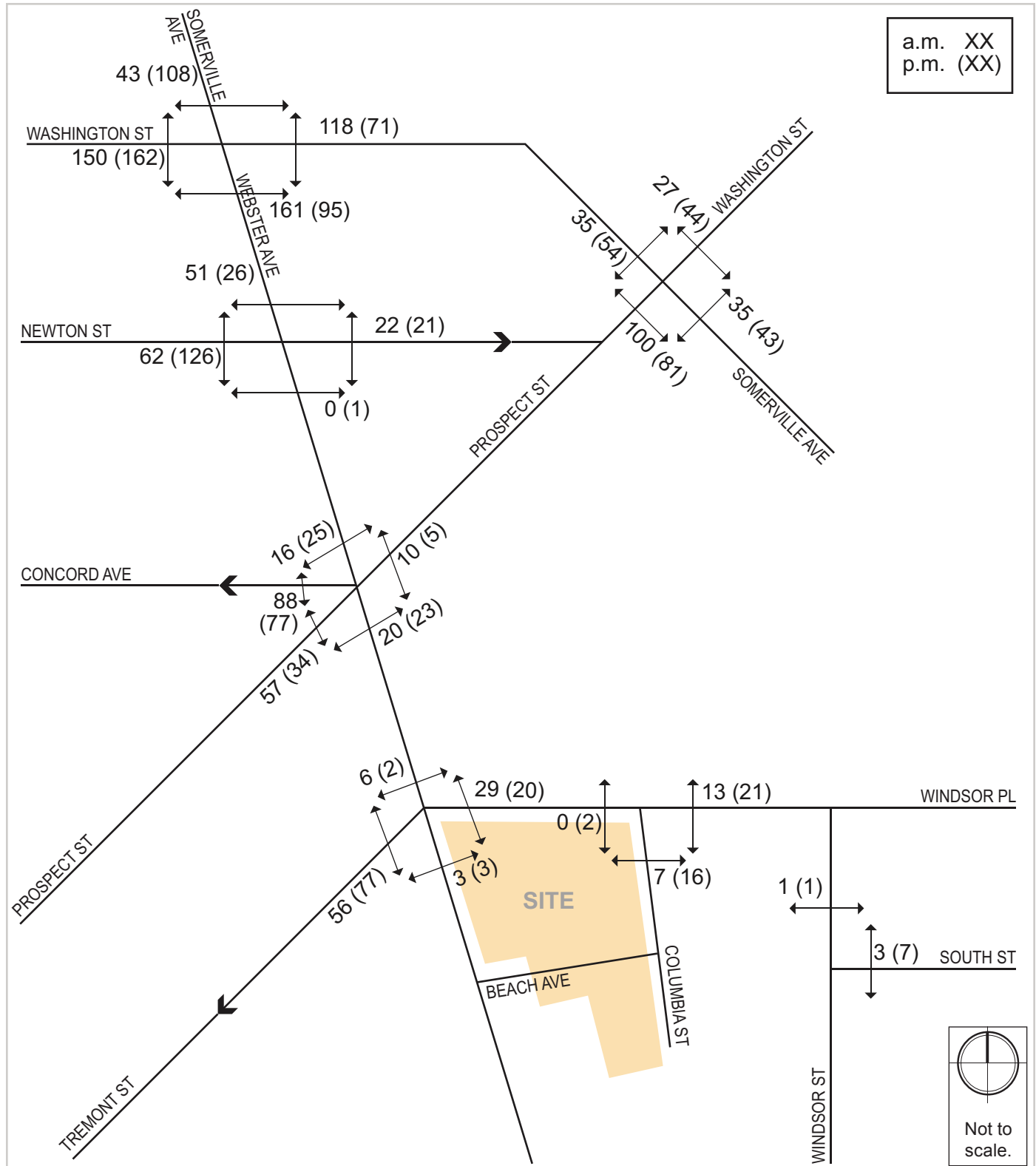
Intersections: Crosswalks and wheelchair ramps are generally provided across all study area intersection approaches; however, not all wheelchair ramps are ADA-compliant. At the unsignalized intersections near to the Project, crosswalks are not provided on any of the legs at the intersection of Webster Avenue/Columbia Street/Tremont Street, the Columbia Street approaches at the intersection with Windsor Place, or on the southbound Windsor Street approach at the intersection with South Street. None of the corners at these unsignalized intersections have ADA-compliant wheelchair ramps. At the intersection of Webster Avenue/Newton Street only the northbound direction is missing a crosswalk and all corners have ADA-compliant wheelchair ramps.

PEDESTRIAN COUNT DATA

To determine the amount of pedestrian activity within the study area, pedestrian counts were conducted as part of the TMC data at the study area intersections. The overall peak hours for the pedestrian counts were identified as 7:30 – 8:30 a.m. and 5:15 – 6:15 p.m. The weekday a.m. and p.m. peak hour pedestrian volumes are shown in **Figure 5**. Pedestrian volumes are generally higher near Union Square and lower around the Boynton Yards sub-area.



Figure 5. *Existing Pedestrian Volumes, Weekday a.m. and p.m. Peak Hours*





Existing Bicycle Conditions

Buffered bicycle lanes, striped bicycle lanes, and sharrows are provided on the streets surrounding the Project. Existing Bicycle Level of Traffic Stress (BLTS) is provided in the Transportation Impact Analysis section.

Webster Avenue: A mix of bicycle facilities are provided along the length of Webster Avenue. Between Somerville Avenue and Prospect Street there is a bicycle lane in the southbound direction and shared lane markings in the northbound direction. The section between Prospect Street and Elm Street was recently re-striped to continue the bicycle facilities with bicycle lanes on both sides of the road. The lanes in this section are semi-buffered and separated with flex-posts at various points. South of Elm Street up to Cambridge Street, the City of Cambridge recently installed separated on-street bicycle lanes. This last stretch of bicycle lanes closed a key gap in bicycle facilities along Webster Avenue which serves as a regional bicycle link between Union Square and the east-west facilities along Cambridge Street.

Prospect Street: On Prospect Street, painted shared lane markings are provided between Houghton Street and Webster Avenue. Between Webster Avenue and Newton Street, there is a Bus Bike Only lane provided in the northbound direction adjacent to a painted bicycle lane.

Washington Street: Shared lane markings are painted on Washington Street west of Union Square. On the section east of Union Square, bicycle lanes are provided in both directions adjacent to the travel lanes. On some sections of the road the bicycle facilities are separated and protected by on-street parking.

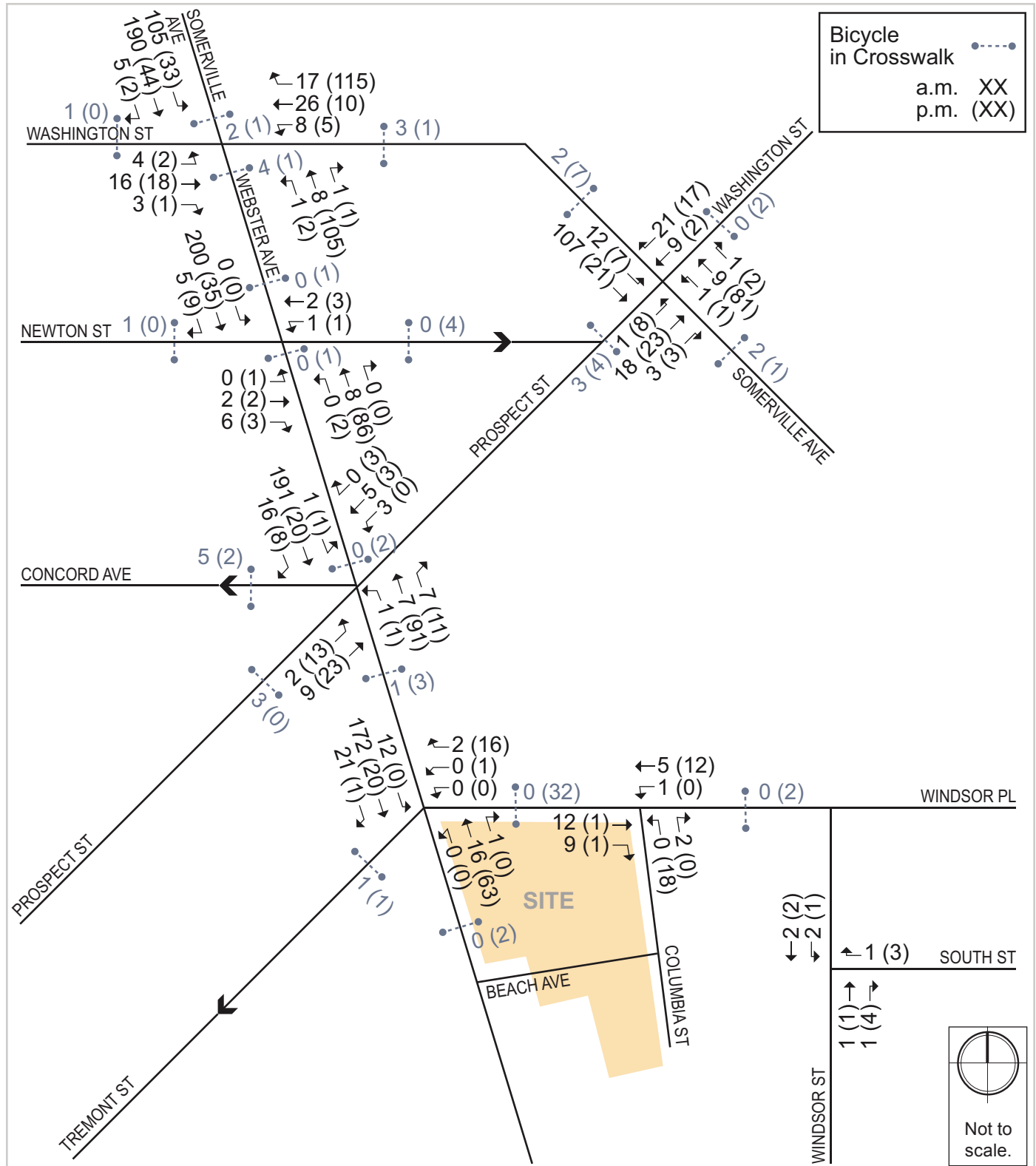
Bicycle lanes are provided in both directions for the length of Somerville Avenue with the facilities at Union Square under construction. North of the Project on Columbia Street, an on-street bicycle lane is proposed in the westbound direction.

BICYCLE COUNT DATA

To determine the amount of bicycle activity within the study area, bicycle turning movements were also conducted as part of the TMC data at the study area intersections. The overall peak hours for the bicycle counts were identified as 8:15 – 9:15 a.m. and 5:30 – 6:30 p.m. The weekday a.m. and p.m. peak hour bicycle volumes are shown in **Figure 6**. Bicycle activity is heavily concentrated along Somerville Avenue and Webster Avenue.



Figure 6. *Existing Bicycle Volumes, Weekday a.m. and p.m. Peak Hours*



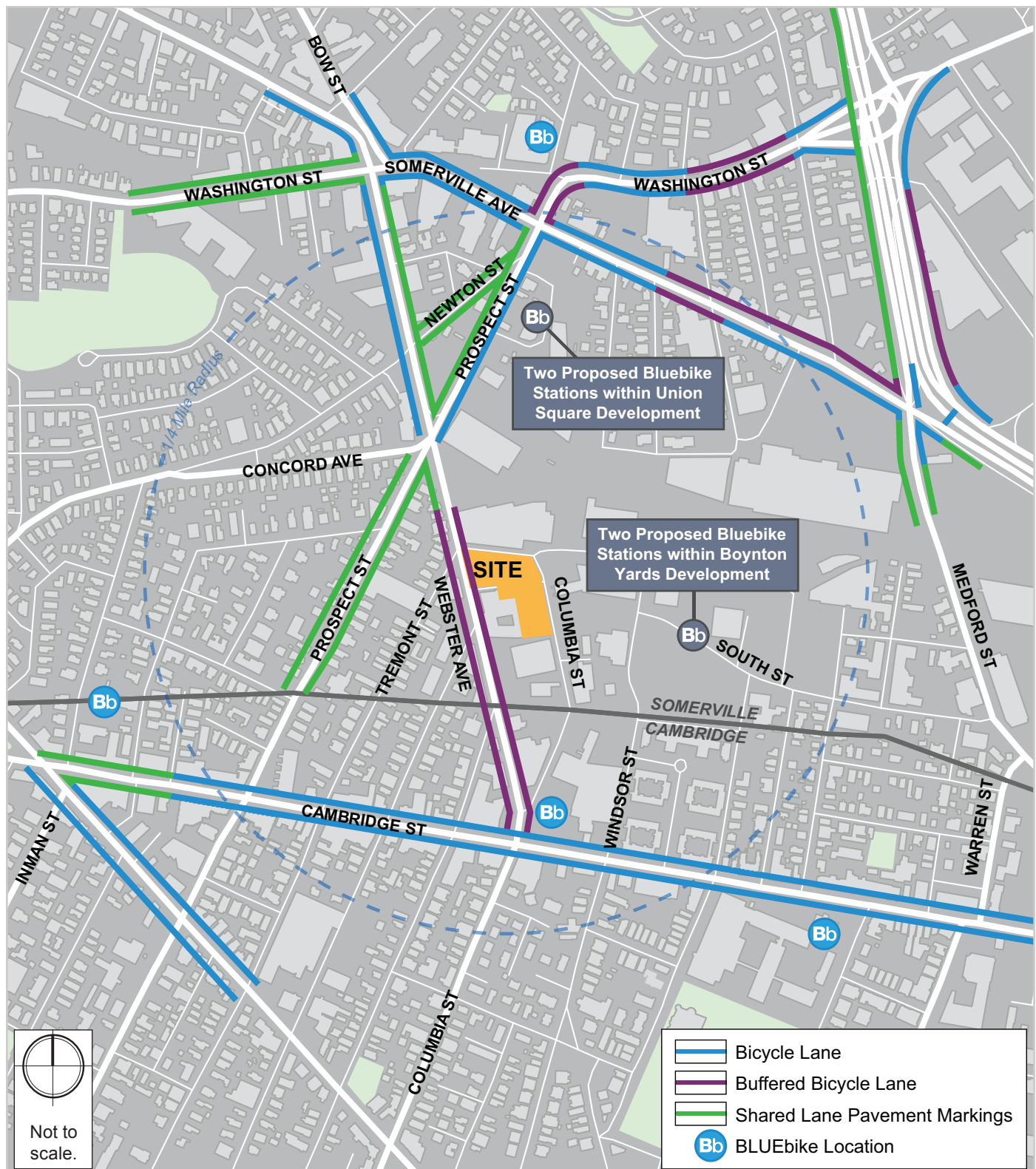


BICYCLE SHARE

Bluebikes is the area's largest bicycle sharing service, operating in Somerville, and nine other Boston region communities. The entire system consists of more than 3,400 shared bicycles at more than 300 stations. Somerville has 30 stations per the most recent inventory on the Bluebikes system map. There is currently one station within a quarter mile radius (five-minute walk) of the Project at Webster Avenue/Cambridge Street. In the future, new Bluebikes stations will be installed at two nearby developments: Boynton Yards (1.3 million square foot science and innovation campus) and Union Square (2.4 million square feet of laboratory, office, retail, and housing). The exact locations of these stations are yet to be determined. A visual representation of the existing bicycle facilities, as well as Bluebikes stations in the study area, are shown in **Figure 7**.



Figure 7. *Existing Bicycle Facilities Map*





Vehicle Crash Analysis

HSH compiled motor vehicle crash data from the MassDOT Crash Records for the most recent five-year period for which complete data are available (2014-2018). Crash rates are determined based on the number of crashes per million vehicles entering an intersection. **Table 2** summarizes the crash data at the study area intersections. The detailed crash data and crash rate worksheets are provided in **Appendix B**.

Table 2. Motor Vehicle Crash Data Summary

Scenario		Union Square	Somerville Ave/ Prospect St	Prospect St/ Webster Ave/ Concord Ave	Webster Ave/ Columbia/ Tremont St	Columbia St/ Windsor Pl	Windsor St/ South St	Webster Ave/ Newton St
TOTAL		24	27	13	14	3	3	8
Year	2014	5	7	3	7	1	1	3
	2015	3	6	1	1	0	2	2
	2016	6	9	3	3	0	0	1
	2017	4	3	4	2	1	0	1
	2018	6	2	2	1	1	0	1
Severity	Property Damage Only	15	16	5	6	2	1	4
	Non-fatal Injury	5	9	6	6	1	0	3
	Not Reported	4	2	2	2	0	2	1
Type	Single Vehicle Crash	4	4	3	4	2	1	2
	Angle	7	8	2	8	0	1	3
	Rear-End	6	5	3	1	1	0	1
	Sideswipe, same direction	5	7	1	1	0	1	1
	Sideswipe, opposite direction	1	0	2	0	0	0	0
	Head-on	1	2	0	0	0	0	0
	Unknown/Not Reported	0	1	2	0	0	0	1
Day/Time	Weekday 6 – 9 a.m.	3	6	4	5	0	1	1
	Weekday 3 – 6 p.m.	5	4	0	2	0	0	0
	Weekday off-peak	11	10	6	6	1	1	4



Scenario		Union Square	Somerville Ave/ Prospect St	Prospect St/ Webster Ave/ Concord Ave	Webster Ave/ Columbia/ Tremont St	Columbia St/ Windsor Pl	Windsor St/ South St	Webster Ave/ Newton St
	Saturday 11 a.m. – 2 p.m.	0	1	0	0	0	0	0
	Weekend off-peak	5	6	3	1	2	1	3
Road Surface	Dry	17	25	10	11	3	2	5
	Wet	6	1	2	3	0	1	3
	Ice/Snow	1	1	1	0	0	0	0
Light	Daylight	12	22	9	10	1	2	6
	Dusk	3	1	0	1	0	0	0
	Dark – Lighted Roadway	9	4	4	3	2	0	2
	Unknown	0	0	0	0	0	1	0
Bicycle/Ped Crash		2	2	6	5	1	0	1
Crash Rate*		0.61	0.60	0.40	0.86	0.51	0.34	0.46
District 6 (2018) Average Crash Rate*		0.71	0.71	0.71	0.52	0.52	0.52	0.52

Source: MassDOT, Impact Crash Data Portal. *Crashes per million vehicles entering the intersection.

As shown in **Table 2**, there were a relatively high number of crashes at the signalized intersections and the crash rate at one unsignalized intersection is higher than the district average. All the signalized locations have crash rates below the District 6 average. Two of the unsignalized intersections have rates below the District 6 average, one is at the District 6 average, and the crash rate at the intersection of Webster Avenue/Columbia Avenue/Tremont Street is above the District 6 average. The crash data from this most recent analysis period shows a trend of unsafe conditions at the intersection of Webster Avenue/Columbia Avenue/Tremont Street. Five pedestrian and bicycle related crashes occurred over the five-year study period at this location. After 2018, on-street parking was removed and buffered bicycle lanes with flex posts were provided on both side of Webster Avenue. While buffered bicycle lanes replaced the parking lanes and the vehicle travel width was not reduced, the addition of the painted markings helps establish the road as a narrow, 20-foot-wide two-way facility. The effect of these improvements would not be reflected in the crash data yet. Most crashes were property damage only and there were no fatalities. However, at the intersections of Webster Avenue/Prospect Street/Concord Avenue and Webster Avenue/Tremont Street/Columbia Street there were just as many crashes resulting in injury as those without injury. Angle crashes were the most common crash type throughout the study area.



Build Conditions

The Project proposes to demolish the existing land uses and construct a new 339,000 sf building with approximately 136,400 sf of lab space, 191,600 sf of office, 1,000 sf of accessory tenant retail space, 10,000 sf of amenity space, and approximately 180 parking spaces in a shared underground garage.

Parking

VEHICLE PARKING DEMAND

Vehicle parking supply and demand was evaluated using both the Institute of Transportation Engineers (ITE) Parking Generation Manual as well as parking maximums compliant with the local Zoning Ordinance.

Vehicle parking for new developments shall be designed in accordance with the Somerville Zoning Ordinance (Article 11: Parking & Mobility) based on the land use district in which the Project falls within. The Zoning Ordinance specifies parking ratio maximums if a site is located within a quarter-mile or half-mile transit area walkshed and parking ratio minimums if the site is outside of the half-mile transit area walksheds. Per the City of Somerville Transit Area Map, the Project is located within a quarter-mile walkshed of the future Union Square Station on the Green Line. For the proposed buildings within the Mid-Rise and High-Rise Districts, the vehicle parking maximums are as follows:

- General Office: 1 space per 900 sf (225 spaces)
- Research and Development or Laboratory: 1 space per 1,000 sf (134 spaces)

Parking demand was forecasted using the ITE Parking Generation Manual. The ITE parking demand estimates for the respective land uses are:

- General Office: 2.39 spaces per 1,000 sf (484 spaces)
- Research and Development or Laboratory: 1.95 spaces per 1,000 sf (262 spaces)

Based on the Somerville Zoning Ordinance, the allowable number of parking spaces for the Project is 361 spaces, while the ITE Parking Generation Manual forecasts an unadjusted demand for at least 746 spaces. The ITE Parking Generation Manual is based on suburban developments and does not account for other travel mode shares (such as walking, bicycling, and transit) and therefore generally overestimates parking demand in an urban setting. The peak parking demand is expected to be during the midday weekday hours due to nature of commuting land uses within the Project.



VEHICLE PARKING SUPPLY

The Project proposes 180 parking spaces in an underground garage on-site that will be a combination of reserved and unreserved spaces, as detailed in the Mobility Management Plan (MMP). As a shared district garage, the garage for the Project will be commercially operated and open to the public. Motor vehicle parking will be unbundled from any commercial tenant leases as required. Parking will be provided in accordance with the Somerville Zoning Ordinance (Article 11: Parking & Mobility) as well as requirements specific to the land use district to minimize parking supply and encourage alternative modes of transportation. The proposed parking results in an average ratio of 0.53 space per 1,000 sf of office/lab space for the overall development. Given the future land use as a life science building, the parking ratio for the entire Project is the same for the individual office and lab land used for traffic forecasts. This parking ratio is less than the City's parking maximums and less than the ITE Parking Generation Manual forecasted demand. The number of parking spaces on-site has been determined based on the City of Somerville maximum parking ratios for each land use in this area. ITE Parking Generation rates are higher than the City of Somerville maximum allowed and therefore were not utilized.

The proposed Project parking supply provides fewer spaces than the unadjusted demand which will discourage single occupant vehicle trips. The proposed parking supply represents an adjusted demand and is consistent with parking ratios in highly dense neighborhoods for which Boynton is zoned for. Providing a constrained parking supply with unreserved spaces will help the Project and City meet its mobility goals.

BICYCLE PARKING SUPPLY

The City of Somerville Zoning Ordinance lays out the requirements for short- and long-term bicycle parking to be provided by new developments at no cost or fee to users of the Project. The City of Somerville's *Bicycle Parking Guide* and the Association of Pedestrian and Bicycle Professionals (APBP's) *Bicycle Parking Guidelines* should be referenced for guidance on bicycle parking design and layout. The Somerville Zoning Ordinance specifies short-term parking to be used by visitors or customers of the Project in need of temporary parking. For the overall Project and the proposed land uses, the bicycle parking minimums are:

- General Office
 - Short-term: 1 space per 20,000 sf (11 spaces)
 - Long-term: 1 space per 3,000 sf (68 spaces)
- Research and Development or Laboratory:
 - Short-term: 1 space per 20,000 sf (7 spaces)
 - Long-term: 1 space per 5,000 sf (27 spaces)



In accordance with the Somerville Zoning Ordinance, the Project will provide a minimum of 18 short-term bicycle parking spaces and a minimum of 95 covered/secured bicycle parking spaces. Outdoor bicycle racks near the Site entrances will be provided for short-term bicycle parking. Indoor, long-term bicycle parking will be available for building employees. Bicycle parking will be protected by security/monitoring. The bicycle storage room will be located on the ground floor with access off the pedestrian walkway between Beach Avenue and Columbia Court. Additionally, bicycle lockers and a bicycle repair station will also be provided in the bicycle storage room for use by building occupants. These amenities are expected to make cycling a more convenient mode of travel.

Site Access and Circulation

Site access is proposed on Beach Avenue. The new Beach Avenue will provide access to the garage and loading area. There will be a two-way ramp to the underground garage at the west end of Beach Avenue which vehicles will access in and out of Webster Avenue. The service/loading area will be at the east end of Beach Avenue. Service and loading vehicles will only have access to Beach Avenue off of Columbia Street for exiting and entering movements. Beach Avenue will be approximately 20-feet-wide at the western end and is planned to widen to 26-feet as it approaches the loading area at the eastern end. Passenger vehicles will only have access off of Webster Avenue and through trips between Webster Avenue and Columbia Street will be prohibited to general traffic. Beach Avenue through access will be provided as required to fire/service vehicles and adjacent properties with easement rights. All other existing curb cuts will be closed which will provide a more continuous pedestrian experience along the sidewalk.

Two primary pedestrian access points are proposed, one at the entrance of 64 Webster Avenue at the corner of Webster Avenue and Columbia Street, and another at the entrance of 495 Columbia Street at the corner of Columbia Street and Windsor Place. Both access points lead to lobby areas that are internally connected. The Project proposes an 11.5-foot north-south pedestrian walkway between Beach Avenue and Columbia Court for additional connectivity. Building entrances will provide quick access to Webster Avenue connecting to Union Square to the north and to the Cambridge Street Corridor to the south. The Project is consistent with Somerville master planning throughfares and intends to maintain east-west desire lines for access to the District from the west. These access points and the site circulation are shown in **Figure 8**.

LOADING/SERVICES

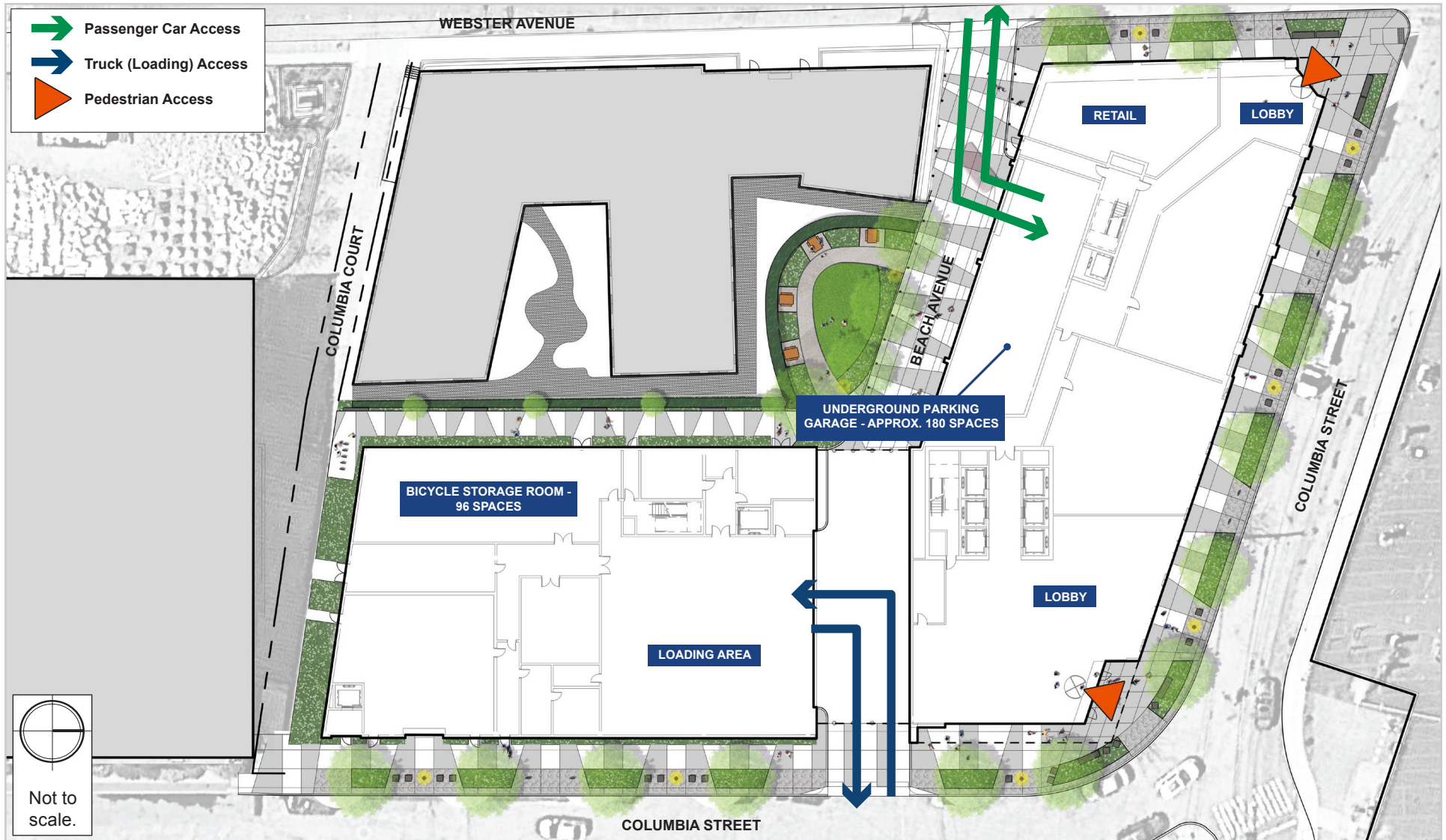
Loading and service operations such as deliveries, trash pickup, and recycling will occur off the improved Beach Avenue, a private way internal to the Site. Vehicles will enter and exit Beach Avenue from Columbia Street, then back into the loading area at the eastern end of Beach Avenue. Service vehicles will exit onto Columbia Street, keeping all major activity off of Webster Avenue. The



loading area is proposed to accommodate two loading bays and two trash bays. The Project proposes to petition a removal in parking along Columbia Street to allow adequate room for loading maneuvers and is consistent with the long-term vision of Boynton Yard district throughfares.



Figure 8. *Conceptual Site Plan*





Trip Generation

Determining the trip generation for the Project is a multi-step process that produces an estimate of vehicle, transit, walk, and bicycle trips associated with a proposed development and a specific land use program. To estimate the number of trips expected to be generated by the proposed Project, data published by the ITE in the Trip Generation Manual¹ were used. ITE provides trip rates to estimate the total number of unadjusted vehicular trips associated with a project. In an urban setting well-served by transit, adjustments are necessary to account for other travel mode shares such as walking, bicycling, and transit.

EXISTING LAND USES

The existing land uses consist of six auto repair businesses and one moving/storage facility. Based on the most recent tax assessor information, the existing buildings are approximately 20,200 sf in total for the auto repair shops and 10,700 sf for the moving/storage facility. All existing businesses were operating at the time when traffic counts were collected, therefore future trips will be reduced by the estimated trips produced by the existing land uses. The following LUCs were used for the existing site:

- **Land Use Code 151 – Mini-Warehouse.** A mini warehouse is a building in which a number of storage units or vaults are rented for the storage of goods. They are typically referred to as “self-storage” facilities. Each unit is physically separated from other units, and access is usually provided through an overhead door or other common access point. Calculations of the number of trips use ITE’s average rate per 1,000 square feet.
- **Land Use Code 942 – Automobile Care Center.** An automobile care center houses numerous businesses that provide automobile-related services, such as repair and servicing, stereo installation, and seat cover upholstery. Calculations of the number of trips use ITE’s average rate per 1,000 square feet.

PROPOSED LAND USES

For this Project, the following Land Use Codes (LUCs) were used for the proposed development:

- **Land Use Code 710 – General Office Building.** A general office building houses multiple tenants; it is a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted. An office building or buildings may contain a mixture of tenants including professional services, insurance companies, investment brokers, and tenant services, such as a bank or savings and loan institution. Calculations of the

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



number of trips use ITE's average rate per 1,000 square feet. Minor space (1,000 sf) dedicated to retail will be accounted for in the total office square footage rather than computed separately using LUC 820 (Shopping Center).

- **Land Use Code 760 – Research and Development Center.** This LUC is a facility or group of facilities devoted almost exclusively to research and development activities. The range of specific types of businesses contained in this land use category varies significantly. Research and development centers may contain offices and light fabrication areas. Calculations of the number of trips use ITE's average rate per 1,000 square feet.

Amenity space, such as a fitness area for employees, is typically not a trip generating land use, however, for a conservative project generated trip estimate the 10,000-sf fitness amenity was included in the total office space calculations. Additionally, the 1,000-sf of retail is considered an accessory space to the rest of the building, therefore it was also included in the office land use estimate. The trip rates used for each LUC are summarized in **Table 3**.

Table 3. ITE Trip Generation Rates

LUC	Time Period	ITE Average Rate	Directional Distribution	
			Entering	Exiting
Existing				
Mini-Warehouse 151	Daily	1.51 per 1,000 sf	50%	50%
	a.m. Peak Hour	0.10 per 1,000 sf	60%	40%
	p.m. Peak Hour	0.17 per 1,000 sf	47%	53%
Automobile Care Center 942	Daily	24.87 per 1,000 sf	50%	50%
	a.m. Peak Hour	2.25 per 1,000 sf	66%	34%
	p.m. Peak Hour	3.11 per 1,000 sf	48%	52%
Proposed				
General Office 710	Daily	9.74 per 1,000 sf	50%	50%
	a.m. Peak Hour	1.16 per 1,000 sf	86%	14%
	p.m. Peak Hour	1.15 per 1,000 sf	16%	84%
Research & Development 760	Daily	11.26 per 1,000 sf	50%	50%
	a.m. Peak Hour	0.42 per 1,000 sf	75%	25%
	p.m. Peak Hour	0.49 per 1,000 sf	15%	85%



AVERAGE VEHICLE OCCUPANCY

The ITE rates for the different land uses were applied to the respective land use facility size to determine unadjusted vehicle trips. Those trips were then modified to person trips using a vehicle occupancy rate. The national average vehicle occupancy rates published by the Federal Highway Administration (FHWA)² are 1.18 people per vehicle for home to work trips. Based on Census data, the average occupancy rate for the Project was determined to be 1.14 people per vehicle for home to work trips. These values were applied to the unadjusted vehicle trips to determine the total number of person trips.

MODE SHARE

Mode splits were determined using 2018 U.S. Census journey-to-work data for the census tract 3515. The existing mode shares shown in **Table 4** were used to allocate the project-generated trips. The current mode share from the census tract provides a conservative estimate of the transit use in the Boynton Yards District before completion of the Green Line Extension project. The mode splits remain nearly in line with the City's SomerVison 2030 50% non-auto goal. The Project aims to enhance the non-car mode shares for the area through TDM elements and mobility plan improvements to help the City of Somerville achieve their 75% non-auto mode share goal by 2040.

Table 4. Existing Mode Share

Mode Type	Mode Split*
Non-Vehicle Modes	
Public Transportation	30%
Walking	16%
Cycling	14%
Vehicle Modes	
Personal Vehicle	38%
Taxi	2%

**Based on U.S. Census 2018: ACS 5-Year Estimates for Means of Transportation to Work for census tract 3515.*

PROJECT-GENERATED TRIPS BY MODE

Based on current Project mode splits, the person trips were distributed by mode. Person trips for the vehicular modes were then converted back to vehicle trips using the average vehicle occupancy rate.

² Summary of Travel Trends: 2017 National Household Travel Survey; FHWA; Washington, D.C.; July 2018.



Table 5 summarizes the trips by transit, walk, bicycle, and automobile trips for the overall development. The full trip generation calculation sheets are included in **Appendix C**.

Table 5. Project-Generated Trips by Mode

Time Period	Direction	Person Trips			Vehicle Trips	
		Transit	Walk	Bicycle	Personal Car	Taxi
Daily	In	601	320	281	688	14
	Out	601	320	281	688	14
	Total	1,202	640	562	1,376	28
a.m. Peak Hour	In	83	45	39	97	2
	Out	16	10	7	18	0
	Total	99	55	46	115	2
p.m. Peak Hour	In	16	9	8	18	0
	Out	87	46	40	98	3
	Total	103	55	48	116	3

Based on 136,400 sf of lab space and 202,600 sf of office (includes 1,000 sf of accessory retail and 10,000 sf of amenity space).

The transit, walk, and bicycle trips presented in **Table 5** are net new trips for those modes since the existing land uses are most likely served only by vehicular trips.

NET NEW VEHICLE TRIP GENERATION

Since the nature of the existing land uses is auto oriented, it is assumed that 100% of the trips to the existing site are vehicle trips. The vehicle-based trips for the existing land uses were subtracted from the project-generated vehicle trips to develop the net new vehicle trips. **Table 6** presents the net new vehicle trips for the overall development.



Table 6. Net New Vehicle Trips

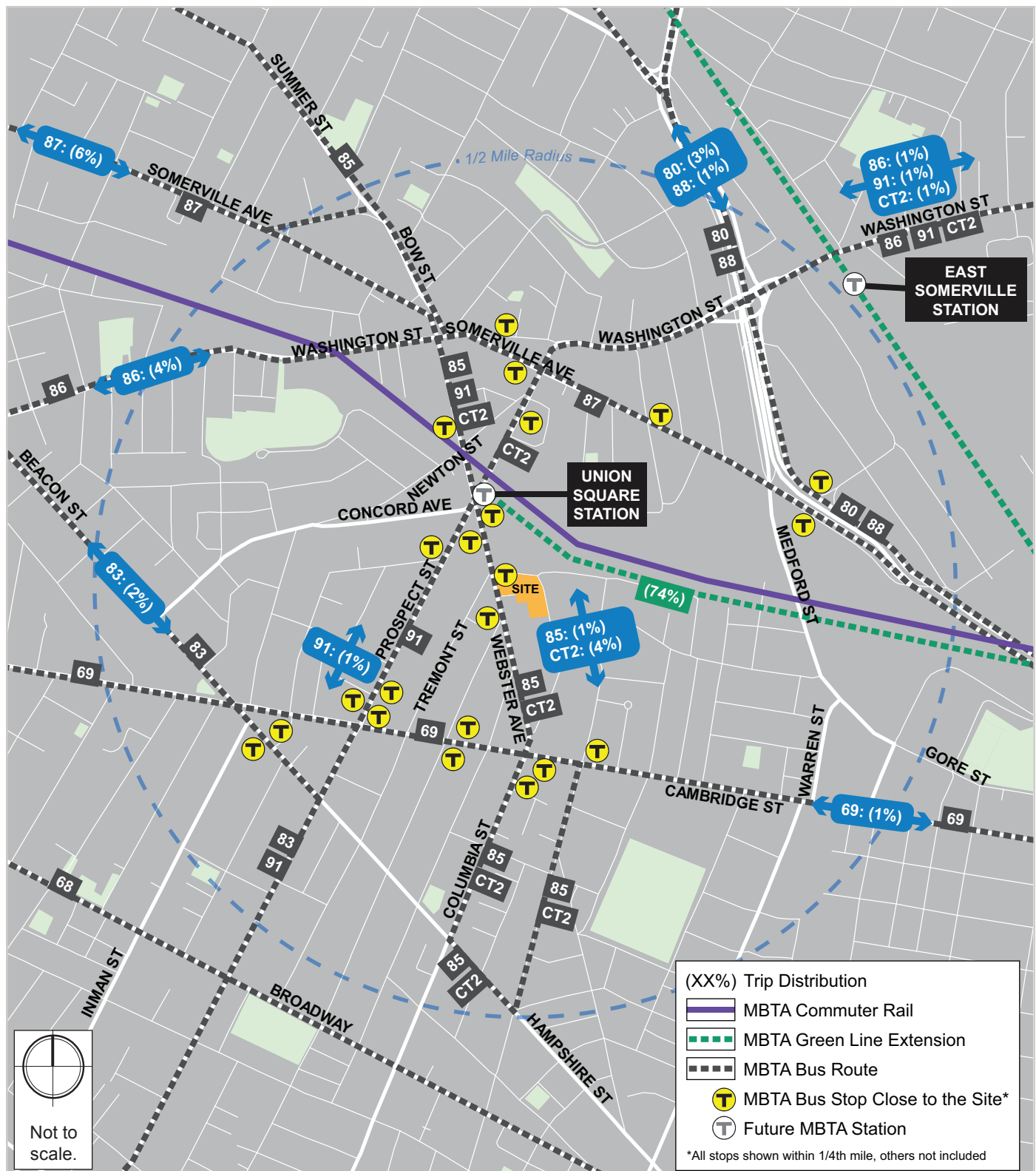
Time Period	Direction	Existing	Proposed	Net New
Daily	In	259	702	+443
	Out	259	702	+443
	Total	518	1,404	+886
a.m. Peak Hour	In	31	99	+68
	Out	15	18	+3
	Total	46	117	+71
p.m. Peak Hour	In	31	18	-13
	Out	34	101	+67
	Total	65	119	+54

Transit Trip Distribution

The transit trip distribution was developed based on journey-to-work data from the U.S. Census Bureau American Community Survey (ACS) Data. Origin-destination pairs were evaluated for the most recent year of data to identify populations of those that work within the zip code that the Project falls within. Origins for future trips to the Project Site include zip codes in the Project area with direct transit service and areas which could be reached with one transfer to the Green Line from a rail-based service. These transfers include areas that could access the MBTA Commuter Rail lines that serve North Station, areas that are served by the Red, Orange, and Blue lines which could transfer at a station in downtown, and the Silver Line. Future trips were assigned to the available bus and rail services within one-half mile of the Project. Given that the expected completion date for the Green Line is within 2021, which is the existing year for this study, rail service was included in the transit analysis for existing and build conditions. Transit assignments assume that riders will select the route with the quickest and most reliable commute. The transit trip distribution is shown in **Figure 9**.



Figure 9. *Transit Trip Distribution*





Vehicle Trip Distribution

The trips generated by the Site are expected to be work-based trips. The trip distribution splits for the Site were based on data from the U.S. Census Bureau as compiled in the “OnTheMap” tool. Origin-destination pairs were evaluated for the most recent year of data to determine where people live of those that work within the zip code that the Project falls within. Origin-destination pairs were assigned a route based on the assumption that drivers will select the most direct route. The vehicle trip distribution is shown in **Figure 10**. The Boynton Yards site to the east of the Project also developed regional vehicle trip distribution splits for their site using journey-to-work census data and existing traffic flow patterns. The Boynton Yards development has also proposed office/lab uses; the resulting trip distributions for the Project were compared and found to be similar.

Build (2021) Condition

The net new vehicle trips were distributed throughout the study area using the vehicle trip distribution splits. The project-generated trips for the weekday a.m. and p.m. peak hours are shown in **Figure 11** and **Figure 12**, respectively. The trip assignments were added to the Existing Condition vehicular traffic volumes to develop the Build (2021) Condition vehicular traffic volumes. The Build (2021) weekday a.m. and p.m. peak hour traffic volumes are shown in **Figure 13** and **Figure 14**, respectively.



Figure 10. *Vehicle Trip Distribution*





Figure 11. *Net New Project-generated Trips, Weekday a.m. Peak Hour*

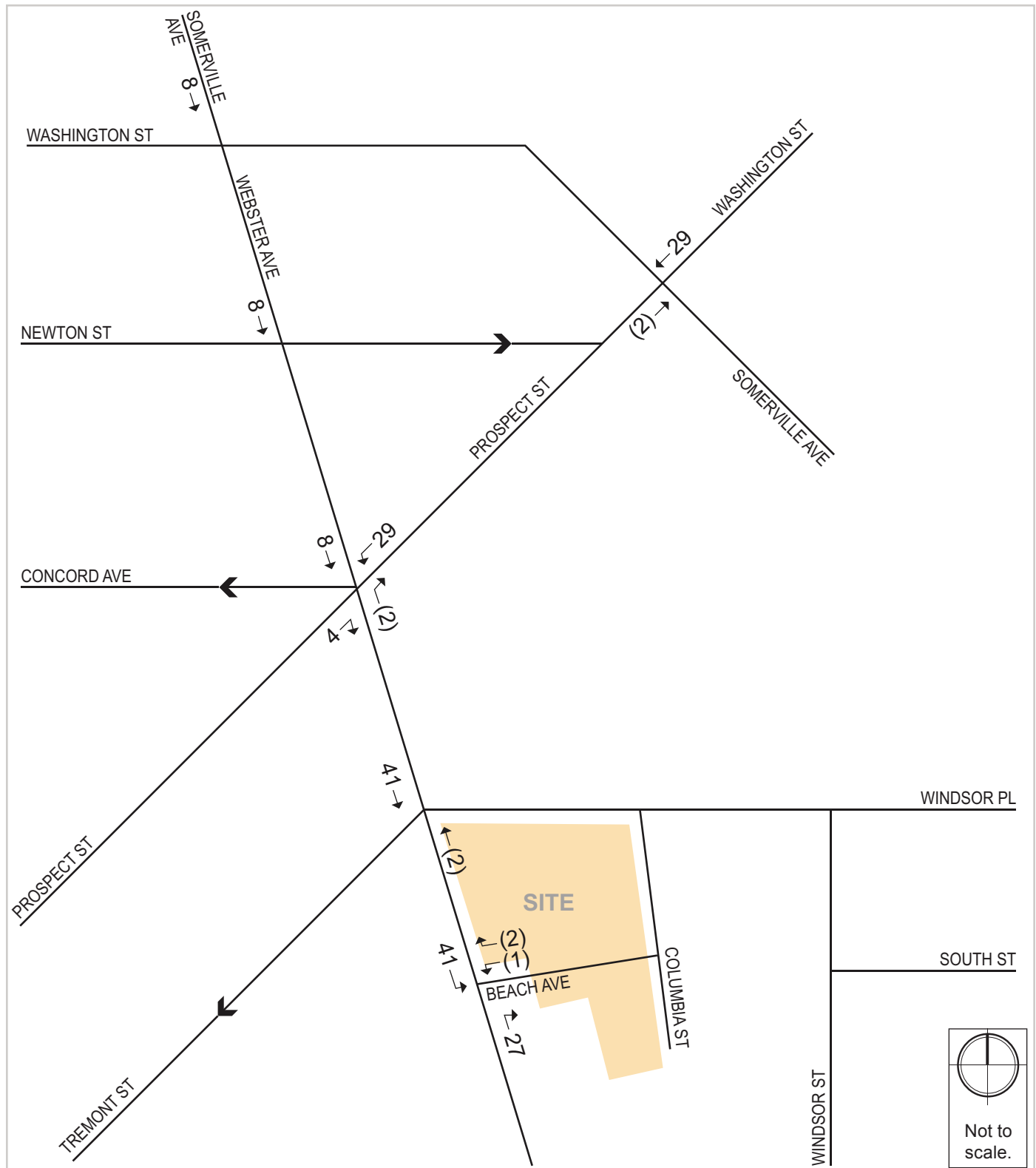




Figure 12. *Net New Project-generated Trips, Weekday p.m. Peak Hour*

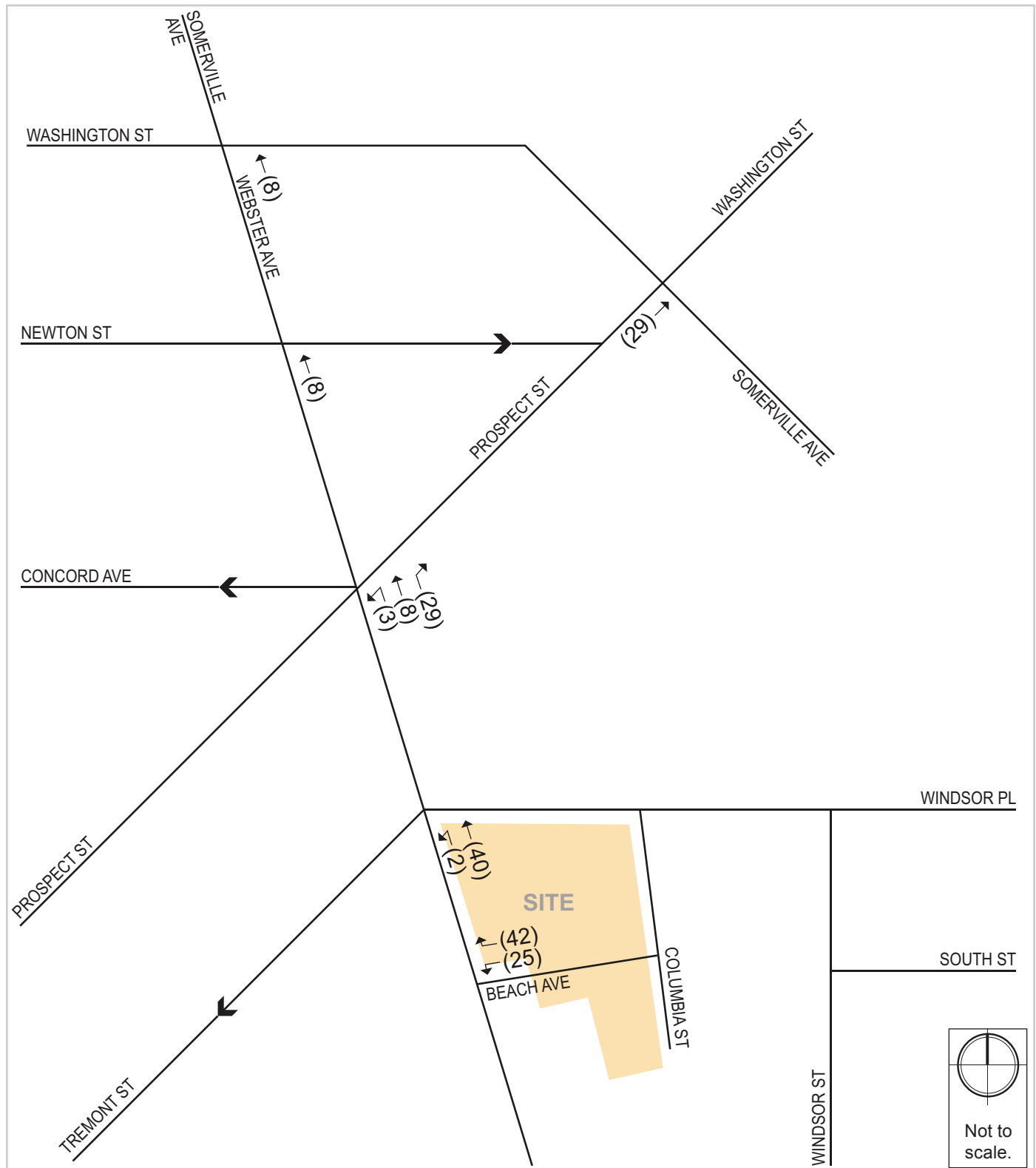




Figure 13. *Build (2021) Condition Traffic Volumes, Weekday a.m. Peak Hour*

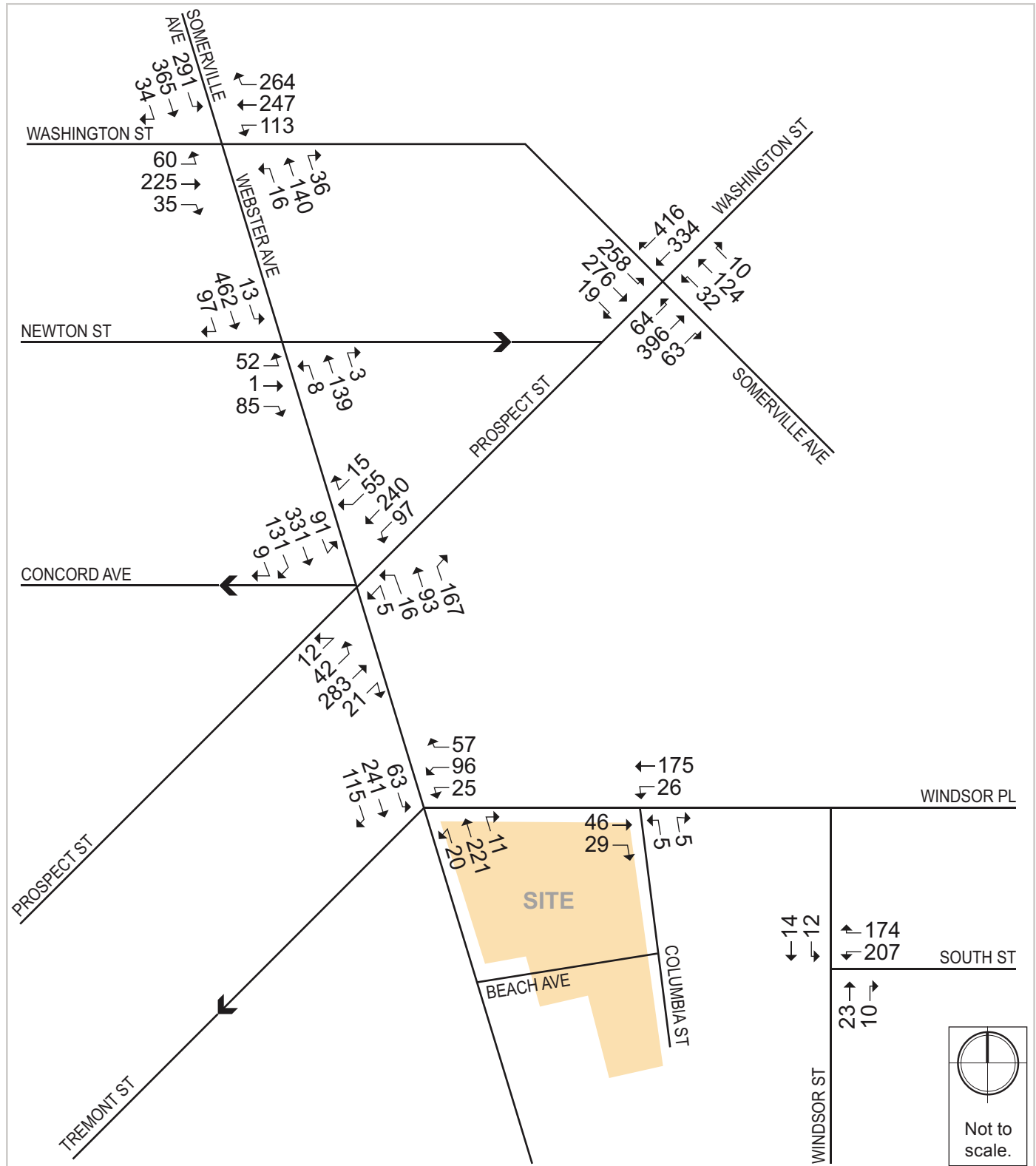
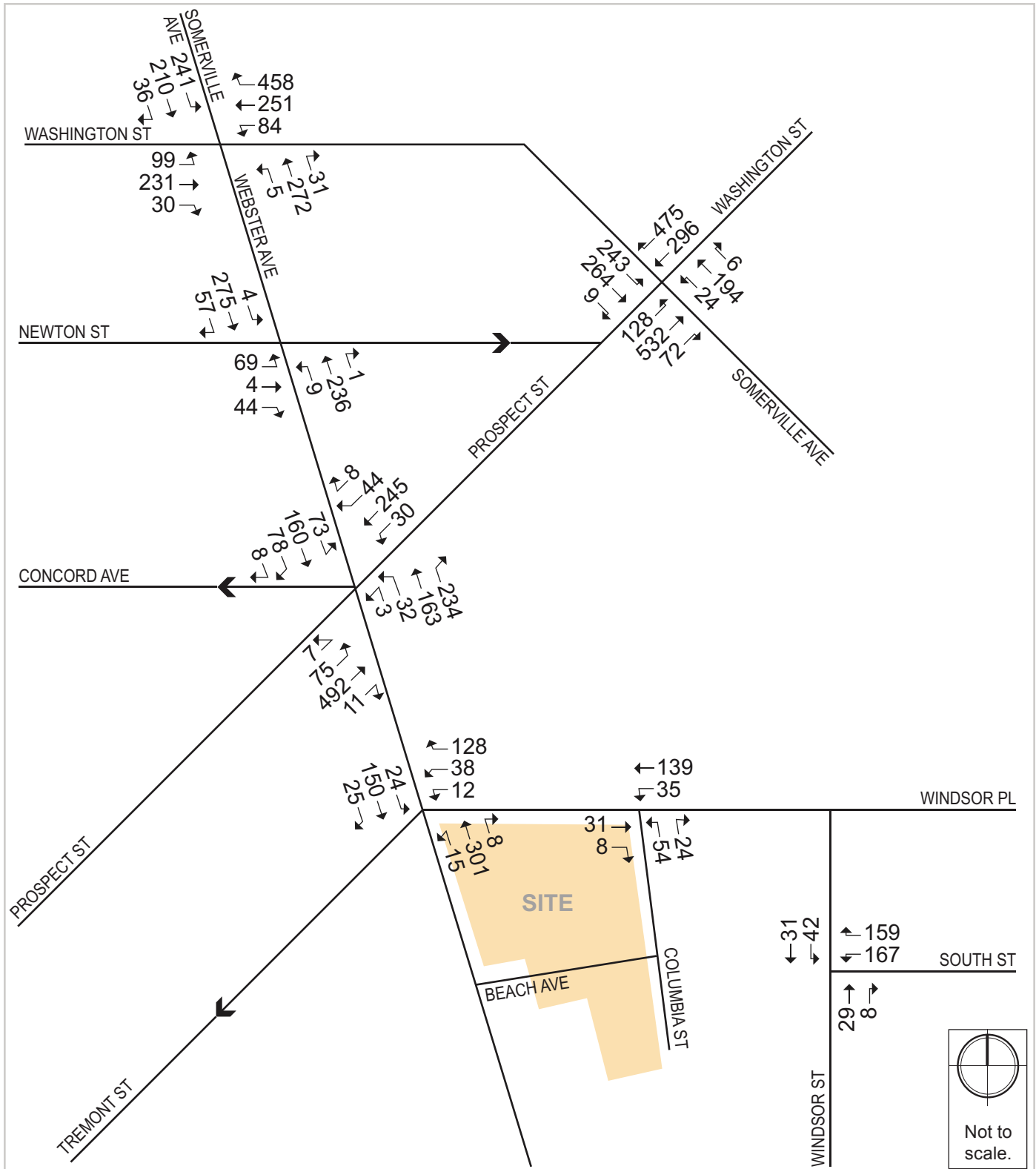




Figure 14. *Build (2021) Condition Traffic Volumes, Weekday p.m. Peak Hour*





Design Year Build (2027) Condition

A future analysis was also completed for a build condition in the design year (2027). The Design Year Build (2027) Condition reflects a future scenario that incorporates anticipated trips associated with other planned specific developments and planned infrastructure improvements that will affect travel patterns throughout the study area. The Design Year Build (2027) Condition adds these additional trips to the Build (2021) scenario which already includes the Project trips. No general background traffic growth rates were applied to the volume data.

SPECIFIC DEVELOPMENT TRAFFIC GROWTH

Traffic volumes associated with larger known development projects can affect traffic patterns throughout the study area within the future analysis time horizon. A review of planned development projects was conducted to determine if there are any nearby projects in the vicinity of the study area. The following four projects were identified and are shown in **Figure 15**.

- **Union Square Revitalization Project.** This development is proposing several mixed-use buildings throughout the Union Square district. The final build will consist of 984 residential units, 143,000 sf of retail, 1,159,000 sf of office (proposed for both general office and lab), a 175-unit hotel, and 74,000 sf of arts space. The final build will be constructed in three phases. For the purposes of this study, all three phases will be considered complete, and the Design Year Build (2027) Condition will account for trips generated by the full buildout including any modifications to intersections.
- **Boynton Yards.** This development proposes five mixed-use buildings in the center of the Boynton Yards district. The final build will consist of 425 residential units, 427,000 sf of office, 112,000 sf of lab space, and 30,000 sf of retail space. The final buildout will be constructed in two phases. For the purposes of this study, both phases will be considered complete, and the Design Year Build (2027) Condition will account for trips generated by the full buildout.
- **Columbia Court.** This project, located at 305 Webster Avenue in Cambridge, consists of a mixed-use development with of 35 residential units and 1,780 sf of retail. This project is currently built; however, construction was not complete at the time traffic counts were collected and therefore is included in the background projects.
- **70 Prospect Street.** This project proposed replacing an existing building with a 14-unit residential building and 1,300 sf of first floor retail use. Construction at this location has been completed, though it was not occupied at the time of the traffic counts, therefore it is included in the background projects.



Figure 15. *Specific Development Projects*





PROPOSED INFRASTRUCTURE IMPROVEMENTS

A review of planned improvements to roadway, transit, bicycle, and pedestrian facilities was conducted to determine if there are any nearby improvement projects in the vicinity of the study area. Based on this review, the following improvement projects were identified.

- **Gr Green Line Extension.** As part of an ongoing project, the Green Line Extension, the MBTA is expanding its service on the Green Line branching from Lechmere Station where the route currently has its northeast-most terminus. The extension to Union Square Station and all the stops north of Lechmere will serve more of the Somerville, Cambridge, and Medford areas after the estimated completion in 2021. The new Union Square Station will be less than a five-minute walk from the Project. The future Green Line service will provide quicker and more reliable transit options into downtown Boston, making public transportation a more desirable mode of travel for the neighborhood.
- **Union Square Early Action Project.** This project proposed some roadways improvements to the Union Square area in advance of the Somerville Avenue Streetscape improvements. It consisted of the Union Square intersection, Somerville Avenue at Prospect Street, and Webster Avenue at Prospect Street. Signal timing changes from this project were utilized as part of the existing and build conditions for the vehicle operations analysis.
- **Somerville Avenue Utility & Streetscape Improvements.** This project is ongoing and consists of several bicycle and pedestrian realm improvements along Somerville Avenue from Webster Avenue to McGrath Highway. Some of the improvements include raised pedestrian crossings, improved ADA compliant crossings, updated street lighting, street trees and furniture, separated cycle tracks on either side of the road, left-turn bicycle boxes, and bicycle lane continuation at driveways and intersections. The design for this project will be considered the finalized condition prior to the start of any construction on the Project (Boynton Gateway).

DESIGN YEAR BUILD (2027) VEHICLE VOLUMES

The traffic volumes associated with the specific development projects listed above were added to the Build (2021) Condition to develop the Design Year Build (2027) Condition vehicle volumes. The Design Year Build (2027) Condition weekday a.m. and p.m. peak hour traffic volumes are shown in **Figure 16** and **Figure 17**, respectively.



Figure 16. *Build (Design Year) Condition Traffic Volumes, Weekday a.m. Peak Hour*

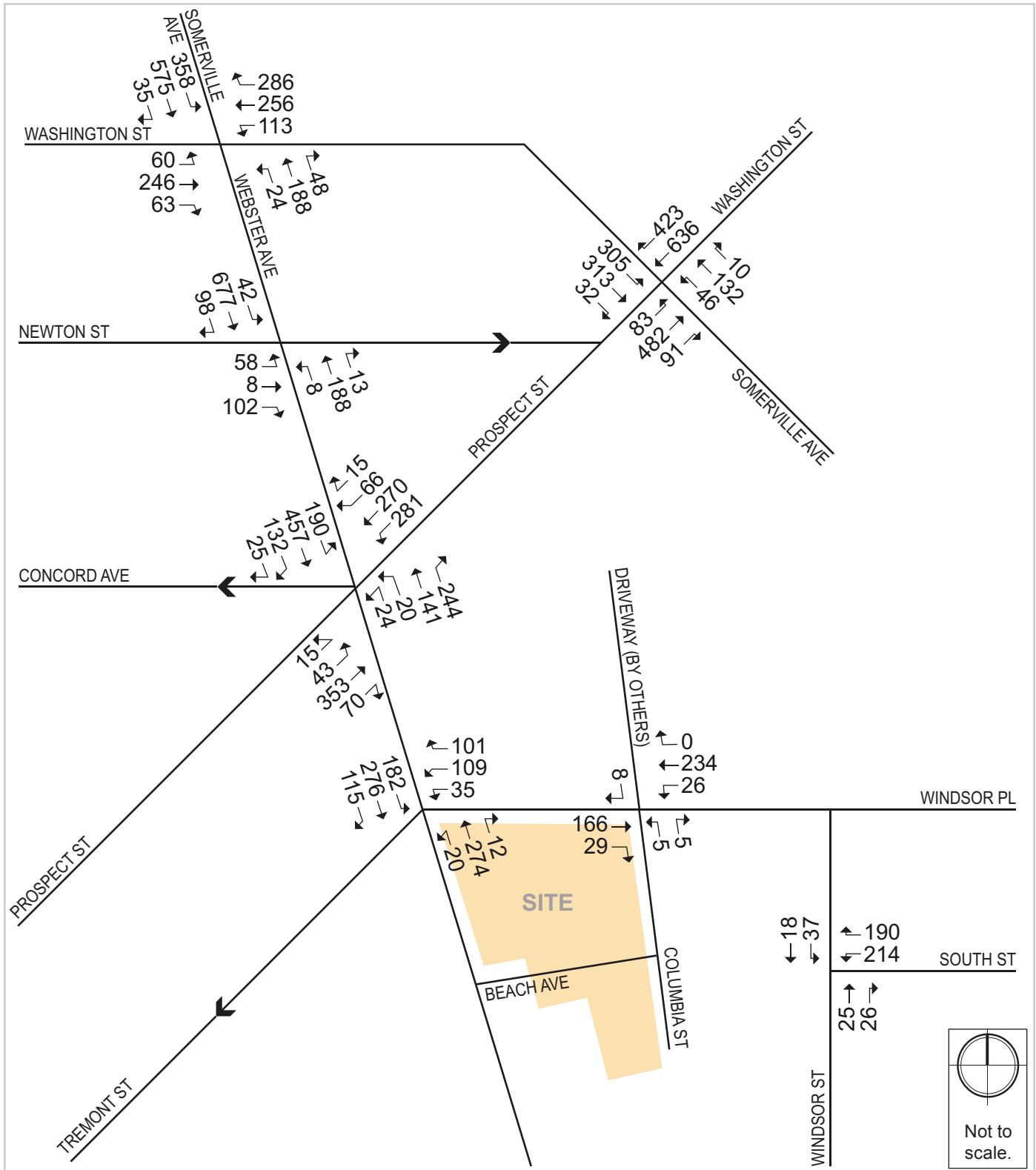
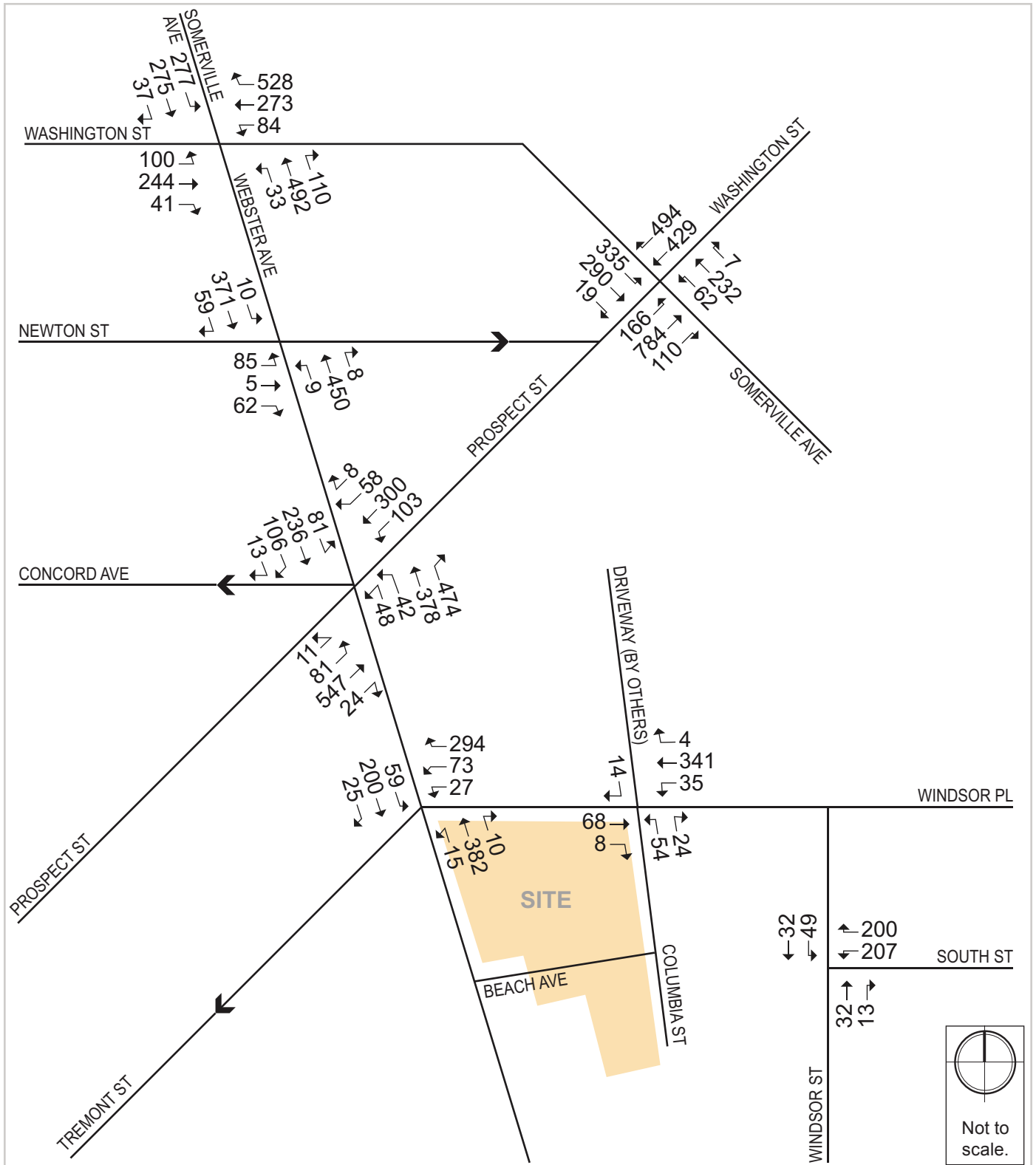




Figure 17. *Build (Design Year) Condition Traffic Volumes, Weekday p.m. Peak Hour*





Transportation Impact Analysis

This section discusses the analysis results for the transit, bicycle, pedestrian, and motor vehicle networks. Each section explains some of the analysis methodology used to evaluate the respective mode and then presents the results. All modes were evaluated for the Existing Condition, Build (2021) Condition, Build (2021) Condition with Mitigation, and Design Year Build (2027) Condition.

Transit Analysis

The volume to capacity ratio (V/C) is the primary comfort metric to determine the existing passenger conditions and evaluate the impact the Project has on local transit services. The V/C ratio is a measurement of the number of passengers divided by the planning capacity. A V/C ratio of 1.0 or higher means the transit line is at or above capacity, and any additional passengers either cannot fit or will cause delays to service as they try to crowd onto the train or bus. Planning capacity for bus and rail service changes between peak and off-peak hours, indicating there is a different level of comfort that passengers are willing to accept during peak hours than off-peak hours. The V/C ratio was calculated for the different analysis conditions for each transit service before and after the closest stop in both directions.

EXISTING CONDITION

To determine the existing ridership, rail and bus data was collected from the MBTA Open Data Portal. Rail flow data from Spring 2018 was used to serve as the baseline for the rail transit analyses, which shows average boarding, alighting, and exit loads at each station in 15-minute increments. Automated Passenger Count (APC) data from Fall 2019 was used to serve as the baseline for the bus transit analysis, which shows average boarding, alighting, and exit loads at a stop for each bus trip.

The analysis also considers future rail service at the Union Square Station to develop baseline conditions. Information on future station boardings, train capacity, and service frequency was pulled from the “Green Line Extension Project – Environmental Assessment and Section 4(f) Evaluation” report submitted in October 2011 (referred to as Green Line Extension Report in this study).

Bus routes within a half-mile radius of the Project were analyzed. This includes MBTA buses 69, 80, 83, 85, 86, 87, 88, 91, and CT2. The load point along each route was identified as the stop with the shortest walking distance from the Project. These stops are shown in **Figure 4**.



BUS METHODOLOGY

Under existing conditions passenger loads approaching and leaving the bus stops closest to the Project in both the inbound and outbound directions were summarized in half-hour intervals. Bus planning capacity was determined using the MBTA's Service and Delivery Policy. The planning capacity for a bus is calculated as 125 percent of the seated capacity during off-peak hours and 140 percent during peak hours for most bus routes. A standard 40-ft MBTA bus has 39 seats; therefore, the off-peak planning capacity is 48 and the peak planning capacity is 55 passengers per bus.

RAIL METHODOLOGY

No rail stations are within a half-mile radius of the Project; therefore, there is no existing ridership data for rail service to the Project. To estimate impacts on the future Union Square Station, a combination of existing Green Line ridership data and projected Union Square Station boardings from the Green Line Extension Report were used.

The Green Line Extension Report identifies a projected number of 3,570 daily boardings at the Union Square Station and 8,820 boardings at the new Lechmere Station for the year 2030. As the Union Square Station will be the terminus of that branch of the Green Line, the southbound rail service exiting Union Square will consist of only passenger boardings at the Union Square Station. The 3,570 boardings were distributed across the day in half-hour intervals based on the same trip distribution pattern as the existing loads that leave Lechmere in the southbound direction today to represent the loads exiting Union Square in the future.

Similarly, for the northbound direction, loads entering Union Square were based on the projected Lechmere boardings from the Green Line Extension Report. It was assumed that the Lechmere boardings from the report represented all boardings at that station in the northbound and southbound directions. To get an estimate of northbound boardings, the existing southbound boardings at Lechmere were subtracted from the projected 8,820 riders resulting in 2,683 boardings at Lechmere headed northbound. The northbound boardings may represent riders headed to Union Square but also those going north on the Medford branch. As a conservative analysis, all were assumed to go towards Union Square. The 2,683 boardings were distributed across half-hour intervals based on a similar distribution to the existing northbound data at the Science Park Station representing a non-terminus station. The existing Green Line data has all riders exiting at Lechmere. The addition of new stops to the north means that some riders who may exit at Lechmere might in the future continue to Union Square. Approximately 10 percent of riders that exit Lechmere today were assumed to continue to Union Square. Those trips were added to the Lechmere northbound boardings to develop the loads leaving Lechmere that enter Union Square.



Rail capacity was determined using headways and car types specified in the Green Line Extension Report. The report indicates that the Union Square Branch would operate on headways of “six minutes in the morning peak period, five minutes in the evening peak period, and nine to 10 minutes during off-peak periods.” The report indicates that the vehicle fleet expected to operate on the Green Line Extension will be various types of three car trains. The report however used a conservative estimate of two cars per train, similar to existing trains on the Green Line, to estimate vehicles needed to meet future demand, therefore the analysis also uses a two-car estimate. Each car has approximately 44 to 46 seats with a peak hour capacity of 100 per car and off-peak capacity of 66 per car based on the capacity of Type 7/8 cars as identified in the MBTA Service and Delivery Policy. The total capacity for one train results in approximately 200 passengers during peak hours and 132 during off-peak hours.

EXISTING CAPACITY ANALYSIS

In the Existing Condition, all transit routes resulted in a V/C ratio of less than 1.00 for each half hour increment except for bus 85 in the inbound direction which reached the planning capacity with V/C of 1.00 during the morning peak hour.

BUILD (2021) CONDITION

For the Build (2021) Condition, the project generated transit trips were distributed according to the transit trip distribution presented earlier and added to the Existing Condition passenger loads. The passenger loads and V/C ratio for all transit services are shown in comparison tables and graphics along with the Existing Condition in **Appendix D**.

BUILD (2021) CAPACITY ANALYSIS

In the Build (2021) Condition, with project-generated transit trips added, no new time periods on any of the transit routes exceed a V/C ratio of 1.00 compared to the Existing Condition. The proposed Project is not expected to have any impact on the existing transit services.

BUILD (2021) CONDITION (WITH MITIGATION)

The Project is considering transit improvements in the form of bus stop enhancements or consolidation for the bus route 85 stop in front of the Site on Webster Avenue. However, this mitigation should not affect the loads or capacity of the overall service. Additionally, no transit routes are expected to be put over capacity because of Project trips, therefore a mitigated condition was not evaluated.

DESIGN YEAR BUILD (2027) CONDITION

The Build (2027) Condition takes into consideration a ridership growth rate of one percent per year for a period of several years from the Existing Condition, based on the City of Somerville TIS standards. These trips are then added to the Build (2021) Condition. The passenger loads and V/C



ratio for all transit services are shown in comparison tables and graphics along with the Existing and Build (2021) Conditions in **Appendix D**.

DESIGN YEAR BUILD (2027) CAPACITY ANALYSIS

In the Design Year Build (2027) Condition, the added trips from the background growth only increased the V/C beyond 1.00 for one half-hour morning interval on one bus on route 85 in the inbound direction. The V/C ratio goes from 1.00 in the Build (2021) Condition to 1.04 in the Design Year Build (2027) Condition. On average, two buses operate per hour in the morning peak period on route 85. Based on the new capacity of the Green Line Extension in Somerville, the MBTA is expected to re-evaluate bus routes in this area.

Bicycle Analysis

Within the study area, bicycle facilities are a mix of protected, unprotected, and shared on-street lanes. These facilities all work to create a connected cycling network along some of the main roadways near the Project such as Cambridge Street, Webster Avenue, Prospect Street, and Somerville Avenue. The bicycle network is analyzed using the Bicycle Level of Traffic Stress (BLTS) methodology developed by Mekuria, Furth, and Nixon in the Mineta Transportation Institute (MTI) Report 11-19. This methodology gives a level of stress classification for each segment and intersection based on a set of measurable characteristics or observations. The four tiers of Level of Traffic Stress (LTS) range from LTS 1, which would classify a low-stress location, to LTS 4, which is considered a high-stress environment. The four levels of stress can be described as follows:

Table 7. Levels of Traffic Street (LTS)

LTS	Description
LTS 1	Strong separation from all except low speed, low volume traffic. Simple crossings. Suitable for children.
LTS 2	Except in low speed/low volume traffic situations, cyclists have their own place to ride that keeps them from having to interact with traffic except at formal crossings. Physical separation from higher speed and multilane traffic. Crossings that are easy for an adult to negotiate. A level of traffic stress that most adults can tolerate, particularly those sometimes classified as “interested but concerned.”
LTS 3	Involves interaction with moderate speed traffic or multilane traffic, or close proximity to higher speed traffic. A level of traffic stress acceptable to those classified as “enthused and confident.”



LTS	Description
LTS 4	Involves interaction with higher speed traffic or close proximity to high-speed traffic. A level of stress acceptable only to those classified as “strong and fearless.”

BLTS for a segment or unsignalized intersection is calculated by evaluating the characteristics in the tables found in **Appendix E** and selecting the lowest score (highest numerical value) to identify each segment or intersection with the classifications in **Table 7**.

EXISTING CONDITION

SEGMENT ANALYSIS

The study area was evaluated using these criteria and is shown visually in **Figure 18**. Most roadways in the immediate vicinity of the Project ranked at the lowest levels of stress, LTS 1 and LTS 2. This is due to a combination of separated facilities on Webster Avenue and slow speed local roadways within the Boynton Yards district. Where the bicycle facility is separated and buffered on Webster Avenue, the level of stress was increased to LTS 2 due to the frequent breaks in the facility for commercial driveways. Areas along Prospect Street that included share-the-road markings were considered LTS 3 since travel lanes are generally wider and vehicles may not be expected to travel as slow as the posted 25 mph speed limit. No segments within the Study Area were classified at LTS 4.

INTERSECTION ANALYSIS

The three unsignalized study area intersections would be classified at LTS 1 as they all are in areas with speeds at or below 25 miles per hour (mph) and would require a cyclist to cross no more than 2 – 3 lanes.

The bicycle infrastructure at the three signalized study area intersections is summarized as follows:

- **Webster Avenue/Prospect Street/Concord Avenue.** No bicycle facilities are carried through the intersection. That element combined with the skew of the intersection means that cyclists must travel a longer distance through the intersection without protection or a dedicated place to be. The level of stress could be improved if green dashed bicycle crossings were places through the intersection on all approaches. Additionally, at the two acute corners of the intersection to the north and south, the location could potentially be improved with channelized right-turn islands. This element would reduce vehicle pavement and introduce refuge areas to help shorten the crossing distances for pedestrians and cyclists. On the Webster Avenue northbound approach and the Prospect Street northeast and southwest approaches, the cycling conditions consist of lanes shared between bicycles and vehicles. This type of facility can have a moderate level of stress because it means the cyclist does not have an established place for a driver to see them. The level of stress on these approaches



could be further improved with a bicycle box. Typically, cyclists will be pushed out to the edge of the shoulder under these conditions. On the Webster Avenue southbound approach there is a bicycle lane that leads to a nine-foot bicycle box. This area allows cyclists to not only be seen by drivers on the approach, but also gives them a head start when the traffic signal lights change which helps lower the level of stress. The level of stress on this approach could be further improved if the vehicle stop line were pulled back to limit vehicles from inching into the bicycle box. The overall level of stress is expected to be LTS 3.

- **Webster Avenue/Somerville Avenue/Washington Street.** This intersection, under the final condition after the Somerville Avenue construction, will provide improved bicycle connections through the intersection along approaches where bicycle facilities are present. This includes bicycle crossing markings in the southbound and westbound directions as well as bicycle boxes on those approaches. When bicyclists can better establish themselves in the intersection there is typically a lower level of traffic stress. However, given that they are not fully protected at this signal, the level of stress is expected to be LTS 2.
- **Somerville Avenue/Prospect Street.** This intersection, under the final condition after the Somerville Avenue construction, will provide high-quality bicycle facilities through the intersection and along approaches where bicycle facilities are present. This includes bicycle crossing markings in the southbound, eastbound, and westbound directions. The eastbound direction crossing is part of a raised crossing which helps slow vehicles down and raises cyclists to a higher line of sight. The northwest corner of the intersection has a curbed island which helps drivers position themselves better to see cyclists and gives cyclists a waiting area before crossing. Overall, the level of stress at this signal is expected to be LTS 1.

BUILD (2021) CONDITION

The Build (2021) Condition will include any added bicycle trips due to the Project and on-site improvements to bicycle facilities. These conditions are not expected to change the BLTS on any public roads. They are forecast to improve the BLTS on Beach Avenue which is privately owned. Beach Avenue is expected to go from an unwelcoming industrial alley to a slow speed shared-use facility that is raised to sidewalk level.

BUILD (2021) CONDITION (WITH MITIGATION)

The Project is proposing off-site mitigation to bicycle facilities on Columbia Street north of the Project. The bicycle improvements include a five-foot eastbound bicycle lane between Webster Avenue and Windsor Place. The street will still operate with two-way vehicle traffic but will not have any centerline and stays the same as in the existing condition. The BLTS in the eastbound direction will change from BLTS 1 to BLTS 2. While this is degradation of BLTS in the short-term based on bicycle lane comfort levels, this should be viewed as an improved facility as it sets out a baseline condition for giving cyclists more dedicated space within the road along Columbia Street.



As the development to the north is constructed and the Boynton Yards east-west thoroughfares are developed, it is expected that this street will have a new cross section and new bicycle facilities in both directions that will meet criteria for BLTS 1.

DESIGN YEAR BUILD (2027) CONDITION

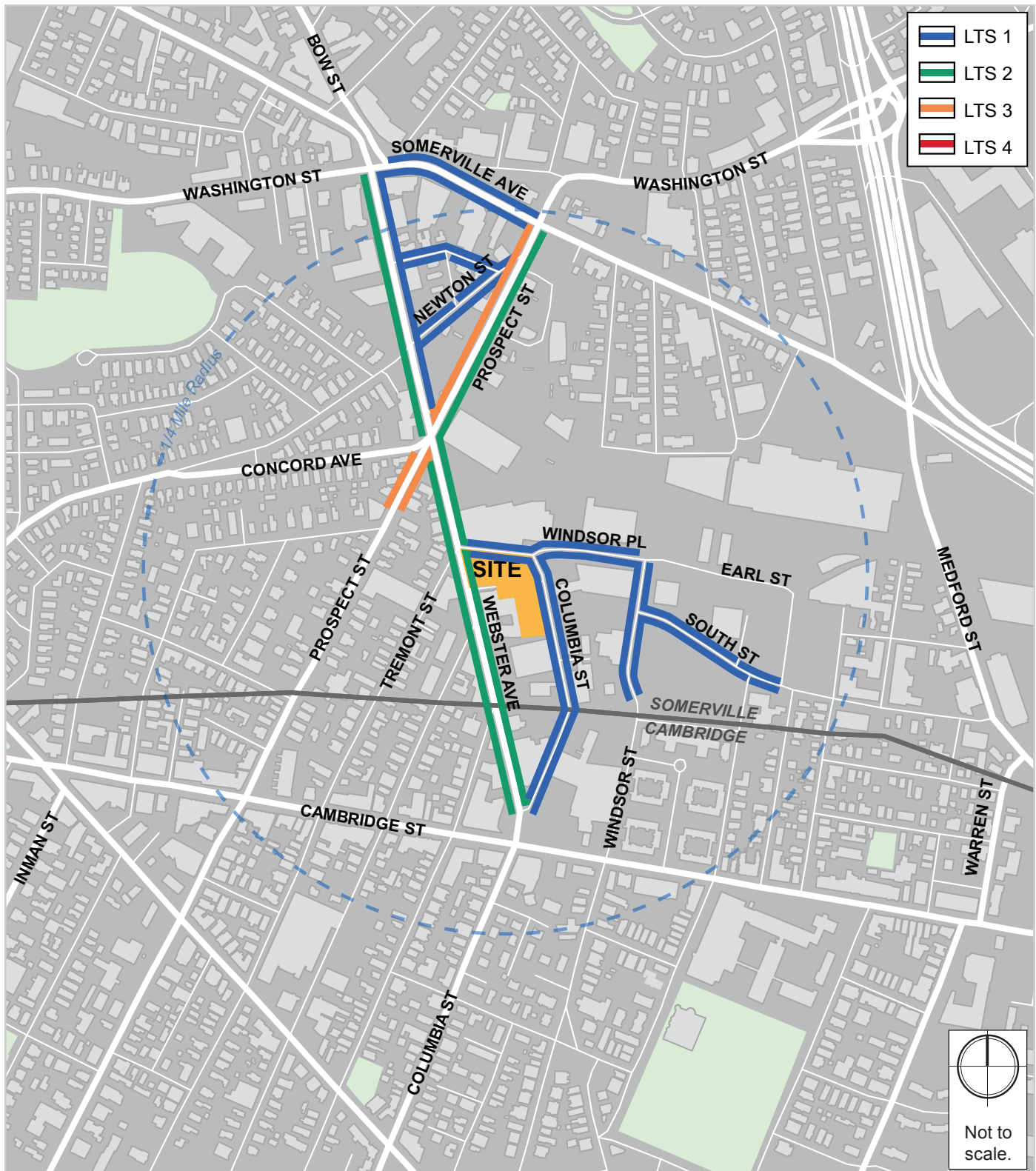
The Design Year Build (2027) Condition includes the improvements proposed in the Build (2021) Condition as well as changes to bicycle facilities proposed by other developments. Off-site bicycle improvements, to be completed by other projects, are expected to include the following:

- Two-way buffered bicycle lanes on South Street between Windsor Street and Harding Street;
- Two-way buffered bicycle lanes on Windsor Street between Windsor Place and South Street;
- Westbound bicycle facilities on Columbia Street between Webster Avenue and Windsor Place;
- The completion of cycle tracks along Somerville Avenue.

The details of these improvements/mitigation are unknown or yet to be finalized, therefore no changes in BLTS are presented under this condition.



Figure 18. *Bicycle Level of Traffic Street - Existing*





Pedestrian Analysis

The pedestrian network is analyzed using the Pedestrian Level of Traffic Stress (PLTS) methodology developed by Oregon DOT. This methodology gives a level of stress classification for each segment based on sidewalk width, travel lanes, physical buffers between the sidewalk and roadway, and sidewalk condition. PLTS for segments are calculated by evaluating the characteristics from the tables in **Appendix F** and selecting the lowest score (highest numerical value).

EXISTING CONDITION

SEGMENT ANALYSIS

The study area segments were evaluated using the tables in Appendix F and are shown visually in **Figure 19**. Most sidewalks in the immediate vicinity of the Project ranked at LTS 2 with a few at LTS 4. Within the Boynton Yards area, many of these sidewalks are likely to be updated with time as land in this area is developed. The locations that are identified as LOS 4 include sidewalks that either do not exist or are in very poor condition. Several areas of the sidewalk along Columbia Street east of the Project have vehicles parked on the sidewalk due to the activity from the existing auto service businesses. The pedestrian network beyond the Project area is predominantly LTS 2 as most sidewalks are greater than five feet wide, however they do not always have a consistent width of at least six feet of un-obstructed usable space.

CROSSWALK ANALYSIS

PLTS was evaluated for the four unsignalized intersections and pedestrian delay was evaluated for the three signalized intersections. The PLTS for the unsignalized crossings is based on the Oregon DOT methodology per the City of Somerville TIS standards and is presented in **Table 8**. The pedestrian delay for signalized crossings is based on Highway Capacity Manual methodology and is presented in **Table 9**.



Figure 19. *Pedestrian Level of Traffic Stress - Existing*

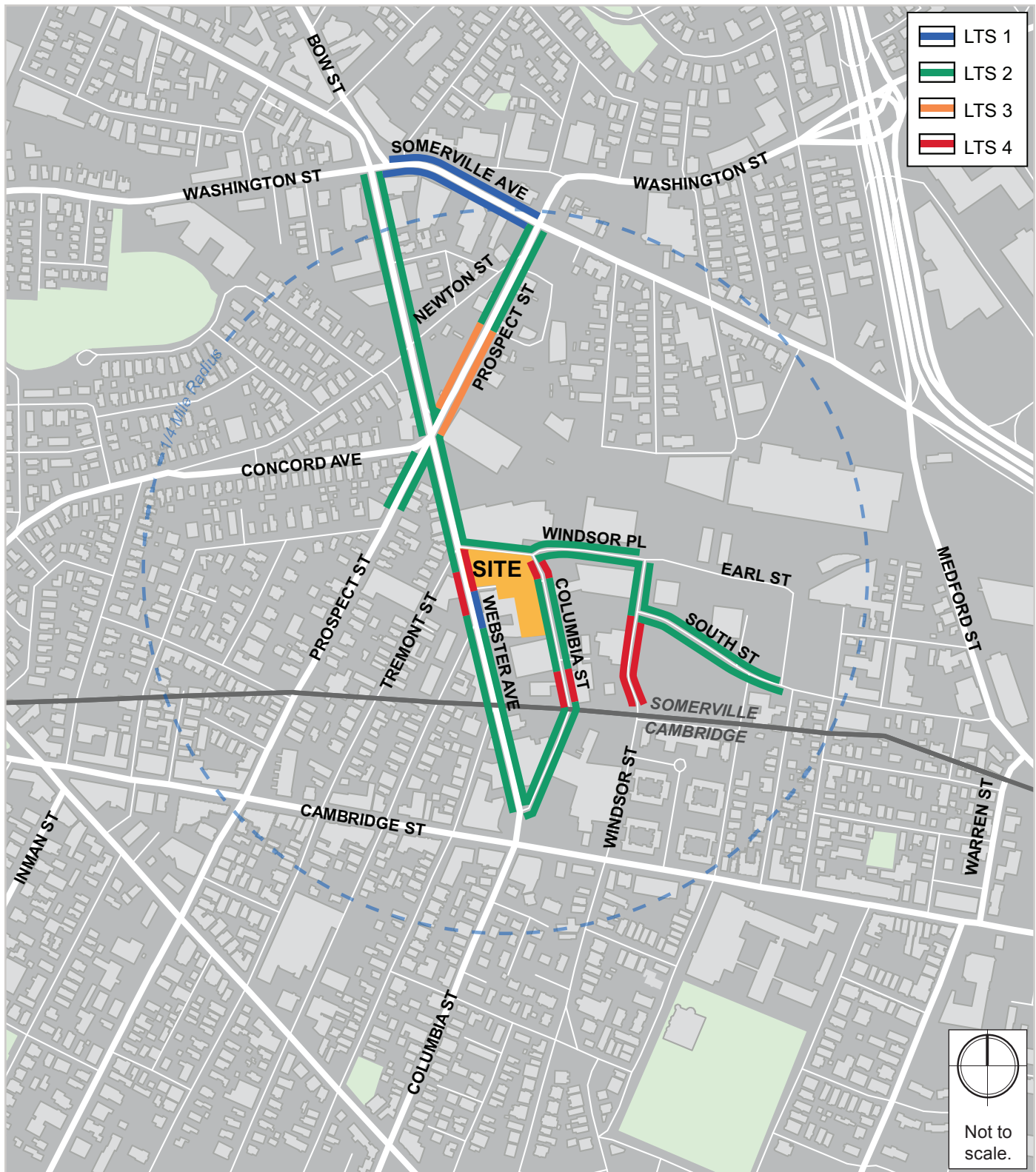




Table 8. PLTS at Unsignalized Intersections

Intersection and Crosswalk Location		PLTS	Travel Lanes Crossed	Posted Speed Limit	Other Notes
Webster Avenue/ Columbia Street/ Tremont Street	East	4	2	25 mph	No southern ADA ramp
	West	4	1	25 mph	No ADA ramps
Webster Avenue/ Newton Street	East	1	1	25 mph	
	West	1	2	25 mph	No median refuge
	North	1	2	25 mph	No median refuge
Columbia Street/ Windsor Place	East	3	2	25 mph	Wheelchair ramps are not ADA compliant
Windsor Street/ South Street	East	3	2	25 mph	Wheelchair ramps are not ADA compliant
	South	3	2	25 mph	Wheelchair ramps are not ADA compliant

Intersection level of stress at the two study area intersections closest to the project ranked at PLTS 3 and PLTS 4. These locations have a poor level of stress because some corners do not have wheelchair ramps while others are not ADA compliant per the most recent ADA guidelines. ADA compliance may include a lack of detectable warning panels, required level landing area, or insufficient clear path of travel. Only the unsignalized location at Webster Avenue and Newton Street appears to have met the criteria for PLTS 1.



Table 9. Pedestrian Delay and Clearance Comparison at Signalized Intersections

Intersection and Crosswalk Location		Length (ft)	MUTCD FDW Calculation (sec) ¹	Provided FDW (sec)	Pedestrian Phasing Type	A.M. Pedestrian Delay (sec)	P.M. Pedestrian Delay (sec)
Webster Avenue/ Prospect Street/ Concord Avenue	Northeast	36	11	16	Exclusive	47.7	47.7
	North	36	11	16	Concurrent	29.4	24.7
	South	56	16	16	Concurrent	29.4	24.7
	Southwest	36	11	12	Concurrent	36.0	41.7
	West	27	8	16	Concurrent	29.4	24.7
Somerville Avenue/ Prospect Street	North	52	15	17	Concurrent	52.3	52.3
	South	39	12	12	Concurrent	34.5	37.6
	East	56	16	19	Concurrent	49.5	46.8
	West	53	16	19	Concurrent	49.5	46.8
Somerville Avenue / Webster Avenue / Washington Street	North	71	21	22	Concurrent	42.5	40.0
	South	34	10	22	Concurrent	42.5	40.0
	East	61	18	19	Concurrent	48.6	45.1
	Northeast	22	7	19	Concurrent	48.6	45.1
	West	68	20	20	Concurrent	40.0	45.9

1. Based on an average walking speed of 3.5 ft/sec.

Pedestrian crossing lengths were used to compute the minimum required clearance time for each crosswalk at the signalized intersections. As shown in **Table 9**, all provided Flashing Don't Walk times for the different crossings met or exceeded the minimum MUTCD requirement based on a walking speed of 3.5 ft/sec. Consistent with HCM methodologies, calculations only considered an effective pedestrian green time and signal cycle length. The average delay assumes pedestrian arrive randomly within a traffic signal cycle to a crossing. Many pedestrians may experience less delay as morning and mid-day periods will have more frequent full traffic cycles. Pedestrian delay at the three Study Area signalized intersections are approximately 40-50 seconds of delay during peak hours.

BUILD (2021) CONDITION

The Build (2021) Condition includes the added pedestrian trips due to the Project and on-site improvements to pedestrian facilities. The pedestrian improvements include upgrading all sidewalks abutting the Project to meet design and zoning requirements. Sidewalks abutting the Project on Webster Avenue are proposed at a width of 14 feet and those abutting the Project on



Columbia Street are proposed at a width of 18 feet. The PLTS on the following sidewalks change from the Existing Condition due to the improvements in condition and the increase in width.

- Increasing the sidewalk from 8-feet to 14-feet on Webster Avenue between Beach Avenue and Columbia Street improves the score from PLTS 4 to PLTS 1.
- Increasing the sidewalk from 7-feet to 18 feet on Columbia Street (north of the Project) between Webster Avenue and Windsor Place improves the score from PLTS 3 to PLTS 1.
- Increasing the sidewalk from 5 or 7 feet to 18 feet on Columbia Street (east of the Project) between Windsor Place and the southern edge of the Project improves the score from PLTS 4 to PLTS 1.

PLTS at the eastern crosswalk of the Webster Avenue/Columbia Street intersection shifts from PLTS 4 to PLTS 1 due to the proposed ADA compliant wheelchair ramp on the southeast corner. This crossing is expected to be further improved with proposed crosswalk pavement markings. All other unsignalized crossings will remain the same as the existing condition.

BUILD (2021) CONDITION (WITH MITIGATION)

The Project is not proposing any off-site mitigation to crosswalks or sidewalks; therefore, no additional improvements are expected under this condition outside of those considered in the Build (2021) Condition.

DESIGN YEAR BUILD (2027) CONDITION

The Design Year Build (2027) Condition includes the improvements proposed in the Build (2021) Condition as well as changes to sidewalks and crossings proposed by other developments. Off-site pedestrian improvements, to be completed by other projects, are expected to include the following:

- Sidewalk improvements along Prospect Street on the southeast side of the road. This will include open space with street trees and seating along a new pedestrian path leading to Union Square Station adjacent to the existing sidewalk in front of the D2.2 and D2.3 buildings. In front of the D2.1 building the sidewalk will be widened and planted with trees.
- Sidewalk improvements and pocket plazas along parts of Windsor Street and South Street.

The specific details of these improvements/mitigation are unknown or yet to be finalized, therefore no changes in PLTS are presented under this condition.



Motor Vehicle Operations Analysis

The criterion for evaluating vehicle operations is level of service (LOS), which is determined by assessing average delay experienced by vehicles at intersections and along intersection approaches. Trafficware's Synchro (version 11) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2000 Highway Capacity Manual (HCM). Satellite imagery as well as proposed plan sets for ongoing construction were used to collect intersection geometry such as number of turning lanes, lane length, and lane width that were incorporated into the operations analysis.

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. **Table 10** displays the intersection LOS criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. However, LOS E or F is often typical for a stop-controlled minor street that intersects a major roadway and does not necessarily indicate that the operations at the intersection are poor or failing.

Table 10. *Vehicle Level of Service Criteria*

Level of Service	Average Stopped Delay (sec/veh)	
	Unsignalized Intersection	Signalized Intersection
A	≤10	≤10
B	>10 and ≤15	>10 and ≤20
C	>15 and ≤25	>20 and ≤35
D	>25 and ≤35	>35 and ≤55
E	>35 and ≤50	>55 and ≤80
F	>50	>80

Source: 2000 Highway Capacity Manual, Transportation Research Board.

In addition to delay and LOS, the operational capacity and vehicular queues are calculated and used to further quantify traffic operations at intersections. The following describes these other calculated measures.

- The volume-to-capacity ratio (v/c ratio) is a measure of congestion at an intersection approach. A v/c ratio below one indicates that the intersection approach has adequate capacity to process the arriving traffic volumes over the course of an hour. A v/c ratio of one or greater indicates that the traffic volume on the intersection approach exceeds capacity.



- The 50th percentile queue length, measured in feet, represents the maximum queue length during cycle of the traffic signal with typical (or median) entering traffic volumes.
- The 95th percentile queue length, measured in feet, denotes the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line. This maximum queue occurs five percent, or less, of the time during the peak hour, and typically does not develop during off-peak hours. Since volumes fluctuate throughout the hour, the 95th percentile queue represents what can be considered a “worst case” condition. Queues at an intersection are generally below the 95th percentile length throughout most of the peak hour. It is also unlikely that 95th percentile queues for each approach to an intersection occur simultaneously.



Table 11 and **Table 12** present, respectively, the a.m. and p.m. peak hour capacity analysis for the study area intersections under each analysis condition: Existing Condition, Build (2021) Condition, and Build (2027) Condition. The detailed analysis reports are provided in **Appendix G**.

As a reminder, the analysis conditions consist of the following:

- **Existing Condition** represents the traffic volumes collected in 2017 that were adjusted to 2019 and used to represent the existing year, 2021, without the project.
- **Build (2021) Condition** represents the Existing Condition with the addition of project generated vehicle trips. This evaluates the effect of only the Project trips on the roadway network as it exists today.
- **Design Year Build (2027) Condition** represents the Build 2021 Condition with the addition of trips from other development projects as well as any network or design improvements proposed by other developments through the future year.

For the motor vehicle operations analysis, a Build (2021) Condition with Mitigation is not provided. The roadway changes and signal timing efforts in the area are part of a broader planning effort by the City for the nearby sub-districts, therefore are not intended to be adjusted. As the Boynton Yards and Union Square sub-districts continue to grow, mitigation such as a re-timing effort may be re-evaluated at an appropriate time based on future measured conditions. Considering only the Project impact, it is not expected to have a large effect on vehicle traffic that would require immediate off-site roadway improvements for vehicle operations.



Table 11. Capacity Analysis Summary, Weekday a.m. Peak Hour

Intersection/Movement	Existing (2021) Condition					Build (2021) Condition					Design Year Build (2027) Condition				
	LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)	
				50th %	95th %				50th %	95th %				50th %	95th %
Unsignalized Intersections															
Webster Avenue/Columbia Street/Tremont Street	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Columbia St WB left/thru/right	E	43.0	0.73	-	132	F	50.3	0.77	-	148	F	407.9	1.75	-	539
Webster Ave NB left/thru/right	A	0.9	0.02	-	2	A	0.9	0.02	-	2	A	0.8	0.02	-	2
Webster Ave SB left/thru/right	A	1.9	0.06	-	5	A	1.8	0.06	-	5	A	4.3	0.18	-	17
Columbia Street/Windsor Place / (Future D3 Driveway)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Columbia St EB thru/right (future left/thru/right)	A	0	0.08	-	0	A	0	0.08	-	0	A	0	0	-	0
Windsor St WB left/thru (future left/thru/right)	A	1.2	0.02	-	2	A	1.2	0.02	-	2	A	1.1	0.03	-	2
Columbia St NB left/right (future left/thru/right)	B	10	0.02	-	2	B	10.0	0.02	-	2	B	13.1	0.03	-	3
Future D3 Driveway SB left/thru/right	N/A										A	9.7	0.01	-	1
South Street/Windsor Street	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
South St WB left/right	B	11.4	0.41	-	51	B	11.4	0.41	-	51	B	12.7	0.47	-	64
Windsor St NB thru/right	A	0	0.02	-	0	A	0	0.02	-	0	A	0	0.03	-	0
Windsor St SB left/thru	A	3.5	0.01	-	1	A	3.5	0.01	-	1	A	5.1	0.03	-	2
Webster Avenue/Newton Street	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Newton St EB left/thru/right	C	24.7	0.48	-	62	D	25.2	0.49	-	64	F	180.3	1.18	-	272
Webster Ave NB left/thru/right	A	0.6	0.01	-	1	A	0.6	0.01	-	1	A	0.6	0.02	-	1
Webster Ave SB left/thru/right	A	0.3	0.01	-	1	A	0.3	0.01	-	1	A	0.9	0.04	-	3
Signalized Intersections															
Webster Avenue/Washington Street/Somerville Avenue	E	55.5	-	-	-	E	55.9	-	-	-	F	109.1	-	-	-
Washington St EB	D	45.2	0.66	128	179	D	45.2	0.66	128	179	D	51.4	0.78	152	210



Intersection/Movement	Existing (2021) Condition					Build (2021) Condition					Design Year Build (2027) Condition				
	LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)	
				50th %	95th %				50th %	95th %				50th %	95th %
left/thru I thru/right															
Somerville Ave WB left	E	67.5	0.83	97	m#182	E	67.8	0.83	97	m#182	F	83.1	0.91	106	m#168
Somerville Ave WB thru	D	39.7	0.66	203	272	D	40.0	0.66	203	277	D	44.7	0.68	230	m272
Somerville Ave WB right	E	69.2	0.23	40	61	E	68.5	0.23	43	60	D	53.2	0.25	38	m45
Webster Ave NB left/thru/right	E	61.1	0.83	195	m219	E	60.8	0.83	195	m215	F	127.1	1.13	~313	m#343
Webster Ave SB left I left	D	35.7	0.36	99	141	D	35.5	0.36	99	141	D	36.2	0.44	125	172
Webster Ave SB thru/right	E	72.7	0.95	312	#509	E	74.7	0.96	320	#524	F	247.1	1.42	~681	#914
Prospect Street/Webster Avenue/Concord Avenue	D	59.3	-	-	-	E	73.8	-	-	-	F	288.4	-	-	-
Webster Ave NB left	C	27.2	0.18	13	40	C	28.9	0.21	13	40	F	155.8	1.00	41	#125
Webster Ave NB thru/right	C	31.5	0.51	148	240	C	32.7	0.52	150	242	D	45.9	0.81	285	#481
Webster Ave SB left	C	26.1	0.34	41	m78	C	27.3	0.36	42	m76	F	187.0	1.31	~191	m#246
Webster Ave SB thru/right	E	60.0	0.98	293	m#695	E	70.3	1.02	301	m#701	F	161.5	1.27	~620	m#715
Prospect St NE left/thru/right	D	49.4	0.84	271	#441	D	45.9	0.82	273	#444	F	93.2	1.05	~443	#662
Prospect St SW left/thru/right	F	98.5	0.97	361	#514	F	143.5	1.12	~434	#602	F	756.5	2.53	~983	m#810
Somerville Avenue/Prospect Street	D	43.4	-	-	-	D	43.7	-	-	-	F	104.1	-	-	-
Somerville Ave EB left	C	34.4	0.72	245	m307	C	34.4	0.72	245	m307	D	41.7	0.85	296	m353
Somerville Ave EB thru/right	D	39.7	0.81	282	347	D	39.8	0.81	282	347	E	59.0	0.97	338	m#432
Somerville Ave WB left	D	46.7	0.20	29	55	D	46.7	0.20	29	55	D	47.5	0.28	42	73
Somerville Ave WB thru/right	E	65.8	0.78	130	#177	E	65.8	0.78	130	#177	E	70.8	0.82	138	#198
Prospect St NB left	C	27.0	0.35	40	m62	C	27.6	0.39	41	m64	F	365.0	1.71	~117	m#118
Prospect St NB thru/right	E	64.3	0.98	441	#585	E	64.5	0.98	443	#590	F	144.4	1.23	~668	m#639
Prospect St SB thru	D	35.3	0.58	208	305	D	36.8	0.64	233	340	F	152.2	1.21	~642	#872
Prospect St SB right	C	26.8	0.30	0	57	C	27.0	0.30	0	57	C	29.2	0.43	46	133

Grey Shading indicates LOS E or F under the Existing Condition or a change from LOS D or better in a previous condition to LOS E or F.

~ 50th percentile volume exceeds capacity. Queue shown is the maximum after two cycles.

95th percentile volume exceeds capacity. Queue shown is the maximum after two cycles.

m Volumes for 95th percentile queue is metered by upstream signal.



Table 12. Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection/Movement	Existing (2021) Condition					Build (2021) Condition					Design Year Build (2027) Condition				
	LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)	
				50th %	95th %				50th %	95th %				50th %	95th %
Unsignalized Intersections															
Webster Avenue/Columbia Street/Tremont Street	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Columbia St WB left/thru/right	C	16.0	0.39	-	45	C	17.4	0.42	-	51	F	118.1	1.13	-	420
Webster Ave NB left/thru/right	A	0.5	0.01	-	1	A	0.5	0.01	-	1	A	0.5	0.02	-	1
Webster Ave SB left/thru/right	A	1.2	0.02	-	2	A	1.2	0.02	-	2	A	2.3	0.06	-	5
Columbia Street/Windsor Place / (Future D3 Driveway)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Columbia St EB thru/right (future left/thru/right)	A	0	0	-	0	A	0	0.03	-	0	A	0	0	-	0
Windsor St WB left/thru (future left/thru/right)	A	1.7	0.03	-	3	A	1.7	0.03	-	2	A	0.9	0.03	-	2
Columbia St NB left/right (future left/thru/right)	B	10.7	0.13	-	13	B	10.7	0.13	-	11	B	14.5	0.21	-	19
Future D3 Driveway SB left/thru/right	N/A										B	10.6	0.02	-	2
South Street/Windsor Street	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
South St WB left/right	B	12.4	0.42	-	50	B	12.4	0.42	-	52	B	14.5	0.54	-	81
Windsor St NB thru/right	A	0	0.03	-	0	A	0	0.03	-	0	A	0	0.03	-	0
Windsor St SB left/thru	A	4.5	0.05	-	3	A	4.5	0.05	-	4	A	4.7	0.05	-	4
Webster Avenue/Newton Street	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Newton St EB left/thru/right	C	24.0	0.41	-	47	C	24.4	0.41	-	48	D	27.4	0.51	-	70
Webster Ave NB left/thru/right	A	0.5	0.01	-	1	A	0.5	0.01	-	1	A	0.4	0.01	-	1
Webster Ave SB left/thru/right	A	0.1	0	-	0	A	0.1	0	-	0	A	0.3	0.01	-	1
Signalized Intersections															
Webster Avenue/Washington Street/Somerville Avenue	E	55.7	-	-	-	E	56.7	-	-	-	F	195.2	-	-	-
Washington St EB	D	44.3	0.70	154	193	D	44.3	0.70	154	193	D	47.8	0.77	168	210



Intersection/Movement	Existing (2021) Condition					Build (2021) Condition					Design Year Build (2027) Condition				
	LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)		LOS	Delay (s)	V/C Ratio	Queues (ft)	
				50th %	95th %				50th %	95th %				50th %	95th %
left/thru I thru/right															
Somerville Ave WB left	D	38.0	0.45	43	m83	D	38.0	0.45	43	m83	D	37.2	0.48	44	m61
Somerville Ave WB thru	D	35.0	0.49	128	m195	D	35.1	0.49	128	m196	C	34.9	0.53	142	m179
Somerville Ave WB right	E	72.6	0.32	96	m105	E	72.6	0.32	95	m105	D	48.1	0.57	117	m116
Webster Ave NB left/thru/right	E	76.4	0.99	279	m#338	E	81.4	1.02	~285	m#321	F	561.4	2.16	~972	m#576
Webster Ave SB left I left	D	41.0	0.38	86	125	D	41.0	0.38	86	125	D	41.2	0.43	100	143
Webster Ave SB thru/right	E	54.7	0.76	182	#299	E	54.7	0.76	185	#299	E	79.1	0.94	245	#423
Prospect Street/Webster Avenue/Concord Avenue	E	76.1	-	-	-	F	80.6	-	-	-	F	307.5	-	-	-
Webster Ave NB left	C	31.4	0.17	21	55	C	32.3	0.21	23	60	D	51.6	0.64	69	#182
Webster Ave NB thru/right	E	55.6	0.85	279	#538	E	70.7	0.95	325	#608	F	547.4	2.11	~1246	#1482
Webster Ave SB left	C	32.3	0.60	29	m#134	E	62.5	0.82	30	m#151	F	290.3	1.48	~90	m#144
Webster Ave SB thru/right	C	20.8	0.59	98	m#371	C	20.8	0.59	98	m#371	C	30.9	0.84	141	m#524
Prospect St NE left/thru/right	F	128.8	1.17	~623	#814	F	128.8	1.17	~623	#814	F	225.0	1.40	~795	#986
Prospect St SW left/thru/right	E	61.1	0.60	292	m391	E	61.1	0.60	292	m391	F	210.5	1.30	~565	m#721
Somerville Avenue/Prospect Street	D	45.0	-	-	-	D	49.6	-	-	-	F	136.7	-	-	-
Somerville Ave EB left	D	52.9	0.78	240	m302	D	52.9	0.78	240	m301	F	101.5	1.07	~354	m#401
Somerville Ave EB thru/right	E	58.1	0.84	270	m#342	E	58.1	0.84	270	m#340	E	71.8	0.96	300	m#344
Somerville Ave WB left	D	46.0	0.12	19	46	D	46.0	0.12	19	46	D	47.8	0.31	50	94
Somerville Ave WB thru/right	F	98.1	0.96	176	#325	F	98.1	0.96	176	#325	F	156.7	1.15	~247	#408
Prospect St NB left	C	21.4	0.53	69	m69	C	22.3	0.53	72	m66	F	94.3	1.11	~165	m71
Prospect St NB thru/right	D	40.8	1.00	~520	m461	E	58.6	1.05	~573	m#484	F	290.2	1.56	1098	m459
Prospect St SB thru	C	30.7	0.50	191	280	C	30.7	0.50	191	280	D	37.4	0.72	307	434
Prospect St SB right	C	28.7	0.34	0	63	C	28.7	0.34	0	63	C	30.3	0.40	18	98

Grey Shading indicates LOS E or F under the Existing Condition or a change from LOS D or better in a previous condition to LOS E or F.

~ 50th percentile volume exceeds capacity. Queue shown is the maximum after two cycles.

95th percentile volume exceeds capacity. Queue shown is the maximum after two cycles.

m Volumes for 95th percentile queue is metered by upstream signal.



EXISTING CAPACITY ANALYSIS

In the Existing Condition, most intersections and movements operate at LOS D or better except the following:

- The Columbia Street westbound approach at Webster Avenue/Columbia Street/Tremont Street operates at LOS E during the a.m. peak hour.
- The overall intersection of Webster Avenue/Washington Street/Somerville Avenue operates at LOS E during the a.m. and p.m. peak hours. The westbound right, northbound left/through/right, and southbound through/right movements all operate at LOS E during the a.m. and p.m. peak hours. The westbound left movement operates at LOS E during the a.m. peak hour.
- The overall intersection of Prospect Street/Webster Avenue/Concord Avenue operates at LOS D during the a.m. peak hour and LOS E during the p.m. peak hour. The southbound through/right and southwest left/through/right operate at LOS E and LOS F, respectively, during the a.m. peak hour. The northbound through/right and southwest left/through/right operate at LOS E, and the northeast left/through/right operates at LOS F during the p.m. peak hour.
- At the intersection of Somerville Avenue and Prospect Street, the westbound through/right operates at LOS E during the a.m. peak hour and LOS F during the p.m. peak hour. The northbound through/right operates at LOS E during a.m. peak hour and the eastbound through/right operates at LOS E during the p.m. peak hour.

BUILD (2021) CAPACITY ANALYSIS

The Build (2021) Condition operations are generally forecasted at the same LOS as the Existing Condition except:

- The Columbia Street westbound approach at Webster Avenue/Columbia Street/Tremont Street is forecasted to change from LOS E to LOS F during the a.m. peak hour.
- The overall intersection of Prospect Street/Webster Avenue/Concord Avenue is projected to change from LOS D to LOS E during the a.m. peak hour and from LOS E to LOS F during the p.m. peak hour. The southbound left at this intersection is forecasted to shift from LOS C to LOS E during the p.m. peak hour.
- The northbound through/right at the intersection of Somerville Avenue and Prospect Street is projected to degrade from LOS D to LOS E during the p.m. peak hour.

DESIGN YEAR BUILD (2027) CAPACITY ANALYSIS

The Design Year Build (2027) Condition generally operates at the same LOS as the Build (2021) Condition except:



- The Columbia Street westbound approach at Webster Avenue/Columbia Street/Tremont Street which is projected to degrade from LOS C to LOS F during the p.m. peak hour.
- The eastbound left/through/right at the intersection of Webster Avenue/Newton Street which is forecasted to change from LOS D to LOS F during the a.m. peak hour.
- The overall intersection of Somerville Avenue/Prospect Street is forecasted to change from LOS D to LOS F during the a.m. and p.m. peak hours. The eastbound through/right goes from LOS D to LOS E, the northbound left is projected to shift from LOS C to LOS F, and the southbound through is forecasted to change from LOS D to LOS F during the a.m. peak hour. The eastbound left is projected to degrade from LOS D to LOS F and the northbound left is forecasted to shift from LOS C to LOS F during the p.m. peak hour.
- The overall intersection of Prospect Street/Webster Avenue/Concord Avenue is projected to shift from LOS E to LOS F during the a.m. peak hour and to remain at LOS F during the p.m. peak hour. During both time periods the delay increases for the overall intersection and several movements due to the added volume from other background projects. The northbound and southbound left movements are projected to shift from LOS C to LOS F and the northeast left/through/right similarly from LOS D to LOS F during the a.m. peak hour.



Transportation Mitigation

The Boynton Gateway Owner LLC (a joint venture between an affiliate of CV Properties LLC., and a fund indirectly owned by Columbia Property Trust, collectively the “Proponent”) continues to partner with the City of Somerville to create a Project that efficiently serves vehicle trips, improves the pedestrian environment, and encourages transit and bicycle use to the Project Site. The Project will bring all abutting sidewalks and pedestrian ramps to the City of Somerville standards in accordance with the National Association of City Transportation Officials (NACTO) design guidelines. This will include the reconstruction and widening of sidewalks abutting the Project Site along Webster Avenue and Columbia Street, improvements to street lighting where necessary, planting of street trees, and addition of street furniture such as benches around the Site. Another pedestrian realm improvement will be a new ADA compliant wheelchair ramp on the southeast corner of the intersection between Webster Avenue and Columbia Court. All existing curb cuts, except for those on either end of Beach Avenue, will be removed. Curb cuts at the east and west ends of Beach Avenue will be updated and driveways at either end will be raised. The public realm will also be enhanced with a publicly accessible landscaped plaza between the Project Site and 80 Webster Avenue.

The Project has committed to install a new Bluebikes bicycle share station in the public sidewalk either in front of the proposed building or at a location to be determined in coordination with the city in the Boynton Yards subdistrict. The Project will provide at least 19 short-term bicycle parking spaces around the Project Site for visitors. The Project will provide at least 96 long-term bicycle parking spaces, at no additional cost to bicyclists, for building employee-use in a secure, covered indoor bicycle storage room. The Project will improve bicycle facilities by installing a new five-foot bicycle lane in the eastbound direction on Columbia Street between Webster Avenue and Windsor Place.

For transit improvements, the Proponent will commit to improving the accessibility and comfort of the MBTA bus stop in front of the Project Site on Webster Avenue in coordination with the US2 Development, the City, and MBTA. The existing stop is a near-side stop that serves MBTA Bus 85. Improvements will include a new ADA-compliant stop consistent with MBTA Bus Design Guidelines. As the long-term vision for the Webster Avenue/Columbia Street continues to evolve, relocation or possible stop consolidation will continue to be evaluated with neighboring development projects, MBTA, City of Somerville and stakeholders.

The Project will make all of these improvements in addition to the required linkage and Green Line Extension contributions as a component of the City approval process.



Transportation Demand Management

The Proponent continues to work with the City of Somerville to create a Project that provides safe access for vehicle trips, improves the pedestrian environment, and encourages transit and bicycle use at the Project Site. Per the City of Somerville Zoning Ordinance and discussions with the city on the Mobility Management Plan (MMP), the Proponent will provide the following TDM elements for tenants:

- An on-site transportation coordinator;
- Posted information on alternative modes of transportation;
- Distributed information on alternative modes of transportation;
- Unbundled parking;
- Preferential parking for carpool/vanpool;
- Qualified transportation fringe benefits;
- A guaranteed ride home program; and
- An annual mobility educational meeting.

The Proponent will also require future tenants to provide the following to their employees through lease agreements:

- A guaranteed ride home program;
- Qualified transportation fringe benefits in the form of pre-tax deduction and transit pass subsidy; and
- Participate in BLUEbikes Corporate Partnership Program and subsidies for annual passes.

The Proponent is committed to implementing TDM measures to minimize automobile usage and Project-related traffic impacts. The Proponent is prepared to take advantage of good transit access in marketing the Project to future tenants and work with tenants to encourage the use of non-vehicular modes of travel. TDM measures are summarized below, while further TDM agreement details are further detailed in the MMP between the Proponent and the City of Somerville. The following consists of additional commitments that the Proponent and future tenants will implement:

- The Proponent will participate in any Transportation Management Associations (TMAs) that may serve the Project area, including ones that are yet to be formed;
- The Proponent will operate the parking garage as a commercial parking facility for the public with spaces priced at local market rates for all types of parking passes (hourly, daily, overnight, and monthly options);



- Through access on Beach Avenue will be restricted to the general public with the uses of retractable bollards and only allowed for emergency vehicles or those with preexisting easement agreements;
- Posted information on alternative transportation modes will be displayed on transit screens in the building lobbies and on one exterior screen facing the public realm;
- Twenty of the parking spaces may be reserved for exclusive use by building occupants and will be priced at 200% of the market rate;
- At least 5% of the parking spaces will be designated as preferential parking for carpool and vanpool users;
- At least three parking spaces will be dedicated for car share vehicles subject to demand;
- One bicycle repair facility will be provided in the bicycle storage room;
- Locker rooms and shower facilities will be provided for tenant employees at a supply equivalent to the expected employee demand;
- Lease agreements with future tenants will require that subsidized MBTA transit passes are made available to any employee choosing to commute by transit for at least 75% of the cost of a pass up to the federal maximum for Qualified Transportation Fringe benefits;
- Lease agreements with future tenants will require that subsidized Bluebikes memberships are made available to any employee choosing to commute by bicycle share for at least 50% of the membership cost;
- The Proponent will commit to keeping the vehicle mode share at 40% as exists in the area today and commit to reducing it to 37.5% or less by 2030 and 25% or less by 2040 to meet the city's SomerVision 2040 goals.

As part of an effort to continue to meet the city's transportation goals, the Proponent will participate in Annual Reporting to track, assess, and reevaluate where the Project is with meeting those goals. This will be conducted in the form of travel surveys, automobile counts at the parking facility, parking utilization, and a formal report summarizing all collected data.



Conclusion

The proposed Boynton Gateway development is expected to have positive impacts to the transportation network with enhanced public realm features, added bicycle amenities, and controlled vehicle access off a private way. As the Project is located at a key entrance point for the Boynton Yards sub-area, the wider sidewalks, added street furniture and trees, and internal pedestrian walkway will provide more comfortable and safe pedestrian connections to districts north and east. The new Beach Avenue access configurations relocate heavier truck activity away from Webster Avenue and onto a lower volume street. The Project's commitments to installing a Bluebikes Station, improving bus stop accessibility near the Site, nearby bicycle lane mitigation, and implementing robust TDM elements are expected to promote non-vehicular travel. The Project is committed to improving the Boynton Yards sub-district in a sustainable way through support of transit, walking, and cycling and will continue to do so as the area develops.



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Appendix A

Raw Traffic Counts

PDI File #: **175894 (8) am**
 Location: **N: Somerville Ave/ Bow Street S: Webster Avenue NE: Stone Avenue**
 Location: **E: Somerville Avenue W: Washington Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Cars and Heavy Vehicles (Combined)

	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						
	North						Northeast						East						South						West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Total
7:30 AM	5	88	67	0	0	160	0	0	0	0	0	0	7	47	43	46	0	143	5	0	40	5	0	50	12	47	0	14	0	73	426
7:45 AM	10	83	64	0	0	157	0	0	0	0	0	0	2	75	81	31	0	189	17	0	43	4	0	64	10	54	0	13	0	77	487
Total	15	171	131	0	0	317	0	0	0	0	0	0	9	122	124	77	0	332	22	0	83	9	0	114	22	101	0	27	0	150	913
8:00 AM	11	92	76	0	0	179	0	0	0	0	0	0	7	60	63	21	0	151	7	0	25	3	0	35	9	64	0	18	0	91	456
8:15 AM	7	88	79	0	0	174	0	0	0	0	0	0	5	56	56	13	0	130	7	0	32	4	0	43	4	60	0	15	0	79	426
8:30 AM	9	103	69	0	0	181	0	0	0	0	0	0	5	72	57	28	0	162	7	0	30	1	0	38	3	75	0	14	0	92	473
8:45 AM	10	80	58	0	0	148	0	0	0	0	0	0	7	67	59	22	0	155	9	0	12	4	0	25	3	54	0	7	0	64	392
Total	37	363	282	0	0	682	0	0	0	0	0	0	24	255	235	84	0	598	30	0	99	12	0	141	19	253	0	54	0	326	1747
9:00 AM	3	108	67	0	1	179	0	0	0	0	0	0	4	76	36	25	0	141	9	0	27	2	0	38	9	52	0	7	0	68	426
9:15 AM	9	64	55	0	0	128	0	0	0	0	0	0	6	79	56	31	0	172	6	0	40	1	0	47	4	42	0	10	0	56	403
Total	12	172	122	0	1	307	0	0	0	0	0	0	10	155	92	56	0	313	15	0	67	3	0	85	13	94	0	17	0	124	829
Grand Total	64	706	535	0	1	1306	0	0	0	0	0	0	43	532	451	217	0	1243	67	0	249	24	0	340	54	448	0	98	0	600	3489
Approach %	4.9	54.1	41.0	0.0	0.1		0.0	0.0	0.0	0.0	0.0	0.0	3.5	42.8	36.3	17.5	0.0		19.7	0.0	73.2	7.1	0.0		9.0	74.7	0.0	16.3	0.0		
Total %	1.8	20.2	15.3	0.0	0.0	37.4	0.0	0.0	0.0	0.0	0.0	0.0	1.2	15.2	12.9	6.2	0.0	35.6	1.9	0.0	7.1	0.7	0.0	9.7	1.5	12.8	0.0	2.8	0.0	17.2	
Exiting Leg Total	880						43						1050						977						539						3489
Cars	62	686	503	0	1	1252	0	0	0	0	0	0	41	485	411	201	0	1138	57	0	242	23	0	322	53	402	0	89	0	544	3256
% Cars	96.9	97.2	94.0	0.0	100.0	95.9	0.0	0.0	0.0	0.0	0.0	0.0	95.3	91.2	91.1	92.6	0.0	91.6	85.1	0.0	97.2	95.8	0.0	94.7	98.1	89.7	0.0	90.8	0.0	90.7	93.3
Exiting Leg Total	817						41						962						940						496						3256
Heavy Vehicles	2	20	32	0	0	54	0	0	0	0	0	0	2	47	40	16	0	105	10	0	7	1	0	18	1	46	0	9	0	56	233
% Heavy Vehicles	3.1	2.8	6.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	0.0	4.7	8.8	8.9	7.4	0.0	8.4	14.9	0.0	2.8	4.2	0.0	5.3	1.9	10.3	0.0	9.2	0.0	9.3	6.7
Exiting Leg Total	63						2						88						37						43						233

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						
	North						Northeast						East						South						West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Total
7:45 AM	10	83	64	0	0	157	0	0	0	0	0	0	2	75	81	31	0	189	17	0	43	4	0	64	10	54	0	13	0	77	487
8:00 AM	11	92	76	0	0	179	0	0	0	0	0	0	7	60	63	21	0	151	7	0	25	3	0	35	9	64	0	18	0	91	456
8:15 AM	7	88	79	0	0	174	0	0	0	0	0	0	5	56	56	13	0	130	7	0	32	4	0	43	4	60	0	15	0	79	426
8:30 AM	9	103	69	0	0	181	0	0	0	0	0	0	5	72	57	28	0	162	7	0	30	1	0	38	3	75	0	14	0	92	473
Total Volume	37	366	288	0	0	691	0	0	0	0	0	0	19	263	257	93	0	632	38	0	130	12	0	180	26	253	0	60	0	339	1842
% Approach Total	5.4	53.0	41.7	0.0	0.0		0.0	0.0	0.0	0.0	0.0		3.0	41.6	40.7	14.7	0.0		21.1	0.0	72.2	6.7	0.0		7.7	74.6	0.0	17.7	0.0		
PHF	0.841	0.888	0.911	0.000	0.000	0.954	0.000	0.000	0.000	0.000	0.000	0.000	0.679	0.877	0.793	0.750	0.000	0.836	0.559	0.000	0.756	0.750	0.000	0.703	0.650	0.843	0.000	0.833	0.000	0.921	0.946
Cars	37	356	275	0	0	668	0	0	0	0	0	0	19	240	232	87	0	578	36	0	126	12	0	174	25	234	0	54	0	313	1733
Cars %	100.0	97.3	95.5	0.0	0.0	96.7	0.0	0.0	0.0	0.0	0.0	0.0	100.0	91.3	90.3	93.5	0.0	91.5	94.7	0.0	96.9	100.0	0.0	96.7	96.2	92.5	0.0	90.0	0.0	92.3	94.1
Heavy Vehicles	0	10	13	0	0	23	0	0	0	0	0	0	0	23	25	6	0	54	2	0	4	0	0	6	1	19	0	6	0	26	109
Heavy Vehicles %	0.0	2.7	4.5	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.7	9.7	6.5	0.0	8.5	5.3	0.0	3.1	0.0	0.0	3.3	3.8	7.5	0.0	10.0	0.0	7.7	5.9
Cars Enter Leg	37	356	275	0	0	668	0	0	0	0	0	0	19	240	232	87	0	578	36	0	126	12	0	174	25	234	0	54	0	313	1733
Heavy Enter Leg	0	10	13	0	0	23	0	0	0	0	0	0	0	23	25	6	0	54	2	0	4	0	0	6	1	19	0	6	0	26	109
Total Entering Leg	37	366	288	0	0	691	0	0	0	0	0	0	19	263	257	93	0	632	38	0	130	12	0	180	26	253	0	60	0	339	1842
Cars Exiting Leg	420						19						545						468						281						1733
Heavy Exiting Leg	33						0						34						17						25						109
Total Exiting Leg	453						19						579						485						306						1842

PDI File #: **175894 (8) am**
 Location: **N: Somerville Ave/ Bow Street S: Webster Avenue NE: Stone Avenue**
 Location: **E: Somerville Avenue W: Washington Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Cars

	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						Total
	North						Northeast						East						South						West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
7:30 AM	4	87	64	0	0	155	0	0	0	0	0	0	7	42	39	42	0	130	5	0	40	4	0	49	12	41	0	12	0	65	399
7:45 AM	10	80	62	0	0	152	0	0	0	0	0	0	2	69	72	30	0	173	16	0	43	4	0	63	10	50	0	11	0	71	459
Total	14	167	126	0	0	307	0	0	0	0	0	0	9	111	111	72	0	303	21	0	83	8	0	112	22	91	0	23	0	136	858
8:00 AM	11	91	73	0	0	175	0	0	0	0	0	0	7	53	57	18	0	135	7	0	23	3	0	33	9	61	0	16	0	86	429
8:15 AM	7	85	75	0	0	167	0	0	0	0	0	0	5	51	52	13	0	121	6	0	30	4	0	40	4	59	0	14	0	77	405
8:30 AM	9	100	65	0	0	174	0	0	0	0	0	0	5	67	51	26	0	149	7	0	30	1	0	38	2	64	0	13	0	79	440
8:45 AM	10	78	54	0	0	142	0	0	0	0	0	0	6	63	57	19	0	145	4	0	12	4	0	20	3	45	0	7	0	55	362
Total	37	354	267	0	0	658	0	0	0	0	0	0	23	234	217	76	0	550	24	0	95	12	0	131	18	229	0	50	0	297	1636
9:00 AM	3	104	63	0	1	171	0	0	0	0	0	0	4	69	31	24	0	128	7	0	26	2	0	35	9	44	0	7	0	60	394
9:15 AM	8	61	47	0	0	116	0	0	0	0	0	0	5	71	52	29	0	157	5	0	38	1	0	44	4	38	0	9	0	51	368
Total	11	165	110	0	1	287	0	0	0	0	0	0	9	140	83	53	0	285	12	0	64	3	0	79	13	82	0	16	0	111	762
Grand Total	62	686	503	0	1	1252	0	0	0	0	0	0	41	485	411	201	0	1138	57	0	242	23	0	322	53	402	0	89	0	544	3256
Approach %	5.0	54.8	40.2	0.0	0.1		0.0	0.0	0.0	0.0	0.0		3.6	42.6	36.1	17.7	0.0		17.7	0.0	75.2	7.1	0.0		9.7	73.9	0.0	16.4	0.0		
Total %	1.9	21.1	15.4	0.0	0.0	38.5	0.0	0.0	0.0	0.0	0.0	0.0	1.3	14.9	12.6	6.2	0.0	35.0	1.8	0.0	7.4	0.7	0.0	9.9	1.6	12.3	0.0	2.7	0.0	16.7	
Exiting Leg Total	817						41						962						940						496						3256

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

7:45 AM	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						
	North						Northeast						East						South						West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
7:45 AM	10	80	62	0	0	152	0	0	0	0	0	0	2	69	72	30	0	173	16	0	43	4	0	63	10	50	0	11	0	71	459
8:00 AM	11	91	73	0	0	175	0	0	0	0	0	0	7	53	57	18	0	135	7	0	23	3	0	33	9	61	0	16	0	86	429
8:15 AM	7	85	75	0	0	167	0	0	0	0	0	0	5	51	52	13	0	121	6	0	30	4	0	40	4	59	0	14	0	77	405
8:30 AM	9	100	65	0	0	174	0	0	0	0	0	0	5	67	51	26	0	149	7	0	30	1	0	38	2	64	0	13	0	79	440
Total Volume	37	356	275	0	0	668	0	0	0	0	0	0	19	240	232	87	0	578	36	0	126	12	0	174	25	234	0	54	0	313	1733
% Approach Total	5.5	53.3	41.2	0.0	0.0		0.0	0.0	0.0	0.0	0.0		3.3	41.5	40.1	15.1	0.0		20.7	0.0	72.4	6.9	0.0		8.0	74.8	0.0	17.3	0.0		
PHF	0.841	0.890	0.917	0.000	0.000	0.954	0.000	0.000	0.000	0.000	0.000	0.000	0.679	0.870	0.806	0.725	0.000	0.835	0.563	0.000	0.733	0.750	0.000	0.690	0.625	0.914	0.000	0.844	0.000	0.910	0.944
Entering Leg	37	356	275	0	0	668	0	0	0	0	0	0	19	240	232	87	0	578	36	0	126	12	0	174	25	234	0	54	0	313	1733
Exiting Leg	420						19						545						468						281						1733
Total	1088						19						1123						642						594						3466

PDI File #: 175894 (8) am
 Location: N: Somerville Ave/ Bow Street S: Webster Avenue NE: Stone Avenue
 Location: E: Somerville Avenue W: Washington Street
 City, State: Somerville, MA
 Client: USSA/ J. Kunz
 Site Code: TBA
 Count Date: Thursday, October 5, 2017
 Start Time: 7:30 AM
 End Time: 9:30 AM
 Class:



Heavy Vehicles (Combined-Large Trucks and Buses)

	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						
	North						Northeast						East						South						West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Total
7:30 AM	1	1	3	0	0	5	0	0	0	0	0	0	0	5	4	4	0	13	0	0	0	1	0	1	0	6	0	2	0	8	27
7:45 AM	0	3	2	0	0	5	0	0	0	0	0	0	0	6	9	1	0	16	1	0	0	0	0	1	0	4	0	2	0	6	28
Total	1	4	5	0	0	10	0	0	0	0	0	0	0	11	13	5	0	29	1	0	0	1	0	2	0	10	0	4	0	14	55
8:00 AM	0	1	3	0	0	4	0	0	0	0	0	0	0	7	6	3	0	16	0	0	2	0	0	2	0	3	0	2	0	5	27
8:15 AM	0	3	4	0	0	7	0	0	0	0	0	0	0	5	4	0	0	9	1	0	2	0	0	3	0	1	0	1	0	2	21
8:30 AM	0	3	4	0	0	7	0	0	0	0	0	0	0	5	6	2	0	13	0	0	0	0	0	0	1	11	0	1	0	13	33
8:45 AM	0	2	4	0	0	6	0	0	0	0	0	0	1	4	2	3	0	10	5	0	0	0	0	5	0	9	0	0	0	9	30
Total	0	9	15	0	0	24	0	0	0	0	0	0	1	21	18	8	0	48	6	0	4	0	0	10	1	24	0	4	0	29	111
9:00 AM	0	4	4	0	0	8	0	0	0	0	0	0	0	7	5	1	0	13	2	0	1	0	0	3	0	8	0	0	0	8	32
9:15 AM	1	3	8	0	0	12	0	0	0	0	0	0	1	8	4	2	0	15	1	0	2	0	0	3	0	4	0	1	0	5	35
Total	1	7	12	0	0	20	0	0	0	0	0	0	1	15	9	3	0	28	3	0	3	0	0	6	0	12	0	1	0	13	67
Grand Total	2	20	32	0	0	54	0	0	0	0	0	0	2	47	40	16	0	105	10	0	7	1	0	18	1	46	0	9	0	56	233
Approach %	3.7	37.0	59.3	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	1.9	44.8	38.1	15.2	0.0		55.6	0.0	38.9	5.6	0.0		1.8	82.1	0.0	16.1	0.0		
Total %	0.9	8.6	13.7	0.0	0.0	23.2	0.0	0.0	0.0	0.0	0.0	0.0	0.9	20.2	17.2	6.9	0.0	45.1	4.3	0.0	3.0	0.4	0.0	7.7	0.4	19.7	0.0	3.9	0.0	24.0	
Exiting Leg Total	63						2						88						37						43						233
Large Trucks	2	16	23	0	0	41	0	0	0	0	0	0	2	33	25	4	0	64	6	0	5	0	0	11	1	16	0	6	0	23	139
% Large Trucks	100.0	80.0	71.9	0.0	0.0	75.9	0.0	0.0	0.0	0.0	0.0	0.0	100.0	70.2	62.5	25.0	0.0	61.0	60.0	0.0	71.4	0.0	0.0	61.1	100.0	34.8	0.0	66.7	0.0	41.1	59.7
Exiting Leg Total	44						2						45						21						27						139
Buses	0	4	9	0	0	13	0	0	0	0	0	0	0	14	15	12	0	41	4	0	2	1	0	7	0	30	0	3	0	33	94
% Buses	0.0	20.0	28.1	0.0	0.0	24.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.8	37.5	75.0	0.0	39.0	40.0	0.0	28.6	100.0	0.0	38.9	0.0	65.2	0.0	33.3	0.0	58.9	40.3
Exiting Leg Total	19						0						43						16						16						94

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						
	North						Northeast						East						South						West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Total
8:30 AM	0	3	4	0	0	7	0	0	0	0	0	0	0	5	6	2	0	13	0	0	0	0	0	0	1	11	0	1	0	13	33
8:45 AM	0	2	4	0	0	6	0	0	0	0	0	0	1	4	2	3	0	10	5	0	0	0	0	5	0	9	0	0	0	9	30
9:00 AM	0	4	4	0	0	8	0	0	0	0	0	0	0	7	5	1	0	13	2	0	1	0	0	3	0	8	0	0	0	8	32
9:15 AM	1	3	8	0	0	12	0	0	0	0	0	0	1	8	4	2	0	15	1	0	2	0	0	3	0	4	0	1	0	5	35
Total Volume	1	12	20	0	0	33	0	0	0	0	0	0	2	24	17	8	0	51	8	0	3	0	0	11	1	32	0	2	0	35	130
% Approach Total	3.0	36.4	60.6	0.0	0.0		0.0	0.0	0.0	0.0	0.0		3.9	47.1	33.3	15.7	0.0		72.7	0.0	27.3	0.0	0.0		2.9	91.4	0.0	5.7	0.0		
PHF	0.250	0.750	0.625	0.000	0.000	0.688	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.750	0.708	0.667	0.000	0.850	0.400	0.000	0.375	0.000	0.000	0.550	0.250	0.727	0.000	0.500	0.000	0.673	0.929
Large Trucks	1	11	14	0	0	26	0	0	0	0	0	0	2	18	11	2	0	33	6	0	2	0	0	8	1	9	0	1	0	11	78
Large Trucks %	100.0	91.7	70.0	0.0	0.0	78.8	0.0	0.0	0.0	0.0	0.0	0.0	100.0	75.0	64.7	25.0	0.0	64.7	75.0	0.0	66.7	0.0	0.0	72.7	100.0	28.1	0.0	50.0	0.0	31.4	60.0
Buses	0	1	6	0	0	7	0	0	0	0	0	0	0	6	6	6	0	18	2	0	1	0	0	3	0	23	0	1	0	24	52
Buses %	0.0	8.3	30.0	0.0	0.0	21.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	35.3	75.0	0.0	35.3	25.0	0.0	33.3	0.0	0.0	27.3	0.0	71.9	0.0	50.0	0.0	68.6	40.0
Trucks Enter Leg	1	11	14	0	0	26	0	0	0	0	0	0	2	18	11	2	0	33	6	0	2	0	0	8	1	9	0	1	0	11	78
Bus Enter Leg	0	1	6	0	0	7	0	0	0	0	0	0	0	6	6	6	0	18	2	0	1	0	0	3	0	23	0	1	0	24	52
Total Entering Leg	1	12	20	0	0	33	0	0	0	0	0	0	2	24	17	8	0	51	8	0	3	0	0	11	1	32	0	2	0	35	130
Trucks Exiting Leg	21						2						29						14						12						78
Buses Exiting Leg	8						0						31						7						6						52
Total Exiting Leg	29						2						60						21						18						130

PDI File #: **175894 (8) am**
 Location: **N: Somerville Ave/ Bow Street S: Webster Avenue NE: Stone Avenue**
 Location: **E: Somerville Avenue W: Washington Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Large Trucks

	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						Total	
	North						Northeast						East						South						West							
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total		
7:30 AM	1	1	3	0	0	5	0	0	0	0	0	0	0	2	2	1	0	5	0	0	0	0	0	0	0	0	4	0	1	0	5	15
7:45 AM	0	2	1	0	0	3	0	0	0	0	0	0	0	5	6	0	0	11	0	0	0	0	0	0	0	0	1	0	1	0	2	16
Total	1	3	4	0	0	8	0	0	0	0	0	0	0	7	8	1	0	16	0	0	0	0	0	0	0	0	5	0	2	0	7	31
8:00 AM	0	0	2	0	0	2	0	0	0	0	0	0	0	5	4	1	0	10	0	0	2	0	0	2	0	1	0	2	0	3	17	
8:15 AM	0	2	3	0	0	5	0	0	0	0	0	0	0	3	2	0	0	5	0	0	1	0	0	1	0	1	0	1	0	2	13	
8:30 AM	0	3	3	0	0	6	0	0	0	0	0	0	0	4	5	2	0	11	0	0	0	0	0	0	0	1	3	0	0	0	4	21
8:45 AM	0	1	3	0	0	4	0	0	0	0	0	0	1	3	1	0	0	5	5	0	0	0	0	5	0	2	0	0	0	2	16	
Total	0	6	11	0	0	17	0	0	0	0	0	0	1	15	12	3	0	31	5	0	3	0	0	8	1	7	0	3	0	11	67	
9:00 AM	0	4	3	0	0	7	0	0	0	0	0	0	0	6	3	0	0	9	1	0	1	0	0	2	0	3	0	0	0	3	21	
9:15 AM	1	3	5	0	0	9	0	0	0	0	0	0	1	5	2	0	0	8	0	0	1	0	0	1	0	1	0	1	0	2	20	
Total	1	7	8	0	0	16	0	0	0	0	0	0	1	11	5	0	0	17	1	0	2	0	0	3	0	4	0	1	0	5	41	
Grand Total	2	16	23	0	0	41	0	0	0	0	0	0	2	33	25	4	0	64	6	0	5	0	0	11	1	16	0	6	0	23	139	
Approach %	4.9	39.0	56.1	0.0	0.0		0.0	0.0	0.0	0.0	0.0		3.1	51.6	39.1	6.3	0.0		54.5	0.0	45.5	0.0	0.0		4.3	69.6	0.0	26.1	0.0			
Total %	1.4	11.5	16.5	0.0	0.0	29.5	0.0	0.0	0.0	0.0	0.0	0.0	1.4	23.7	18.0	2.9	0.0	46.0	4.3	0.0	3.6	0.0	0.0	7.9	0.7	11.5	0.0	4.3	0.0	16.5		
Exiting Leg Total	44						2						45						21						27						139	

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:30 AM	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street							
	North						Northeast						East						South						West							
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total		
8:30 AM	0	3	3	0	0	6	0	0	0	0	0	0	0	4	5	2	0	11	0	0	0	0	0	0	0	1	3	0	0	0	4	21
8:45 AM	0	1	3	0	0	4	0	0	0	0	0	0	1	3	1	0	0	5	5	0	0	0	0	5	0	2	0	0	0	2	16	
9:00 AM	0	4	3	0	0	7	0	0	0	0	0	0	0	6	3	0	0	9	1	0	1	0	0	2	0	3	0	0	0	3	21	
9:15 AM	1	3	5	0	0	9	0	0	0	0	0	0	1	5	2	0	0	8	0	0	1	0	0	1	0	1	0	1	0	2	20	
Total Volume	1	11	14	0	0	26	0	0	0	0	0	0	2	18	11	2	0	33	6	0	2	0	0	8	1	9	0	1	0	11	78	
% Approach Total	3.8	42.3	53.8	0.0	0.0		0.0	0.0	0.0	0.0	0.0		6.1	54.5	33.3	6.1	0.0		75.0	0.0	25.0	0.0	0.0		9.1	81.8	0.0	9.1	0.0			
PHF	0.250	0.688	0.700	0.000	0.000	0.722	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.750	0.550	0.250	0.000	0.750	0.300	0.000	0.500	0.000	0.000	0.400	0.250	0.750	0.000	0.250	0.000	0.688	0.929	
Entering Leg	1	11	14	0	0	26	0	0	0	0	0	0	2	18	11	2	0	33	6	0	2	0	0	8	1	9	0	1	0	11	78	
Exiting Leg	21						2						29						14						12						78	
Total	47						2						62						22						23						156	

PDI File #: **175894 (8) am**
 Location: **N: Somerville Ave/ Bow Street S: Webster Avenue NE: Stone Avenue**
 Location: **E: Somerville Avenue W: Washington Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Buses

	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						Total	
	North						Northeast						East						South						West							
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total		
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	3	0	8	0	0	0	1	0	1	0	2	0	1	0	3	12	
7:45 AM	0	1	1	0	0	2	0	0	0	0	0	0	0	1	3	1	0	5	1	0	0	0	0	1	0	3	0	1	0	4	12	
Total	0	1	1	0	0	2	0	0	0	0	0	0	0	4	5	4	0	13	1	0	0	1	0	2	0	5	0	2	0	7	24	
8:00 AM	0	1	1	0	0	2	0	0	0	0	0	0	0	2	2	2	0	6	0	0	0	0	0	0	0	2	0	2	0	0	2	10
8:15 AM	0	1	1	0	0	2	0	0	0	0	0	0	0	2	2	0	0	4	1	0	1	0	0	2	0	0	0	0	0	0	0	8
8:30 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	8	0	1	0	9	12
8:45 AM	0	1	1	0	0	2	0	0	0	0	0	0	0	1	1	3	0	5	0	0	0	0	0	0	0	0	7	0	0	0	7	14
Total	0	3	4	0	0	7	0	0	0	0	0	0	0	6	6	5	0	17	1	0	1	0	0	2	0	17	0	1	0	18	44	
9:00 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	2	1	0	4	1	0	0	0	0	1	0	5	0	0	0	0	5	11
9:15 AM	0	0	3	0	0	3	0	0	0	0	0	0	0	3	2	2	0	7	1	0	1	0	0	2	0	3	0	0	0	0	3	15
Total	0	0	4	0	0	4	0	0	0	0	0	0	0	4	4	3	0	11	2	0	1	0	0	3	0	8	0	0	0	0	8	26
Grand Total	0	4	9	0	0	13	0	0	0	0	0	0	0	14	15	12	0	41	4	0	2	1	0	7	0	30	0	3	0	33	94	
Approach %	0.0	30.8	69.2	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	34.1	36.6	29.3	0.0		57.1	0.0	28.6	14.3	0.0		0.0	90.9	0.0	9.1	0.0			
Total %	0.0	4.3	9.6	0.0	0.0	13.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.9	16.0	12.8	0.0	43.6	4.3	0.0	2.1	1.1	0.0	7.4	0.0	31.9	0.0	3.2	0.0	35.1		
Exiting Leg Total	19						0						43						16						16						94	

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:30 AM	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street							
	North						Northeast						East						South						West							
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total		
8:30 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	8	0	1	0	9	12
8:45 AM	0	1	1	0	0	2	0	0	0	0	0	0	0	1	1	3	0	5	0	0	0	0	0	0	0	7	0	0	0	0	7	14
9:00 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	2	1	0	4	1	0	0	0	0	1	0	5	0	0	0	0	5	11
9:15 AM	0	0	3	0	0	3	0	0	0	0	0	0	0	3	2	2	0	7	1	0	1	0	0	2	0	3	0	0	0	0	3	15
Total Volume	0	1	6	0	0	7	0	0	0	0	0	0	0	6	6	6	0	18	2	0	1	0	0	3	0	23	0	1	0	0	24	52
% Approach Total	0.0	14.3	85.7	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	33.3	33.3	33.3	0.0		66.7	0.0	33.3	0.0	0.0		0.0	95.8	0.0	4.2	0.0			
PHF	0.000	0.250	0.500	0.000	0.000	0.583	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.750	0.500	0.000	0.643	0.500	0.000	0.250	0.000	0.000	0.375	0.000	0.719	0.000	0.250	0.000	0.667	0.867	
Entering Leg	0	1	6	0	0	7	0	0	0	0	0	0	0	6	6	6	0	18	2	0	1	0	0	3	0	23	0	1	0	24	52	
Exiting Leg	8						0						31						7						6						52	
Total	15						0						49						10						30						104	

PDI File #: **175894 (8) am**
 Location: **N: Somerville Ave/ Bow Street S: Webster Avenue NE: Stone Avenue**
 Location: **E: Somerville Avenue W: Washington Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Bicycles (on Roadway and Crosswalks)

	Somerville Ave/ Bow Street								Stone Avenue								Somerville Avenue								Webster Avenue								Washington Street								Total	
	North								Northeast								East								South								West									
	Right	Thru	Left	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-SEB	CW-NWB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Bear Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total		
7:30 AM	0	24	12	0	0	0	0	36	1	0	0	0	0	0	0	1	0	3	2	1	0	1	0	7	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2	46
7:45 AM	2	15	13	0	0	0	0	30	0	0	0	0	0	0	0	0	0	4	4	2	0	0	0	10	0	0	1	0	0	1	0	2	1	1	0	0	0	0	0	2	44	
Total	2	39	25	0	0	0	0	66	1	0	0	0	0	0	0	1	0	7	6	3	0	1	0	17	0	0	1	0	0	1	0	2	1	3	0	0	0	0	0	4	90	
8:00 AM	2	45	15	0	0	0	0	62	0	0	0	0	0	1	0	1	0	4	4	1	0	1	0	10	0	0	2	1	0	1	0	4	1	3	0	0	0	0	1	5	82	
8:15 AM	0	50	25	0	0	0	0	75	1	0	0	0	0	0	0	1	0	3	5	3	0	0	0	11	0	0	2	0	0	1	1	4	1	4	0	1	0	0	0	6	97	
8:30 AM	2	50	31	0	0	1	0	84	0	0	0	0	0	0	0	0	0	5	10	2	0	1	0	18	0	0	1	0	0	0	1	2	1	4	0	2	0	0	0	7	111	
8:45 AM	1	45	34	0	0	0	1	81	0	0	0	3	0	1	0	4	1	4	7	2	0	1	0	15	1	0	3	0	0	0	0	4	0	5	0	1	0	0	0	6	110	
Total	5	190	105	0	0	1	1	302	1	0	0	3	0	2	0	6	1	16	26	8	0	3	0	54	1	0	8	1	0	2	2	14	3	16	0	4	0	0	1	24	400	
9:00 AM	1	31	21	0	0	1	0	54	1	0	0	0	0	0	0	1	0	4	5	1	0	2	0	12	0	0	2	1	0	0	0	3	1	7	0	1	0	0	0	9	79	
9:15 AM	2	32	12	0	0	1	0	47	0	0	0	0	0	1	2	3	0	4	3	1	0	0	0	8	0	0	3	1	0	0	0	4	0	1	0	0	0	0	0	1	63	
Total	3	63	33	0	0	2	0	101	1	0	0	0	0	1	2	4	0	8	8	2	0	2	0	20	0	0	5	2	0	0	0	7	1	8	0	1	0	0	0	10	142	
Grand Total	10	292	163	0	0	3	1	469	3	0	0	3	0	3	2	11	1	31	40	13	0	6	0	91	1	0	14	3	0	3	2	23	5	27	0	5	0	0	1	38	632	
Approach %	2.1	62.3	34.8	0.0	0.0	0.6	0.2		27.3	0.0	0.0	27.3	0.0	27.3	18.2		1.1	34.1	44.0	14.3	0.0	6.6	0.0		4.3	0.0	60.9	13.0	0.0	13.0	8.7		13.2	71.1	0.0	13.2	0.0	0.0	2.6			
Total %	1.6	46.2	25.8	0.0	0.0	0.5	0.2	74.2	0.5	0.0	0.0	0.5	0.0	0.5	0.3	1.7	0.2	4.9	6.3	2.1	0.0	0.9	0.0	14.4	0.2	0.0	2.2	0.5	0.0	0.5	0.3	3.6	0.8	4.3	0.0	0.8	0.0	0.0	0.2	6.0		
Exiting Leg Total	57								6								200								315								54								632	

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:00 AM	Somerville Ave/ Bow Street							Stone Avenue							Somerville Avenue							Webster Avenue							Washington Street							Total					
	North							Northeast							East							South							West												
	Right	Thru	Left	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-SEB	CW-NWB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Bear Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Bear Left		Left	U-Turn	CW-NB	CW-SB	Total
8:00 AM	2	45	15	0	0	0	0	62	0	0	0	0	0	1	0	1	0	4	4	1	0	1	0	10	0	0	2	1	0	1	0	4	1	3	0	0	0	1	5	82	
8:15 AM	0	50	25	0	0	0	0	75	1	0	0	0	0	0	0	1	0	3	5	3	0	0	0	11	0	0	2	0	0	1	1	4	1	4	0	1	0	0	0	6	97
8:30 AM	2	50	31	0	0	1	0	84	0	0	0	0	0	0	0	0	0	5	10	2	0	1	0	18	0	0	1	0	0	0	1	2	1	4	0	2	0	0	0	7	111
8:45 AM	1	45	34	0	0	0	1	81	0	0	0	3	0	1	0	4	1	4	7	2	0	1	0	15	1	0	3	0	0	0	0	4	0	5	0	1	0	0	0	6	110
Total Volume	5	190	105	0	0	1	1	302	1	0	0	3	0	2	0	6	1	16	26	8	0	3	0	54	1	0	8	1	0	2	2	14	3	16	0	4	0	0	1	24	400
% Approach Total	1.7	62.9	34.8	0.0	0.0	0.3	0.3		16.7	0.0	0.0	50.0	0.0	33.3	0.0		1.9	29.6	48.1	14.8	0.0	5.6	0.0		7.1	0.0	57.1	7.1	0.0	14.3	14.3		12.5	66.7	0.0	16.7	0.0	0.0	4.2		
PHF	0.625	0.950	0.772	0.000	0.000	0.250	0.250	0.899	0.250	0.000	0.000	0.250	0.000	0.500	0.000	0.375	0.250	0.800	0.650	0.667	0.000	0.750	0.000	0.750	0.250	0.000	0.667	0.250	0.000	0.500	0.500	0.875	0.750	0.800	0.000	0.500	0.000	0.000	0.250	0.857	0.901
Entering Leg	5	190	105	0	0	1	1	302	1	0	0	3	0	2	0	6	1	16	26	8	0	3	0	54	1	0	8	1	0	2	2	14	3	16	0	4	0	0	1	24	400
Exiting Leg	31								3								128								205								33								400
Total	333								9								182								219								57								800

PDI File #: **175894 (8) am**
 Location: **N: Somerville Ave/ Bow Street S: Webster Avenue NE: Stone Avenue**
 Location: **E: Somerville Avenue W: Washington Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Pedestrians

	Somerville Ave/ Bow Street								Stone Avenue								Somerville Avenue								Webster Avenue								Washington Street								
7:30 AM 7:45 AM Total	North								Northeast								East								South								West								Total
	Right	Thru	Left	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-SEB	CW-NWB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Bear Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total	
	0	0	0	0	0	5	3	8	0	0	0	0	0	18	15	33	0	0	0	0	0	22	14	36	0	0	0	0	0	34	17	51	0	0	0	0	0	14	28	42	170
	0	0	0	0	0	8	7	15	0	0	0	0	0	21	13	34	0	0	0	0	0	19	17	36	0	0	0	0	0	20	20	40	0	0	0	0	0	11	27	38	163
	0	0	0	0	0	13	10	23	0	0	0	0	0	39	28	67	0	0	0	0	0	41	31	72	0	0	0	0	0	54	37	91	0	0	0	0	0	25	55	80	333
8:00 AM	0	0	0	0	0	3	4	7	0	0	0	0	0	25	17	42	0	0	0	0	0	17	9	26	0	0	0	0	0	25	12	37	0	0	0	0	0	15	17	32	144
8:15 AM	0	0	0	0	0	6	7	13	0	0	0	0	0	19	9	28	0	0	0	0	0	15	5	20	0	0	0	0	0	5	28	33	0	0	0	0	0	7	31	38	132
8:30 AM	0	0	0	0	0	2	7	9	0	0	0	0	0	21	19	40	0	0	0	0	0	6	5	11	0	0	0	0	0	4	9	13	0	0	0	0	0	13	23	36	109
8:45 AM	0	0	0	0	0	4	6	10	0	0	0	0	0	27	13	40	0	0	0	0	0	6	8	14	0	0	0	0	0	3	5	8	0	0	0	0	0	8	8	16	88
	0	0	0	0	0	15	24	39	0	0	0	0	0	92	58	150	0	0	0	0	0	44	27	71	0	0	0	0	0	37	54	91	0	0	0	0	0	43	79	122	473
9:00 AM	0	0	0	0	0	6	6	12	0	0	0	0	0	15	17	32	0	0	0	0	0	18	5	23	0	0	0	0	0	1	7	8	0	0	0	0	0	16	12	28	103
9:15 AM	0	0	0	0	0	2	1	3	0	0	0	0	0	24	10	34	0	0	0	0	0	8	7	15	0	0	0	0	0	4	4	8	0	0	0	0	0	2	11	13	73
	0	0	0	0	0	8	7	15	0	0	0	0	0	39	27	66	0	0	0	0	0	26	12	38	0	0	0	0	0	5	11	16	0	0	0	0	0	18	23	41	176
Grand Total	0	0	0	0	0	36	41	77	0	0	0	0	0	170	113	283	0	0	0	0	0	111	70	181	0	0	0	0	0	96	102	198	0	0	0	0	0	86	157	243	982
Approach %	0.0	0.0	0.0	0.0	0.0	46.8	53.2		0.0	0.0	0.0	0.0	0.0	60.1	39.9		0.0	0.0	0.0	0.0	0.0	61.3	38.7		0.0	0.0	0.0	0.0	0.0	48.5	51.5		0.0	0.0	0.0	0.0	0.0	35.4	64.6		
Total %	0.0	0.0	0.0	0.0	0.0	3.7	4.2	7.8	0.0	0.0	0.0	0.0	0.0	17.3	11.5	28.8	0.0	0.0	0.0	0.0	0.0	11.3	7.1	18.4	0.0	0.0	0.0	0.0	0.0	9.8	10.4	20.2	0.0	0.0	0.0	0.0	0.0	8.8	16.0	24.7	
Exiting Leg Total	77								283								181								198								243								982

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

7:30 AM	Somerville Ave/ Bow Street								Stone Avenue								Somerville Avenue								Webster Avenue								Washington Street								Total
	North								Northeast								East								South								West								
	Right	Thru	Left	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-SE	CW-NW	Total	Hard Right	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Bear Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total	
7:30 AM	0	0	0	0	0	5	3	8	0	0	0	0	0	18	15	33	0	0	0	0	0	22	14	36	0	0	0	0	0	34	17	51	0	0	0	0	0	14	28	42	170
7:45 AM	0	0	0	0	0	8	7	15	0	0	0	0	0	21	13	34	0	0	0	0	0	19	17	36	0	0	0	0	0	20	20	40	0	0	0	0	0	11	27	38	163
8:00 AM	0	0	0	0	0	3	4	7	0	0	0	0	0	25	17	42	0	0	0	0	0	17	9	26	0	0	0	0	0	25	12	37	0	0	0	0	0	15	17	32	144
8:15 AM	0	0	0	0	0	6	7	13	0	0	0	0	0	19	9	28	0	0	0	0	0	15	5	20	0	0	0	0	0	5	28	33	0	0	0	0	0	7	31	38	132
Total Volume	0	0	0	0	0	22	21	43	0	0	0	0	0	83	54	137	0	0	0	0	0	73	45	118	0	0	0	0	0	84	77	161	0	0	0	0	0	47	103	150	609
% Approach Total	0.0	0.0	0.0	0.0	0.0	51.2	48.8		0.0	0.0	0.0	0.0	0.0	60.6	39.4		0.0	0.0	0.0	0.0	0.0	61.9	38.1		0.0	0.0	0.0	0.0	0.0	52.2	47.8		0.0	0.0	0.0	0.0	0.0	31.3	68.7		
PHF	0.000	0.000	0.000	0.000	0.000	0.688	0.750	0.717	0.000	0.000	0.000	0.000	0.000	0.830	0.794	0.815	0.000	0.000	0.000	0.000	0.000	0.830	0.662	0.819	0.000	0.000	0.000	0.000	0.000	0.618	0.688	0.789	0.000	0.000	0.000	0.000	0.000	0.783	0.831	0.893	0.896
Entering Leg	0	0	0	0	0	22	21	43	0	0	0	0	0	83	54	137	0	0	0	0	0	73	45	118	0	0	0	0	0	84	77	161	0	0	0	0	0	47	103	150	609
Exiting Leg	43								137								118								161								150								609
Total	86								274								236								322								300								1218

PDI File #: **175894 (8) pm**
 Location: **N: Somerville Ave/ Bow Street S: Webster Avenue NE: Stone Avenue**
 Location: **E: Somerville Avenue W: Washington Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Cars and Heavy Vehicles (Combined)

	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						Total
	North						Northeast						East						South						West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
4:30 PM	10	57	58	0	0	125	0	0	0	0	0	0	10	91	67	18	0	186	3	0	87	4	0	94	5	53	0	19	0	77	482
4:45 PM	8	48	64	0	0	120	0	0	0	0	0	0	11	107	56	21	0	195	10	0	70	0	0	80	4	58	0	25	0	87	482
Total	18	105	122	0	0	245	0	0	0	0	0	0	21	198	123	39	0	381	13	0	157	4	0	174	9	111	0	44	0	164	964
5:00 PM	8	50	55	0	0	113	0	0	0	0	0	0	9	102	69	24	0	204	5	0	39	0	0	44	14	66	0	28	0	108	469
5:15 PM	9	51	60	0	0	120	0	0	0	0	0	0	9	111	55	20	1	196	13	0	68	1	0	82	7	54	0	27	0	88	486
5:30 PM	8	42	62	0	0	112	0	0	0	0	0	0	11	97	85	21	0	214	4	0	59	2	0	65	2	61	0	32	0	95	486
5:45 PM	8	52	48	0	0	108	0	0	0	0	0	0	13	101	73	18	0	205	7	0	72	2	0	81	1	69	0	28	0	98	492
Total	33	195	225	0	0	453	0	0	0	0	0	0	42	411	282	83	1	819	29	0	238	5	0	272	24	250	0	115	0	389	1933
6:00 PM	6	55	69	0	0	130	0	0	0	0	0	0	5	93	71	21	0	190	7	0	80	0	0	87	7	55	0	26	0	88	495
6:15 PM	5	52	59	0	0	116	0	0	0	0	0	0	9	83	74	19	0	185	10	0	67	1	0	78	3	74	0	36	0	113	492
Total	11	107	128	0	0	246	0	0	0	0	0	0	14	176	145	40	0	375	17	0	147	1	0	165	10	129	0	62	0	201	987
Grand Total	62	407	475	0	0	944	0	0	0	0	0	0	77	785	550	162	1	1575	59	0	542	10	0	611	43	490	0	221	0	754	3884
Approach %	6.6	43.1	50.3	0.0	0.0		0.0	0.0	0.0	0.0	0.0		4.9	49.8	34.9	10.3	0.1		9.7	0.0	88.7	1.6	0.0		5.7	65.0	0.0	29.3	0.0		
Total %	1.6	10.5	12.2	0.0	0.0	24.3	0.0	0.0	0.0	0.0	0.0	0.0	2.0	20.2	14.2	4.2	0.0	40.6	1.5	0.0	14.0	0.3	0.0	15.7	1.1	12.6	0.0	5.7	0.0	19.4	
Exiting Leg Total	1548						77						1025						612						622						3884
Cars	62	399	452	0	0	913	0	0	0	0	0	0	77	753	533	152	1	1516	57	0	536	10	0	603	42	461	0	219	0	722	3754
% Cars	100.0	98.0	95.2	0.0	0.0	96.7	0.0	0.0	0.0	0.0	0.0	0.0	100.0	95.9	96.9	93.8	100.0	96.3	96.6	0.0	98.9	100.0	0.0	98.7	97.7	94.1	0.0	99.1	0.0	95.8	96.7
Exiting Leg Total	1508						77						971						593						605						3754
Heavy Vehicles	0	8	23	0	0	31	0	0	0	0	0	0	0	32	17	10	0	59	2	0	6	0	0	8	1	29	0	2	0	32	130
% Heavy Vehicles	0.0	2.0	4.8	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	3.1	6.2	0.0	3.7	3.4	0.0	1.1	0.0	0.0	1.3	2.3	5.9	0.0	0.9	0.0	4.2	3.3
Exiting Leg Total	40						0						54						19						17						130

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:30 PM	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						Total
	North						Northeast						East						South						West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
5:30 PM	8	42	62	0	0	112	0	0	0	0	0	0	11	97	85	21	0	214	4	0	59	2	0	65	2	61	0	32	0	95	486
5:45 PM	8	52	48	0	0	108	0	0	0	0	0	0	13	101	73	18	0	205	7	0	72	2	0	81	1	69	0	28	0	98	492
6:00 PM	6	55	69	0	0	130	0	0	0	0	0	0	5	93	71	21	0	190	7	0	80	0	0	87	7	55	0	26	0	88	495
6:15 PM	5	52	59	0	0	116	0	0	0	0	0	0	9	83	74	19	0	185	10	0	67	1	0	78	3	74	0	36	0	113	492
Total Volume	27	201	238	0	0	466	0	0	0	0	0	0	38	374	303	79	0	794	28	0	278	5	0	311	13	259	0	122	0	394	1965
% Approach Total	5.8	43.1	51.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	47.1	38.2	9.9	0.0	0.0	9.0	0.0	89.4	1.6	0.0	0.0	3.3	65.7	0.0	31.0	0.0	0.0	0.0
PHF	0.844	0.914	0.862	0.000	0.000	0.896	0.000	0.000	0.000	0.000	0.000	0.000	0.731	0.926	0.891	0.940	0.000	0.928	0.700	0.000	0.869	0.625	0.000	0.894	0.464	0.875	0.000	0.847	0.000	0.872	0.992
Cars	27	198	226	0	0	451	0	0	0	0	0	0	38	361	298	72	0	769	28	0	277	5	0	310	13	249	0	121	0	383	1913
Cars %	100.0	98.5	95.0	0.0	0.0	96.8	0.0	0.0	0.0	0.0	0.0	0.0	100.0	96.5	98.3	91.1	0.0	96.9	100.0	0.0	99.6	100.0	0.0	99.7	100.0	96.1	0.0	99.2	0.0	97.2	97.4
Heavy Vehicles	0	3	12	0	0	15	0	0	0	0	0	0	0	13	5	7	0	25	0	0	1	0	0	1	0	10	0	1	0	11	52
Heavy Vehicles %	0.0	1.5	5.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	1.7	8.9	0.0	3.1	0.0	0.0	0.4	0.0	0.0	0.3	0.0	3.9	0.0	0.8	0.0	2.8	2.6
Cars Enter Leg	27	198	226	0	0	451	0	0	0	0	0	0	38	361	298	72	0	769	28	0	277	5	0	310	13	249	0	121	0	383	1913
Heavy Enter Leg	0	3	12	0	0	15	0	0	0	0	0	0	0	13	5	7	0	25	0	0	1	0	0	1	0	10	0	1	0	11	52
Total Entering Leg	27	201	238	0	0	466	0	0	0	0	0	0	38	374	303	79	0	794	28	0	278	5	0	311	13	259	0	122	0	394	1965
Cars Exiting Leg	759						38						503						283						330						1913
Heavy Exiting Leg	15						0						22						10						5						52
Total Exiting Leg	774						38						525						293						335						1965

PDI File #: **175894 (8) pm**
 Location: **N: Somerville Ave/ Bow Street S: Webster Avenue NE: Stone Avenue**
 Location: **E: Somerville Avenue W: Washington Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Cars

	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						Total
	North						Northeast						East						South						West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
4:30 PM	10	56	58	0	0	124	0	0	0	0	0	0	10	83	63	17	0	173	3	0	85	4	0	92	5	48	0	18	0	71	460
4:45 PM	8	46	61	0	0	115	0	0	0	0	0	0	11	103	52	20	0	186	9	0	68	0	0	77	4	54	0	25	0	83	461
Total	18	102	119	0	0	239	0	0	0	0	0	0	21	186	115	37	0	359	12	0	153	4	0	169	9	102	0	43	0	154	921
5:00 PM	8	49	49	0	0	106	0	0	0	0	0	0	9	98	67	23	0	197	5	0	38	0	0	43	13	62	0	28	0	103	449
5:15 PM	9	50	58	0	0	117	0	0	0	0	0	0	9	108	53	20	1	191	12	0	68	1	0	81	7	48	0	27	0	82	471
5:30 PM	8	41	62	0	0	111	0	0	0	0	0	0	11	92	84	20	0	207	4	0	58	2	0	64	2	59	0	32	0	93	475
5:45 PM	8	52	42	0	0	102	0	0	0	0	0	0	13	98	72	17	0	200	7	0	72	2	0	81	1	65	0	28	0	94	477
Total	33	192	211	0	0	436	0	0	0	0	0	0	42	396	276	80	1	795	28	0	236	5	0	269	23	234	0	115	0	372	1872
6:00 PM	6	55	67	0	0	128	0	0	0	0	0	0	5	92	69	19	0	185	7	0	80	0	0	87	7	54	0	26	0	87	487
6:15 PM	5	50	55	0	0	110	0	0	0	0	0	0	9	79	73	16	0	177	10	0	67	1	0	78	3	71	0	35	0	109	474
Total	11	105	122	0	0	238	0	0	0	0	0	0	14	171	142	35	0	362	17	0	147	1	0	165	10	125	0	61	0	196	961
Grand Total	62	399	452	0	0	913	0	0	0	0	0	0	77	753	533	152	1	1516	57	0	536	10	0	603	42	461	0	219	0	722	3754
Approach %	6.8	43.7	49.5	0.0	0.0		0.0	0.0	0.0	0.0	0.0		5.1	49.7	35.2	10.0	0.1		9.5	0.0	88.9	1.7	0.0		5.8	63.9	0.0	30.3	0.0		
Total %	1.7	10.6	12.0	0.0	0.0	24.3	0.0	0.0	0.0	0.0	0.0	0.0	2.1	20.1	14.2	4.0	0.0	40.4	1.5	0.0	14.3	0.3	0.0	16.1	1.1	12.3	0.0	5.8	0.0	19.2	
Exiting Leg Total	1508						77						971						593						605						3754

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:30 PM	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						Total
	North						Northeast						East						South						West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
5:30 PM	8	41	62	0	0	111	0	0	0	0	0	0	11	92	84	20	0	207	4	0	58	2	0	64	2	59	0	32	0	93	475
5:45 PM	8	52	42	0	0	102	0	0	0	0	0	0	13	98	72	17	0	200	7	0	72	2	0	81	1	65	0	28	0	94	477
6:00 PM	6	55	67	0	0	128	0	0	0	0	0	0	5	92	69	19	0	185	7	0	80	0	0	87	7	54	0	26	0	87	487
6:15 PM	5	50	55	0	0	110	0	0	0	0	0	0	9	79	73	16	0	177	10	0	67	1	0	78	3	71	0	35	0	109	474
Total Volume	27	198	226	0	0	451	0	0	0	0	0	0	38	361	298	72	0	769	28	0	277	5	0	310	13	249	0	121	0	383	1913
% Approach Total	6.0	43.9	50.1	0.0	0.0		0.0	0.0	0.0	0.0	0.0		4.9	46.9	38.8	9.4	0.0		9.0	0.0	89.4	1.6	0.0		3.4	65.0	0.0	31.6	0.0		
PHF	0.844	0.900	0.843	0.000	0.000	0.881	0.000	0.000	0.000	0.000	0.000	0.000	0.731	0.921	0.887	0.900	0.000	0.929	0.700	0.000	0.866	0.625	0.000	0.891	0.464	0.877	0.000	0.864	0.000	0.878	0.982
Entering Leg	27	198	226	0	0	451	0	0	0	0	0	0	38	361	298	72	0	769	28	0	277	5	0	310	13	249	0	121	0	383	1913
Exiting Leg	759						38						503						283						330						1913
Total	1210						38						1272						593						713						3826

PDI File #: **175894 (8) pm**
 Location: **N: Somerville Ave/ Bow Street S: Webster Avenue NE: Stone Avenue**
 Location: **E: Somerville Avenue W: Washington Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Heavy Vehicles (Combined-Large Trucks and Buses)

	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						Total
	North						Northeast						East						South						West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
4:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	8	4	1	0	13	0	0	2	0	0	2	0	5	0	1	0	6	22
4:45 PM	0	2	3	0	0	5	0	0	0	0	0	0	0	4	4	1	0	9	1	0	2	0	0	3	0	4	0	0	4	21	
Total	0	3	3	0	0	6	0	0	0	0	0	0	0	12	8	2	0	22	1	0	4	0	0	5	0	9	0	1	0	10	43
5:00 PM	0	1	6	0	0	7	0	0	0	0	0	0	0	4	2	1	0	7	0	0	1	0	0	1	1	4	0	0	0	5	20
5:15 PM	0	1	2	0	0	3	0	0	0	0	0	0	0	3	2	0	0	5	1	0	0	0	0	1	0	6	0	0	0	6	15
5:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	5	1	1	0	7	0	0	1	0	0	1	0	2	0	0	0	2	11
5:45 PM	0	0	6	0	0	6	0	0	0	0	0	0	0	3	1	1	0	5	0	0	0	0	0	0	0	4	0	0	0	4	15
Total	0	3	14	0	0	17	0	0	0	0	0	0	0	15	6	3	0	24	1	0	2	0	0	3	1	16	0	0	0	17	61
6:00 PM	0	0	2	0	0	2	0	0	0	0	0	0	0	1	2	2	0	5	0	0	0	0	0	0	0	1	0	0	0	1	8
6:15 PM	0	2	4	0	0	6	0	0	0	0	0	0	0	4	1	3	0	8	0	0	0	0	0	0	0	3	0	1	0	4	18
Total	0	2	6	0	0	8	0	0	0	0	0	0	0	5	3	5	0	13	0	0	0	0	0	0	0	4	0	1	0	5	26
Grand Total	0	8	23	0	0	31	0	0	0	0	0	0	0	32	17	10	0	59	2	0	6	0	0	8	1	29	0	2	0	32	130
Approach %	0.0	25.8	74.2	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	54.2	28.8	16.9	0.0		25.0	0.0	75.0	0.0	0.0		3.1	90.6	0.0	6.3	0.0		
Total %	0.0	6.2	17.7	0.0	0.0	23.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.6	13.1	7.7	0.0	45.4	1.5	0.0	4.6	0.0	0.0	6.2	0.8	22.3	0.0	1.5	0.0	24.6	
Exiting Leg Total	40						0						54						19						17						130
Large Trucks	0	5	14	0	0	19	0	0	0	0	0	0	0	19	7	0	0	26	0	0	4	0	0	4	0	15	0	2	0	17	66
% Large Trucks	0.0	62.5	60.9	0.0	0.0	61.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	59.4	41.2	0.0	0.0	44.1	0.0	0.0	66.7	0.0	0.0	50.0	0.0	51.7	0.0	100.0	0.0	53.1	50.8
Exiting Leg Total	25						0						29						5						7						66
Buses	0	3	9	0	0	12	0	0	0	0	0	0	0	13	10	10	0	33	2	0	2	0	0	4	1	14	0	0	0	15	64
% Buses	0.0	37.5	39.1	0.0	0.0	38.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.6	58.8	100.0	0.0	55.9	100.0	0.0	33.3	0.0	0.0	50.0	100.0	48.3	0.0	0.0	0.0	46.9	49.2
Exiting Leg Total	15						0						25						14						10						64

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						
	North						Northeast						East						South						West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	Total
4:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	8	4	1	0	13	0	0	2	0	0	2	0	5	0	1	0	6	22
4:45 PM	0	2	3	0	0	5	0	0	0	0	0	0	0	4	4	1	0	9	1	0	2	0	0	3	0	4	0	0	0	4	21
5:00 PM	0	1	6	0	0	7	0	0	0	0	0	0	0	4	2	1	0	7	0	0	1	0	0	1	1	4	0	0	0	5	20
5:15 PM	0	1	2	0	0	3	0	0	0	0	0	0	0	3	2	0	0	5	1	0	0	0	0	1	0	6	0	0	0	6	15
Total Volume	0	5	11	0	0	16	0	0	0	0	0	0	0	19	12	3	0	34	2	0	5	0	0	7	1	19	0	1	0	21	78
% Approach Total	0.0	31.3	68.8	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	55.9	35.3	8.8	0.0		28.6	0.0	71.4	0.0	0.0		4.8	90.5	0.0	4.8	0.0		
PHF	0.000	0.625	0.458	0.000	0.000	0.571	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.594	0.750	0.750	0.000	0.654	0.500	0.000	0.625	0.000	0.000	0.583	0.250	0.792	0.000	0.250	0.000	0.875	0.886
Large Trucks	0	4	4	0	0	8	0	0	0	0	0	0	0	13	5	0	0	18	0	0	3	0	0	3	0	9	0	1	0	10	39
Large Trucks %	0.0	80.0	36.4	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	68.4	41.7	0.0	0.0	52.9	0.0	0.0	60.0	0.0	0.0	42.9	0.0	47.4	0.0	100.0	0.0	47.6	50.0
Buses	0	1	7	0	0	8	0	0	0	0	0	0	0	6	7	3	0	16	2	0	2	0	0	4	1	10	0	0	0	11	39
Buses %	0.0	20.0	63.6	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.6	58.3	100.0	0.0	47.1	100.0	0.0	40.0	0.0	0.0	57.1	100.0	52.6	0.0	0.0	0.0	52.4	50.0
Trucks Enter Leg	0	4	4	0	0	8	0	0	0	0	0	0	0	13	5	0	0	18	0	0	3	0	0	3	0	9	0	1	0	10	39
Bus Enter Leg	0	1	7	0	0	8	0	0	0	0	0	0	0	6	7	3	0	16	2	0	2	0	0	4	1	10	0	0	0	11	39
Total Entering Leg	0	5	11	0	0	16	0	0	0	0	0	0	0	19	12	3	0	34	2	0	5	0	0	7	1	19	0	1	0	21	78
Trucks Exiting Leg	17						0						13						4						5						39
Buses Exiting Leg	8						0						19						5						7						39
Total Exiting Leg	25						0						32						9						12						78

PDI File #: **175894 (8) pm**
 Location: **N: Somerville Ave/ Bow Street S: Webster Avenue NE: Stone Avenue**
 Location: **E: Somerville Avenue W: Washington Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Large Trucks

	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						Total
	North						Northeast						East						South						West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
4:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	4	2	0	0	6	0	0	1	0	0	1	0	2	0	1	0	3	11
4:45 PM	0	1	1	0	0	2	0	0	0	0	0	0	0	3	1	0	0	4	0	0	1	0	0	1	0	4	0	0	0	4	11
Total	0	2	1	0	0	3	0	0	0	0	0	0	0	7	3	0	0	10	0	0	2	0	0	2	0	6	0	1	0	7	22
5:00 PM	0	1	2	0	0	3	0	0	0	0	0	0	0	3	1	0	0	4	0	0	1	0	0	1	0	2	0	0	0	2	10
5:15 PM	0	1	1	0	0	2	0	0	0	0	0	0	0	3	1	0	0	4	0	0	0	0	0	0	0	1	0	0	0	1	7
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	1	0	2	0	0	0	2	4
5:45 PM	0	0	4	0	0	4	0	0	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	0	0	2	0	0	0	2	9
Total	0	2	7	0	0	9	0	0	0	0	0	0	0	9	3	0	0	12	0	0	2	0	0	2	0	7	0	0	0	7	30
6:00 PM	0	0	2	0	0	2	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3
6:15 PM	0	1	4	0	0	5	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	2	0	1	0	3	11
Total	0	1	6	0	0	7	0	0	0	0	0	0	0	3	1	0	0	4	0	0	0	0	0	0	0	2	0	1	0	3	14
Grand Total	0	5	14	0	0	19	0	0	0	0	0	0	0	19	7	0	0	26	0	0	4	0	0	4	0	15	0	2	0	17	66
Approach %	0.0	26.3	73.7	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	73.1	26.9	0.0	0.0		0.0	0.0	100.0	0.0	0.0		0.0	88.2	0.0	11.8	0.0		
Total %	0.0	7.6	21.2	0.0	0.0	28.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.8	10.6	0.0	0.0	39.4	0.0	0.0	6.1	0.0	0.0	6.1	0.0	22.7	0.0	3.0	0.0	25.8	
Exiting Leg Total	25						0						29						5						7						66

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						
	North						Northeast						East						South						West						
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total	
4:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	4	2	0	0	6	0	0	1	0	0	1	0	2	0	1	0	3	11
4:45 PM	0	1	1	0	0	2	0	0	0	0	0	0	0	3	1	0	0	4	0	0	1	0	0	1	0	4	0	0	0	4	11
5:00 PM	0	1	2	0	0	3	0	0	0	0	0	0	0	3	1	0	0	4	0	0	1	0	0	1	0	2	0	0	0	2	10
5:15 PM	0	1	1	0	0	2	0	0	0	0	0	0	0	3	1	0	0	4	0	0	0	0	0	0	0	1	0	0	0	1	7
Total Volume	0	4	4	0	0	8	0	0	0	0	0	0	0	13	5	0	0	18	0	0	3	0	0	3	0	9	0	1	0	10	39
% Approach Total	0.0	50.0	50.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	72.2	27.8	0.0	0.0		0.0	0.0	100.0	0.0	0.0		0.0	90.0	0.0	10.0	0.0		
PHF	0.000	1.000	0.500	0.000	0.000	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.813	0.625	0.000	0.000	0.750	0.000	0.000	0.750	0.000	0.000	0.750	0.000	0.563	0.000	0.250	0.000	0.625	0.886
Entering Leg	0	4	4	0	0	8	0	0	0	0	0	0	0	13	5	0	0	18	0	0	3	0	0	3	0	9	0	1	0	10	39
Exiting Leg	17						0						13						4						5						39
Total	25						0						31						7						15						78

PDI File #: **175894 (8) pm**
 Location: **N: Somerville Ave/ Bow Street S: Webster Avenue NE: Stone Avenue**
 Location: **E: Somerville Avenue W: Washington Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Buses

	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street						Total	
	North						Northeast						East						South						West							
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total		
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	1	0	7	0	0	1	0	0	1	0	3	0	0	0	0	3	11
4:45 PM	0	1	2	0	0	3	0	0	0	0	0	0	0	1	3	1	0	5	1	0	1	0	0	2	0	0	0	0	0	0	10	
Total	0	1	2	0	0	3	0	0	0	0	0	0	0	5	5	2	0	12	1	0	2	0	0	3	0	3	0	0	0	3	21	
5:00 PM	0	0	4	0	0	4	0	0	0	0	0	0	0	1	1	1	0	3	0	0	0	0	0	0	1	2	0	0	0	3	10	
5:15 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	5	0	0	0	5	8	
5:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	4	1	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	7	
5:45 PM	0	0	2	0	0	2	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	2	0	0	0	2	6	
Total	0	1	7	0	0	8	0	0	0	0	0	0	0	6	3	3	0	12	1	0	0	0	0	1	1	9	0	0	0	10	31	
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	4	0	0	0	0	0	0	0	1	0	0	0	1	5	
6:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	1	3	0	5	0	0	0	0	0	0	0	1	0	0	0	1	7	
Total	0	1	0	0	0	1	0	0	0	0	0	0	0	2	2	5	0	9	0	0	0	0	0	0	0	2	0	0	0	2	12	
Grand Total	0	3	9	0	0	12	0	0	0	0	0	0	0	13	10	10	0	33	2	0	2	0	0	4	1	14	0	0	0	15	64	
Approach %	0.0	25.0	75.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	39.4	30.3	30.3	0.0		50.0	0.0	50.0	0.0	0.0		6.7	93.3	0.0	0.0	0.0			
Total %	0.0	4.7	14.1	0.0	0.0	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.3	15.6	15.6	0.0	51.6	3.1	0.0	3.1	0.0	0.0	6.3	1.6	21.9	0.0	0.0	0.0	23.4		
Exiting Leg Total	15						0						25						14						10						64	

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Somerville Ave/ Bow Street						Stone Avenue						Somerville Avenue						Webster Avenue						Washington Street							
	North						Northeast						East						South						West							
	Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Thru	Left	U-Turn	Total	Right	Bear Right	Thru	Left	U-Turn	Total	Right	Thru	Bear Left	Left	U-Turn	Total		
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	1	0	7	0	0	1	0	0	1	0	3	0	3	0	0	3	11
4:45 PM	0	1	2	0	0	3	0	0	0	0	0	0	0	1	3	1	0	5	1	0	1	0	0	2	0	0	0	0	0	0	10	
5:00 PM	0	0	4	0	0	4	0	0	0	0	0	0	0	1	1	1	0	3	0	0	0	0	0	0	1	2	0	0	0	3	10	
5:15 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	5	0	0	0	5	8	
Total Volume	0	1	7	0	0	8	0	0	0	0	0	0	0	6	7	3	0	16	2	0	2	0	0	4	1	10	0	0	0	11	39	
% Approach Total	0.0	12.5	87.5	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	37.5	43.8	18.8	0.0		50.0	0.0	50.0	0.0	0.0		9.1	90.9	0.0	0.0	0.0			
PHF	0.000	0.250	0.438	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.583	0.750	0.000	0.571	0.500	0.000	0.500	0.000	0.000	0.500	0.250	0.500	0.000	0.000	0.000	0.550	0.886	
Entering Leg	0	1	7	0	0	8	0	0	0	0	0	0	0	6	7	3	0	16	2	0	2	0	0	4	1	10	0	0	0	11	39	
Exiting Leg	8						0						19						5						7						39	
Total	16						0						35						9						18						78	

PDI File #: 175894 (8) pm
 Location: N: Somerville Ave/ Bow Street S: Webster Avenue NE: Stone Avenue
 Location: E: Somerville Avenue W: Washington Street
 City, State: Somerville, MA
 Client: USSA/ J. Kunz
 Site Code: TBA
 Count Date: Thursday, October 5, 2017
 Start Time: 4:30 PM
 End Time: 6:30 PM
 Class:



Bicycles (on Roadway and Crosswalks)

	Somerville Ave/ Bow Street								Stone Avenue								Somerville Avenue								Webster Avenue								Washington Street								Total
	North								Northeast								East								South								West								
	Right	Thru	Left	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-SEB	CW-NWB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Bear Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total	
4:30 PM	1	3	1	0	0	0	1	6	0	0	0	0	0	0	0	0	0	13	1	0	0	0	1	15	0	0	13	4	0	0	0	17	1	4	0	1	0	1	0	7	45
4:45 PM	0	6	5	0	0	0	2	15	0	0	0	0	0	0	0	0	0	1	13	2	2	0	0	18	0	0	5	0	0	0	1	6	1	3	0	0	1	0	5	44	
Total	1	9	6	0	0	2	3	21	0	0	0	0	0	0	0	0	1	26	3	2	0	0	1	33	0	0	18	4	0	0	1	23	2	7	0	1	0	2	0	12	89
5:00 PM	0	6	1	0	0	3	0	10	0	0	0	0	0	0	0	0	4	20	2	1	0	0	1	28	0	0	17	0	0	1	1	19	0	1	1	0	0	0	2	59	
5:15 PM	0	6	2	0	0	0	2	10	0	0	0	0	0	0	0	0	3	28	3	1	0	1	1	37	1	0	23	1	0	0	0	25	0	3	0	0	0	1	0	4	76
5:30 PM	0	10	5	0	0	0	0	15	0	2	0	0	0	0	0	2	0	31	1	1	0	0	0	33	0	0	25	0	0	0	0	25	0	6	0	0	0	0	0	6	81
5:45 PM	0	15	3	0	0	1	0	19	0	0	0	0	0	0	0	0	0	32	5	3	0	0	0	40	0	0	25	0	0	0	0	25	0	4	0	1	0	0	0	5	89
Total	0	37	11	0	0	4	2	54	0	2	0	0	0	0	0	2	7	111	11	6	0	1	2	138	1	0	90	1	0	1	1	94	0	14	1	1	0	1	0	17	305
6:00 PM	1	9	11	0	0	0	0	21	0	0	0	0	0	0	0	0	2	28	2	0	0	0	0	32	0	0	26	2	0	0	0	28	1	6	0	1	0	0	0	8	89
6:15 PM	1	10	14	0	0	0	0	25	0	0	0	0	0	0	0	0	0	22	2	1	0	0	1	26	1	0	29	0	0	1	0	31	0	2	0	0	0	0	0	2	84
Total	2	19	25	0	0	0	0	46	0	0	0	0	0	0	0	0	2	50	4	1	0	0	1	58	1	0	55	2	0	1	0	59	1	8	0	1	0	0	0	10	173
Grand Total	3	65	42	0	0	6	5	121	0	2	0	0	0	0	0	2	10	187	18	9	0	1	4	229	2	0	163	7	0	2	2	176	3	29	1	3	0	3	0	39	567
Approach %	2.5	53.7	34.7	0.0	0.0	5.0	4.1		0.0	100.0	0.0	0.0	0.0	0.0	0.0		4.4	81.7	7.9	3.9	0.0	0.4	1.7		1.1	0.0	92.6	4.0	0.0	1.1	1.1		7.7	74.4	2.6	7.7	0.0	7.7	0.0		
Total %	0.5	11.5	7.4	0.0	0.0	1.1	0.9	21.3	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.4	1.8	33.0	3.2	1.6	0.0	0.2	0.7	40.4	0.4	0.0	28.7	1.2	0.0	0.4	0.4	31.0	0.5	5.1	0.2	0.5	0.0	0.5	0.0	6.9	
Exiting Leg Total	364								11								78								81								33								567

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:30 PM	Somerville Ave/ Bow Street							Stone Avenue							Somerville Avenue							Webster Avenue							Washington Street							Total							
	North							Northeast							East							South							West														
	Right	Thru	Left	Hard Left	U-Turn	CW-WB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-SEB	CW-NWB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Bear Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Bear Left	Left		U-Turn	CW-NB	CW-SB	Total			
5:30 PM	0	10	5	0	0	0	0	15	0	2	0	0	0	0	0	2	0	31	1	1	0	0	0	0	33	0	0	25	0	0	0	0	0	25	0	6	0	0	0	0	6	81	
5:45 PM	0	15	3	0	0	1	0	19	0	0	0	0	0	0	0	0	0	32	5	3	0	0	0	0	40	0	0	25	0	0	0	0	0	25	0	4	0	1	0	0	0	5	89
6:00 PM	1	9	11	0	0	0	0	21	0	0	0	0	0	0	0	0	2	28	2	0	0	0	0	0	32	0	0	26	2	0	0	0	0	28	1	6	0	1	0	0	0	8	89
6:15 PM	1	10	14	0	0	0	0	25	0	0	0	0	0	0	0	0	0	22	2	1	0	0	1	26	1	0	29	0	0	1	0	1	0	31	0	2	0	0	0	0	2	84	
Total Volume	2	44	33	0	0	1	0	80	0	2	0	0	0	0	0	2	2	113	10	5	0	0	1	131	1	0	105	2	0	1	0	109	1	18	0	2	0	0	0	21	343		
% Approach Total	2.5	55.0	41.3	0.0	0.0	1.3	0.0		0.0	100.0	0.0	0.0	0.0	0.0	0.0		1.5	86.3	7.6	3.8	0.0	0.0	0.8		0.9	0.0	96.3	1.8	0.0	0.9	0.0		4.8	85.7	0.0	9.5	0.0	0.0	0.0				
PHF	0.500	0.733	0.589	0.000	0.000	0.250	0.000	0.800	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.883	0.500	0.417	0.000	0.000	0.250	0.819	0.250	0.000	0.905	0.250	0.000	0.250	0.000	0.879	0.250	0.750	0.000	0.500	0.000	0.000	0.000	0.656	0.963		
Entering Leg	2	44	33	0	0	1	0	80	0	2	0	0	0	0	0	2	2	113	10	5	0	0	1	131	1	0	105	2	0	1	0	109	1	18	0	2	0	0	0	21	343		
Exiting Leg								221								2								53								51								16	343		
Total								301								4								184								160								37	686		

PDI File #: **175894 (8) pm**
 Location: **N: Somerville Ave/ Bow Street S: Webster Avenue NE: Stone Avenue**
 Location: **E: Somerville Avenue W: Washington Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Pedestrians

	Somerville Ave/ Bow Street								Stone Avenue								Somerville Avenue								Webster Avenue								Washington Street								Total
	North								Northeast								East								South								West								
	Right	Thru	Left	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-SE	CW-NW	Total	Hard Right	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Bear Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total	
4:30 PM	0	0	0	0	0	1	7	8	0	0	0	0	0	19	22	41	0	0	0	0	0	7	11	18	0	0	0	0	0	9	18	27	0	0	0	0	0	16	15	31	125
4:45 PM	0	0	0	0	0	4	4	8	0	0	0	0	0	23	20	43	0	0	0	0	0	6	9	15	0	0	0	0	0	10	13	23	0	0	0	0	0	15	7	22	111
Total	0	0	0	0	0	5	11	16	0	0	0	0	0	42	42	84	0	0	0	0	0	13	20	33	0	0	0	0	0	19	31	50	0	0	0	0	0	31	22	53	236
5:00 PM	0	0	0	0	0	3	3	6	0	0	0	0	0	27	21	48	0	0	0	0	0	8	11	19	0	0	0	0	0	6	6	12	0	0	0	0	0	16	13	29	114
5:15 PM	0	0	0	0	0	13	6	19	0	0	0	0	0	30	19	49	0	0	0	0	0	4	13	17	0	0	0	0	0	6	8	14	0	0	0	0	0	29	10	39	138
5:30 PM	0	0	0	0	0	21	8	29	0	0	0	0	0	19	41	60	0	0	0	0	0	6	9	15	0	0	0	0	0	9	14	23	0	0	0	0	0	30	8	38	165
5:45 PM	0	0	0	0	0	15	24	39	0	0	0	0	0	23	24	47	0	0	0	0	0	5	9	14	0	0	0	0	0	17	12	29	0	0	0	0	0	37	8	45	174
Total	0	0	0	0	0	52	41	93	0	0	0	0	0	99	105	204	0	0	0	0	0	23	42	65	0	0	0	0	0	38	40	78	0	0	0	0	0	112	39	151	591
6:00 PM	0	0	0	0	0	7	14	21	0	0	0	0	0	32	49	81	0	0	0	0	0	6	8	14	0	0	0	0	0	15	8	23	0	0	0	0	0	31	16	47	186
6:15 PM	0	0	0	0	0	12	7	19	0	0	0	0	0	30	33	63	0	0	0	0	0	10	18	28	0	0	0	0	0	8	12	20	0	0	0	0	0	21	11	32	162
Total	0	0	0	0	0	19	21	40	0	0	0	0	0	62	82	144	0	0	0	0	0	16	26	42	0	0	0	0	0	23	20	43	0	0	0	0	0	52	27	79	348
Grand Total	0	0	0	0	0	76	73	149	0	0	0	0	0	203	229	432	0	0	0	0	0	52	88	140	0	0	0	0	0	80	91	171	0	0	0	0	0	195	88	283	1175
Approach %	0.0	0.0	0.0	0.0	0.0	51.0	49.0		0.0	0.0	0.0	0.0	0.0	47.0	53.0		0.0	0.0	0.0	0.0	0.0	37.1	62.9		0.0	0.0	0.0	0.0	0.0	46.8	53.2		0.0	0.0	0.0	0.0	0.0	68.9	31.1		
Total %	0.0	0.0	0.0	0.0	0.0	6.5	6.2	12.7	0.0	0.0	0.0	0.0	0.0	17.3	19.5	36.8	0.0	0.0	0.0	0.0	0.0	4.4	7.5	11.9	0.0	0.0	0.0	0.0	0.0	6.8	7.7	14.6	0.0	0.0	0.0	0.0	0.0	16.6	7.5	24.1	
Exiting Leg Total	149								432								140								171								283								1175

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:30 PM	Somerville Ave/ Bow Street							Stone Avenue							Somerville Avenue							Webster Avenue							Washington Street							Total					
	North							Northeast							East							South							West												
	Right	Thru	Left	Hard Left	U-Turn	CW-WB	Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	CW-SEB	CW-NWB	Total	Hard Right	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Bear Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Bear Left	Left		U-Turn	CW-NB	CW-SB	Total	
5:30 PM	0	0	0	0	0	21	8	29	0	0	0	0	0	19	41	60	0	0	0	0	0	6	9	15	0	0	0	0	0	9	14	23	0	0	0	0	0	30	8	38	165
5:45 PM	0	0	0	0	0	15	24	39	0	0	0	0	0	23	24	47	0	0	0	0	0	5	9	14	0	0	0	0	0	17	12	29	0	0	0	0	0	37	8	45	174
6:00 PM	0	0	0	0	0	7	14	21	0	0	0	0	0	32	49	81	0	0	0	0	0	6	8	14	0	0	0	0	0	15	8	23	0	0	0	0	0	31	16	47	186
6:15 PM	0	0	0	0	0	12	7	19	0	0	0	0	0	30	33	63	0	0	0	0	0	10	18	28	0	0	0	0	0	8	12	20	0	0	0	0	0	21	11	32	162
Total Volume	0	0	0	0	0	55	53	108	0	0	0	0	0	104	147	251	0	0	0	0	0	27	44	71	0	0	0	0	0	49	46	95	0	0	0	0	0	119	43	162	687
% Approach Total	0.0	0.0	0.0	0.0	0.0	50.9	49.1		0.0	0.0	0.0	0.0	0.0	41.4	58.6		0.0	0.0	0.0	0.0	0.0	38.0	62.0		0.0	0.0	0.0	0.0	0.0	51.6	48.4		0.0	0.0	0.0	0.0	0.0	73.5	26.5		
PHF	0.000	0.000	0.000	0.000	0.000	0.655	0.552	0.692	0.000	0.000	0.000	0.000	0.000	0.813	0.750	0.775	0.000	0.000	0.000	0.000	0.000	0.675	0.611	0.634	0.000	0.000	0.000	0.000	0.000	0.721	0.821	0.819	0.000	0.000	0.000	0.000	0.000	0.804	0.672	0.862	0.923
Entering Leg	0	0	0	0	0	55	53	108	0	0	0	0	0	104	147	251	0	0	0	0	0	27	44	71	0	0	0	0	0	49	46	95	0	0	0	0	0	119	43	162	687
Exiting Leg								108								251								71								95								162	687
Total								216								502								142								190								324	1374

PDI File #: **175894 (13) am**
 Location: **N: Prospect Street S: Prospect Street**
 Location: **E: Somerville Avenue W: Somerville Avenue**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Cars and Heavy Vehicles (Combined)

	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	106	82	0	0	188	0	17	11	0	28	16	117	19	1	153	5	53	53	0	111	480
7:45 AM	108	81	0	0	189	2	43	8	0	53	15	88	18	0	121	6	70	60	0	136	499
Total	214	163	0	0	377	2	60	19	0	81	31	205	37	1	274	11	123	113	0	247	979
8:00 AM	96	64	0	0	160	2	33	8	0	43	15	100	17	0	132	3	63	62	0	128	463
8:15 AM	99	73	0	0	172	6	29	4	0	39	16	82	9	0	107	5	85	78	0	168	486
8:30 AM	99	90	0	0	189	1	41	5	0	47	14	81	12	0	107	5	55	67	0	127	470
8:45 AM	101	68	0	0	169	5	25	9	0	39	17	81	20	0	118	2	84	56	0	142	468
Total	395	295	0	0	690	14	128	26	0	168	62	344	58	0	464	15	287	263	0	565	1887
9:00 AM	86	78	0	0	164	2	28	10	0	40	15	90	27	0	132	4	60	51	0	115	451
9:15 AM	105	92	0	0	197	3	42	10	0	55	10	89	19	0	118	1	50	63	0	114	484
Total	191	170	0	0	361	5	70	20	0	95	25	179	46	0	250	5	110	114	0	229	935
Grand Total	800	628	0	0	1428	21	258	65	0	344	118	728	141	1	988	31	520	490	0	1041	3801
Approach %	56.0	44.0	0.0	0.0		6.1	75.0	18.9	0.0		11.9	73.7	14.3	0.1		3.0	50.0	47.1	0.0		
Total %	21.0	16.5	0.0	0.0	37.6	0.6	6.8	1.7	0.0	9.1	3.1	19.2	3.7	0.0	26.0	0.8	13.7	12.9	0.0	27.4	
Exiting Leg Total	1239					638					725					1199					3801
Cars	728	609	0	0	1337	20	236	64	0	320	111	676	132	1	920	30	491	440	0	961	3538
% Cars	91.0	97.0	0.0	0.0	93.6	95.2	91.5	98.5	0.0	93.0	94.1	92.9	93.6	100.0	93.1	96.8	94.4	89.8	0.0	92.3	93.1
Exiting Leg Total	1136					602					704					1096					3538
Heavy Vehicles	72	19	0	0	91	1	22	1	0	24	7	52	9	0	68	1	29	50	0	80	263
% Heavy Vehicles	9.0	3.0	0.0	0.0	6.4	4.8	8.5	1.5	0.0	7.0	5.9	7.1	6.4	0.0	6.9	3.2	5.6	10.2	0.0	7.7	6.9
Exiting Leg Total	103					36					21					103					263

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

7:30 AM	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	106	82	0	0	188	0	17	11	0	28	16	117	19	1	153	5	53	53	0	111	480
7:45 AM	108	81	0	0	189	2	43	8	0	53	15	88	18	0	121	6	70	60	0	136	499
8:00 AM	96	64	0	0	160	2	33	8	0	43	15	100	17	0	132	3	63	62	0	128	463
8:15 AM	99	73	0	0	172	6	29	4	0	39	16	82	9	0	107	5	85	78	0	168	486
Total Volume	409	300	0	0	709	10	122	31	0	163	62	387	63	1	513	19	271	253	0	543	1928
% Approach Total	57.7	42.3	0.0	0.0		6.1	74.8	19.0	0.0		12.1	75.4	12.3	0.2		3.5	49.9	46.6	0.0		
PHF	0.947	0.915	0.000	0.000	0.938	0.417	0.709	0.705	0.000	0.769	0.969	0.827	0.829	0.250	0.838	0.792	0.797	0.811	0.000	0.808	0.966
Cars	371	288	0	0	659	9	110	31	0	150	61	371	59	1	492	19	260	237	0	516	1817
Cars %	90.7	96.0	0.0	0.0	92.9	90.0	90.2	100.0	0.0	92.0	98.4	95.9	93.7	100.0	95.9	100.0	95.9	93.7	0.0	95.0	94.2
Heavy Vehicles	38	12	0	0	50	1	12	0	0	13	1	16	4	0	21	0	11	16	0	27	111
Heavy Vehicles %	9.3	4.0	0.0	0.0	7.1	10.0	9.8	0.0	0.0	8.0	1.6	4.1	6.3	0.0	4.1	0.0	4.1	6.3	0.0	5.0	5.8
Cars Enter Leg	371	288	0	0	659	9	110	31	0	150	61	371	59	1	492	19	260	237	0	516	1817
Heavy Enter Leg	38	12	0	0	50	1	12	0	0	13	1	16	4	0	21	0	11	16	0	27	111
Total Entering Leg	409	300	0	0	709	10	122	31	0	163	62	387	63	1	513	19	271	253	0	543	1928
Cars Exiting Leg	617					321					339					540					1817
Heavy Exiting Leg	33					12					12					54					111
Total Exiting Leg	650					333					351					594					1928

PDI File #: **175894 (13) am**
 Location: **N: Prospect Street S: Prospect Street**
 Location: **E: Somerville Avenue W: Somerville Avenue**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Cars

	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	95	79	0	0	174	0	15	11	0	26	16	112	19	1	148	5	50	48	0	103	451
7:45 AM	97	77	0	0	174	1	40	8	0	49	15	88	16	0	119	6	68	57	0	131	473
Total	192	156	0	0	348	1	55	19	0	75	31	200	35	1	267	11	118	105	0	234	924
8:00 AM	85	62	0	0	147	2	29	8	0	39	15	95	16	0	126	3	60	59	0	122	434
8:15 AM	94	70	0	0	164	6	26	4	0	36	15	76	8	0	99	5	82	73	0	160	459
8:30 AM	89	90	0	0	179	1	38	5	0	44	12	73	12	0	97	5	53	57	0	115	435
8:45 AM	96	65	0	0	161	5	24	9	0	38	17	70	17	0	104	2	75	47	0	124	427
Total	364	287	0	0	651	14	117	26	0	157	59	314	53	0	426	15	270	236	0	521	1755
9:00 AM	78	76	0	0	154	2	26	9	0	37	11	78	26	0	115	4	57	44	0	105	411
9:15 AM	94	90	0	0	184	3	38	10	0	51	10	84	18	0	112	0	46	55	0	101	448
Total	172	166	0	0	338	5	64	19	0	88	21	162	44	0	227	4	103	99	0	206	859
Grand Total	728	609	0	0	1337	20	236	64	0	320	111	676	132	1	920	30	491	440	0	961	3538
Approach %	54.5	45.5	0.0	0.0		6.3	73.8	20.0	0.0		12.1	73.5	14.3	0.1		3.1	51.1	45.8	0.0		
Total %	20.6	17.2	0.0	0.0	37.8	0.6	6.7	1.8	0.0	9.0	3.1	19.1	3.7	0.0	26.0	0.8	13.9	12.4	0.0	27.2	
Exiting Leg Total	1136					602					704					1096					3538

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

7:30 AM	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	95	79	0	0	174	0	15	11	0	26	16	112	19	1	148	5	50	48	0	103	451
7:45 AM	97	77	0	0	174	1	40	8	0	49	15	88	16	0	119	6	68	57	0	131	473
8:00 AM	85	62	0	0	147	2	29	8	0	39	15	95	16	0	126	3	60	59	0	122	434
8:15 AM	94	70	0	0	164	6	26	4	0	36	15	76	8	0	99	5	82	73	0	160	459
Total Volume	371	288	0	0	659	9	110	31	0	150	61	371	59	1	492	19	260	237	0	516	1817
% Approach Total	56.3	43.7	0.0	0.0		6.0	73.3	20.7	0.0		12.4	75.4	12.0	0.2		3.7	50.4	45.9	0.0		
PHF	0.956	0.911	0.000	0.000	0.947	0.375	0.688	0.705	0.000	0.765	0.953	0.828	0.776	0.250	0.831	0.792	0.793	0.812	0.000	0.806	0.960
Entering Leg	371	288	0	0	659	9	110	31	0	150	61	371	59	1	492	19	260	237	0	516	1817
Exiting Leg	617					321					339					540					1817
Total	1276					471					831					1056					3634

PDI File #: **175894 (13) am**
 Location: **N: Prospect Street S: Prospect Street**
 Location: **E: Somerville Avenue W: Somerville Avenue**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Heavy Vehicles (Combined-Large Trucks and Buses)

	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	11	3	0	0	14	0	2	0	0	2	0	5	0	0	5	0	3	5	0	8	29
7:45 AM	11	4	0	0	15	1	3	0	0	4	0	0	2	0	2	0	2	3	0	5	26
Total	22	7	0	0	29	1	5	0	0	6	0	5	2	0	7	0	5	8	0	13	55
8:00 AM	11	2	0	0	13	0	4	0	0	4	0	5	1	0	6	0	3	3	0	6	29
8:15 AM	5	3	0	0	8	0	3	0	0	3	1	6	1	0	8	0	3	5	0	8	27
8:30 AM	10	0	0	0	10	0	3	0	0	3	2	8	0	0	10	0	2	10	0	12	35
8:45 AM	5	3	0	0	8	0	1	0	0	1	0	11	3	0	14	0	9	9	0	18	41
Total	31	8	0	0	39	0	11	0	0	11	3	30	5	0	38	0	17	27	0	44	132
9:00 AM	8	2	0	0	10	0	2	1	0	3	4	12	1	0	17	0	3	7	0	10	40
9:15 AM	11	2	0	0	13	0	4	0	0	4	0	5	1	0	6	1	4	8	0	13	36
Total	19	4	0	0	23	0	6	1	0	7	4	17	2	0	23	1	7	15	0	23	76
Grand Total	72	19	0	0	91	1	22	1	0	24	7	52	9	0	68	1	29	50	0	80	263
Approach %	79.1	20.9	0.0	0.0		4.2	91.7	4.2	0.0		10.3	76.5	13.2	0.0		1.3	36.3	62.5	0.0		
Total %	27.4	7.2	0.0	0.0	34.6	0.4	8.4	0.4	0.0	9.1	2.7	19.8	3.4	0.0	25.9	0.4	11.0	19.0	0.0	30.4	
Exiting Leg Total	103					36					21					103					263
Large Trucks	44	16	0	0	60	1	12	1	0	14	4	29	6	0	39	1	19	19	0	39	152
% Large Trucks	61.1	84.2	0.0	0.0	65.9	100.0	54.5	100.0	0.0	58.3	57.1	55.8	66.7	0.0	57.4	100.0	65.5	38.0	0.0	48.8	57.8
Exiting Leg Total	49					23					18					62					152
Buses	28	3	0	0	31	0	10	0	0	10	3	23	3	0	29	0	10	31	0	41	111
% Buses	38.9	15.8	0.0	0.0	34.1	0.0	45.5	0.0	0.0	41.7	42.9	44.2	33.3	0.0	42.6	0.0	34.5	62.0	0.0	51.3	42.2
Exiting Leg Total	54					13					3					41					111

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:30 AM	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
8:30 AM	10	0	0	0	10	0	3	0	0	3	2	8	0	0	10	0	2	10	0	12	35
8:45 AM	5	3	0	0	8	0	1	0	0	1	0	11	3	0	14	0	9	9	0	18	41
9:00 AM	8	2	0	0	10	0	2	1	0	3	4	12	1	0	17	0	3	7	0	10	40
9:15 AM	11	2	0	0	13	0	4	0	0	4	0	5	1	0	6	1	4	8	0	13	36
Total Volume	34	7	0	0	41	0	10	1	0	11	6	36	5	0	47	1	18	34	0	53	152
% Approach Total	82.9	17.1	0.0	0.0		0.0	90.9	9.1	0.0		12.8	76.6	10.6	0.0		1.9	34.0	64.2	0.0		
PHF	0.773	0.583	0.000	0.000	0.788	0.000	0.625	0.250	0.000	0.688	0.375	0.750	0.417	0.000	0.691	0.250	0.500	0.850	0.000	0.736	0.927
Large Trucks	20	5	0	0	25	0	4	1	0	5	3	19	4	0	26	1	11	12	0	24	80
Large Trucks %	58.8	71.4	0.0	0.0	61.0	0.0	40.0	100.0	0.0	45.5	50.0	52.8	80.0	0.0	55.3	100.0	61.1	35.3	0.0	45.3	52.6
Buses	14	2	0	0	16	0	6	0	0	6	3	17	1	0	21	0	7	22	0	29	72
Buses %	41.2	28.6	0.0	0.0	39.0	0.0	60.0	0.0	0.0	54.5	50.0	47.2	20.0	0.0	44.7	0.0	38.9	64.7	0.0	54.7	47.4
Trucks Enter Leg	20	5	0	0	25	0	4	1	0	5	3	19	4	0	26	1	11	12	0	24	80
Bus Enter Leg	14	2	0	0	16	0	6	0	0	6	3	17	1	0	21	0	7	22	0	29	72
Total Entering Leg	34	7	0	0	41	0	10	1	0	11	6	36	5	0	47	1	18	34	0	53	152
Trucks Exiting Leg	31					14					7					28					80
Buses Exiting Leg	39					10					2					21					72
Total Exiting Leg	70					24					9					49					152

PDI File #: **175894 (13) am**
 Location: **N: Prospect Street S: Prospect Street**
 Location: **E: Somerville Avenue W: Somerville Avenue**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Large Trucks

	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	7	3	0	0	10	0	0	0	0	0	0	4	0	0	4	0	3	3	0	6	20
7:45 AM	7	4	0	0	11	1	3	0	0	4	0	0	1	0	1	0	1	1	0	2	18
Total	14	7	0	0	21	1	3	0	0	4	0	4	1	0	5	0	4	4	0	8	38
8:00 AM	7	2	0	0	9	0	3	0	0	3	0	3	1	0	4	0	3	0	0	3	19
8:15 AM	3	2	0	0	5	0	2	0	0	2	1	3	0	0	4	0	1	3	0	4	15
8:30 AM	8	0	0	0	8	0	2	0	0	2	2	2	0	0	4	0	2	3	0	5	19
8:45 AM	2	1	0	0	3	0	0	0	0	0	0	6	3	0	9	0	5	5	0	10	22
Total	20	5	0	0	25	0	7	0	0	7	3	14	4	0	21	0	11	11	0	22	75
9:00 AM	3	2	0	0	5	0	1	1	0	2	1	7	1	0	9	0	2	2	0	4	20
9:15 AM	7	2	0	0	9	0	1	0	0	1	0	4	0	0	4	1	2	2	0	5	19
Total	10	4	0	0	14	0	2	1	0	3	1	11	1	0	13	1	4	4	0	9	39
Grand Total	44	16	0	0	60	1	12	1	0	14	4	29	6	0	39	1	19	19	0	39	152
Approach %	73.3	26.7	0.0	0.0		7.1	85.7	7.1	0.0		10.3	74.4	15.4	0.0		2.6	48.7	48.7	0.0		
Total %	28.9	10.5	0.0	0.0	39.5	0.7	7.9	0.7	0.0	9.2	2.6	19.1	3.9	0.0	25.7	0.7	12.5	12.5	0.0	25.7	
Exiting Leg Total	49					23					18					62					152

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:30 AM	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
8:30 AM	8	0	0	0	8	0	2	0	0	2	2	2	0	0	4	0	2	3	0	5	19
8:45 AM	2	1	0	0	3	0	0	0	0	0	0	6	3	0	9	0	5	5	0	10	22
9:00 AM	3	2	0	0	5	0	1	1	0	2	1	7	1	0	9	0	2	2	0	4	20
9:15 AM	7	2	0	0	9	0	1	0	0	1	0	4	0	0	4	1	2	2	0	5	19
Total Volume	20	5	0	0	25	0	4	1	0	5	3	19	4	0	26	1	11	12	0	24	80
% Approach Total	80.0	20.0	0.0	0.0		0.0	80.0	20.0	0.0		11.5	73.1	15.4	0.0		4.2	45.8	50.0	0.0		
PHF	0.625	0.625	0.000	0.000	0.694	0.000	0.500	0.250	0.000	0.625	0.375	0.679	0.333	0.000	0.722	0.250	0.550	0.600	0.000	0.600	0.909
Entering Leg	20	5	0	0	25	0	4	1	0	5	3	19	4	0	26	1	11	12	0	24	80
Exiting Leg	31					14					7					28					80
Total	56					19					33					52					160

PDI File #: **175894 (13) am**
 Location: **N: Prospect Street S: Prospect Street**
 Location: **E: Somerville Avenue W: Somerville Avenue**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Buses

	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	4	0	0	0	4	0	2	0	0	2	0	1	0	0	1	0	0	2	0	2	9
7:45 AM	4	0	0	0	4	0	0	0	0	0	0	0	1	0	1	0	1	2	0	3	8
Total	8	0	0	0	8	0	2	0	0	2	0	1	1	0	2	0	1	4	0	5	17
8:00 AM	4	0	0	0	4	0	1	0	0	1	0	2	0	0	2	0	0	3	0	3	10
8:15 AM	2	1	0	0	3	0	1	0	0	1	0	3	1	0	4	0	2	2	0	4	12
8:30 AM	2	0	0	0	2	0	1	0	0	1	0	6	0	0	6	0	0	7	0	7	16
8:45 AM	3	2	0	0	5	0	1	0	0	1	0	5	0	0	5	0	4	4	0	8	19
Total	11	3	0	0	14	0	4	0	0	4	0	16	1	0	17	0	6	16	0	22	57
9:00 AM	5	0	0	0	5	0	1	0	0	1	3	5	0	0	8	0	1	5	0	6	20
9:15 AM	4	0	0	0	4	0	3	0	0	3	0	1	1	0	2	0	2	6	0	8	17
Total	9	0	0	0	9	0	4	0	0	4	3	6	1	0	10	0	3	11	0	14	37
Grand Total	28	3	0	0	31	0	10	0	0	10	3	23	3	0	29	0	10	31	0	41	111
Approach %	90.3	9.7	0.0	0.0		0.0	100.0	0.0	0.0		10.3	79.3	10.3	0.0		0.0	24.4	75.6	0.0		
Total %	25.2	2.7	0.0	0.0	27.9	0.0	9.0	0.0	0.0	9.0	2.7	20.7	2.7	0.0	26.1	0.0	9.0	27.9	0.0	36.9	
Exiting Leg Total	54					13					3					41					111

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:30 AM	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
8:30 AM	2	0	0	0	2	0	1	0	0	1	0	6	0	0	6	0	0	7	0	7	16
8:45 AM	3	2	0	0	5	0	1	0	0	1	0	5	0	0	5	0	4	4	0	8	19
9:00 AM	5	0	0	0	5	0	1	0	0	1	3	5	0	0	8	0	1	5	0	6	20
9:15 AM	4	0	0	0	4	0	3	0	0	3	0	1	1	0	2	0	2	6	0	8	17
Total Volume	14	2	0	0	16	0	6	0	0	6	3	17	1	0	21	0	7	22	0	29	72
% Approach Total	87.5	12.5	0.0	0.0		0.0	100.0	0.0	0.0		14.3	81.0	4.8	0.0		0.0	24.1	75.9	0.0		
PHF	0.700	0.250	0.000	0.000	0.800	0.000	0.500	0.000	0.000	0.500	0.250	0.708	0.250	0.000	0.656	0.000	0.438	0.786	0.000	0.906	0.900
Entering Leg	14	2	0	0	16	0	6	0	0	6	3	17	1	0	21	0	7	22	0	29	72
Exiting Leg	39					10					2					21					72
Total	55					16					23					50					144

PDI File #: **175894 (13) am**
 Location: **N: Prospect Street S: Prospect Street**
 Location: **E: Somerville Avenue W: Somerville Avenue**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Bicycles (on Roadway and Crosswalks)

	Prospect Street							Somerville Avenue							Prospect Street							Somerville Avenue							Total
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:30 AM	4	2	0	0	1	0	7	0	0	0	0	0	0	0	0	1	3	0	0	0	4	0	5	2	0	0	2	9	20
7:45 AM	3	1	0	0	0	0	4	0	1	0	0	0	0	1	0	1	0	0	0	1	2	0	16	4	0	0	0	20	27
Total	7	3	0	0	1	0	11	0	1	0	0	0	0	1	0	2	3	0	0	1	6	0	21	6	0	0	2	29	47
8:00 AM	1	0	0	0	0	0	1	0	1	0	0	0	0	1	0	3	2	0	0	0	5	0	14	2	0	0	0	16	23
8:15 AM	4	2	0	0	0	0	6	0	1	0	0	0	0	1	1	3	0	0	0	0	4	0	21	6	0	0	0	27	38
8:30 AM	8	3	0	0	0	0	11	0	2	0	0	1	1	4	2	6	1	0	0	0	9	0	30	1	0	0	0	31	55
8:45 AM	4	1	0	0	0	0	5	1	3	1	0	0	0	5	0	3	0	0	1	1	5	0	35	2	0	1	0	38	53
Total	17	6	0	0	0	0	23	1	7	1	0	1	1	11	3	15	3	0	1	1	23	0	100	11	0	1	0	112	169
9:00 AM	5	3	0	0	0	0	8	0	3	0	0	0	0	3	0	6	0	0	0	1	7	0	21	3	0	0	1	25	43
9:15 AM	1	2	0	0	0	1	4	0	1	0	0	0	0	1	0	2	1	0	0	0	3	0	17	1	0	0	0	18	26
Total	6	5	0	0	0	1	12	0	4	0	0	0	0	4	0	8	1	0	0	1	10	0	38	4	0	0	1	43	69
Grand Total	30	14	0	0	1	1	46	1	12	1	0	1	1	16	3	25	7	0	1	3	39	0	159	21	0	1	3	184	285
Approach %	65.2	30.4	0.0	0.0	2.2	2.2		6.3	75.0	6.3	0.0	6.3	6.3		7.7	64.1	17.9	0.0	2.6	7.7		0.0	86.4	11.4	0.0	0.5	1.6		
Total %	10.5	4.9	0.0	0.0	0.4	0.4	16.1	0.4	4.2	0.4	0.0	0.4	0.4	5.6	1.1	8.8	2.5	0.0	0.4	1.1	13.7	0.0	55.8	7.4	0.0	0.4	1.1	64.6	
Exiting Leg Total	49							164							19							53							285

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:15 AM	Prospect Street							Somerville Avenue							Prospect Street							Somerville Avenue							Total	
	North							East							South							West								
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
8:15 AM	4	2	0	0	0	0	6	0	1	0	0	0	0	1	1	3	0	0	0	0	4	0	21	6	0	0	0	0	27	38
8:30 AM	8	3	0	0	0	0	11	0	2	0	0	1	1	4	2	6	1	0	0	0	9	0	30	1	0	0	0	31	55	
8:45 AM	4	1	0	0	0	0	5	1	3	1	0	0	0	5	0	3	0	0	1	1	5	0	35	2	0	1	0	38	53	
9:00 AM	5	3	0	0	0	0	8	0	3	0	0	0	0	3	0	6	0	0	0	1	7	0	21	3	0	0	1	25	43	
Total Volume	21	9	0	0	0	0	30	1	9	1	0	1	1	13	3	18	1	0	1	2	25	0	107	12	0	1	1	121	189	
% Approach Total	70.0	30.0	0.0	0.0	0.0	0.0		7.7	69.2	7.7	0.0	7.7	7.7		12.0	72.0	4.0	0.0	4.0	8.0		0.0	88.4	9.9	0.0	0.8	0.8			
PHF	0.656	0.750	0.000	0.000	0.000	0.000	0.682	0.250	0.750	0.250	0.000	0.250	0.250	0.650	0.375	0.750	0.250	0.000	0.250	0.500	0.694	0.000	0.764	0.500	0.000	0.250	0.250	0.796	0.859	
Entering Leg	21	9	0	0	0	0	30	1	9	1	0	1	1	13	3	18	1	0	1	2	25	0	107	12	0	1	1	121	189	
Exiting Leg	31							112							13							33							189	
Total	61							125							38							154							378	

PDI File #: **175894 (13) am**
 Location: **N: Prospect Street S: Prospect Street**
 Location: **E: Somerville Avenue W: Somerville Avenue**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Pedestrians

	Prospect Street							Somerville Avenue							Prospect Street							Somerville Avenue							Total
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:30 AM	0	0	0	0	4	2	6	0	0	0	0	4	5	9	0	0	0	0	8	7	15	0	0	0	0	1	10	11	41
7:45 AM	0	0	0	0	6	0	6	0	0	0	0	7	0	7	0	0	0	0	14	9	23	0	0	0	0	1	4	5	41
Total	0	0	0	0	10	2	12	0	0	0	0	11	5	16	0	0	0	0	22	16	38	0	0	0	0	2	14	16	82
8:00 AM	0	0	0	0	6	2	8	0	0	0	0	6	2	8	0	0	0	0	19	8	27	0	0	0	0	4	11	15	58
8:15 AM	0	0	0	0	3	3	6	0	0	0	0	6	4	10	0	0	0	0	8	18	26	0	0	0	0	2	8	10	52
8:30 AM	0	0	0	0	5	2	7	0	0	0	0	5	5	10	0	0	0	0	8	16	24	0	0	0	0	1	4	5	46
8:45 AM	0	0	0	0	3	1	4	0	0	0	0	1	1	2	0	0	0	0	4	8	12	0	0	0	0	0	2	2	20
Total	0	0	0	0	17	8	25	0	0	0	0	18	12	30	0	0	0	0	39	50	89	0	0	0	0	7	25	32	176
9:00 AM	0	0	0	0	3	5	8	0	0	0	0	2	3	5	0	0	0	0	1	2	3	0	0	0	0	4	1	5	21
9:15 AM	0	0	0	0	5	6	11	0	0	0	0	2	3	5	0	0	0	0	1	5	6	0	0	0	0	2	4	6	28
Total	0	0	0	0	8	11	19	0	0	0	0	4	6	10	0	0	0	0	2	7	9	0	0	0	0	6	5	11	49
Grand Total	0	0	0	0	35	21	56	0	0	0	0	33	23	56	0	0	0	0	63	73	136	0	0	0	0	15	44	59	307
Approach %	0.0	0.0	0.0	0.0	62.5	37.5		0.0	0.0	0.0	0.0	58.9	41.1		0.0	0.0	0.0	0.0	46.3	53.7		0.0	0.0	0.0	0.0	25.4	74.6		
Total %	0.0	0.0	0.0	0.0	11.4	6.8	18.2	0.0	0.0	0.0	0.0	10.7	7.5	18.2	0.0	0.0	0.0	0.0	20.5	23.8	44.3	0.0	0.0	0.0	0.0	4.9	14.3	19.2	
Exiting Leg Total	56							56							136							59							307

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

7:45 AM	Prospect Street							Somerville Avenue							Prospect Street							Somerville Avenue							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:45 AM	0	0	0	0	6	0	6	0	0	0	0	7	0	7	0	0	0	0	14	9	23	0	0	0	0	1	4	5	41
8:00 AM	0	0	0	0	6	2	8	0	0	0	0	6	2	8	0	0	0	0	19	8	27	0	0	0	0	4	11	15	58
8:15 AM	0	0	0	0	3	3	6	0	0	0	0	6	4	10	0	0	0	0	8	18	26	0	0	0	0	2	8	10	52
8:30 AM	0	0	0	0	5	2	7	0	0	0	0	5	5	10	0	0	0	0	8	16	24	0	0	0	0	1	4	5	46
Total Volume	0	0	0	0	20	7	27	0	0	0	0	24	11	35	0	0	0	0	49	51	100	0	0	0	0	8	27	35	197
% Approach Total	0.0	0.0	0.0	0.0	74.1	25.9		0.0	0.0	0.0	0.0	68.6	31.4		0.0	0.0	0.0	0.0	49.0	51.0		0.0	0.0	0.0	0.0	22.9	77.1		
PHF	0.000	0.000	0.000	0.000	0.833	0.583	0.844	0.000	0.000	0.000	0.000	0.857	0.550	0.875	0.000	0.000	0.000	0.000	0.645	0.708	0.926	0.000	0.000	0.000	0.000	0.500	0.614	0.583	0.849
Entering Leg	0	0	0	0	20	7	27	0	0	0	0	24	11	35	0	0	0	0	49	51	100	0	0	0	0	8	27	35	197
Exiting Leg	27							35							100							35							197
Total	54							70							200							70							394

PDI File #: **175894 (13) pm**
 Location: **N: Prospect Street S: Prospect Street**
 Location: **E: Somerville Avenue W: Somerville Avenue**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Cars and Heavy Vehicles (Combined)

	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:30 PM	120	83	0	0	203	2	44	5	0	51	15	139	23	0	177	3	53	48	0	104	535
4:45 PM	125	69	0	0	194	1	49	7	0	57	18	120	26	0	164	4	72	67	0	143	558
Total	245	152	0	0	397	3	93	12	0	108	33	259	49	0	341	7	125	115	0	247	1093
5:00 PM	113	62	0	0	175	1	45	4	0	50	21	131	35	0	187	0	56	52	0	108	520
5:15 PM	109	77	0	0	186	2	53	8	0	63	17	104	42	0	163	2	78	72	0	152	564
5:30 PM	102	79	0	0	181	5	49	5	0	59	21	131	35	0	187	0	56	66	0	122	549
5:45 PM	107	79	0	0	186	3	57	13	0	73	14	116	30	0	160	4	64	71	0	139	558
Total	431	297	0	0	728	11	204	30	0	245	73	482	142	0	697	6	254	261	0	521	2191
6:00 PM	127	81	0	0	208	2	44	9	0	55	19	134	23	0	176	2	56	61	0	119	558
6:15 PM	123	81	0	0	204	7	36	8	0	51	18	111	22	0	151	0	59	73	0	132	538
Total	250	162	0	0	412	9	80	17	0	106	37	245	45	0	327	2	115	134	0	251	1096
Grand Total	926	611	0	0	1537	23	377	59	0	459	143	986	236	0	1365	15	494	510	0	1019	4380
Approach %	60.2	39.8	0.0	0.0		5.0	82.1	12.9	0.0		10.5	72.2	17.3	0.0		1.5	48.5	50.0	0.0		
Total %	21.1	13.9	0.0	0.0	35.1	0.5	8.6	1.3	0.0	10.5	3.3	22.5	5.4	0.0	31.2	0.3	11.3	11.6	0.0	23.3	
Exiting Leg Total	1519					637					685					1539					4380
Cars	890	604	0	0	1494	23	367	59	0	449	141	953	228	0	1322	14	461	483	0	958	4223
% Cars	96.1	98.9	0.0	0.0	97.2	100.0	97.3	100.0	0.0	97.8	98.6	96.7	96.6	0.0	96.8	93.3	93.3	94.7	0.0	94.0	96.4
Exiting Leg Total	1459					602					677					1485					4223
Heavy Vehicles	36	7	0	0	43	0	10	0	0	10	2	33	8	0	43	1	33	27	0	61	157
% Heavy Vehicles	3.9	1.1	0.0	0.0	2.8	0.0	2.7	0.0	0.0	2.2	1.4	3.3	3.4	0.0	3.2	6.7	6.7	5.3	0.0	6.0	3.6
Exiting Leg Total	60					35					8					54					157

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:15 PM	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
5:15 PM	109	77	0	0	186	2	53	8	0	63	17	104	42	0	163	2	78	72	0	152	564
5:30 PM	102	79	0	0	181	5	49	5	0	59	21	131	35	0	187	0	56	66	0	122	549
5:45 PM	107	79	0	0	186	3	57	13	0	73	14	116	30	0	160	4	64	71	0	139	558
6:00 PM	127	81	0	0	208	2	44	9	0	55	19	134	23	0	176	2	56	61	0	119	558
Total Volume	445	316	0	0	761	12	203	35	0	250	71	485	130	0	686	8	254	270	0	532	2229
% Approach Total	58.5	41.5	0.0	0.0		4.8	81.2	14.0	0.0		10.3	70.7	19.0	0.0		1.5	47.7	50.8	0.0		
PHF	0.876	0.975	0.000	0.000	0.915	0.600	0.890	0.673	0.000	0.856	0.845	0.905	0.774	0.000	0.917	0.500	0.814	0.938	0.000	0.875	0.988
Cars	432	315	0	0	747	12	199	35	0	246	71	473	124	0	668	7	239	256	0	502	2163
Cars %	97.1	99.7	0.0	0.0	98.2	100.0	98.0	100.0	0.0	98.4	100.0	97.5	95.4	0.0	97.4	87.5	94.1	94.8	0.0	94.4	97.0
Heavy Vehicles	13	1	0	0	14	0	4	0	0	4	0	12	6	0	18	1	15	14	0	30	66
Heavy Vehicles %	2.9	0.3	0.0	0.0	1.8	0.0	2.0	0.0	0.0	1.6	0.0	2.5	4.6	0.0	2.6	12.5	5.9	5.2	0.0	5.6	3.0
Cars Enter Leg	432	315	0	0	747	12	199	35	0	246	71	473	124	0	668	7	239	256	0	502	2163
Heavy Enter Leg	13	1	0	0	14	0	4	0	0	4	0	12	6	0	18	1	15	14	0	30	66
Total Entering Leg	445	316	0	0	761	12	203	35	0	250	71	485	130	0	686	8	254	270	0	532	2229
Cars Exiting Leg	741					310					357					755					2163
Heavy Exiting Leg	26					15					2					23					66
Total Exiting Leg	767					325					359					778					2229

PDI File #: **175894 (13) pm**
 Location: **N: Prospect Street S: Prospect Street**
 Location: **E: Somerville Avenue W: Somerville Avenue**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Cars

	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:30 PM	112	81	0	0	193	2	42	5	0	49	14	133	21	0	168	3	51	43	0	97	507
4:45 PM	119	67	0	0	186	1	47	7	0	55	17	116	26	0	159	4	66	66	0	136	536
Total	231	148	0	0	379	3	89	12	0	104	31	249	47	0	327	7	117	109	0	233	1043
5:00 PM	108	62	0	0	170	1	44	4	0	49	21	123	35	0	179	0	49	47	0	96	494
5:15 PM	106	77	0	0	183	2	53	8	0	63	17	104	40	0	161	1	70	67	0	138	545
5:30 PM	100	79	0	0	179	5	48	5	0	58	21	126	32	0	179	0	56	65	0	121	537
5:45 PM	105	78	0	0	183	3	54	13	0	70	14	115	30	0	159	4	58	66	0	128	540
Total	419	296	0	0	715	11	199	30	0	240	73	468	137	0	678	5	233	245	0	483	2116
6:00 PM	121	81	0	0	202	2	44	9	0	55	19	128	22	0	169	2	55	58	0	115	541
6:15 PM	119	79	0	0	198	7	35	8	0	50	18	108	22	0	148	0	56	71	0	127	523
Total	240	160	0	0	400	9	79	17	0	105	37	236	44	0	317	2	111	129	0	242	1064
Grand Total	890	604	0	0	1494	23	367	59	0	449	141	953	228	0	1322	14	461	483	0	958	4223
Approach %	59.6	40.4	0.0	0.0		5.1	81.7	13.1	0.0		10.7	72.1	17.2	0.0		1.5	48.1	50.4	0.0		
Total %	21.1	14.3	0.0	0.0	35.4	0.5	8.7	1.4	0.0	10.6	3.3	22.6	5.4	0.0	31.3	0.3	10.9	11.4	0.0	22.7	
Exiting Leg Total	1459					602					677					1485					4223

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:15 PM	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
5:15 PM	106	77	0	0	183	2	53	8	0	63	17	104	40	0	161	1	70	67	0	138	545
5:30 PM	100	79	0	0	179	5	48	5	0	58	21	126	32	0	179	0	56	65	0	121	537
5:45 PM	105	78	0	0	183	3	54	13	0	70	14	115	30	0	159	4	58	66	0	128	540
6:00 PM	121	81	0	0	202	2	44	9	0	55	19	128	22	0	169	2	55	58	0	115	541
Total Volume	432	315	0	0	747	12	199	35	0	246	71	473	124	0	668	7	239	256	0	502	2163
% Approach Total	57.8	42.2	0.0	0.0		4.9	80.9	14.2	0.0		10.6	70.8	18.6	0.0		1.4	47.6	51.0	0.0		
PHF	0.893	0.972	0.000	0.000	0.925	0.600	0.921	0.673	0.000	0.879	0.845	0.924	0.775	0.000	0.933	0.438	0.854	0.955	0.000	0.909	0.992
Entering Leg	432	315	0	0	747	12	199	35	0	246	71	473	124	0	668	7	239	256	0	502	2163
Exiting Leg	741					310					357					755					2163
Total	1488					556					1025					1257					4326

PDI File #: **175894 (13) pm**
 Location: **N: Prospect Street S: Prospect Street**
 Location: **E: Somerville Avenue W: Somerville Avenue**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Heavy Vehicles (Combined-Large Trucks and Buses)

	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:30 PM	8	2	0	0	10	0	2	0	0	2	1	6	2	0	9	0	2	5	0	7	28
4:45 PM	6	2	0	0	8	0	2	0	0	2	1	4	0	0	5	0	6	1	0	7	22
Total	14	4	0	0	18	0	4	0	0	4	2	10	2	0	14	0	8	6	0	14	50
5:00 PM	5	0	0	0	5	0	1	0	0	1	0	8	0	0	8	0	7	5	0	12	26
5:15 PM	3	0	0	0	3	0	0	0	0	0	0	0	2	0	2	1	8	5	0	14	19
5:30 PM	2	0	0	0	2	0	1	0	0	1	0	5	3	0	8	0	0	1	0	1	12
5:45 PM	2	1	0	0	3	0	3	0	0	3	0	1	0	0	1	0	6	5	0	11	18
Total	12	1	0	0	13	0	5	0	0	5	0	14	5	0	19	1	21	16	0	38	75
6:00 PM	6	0	0	0	6	0	0	0	0	0	0	6	1	0	7	0	1	3	0	4	17
6:15 PM	4	2	0	0	6	0	1	0	0	1	0	3	0	0	3	0	3	2	0	5	15
Total	10	2	0	0	12	0	1	0	0	1	0	9	1	0	10	0	4	5	0	9	32
Grand Total	36	7	0	0	43	0	10	0	0	10	2	33	8	0	43	1	33	27	0	61	157
Approach %	83.7	16.3	0.0	0.0		0.0	100.0	0.0	0.0		4.7	76.7	18.6	0.0		1.6	54.1	44.3	0.0		
Total %	22.9	4.5	0.0	0.0	27.4	0.0	6.4	0.0	0.0	6.4	1.3	21.0	5.1	0.0	27.4	0.6	21.0	17.2	0.0	38.9	
Exiting Leg Total	60					35					8					54					157
Large Trucks	16	4	0	0	20	0	3	0	0	3	1	23	3	0	27	0	21	14	0	35	85
% Large Trucks	44.4	57.1	0.0	0.0	46.5	0.0	30.0	0.0	0.0	30.0	50.0	69.7	37.5	0.0	62.8	0.0	63.6	51.9	0.0	57.4	54.1
Exiting Leg Total	37					22					4					22					85
Buses	20	3	0	0	23	0	7	0	0	7	1	10	5	0	16	1	12	13	0	26	72
% Buses	55.6	42.9	0.0	0.0	53.5	0.0	70.0	0.0	0.0	70.0	50.0	30.3	62.5	0.0	37.2	100.0	36.4	48.1	0.0	42.6	45.9
Exiting Leg Total	23					13					4					32					72

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:30 PM	8	2	0	0	10	0	2	0	0	2	1	6	2	0	9	0	2	5	0	7	28
4:45 PM	6	2	0	0	8	0	2	0	0	2	1	4	0	0	5	0	6	1	0	7	22
5:00 PM	5	0	0	0	5	0	1	0	0	1	0	8	0	0	8	0	7	5	0	12	26
5:15 PM	3	0	0	0	3	0	0	0	0	0	0	0	2	0	2	1	8	5	0	14	19
Total Volume	22	4	0	0	26	0	5	0	0	5	2	18	4	0	24	1	23	16	0	40	95
% Approach Total	84.6	15.4	0.0	0.0		0.0	100.0	0.0	0.0		8.3	75.0	16.7	0.0		2.5	57.5	40.0	0.0		
PHF	0.688	0.500	0.000	0.000	0.650	0.000	0.625	0.000	0.000	0.625	0.500	0.563	0.500	0.000	0.667	0.250	0.719	0.800	0.000	0.714	0.848
Large Trucks	12	2	0	0	14	0	1	0	0	1	1	15	3	0	19	0	12	8	0	20	54
Large Trucks %	54.5	50.0	0.0	0.0	53.8	0.0	20.0	0.0	0.0	20.0	50.0	83.3	75.0	0.0	79.2	0.0	52.2	50.0	0.0	50.0	56.8
Buses	10	2	0	0	12	0	4	0	0	4	1	3	1	0	5	1	11	8	0	20	41
Buses %	45.5	50.0	0.0	0.0	46.2	0.0	80.0	0.0	0.0	80.0	50.0	16.7	25.0	0.0	20.8	100.0	47.8	50.0	0.0	50.0	43.2
Trucks Enter Leg	12	2	0	0	14	0	1	0	0	1	1	15	3	0	19	0	12	8	0	20	54
Bus Enter Leg	10	2	0	0	12	0	4	0	0	4	1	3	1	0	5	1	11	8	0	20	41
Total Entering Leg	22	4	0	0	26	0	5	0	0	5	2	18	4	0	24	1	23	16	0	40	95
Trucks Exiting Leg	23					13					2					16					54
Buses Exiting Leg	11					12					3					15					41
Total Exiting Leg	34					25					5					31					95

PDI File #: **175894 (13) pm**
 Location: **N: Prospect Street S: Prospect Street**
 Location: **E: Somerville Avenue W: Somerville Avenue**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Large Trucks

	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:30 PM	3	2	0	0	5	0	1	0	0	1	0	5	1	0	6	0	2	4	0	6	18
4:45 PM	3	0	0	0	3	0	0	0	0	0	1	3	0	0	4	0	4	0	0	4	11
Total	6	2	0	0	8	0	1	0	0	1	1	8	1	0	10	0	6	4	0	10	29
5:00 PM	4	0	0	0	4	0	0	0	0	0	0	7	0	0	7	0	3	3	0	6	17
5:15 PM	2	0	0	0	2	0	0	0	0	0	0	0	2	0	2	0	3	1	0	4	8
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	3
5:45 PM	1	1	0	0	2	0	2	0	0	2	0	0	0	0	0	0	5	3	0	8	12
Total	7	1	0	0	8	0	2	0	0	2	0	9	2	0	11	0	11	8	0	19	40
6:00 PM	2	0	0	0	2	0	0	0	0	0	0	4	0	0	4	0	1	1	0	2	8
6:15 PM	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	0	3	1	0	4	8
Total	3	1	0	0	4	0	0	0	0	0	0	6	0	0	6	0	4	2	0	6	16
Grand Total	16	4	0	0	20	0	3	0	0	3	1	23	3	0	27	0	21	14	0	35	85
Approach %	80.0	20.0	0.0	0.0		0.0	100.0	0.0	0.0		3.7	85.2	11.1	0.0		0.0	60.0	40.0	0.0		
Total %	18.8	4.7	0.0	0.0	23.5	0.0	3.5	0.0	0.0	3.5	1.2	27.1	3.5	0.0	31.8	0.0	24.7	16.5	0.0	41.2	
Exiting Leg Total	37					22					4					22					85

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:30 PM	3	2	0	0	5	0	1	0	0	1	0	5	1	0	6	0	2	4	0	6	18
4:45 PM	3	0	0	0	3	0	0	0	0	0	1	3	0	0	4	0	4	0	0	4	11
5:00 PM	4	0	0	0	4	0	0	0	0	0	0	7	0	0	7	0	3	3	0	6	17
5:15 PM	2	0	0	0	2	0	0	0	0	0	0	0	2	0	2	0	3	1	0	4	8
Total Volume	12	2	0	0	14	0	1	0	0	1	1	15	3	0	19	0	12	8	0	20	54
% Approach Total	85.7	14.3	0.0	0.0		0.0	100.0	0.0	0.0		5.3	78.9	15.8	0.0		0.0	60.0	40.0	0.0		
PHF	0.750	0.250	0.000	0.000	0.700	0.000	0.250	0.000	0.000	0.250	0.250	0.536	0.375	0.000	0.679	0.000	0.750	0.500	0.000	0.833	0.750
Entering Leg	12	2	0	0	14	0	1	0	0	1	1	15	3	0	19	0	12	8	0	20	54
Exiting Leg	23					13					2					16					54
Total	37					14					21					36					108

PDI File #: **175894 (13) pm**
 Location: **N: Prospect Street S: Prospect Street**
 Location: **E: Somerville Avenue W: Somerville Avenue**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Buses

	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:30 PM	5	0	0	0	5	0	1	0	0	1	1	1	1	0	3	0	0	1	0	1	10
4:45 PM	3	2	0	0	5	0	2	0	0	2	0	1	0	0	1	0	2	1	0	3	11
Total	8	2	0	0	10	0	3	0	0	3	1	2	1	0	4	0	2	2	0	4	21
5:00 PM	1	0	0	0	1	0	1	0	0	1	0	1	0	0	1	0	4	2	0	6	9
5:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	5	4	0	10	11
5:30 PM	2	0	0	0	2	0	1	0	0	1	0	3	3	0	6	0	0	0	0	0	9
5:45 PM	1	0	0	0	1	0	1	0	0	1	0	1	0	0	1	0	1	2	0	3	6
Total	5	0	0	0	5	0	3	0	0	3	0	5	3	0	8	1	10	8	0	19	35
6:00 PM	4	0	0	0	4	0	0	0	0	0	0	2	1	0	3	0	0	2	0	2	9
6:15 PM	3	1	0	0	4	0	1	0	0	1	0	1	0	0	1	0	0	1	0	1	7
Total	7	1	0	0	8	0	1	0	0	1	0	3	1	0	4	0	0	3	0	3	16
Grand Total	20	3	0	0	23	0	7	0	0	7	1	10	5	0	16	1	12	13	0	26	72
Approach %	87.0	13.0	0.0	0.0		0.0	100.0	0.0	0.0		6.3	62.5	31.3	0.0		3.8	46.2	50.0	0.0		
Total %	27.8	4.2	0.0	0.0	31.9	0.0	9.7	0.0	0.0	9.7	1.4	13.9	6.9	0.0	22.2	1.4	16.7	18.1	0.0	36.1	
Exiting Leg Total	23					13					4					32					72

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Prospect Street					Somerville Avenue					Prospect Street					Somerville Avenue					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:30 PM	5	0	0	0	5	0	1	0	0	1	1	1	1	0	3	0	0	1	0	1	10
4:45 PM	3	2	0	0	5	0	2	0	0	2	0	1	0	0	1	0	2	1	0	3	11
5:00 PM	1	0	0	0	1	0	1	0	0	1	0	1	0	0	1	0	4	2	0	6	9
5:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	5	4	0	10	11
Total Volume	10	2	0	0	12	0	4	0	0	4	1	3	1	0	5	1	11	8	0	20	41
% Approach Total	83.3	16.7	0.0	0.0		0.0	100.0	0.0	0.0		20.0	60.0	20.0	0.0		5.0	55.0	40.0	0.0		
PHF	0.500	0.250	0.000	0.000	0.600	0.000	0.500	0.000	0.000	0.500	0.250	0.750	0.250	0.000	0.417	0.250	0.550	0.500	0.000	0.500	0.932
Entering Leg	10	2	0	0	12	0	4	0	0	4	1	3	1	0	5	1	11	8	0	20	41
Exiting Leg	11					12					3					15					41
Total	23					16					8					35					82

PDI File #: **175894 (13) pm**
 Location: **N: Prospect Street S: Prospect Street**
 Location: **E: Somerville Avenue W: Somerville Avenue**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Bicycles (on Roadway and Crosswalks)

	Prospect Street							Somerville Avenue							Prospect Street							Somerville Avenue							Total
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
4:30 PM	4	1	0	0	0	0	5	1	4	0	0	0	0	5	0	2	1	0	1	0	4	0	3	2	0	0	0	5	19
4:45 PM	1	0	0	0	0	0	1	0	11	1	0	0	0	12	0	6	3	0	0	0	9	0	4	3	0	0	0	7	29
Total	5	1	0	0	0	0	6	1	15	1	0	0	0	17	0	8	4	0	1	0	13	0	7	5	0	0	0	12	48
5:00 PM	3	1	0	0	0	0	4	0	11	0	0	0	0	11	0	4	5	0	1	0	10	0	0	2	0	0	0	2	27
5:15 PM	3	1	0	0	0	0	6	0	27	0	0	0	0	27	1	7	0	0	1	0	9	0	4	0	0	0	1	5	47
5:30 PM	2	0	0	0	0	0	2	1	16	0	0	0	0	17	0	8	4	0	0	0	12	0	7	1	0	0	0	8	39
5:45 PM	5	1	0	0	0	0	6	0	22	1	0	0	0	23	2	3	0	0	2	0	7	0	5	1	0	2	1	9	45
Total	13	3	0	0	0	0	18	1	76	1	0	0	0	78	3	22	9	0	4	0	38	0	16	4	0	2	2	24	158
6:00 PM	7	0	0	0	0	0	7	1	16	0	0	0	1	18	0	5	4	0	1	0	10	0	5	5	0	3	0	13	48
6:15 PM	4	1	0	0	0	0	6	0	14	2	0	0	0	16	1	7	1	0	0	0	9	0	3	9	0	0	0	12	43
Total	11	1	0	0	0	0	13	1	30	2	0	0	1	34	1	12	5	0	1	0	19	0	8	14	0	3	0	25	91
Grand Total	29	5	0	0	0	3	37	3	121	4	0	0	1	129	4	42	18	0	6	0	70	0	31	23	0	5	2	61	297
Approach %	78.4	13.5	0.0	0.0	0.0	8.1		2.3	93.8	3.1	0.0	0.0	0.8		5.7	60.0	25.7	0.0	8.6	0.0		0.0	50.8	37.7	0.0	8.2	3.3		
Total %	9.8	1.7	0.0	0.0	0.0	1.0	12.5	1.0	40.7	1.3	0.0	0.0	0.3	43.4	1.3	14.1	6.1	0.0	2.0	0.0	23.6	0.0	10.4	7.7	0.0	1.7	0.7	20.5	
Exiting Leg Total	71							36							15							175							297

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:15 PM	Prospect Street							Somerville Avenue							Prospect Street							Somerville Avenue							Total			
	North							East							South							West										
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total				
5:15 PM	3	1	0	0	0	0	2	6	0	27	0	0	0	0	0	27	1	7	0	0	1	0	0	9	0	4	0	0	0	1	5	47
5:30 PM	2	0	0	0	0	0	0	2	1	16	0	0	0	0	0	17	0	8	4	0	0	0	0	12	0	7	1	0	0	0	8	39
5:45 PM	5	1	0	0	0	0	0	6	0	22	1	0	0	0	0	23	2	3	0	0	2	0	7	0	5	1	0	2	1	9	45	
6:00 PM	7	0	0	0	0	0	0	7	1	16	0	0	0	0	1	18	0	5	4	0	1	0	10	0	5	5	0	3	0	13	48	
Total Volume	17	2	0	0	0	0	2	21	2	81	1	0	0	1	85	3	23	8	0	4	0	38	0	21	7	0	5	2	35	179		
% Approach Total	81.0	9.5	0.0	0.0	0.0	0.0	9.5		2.4	95.3	1.2	0.0	0.0	1.2		7.9	60.5	21.1	0.0	10.5	0.0		0.0	60.0	20.0	0.0	14.3	5.7				
PHF	0.607	0.500	0.000	0.000	0.000	0.250	0.750		0.500	0.750	0.250	0.000	0.000	0.250	0.787		0.375	0.719	0.500	0.000	0.500	0.000	0.792	0.000	0.750	0.350	0.000	0.417	0.500	0.673	0.932	
Entering Leg	17	2	0	0	0	0	2	21	2	81	1	0	0	1	85	3	23	8	0	4	0	38	0	21	7	0	5	2	35	179		
Exiting Leg	34							25							7							113							179			
Total	55							110							45							148							358			

PDI File #: **175894 (13) pm**
 Location: **N: Prospect Street S: Prospect Street**
 Location: **E: Somerville Avenue W: Somerville Avenue**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Pedestrians

	Prospect Street								Somerville Avenue								Prospect Street								Somerville Avenue								Total
	North								East								South								West								
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total					
4:30 PM	0	0	0	0	0	0	10	10	0	0	0	0	1	4	5	0	0	0	0	5	11	16	0	0	0	0	0	6	2	8	39		
4:45 PM	0	0	0	0	2	5	7	7	0	0	0	0	2	5	7	0	0	0	0	7	7	14	0	0	0	0	0	6	1	7	35		
Total	0	0	0	0	2	15	17	17	0	0	0	0	3	9	12	0	0	0	0	12	18	30	0	0	0	0	12	3	15	74			
5:00 PM	0	0	0	0	6	4	10	10	0	0	0	0	3	1	4	0	0	0	0	13	6	19	0	0	0	0	8	4	12	45			
5:15 PM	0	0	0	0	2	9	11	11	0	0	0	0	5	5	10	0	0	0	0	11	8	19	0	0	0	0	2	6	8	48			
5:30 PM	0	0	0	0	2	10	12	12	0	0	0	0	0	15	15	0	0	0	0	14	11	25	0	0	0	0	10	12	22	74			
5:45 PM	0	0	0	0	7	3	10	10	0	0	0	0	5	0	5	0	0	0	0	9	4	13	0	0	0	0	6	1	7	35			
Total	0	0	0	0	17	26	43	43	0	0	0	0	13	21	34	0	0	0	0	47	29	76	0	0	0	0	26	23	49	202			
6:00 PM	0	0	0	0	1	10	11	11	0	0	0	0	1	12	13	0	0	0	0	19	5	24	0	0	0	0	12	5	17	65			
6:15 PM	0	0	0	0	2	8	10	10	0	0	0	0	0	6	6	0	0	0	0	6	9	15	0	0	0	0	8	1	9	40			
Total	0	0	0	0	3	18	21	21	0	0	0	0	1	18	19	0	0	0	0	25	14	39	0	0	0	0	20	6	26	105			
Grand Total	0	0	0	0	22	59	81	81	0	0	0	0	17	48	65	0	0	0	0	84	61	145	0	0	0	0	58	32	90	381			
Approach %	0.0	0.0	0.0	0.0	27.2	72.8			0.0	0.0	0.0	0.0	26.2	73.8		0.0	0.0	0.0	0.0	57.9	42.1		0.0	0.0	0.0	0.0	64.4	35.6					
Total %	0.0	0.0	0.0	0.0	5.8	15.5	21.3		0.0	0.0	0.0	0.0	4.5	12.6	17.1	0.0	0.0	0.0	0.0	22.0	16.0	38.1	0.0	0.0	0.0	0.0	15.2	8.4	23.6				
Exiting Leg Total	81								65								145								90								381

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:15 PM	Prospect Street							Somerville Avenue							Prospect Street							Somerville Avenue							Total
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
5:15 PM	0	0	0	0	2	9	11	0	0	0	0	5	5	10	0	0	0	0	11	8	19	0	0	0	0	2	6	8	48
5:30 PM	0	0	0	0	2	10	12	0	0	0	0	0	15	15	0	0	0	0	14	11	25	0	0	0	0	10	12	22	74
5:45 PM	0	0	0	0	7	3	10	0	0	0	0	5	0	5	0	0	0	0	9	4	13	0	0	0	0	6	1	7	35
6:00 PM	0	0	0	0	1	10	11	0	0	0	0	1	12	13	0	0	0	0	19	5	24	0	0	0	0	12	5	17	65
Total Volume	0	0	0	0	12	32	44	0	0	0	0	11	32	43	0	0	0	0	53	28	81	0	0	0	0	30	24	54	222
% Approach Total	0.0	0.0	0.0	0.0	27.3	72.7		0.0	0.0	0.0	0.0	25.6	74.4		0.0	0.0	0.0	0.0	65.4	34.6		0.0	0.0	0.0	0.0	55.6	44.4		
PHF	0.000	0.000	0.000	0.000	0.429	0.800	0.917	0.000	0.000	0.000	0.000	0.550	0.533	0.717	0.000	0.000	0.000	0.000	0.697	0.636	0.810	0.000	0.000	0.000	0.000	0.625	0.500	0.614	0.750
Entering Leg	0	0	0	0	12	32	44	0	0	0	0	11	32	43	0	0	0	0	53	28	81	0	0	0	0	30	24	54	222
Exiting Leg	44							43							81							54							222
Total	88							86							162							108							444

PDI File #: **175894 (17) am**
 Location: **N: Warren Avenue S: Warren Avenue NE: Prospect Street**
 Location: **W: Concord Avenue SW: Prospect Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Cars and Heavy Vehicles (Combined)

	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
7:30 AM	1	38	61	41	0	141	5	10	58	18	0	91	51	31	6	4	0	92	2	74	16	4	0	96	0	0	0	0	0	0	420
7:45 AM	0	40	94	23	0	157	7	12	73	16	0	108	38	23	5	1	0	67	7	57	6	3	0	73	0	0	0	0	0	0	405
Total	1	78	155	64	0	298	12	22	131	34	0	199	89	54	11	5	0	159	9	131	22	7	0	169	0	0	0	0	0	0	825
8:00 AM	5	20	71	13	0	109	1	15	43	20	0	79	40	20	1	0	0	61	5	77	6	3	0	91	0	0	0	0	0	0	340
8:15 AM	3	33	97	14	0	147	2	17	62	13	0	94	36	19	4	0	0	59	3	70	13	2	0	88	0	0	0	0	0	0	388
8:30 AM	0	30	69	6	0	105	0	4	57	31	0	92	21	20	3	1	0	45	3	80	3	0	0	86	0	0	0	0	0	0	328
8:45 AM	2	48	65	11	0	126	3	8	59	16	0	86	24	9	4	3	0	40	5	88	6	1	0	100	0	0	0	0	0	0	352
Total	10	131	302	44	0	487	6	44	221	80	0	351	121	68	12	4	0	205	16	315	28	6	0	365	0	0	0	0	0	0	1408
9:00 AM	0	32	68	2	0	102	1	2	66	16	0	85	52	19	2	2	0	75	4	89	11	1	0	105	0	0	0	0	0	0	367
9:15 AM	4	39	63	9	0	115	4	17	76	15	0	112	36	20	0	2	0	58	2	80	13	2	0	97	0	0	0	0	0	0	382
Total	4	71	131	11	0	217	5	19	142	31	0	197	88	39	2	4	0	133	6	169	24	3	0	202	0	0	0	0	0	0	749
Grand Total	15	280	588	119	0	1002	23	85	494	145	0	747	298	161	25	13	0	497	31	615	74	16	0	736	0	0	0	0	0	0	2982
Approach %	1.5	27.9	58.7	11.9	0.0		3.1	11.4	66.1	19.4	0.0		60.0	32.4	5.0	2.6	0.0		4.2	83.6	10.1	2.2	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total %	0.5	9.4	19.7	4.0	0.0	33.6	0.8	2.9	16.6	4.9	0.0	25.1	10.0	5.4	0.8	0.4	0.0	16.7	1.0	20.6	2.5	0.5	0.0	24.7	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	258						1032						764						787						141						2982
Cars	15	273	569	119	0	976	23	82	477	138	0	720	260	154	25	9	0	448	30	572	71	16	0	689	0	0	0	0	0	0	2833
% Cars	100.0	97.5	96.8	100.0	0.0	97.4	100.0	96.5	96.6	95.2	0.0	96.4	87.2	95.7	100.0	69.2	0.0	90.1	96.8	93.0	95.9	100.0	0.0	93.6	0.0	0.0	0.0	0.0	0.0	0.0	95.0
Exiting Leg Total	248						951						737						759						138						2833
Heavy Vehicles	0	7	19	0	0	26	0	3	17	7	0	27	38	7	0	4	0	49	1	43	3	0	0	47	0	0	0	0	0	0	149
% Heavy Vehicles	0.0	2.5	3.2	0.0	0.0	2.6	0.0	3.5	3.4	4.8	0.0	3.6	12.8	4.3	0.0	30.8	0.0	9.9	3.2	7.0	4.1	0.0	0.0	6.4	0.0	0.0	0.0	0.0	0.0	0.0	5.0
Exiting Leg Total	10						81						27						28						3						149

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

7:30 AM	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
7:30 AM	1	38	61	41	0	141	5	10	58	18	0	91	51	31	6	4	0	92	2	74	16	4	0	96	0	0	0	0	0	0	420
7:45 AM	0	40	94	23	0	157	7	12	73	16	0	108	38	23	5	1	0	67	7	57	6	3	0	73	0	0	0	0	0	0	405
8:00 AM	5	20	71	13	0	109	1	15	43	20	0	79	40	20	1	0	0	61	5	77	6	3	0	91	0	0	0	0	0	0	340
8:15 AM	3	33	97	14	0	147	2	17	62	13	0	94	36	19	4	0	0	59	3	70	13	2	0	88	0	0	0	0	0	0	388
Total Volume	9	131	323	91	0	554	15	54	236	67	0	372	165	93	16	5	0	279	17	278	41	12	0	348	0	0	0	0	0	0	1553
% Approach Total	1.6	23.6	58.3	16.4	0.0		4.0	14.5	63.4	18.0	0.0		59.1	33.3	5.7	1.8	0.0		4.9	79.9	11.8	3.4	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
PHF	0.450	0.819	0.832	0.555	0.000	0.882	0.536	0.794	0.808	0.838	0.000	0.861	0.809	0.750	0.667	0.313	0.000	0.758	0.607	0.903	0.641	0.750	0.000	0.906	0.000	0.000	0.000	0.000	0.000	0.000	0.924
Cars	9	127	316	91	0	543	15	52	229	60	0	356	148	90	16	4	0	258	16	268	41	12	0	337	0	0	0	0	0	0	1494
Cars %	100.0	96.9	97.8	100.0	0.0	98.0	100.0	96.3	97.0	89.6	0.0	95.7	89.7	96.8	100.0	80.0	0.0	92.5	94.1	96.4	100.0	100.0	0.0	96.8	0.0	0.0	0.0	0.0	0.0	0.0	96.2
Heavy Vehicles	0	4	7	0	0	11	0	2	7	7	0	16	17	3	0	1	0	21	1	10	0	0	0	11	0	0	0	0	0	0	59
Heavy Vehicles %	0.0	3.1	2.2	0.0	0.0	2.0	0.0	3.7	3.0	10.4	0.0	4.3	10.3	3.2	0.0	20.0	0.0	7.5	5.9	3.6	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	3.8
Cars Enter Leg	9	127	316	91	0	543	15	52	229	60	0	356	148	90	16	4	0	258	16	268	41	12	0	337	0	0	0	0	0	0	1494
Heavy Enter Leg	0	4	7	0	0	11	0	2	7	7	0	16	17	3	0	1	0	21	1	10	0	0	0	11	0	0	0	0	0	0	59
Total Entering Leg	9	131	323	91	0	554	15	54	236	67	0	372	165	93	16	5	0	279	17	278	41	12	0	348	0	0	0	0	0	0	1553
Cars Exiting Leg	146						507						392						360						89						1494
Heavy Exiting Leg	3						27						15						12						2						59
Total Exiting Leg	149						534						407						372						91						1553

PDI File #: **175894 (17) am**
 Location: **N: Warren Avenue S: Warren Avenue NE: Prospect Street**
 Location: **W: Concord Avenue SW: Prospect Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Cars

	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
7:30 AM	1	38	61	41	0	141	5	10	58	15	0	88	48	30	6	3	0	87	2	72	16	4	0	94	0	0	0	0	0	0	410
7:45 AM	0	38	90	23	0	151	7	11	68	16	0	102	35	23	5	1	0	64	6	57	6	3	0	72	0	0	0	0	0	0	389
Total	1	76	151	64	0	292	12	21	126	31	0	190	83	53	11	4	0	151	8	129	22	7	0	166	0	0	0	0	0	0	799
8:00 AM	5	18	69	13	0	105	1	15	43	19	0	78	34	18	1	0	0	53	5	72	6	3	0	86	0	0	0	0	0	0	322
8:15 AM	3	33	96	14	0	146	2	16	60	10	0	88	31	19	4	0	0	54	3	67	13	2	0	85	0	0	0	0	0	0	373
8:30 AM	0	29	64	6	0	99	0	4	56	31	0	91	18	20	3	1	0	42	3	72	3	0	0	78	0	0	0	0	0	0	310
8:45 AM	2	47	63	11	0	123	3	8	56	16	0	83	17	7	4	1	0	29	5	79	5	1	0	90	0	0	0	0	0	0	325
Total	10	127	292	44	0	473	6	43	215	76	0	340	100	64	12	2	0	178	16	290	27	6	0	339	0	0	0	0	0	0	1330
9:00 AM	0	32	65	2	0	99	1	2	63	16	0	82	42	18	2	1	0	63	4	80	10	1	0	95	0	0	0	0	0	0	339
9:15 AM	4	38	61	9	0	112	4	16	73	15	0	108	35	19	0	2	0	56	2	73	12	2	0	89	0	0	0	0	0	0	365
Total	4	70	126	11	0	211	5	18	136	31	0	190	77	37	2	3	0	119	6	153	22	3	0	184	0	0	0	0	0	0	704
Grand Total	15	273	569	119	0	976	23	82	477	138	0	720	260	154	25	9	0	448	30	572	71	16	0	689	0	0	0	0	0	0	2833
Approach %	1.5	28.0	58.3	12.2	0.0		3.2	11.4	66.3	19.2	0.0		58.0	34.4	5.6	2.0	0.0		4.4	83.0	10.3	2.3	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.5	9.6	20.1	4.2	0.0	34.5	0.8	2.9	16.8	4.9	0.0	25.4	9.2	5.4	0.9	0.3	0.0	15.8	1.1	20.2	2.5	0.6	0.0	24.3	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	248						951						737						759						138						2833

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

7:30 AM	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
7:30 AM	1	38	61	41	0	141	5	10	58	15	0	88	48	30	6	3	0	87	2	72	16	4	0	94	0	0	0	0	0	0	410
7:45 AM	0	38	90	23	0	151	7	11	68	16	0	102	35	23	5	1	0	64	6	57	6	3	0	72	0	0	0	0	0	0	389
8:00 AM	5	18	69	13	0	105	1	15	43	19	0	78	34	18	1	0	0	53	5	72	6	3	0	86	0	0	0	0	0	0	322
8:15 AM	3	33	96	14	0	146	2	16	60	10	0	88	31	19	4	0	0	54	3	67	13	2	0	85	0	0	0	0	0	0	373
Total Volume	9	127	316	91	0	543	15	52	229	60	0	356	148	90	16	4	0	258	16	268	41	12	0	337	0	0	0	0	0	0	1494
% Approach Total	1.7	23.4	58.2	16.8	0.0		4.2	14.6	64.3	16.9	0.0		57.4	34.9	6.2	1.6	0.0		4.7	79.5	12.2	3.6	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
PHF	0.450	0.836	0.823	0.555	0.000	0.899	0.536	0.813	0.842	0.789	0.000	0.873	0.771	0.750	0.667	0.333	0.000	0.741	0.667	0.931	0.641	0.750	0.000	0.896	0.000	0.000	0.000	0.000	0.000	0.000	0.911
Entering Leg	9	127	316	91	0	543	15	52	229	60	0	356	148	90	16	4	0	258	16	268	41	12	0	337	0	0	0	0	0	0	1494
Exiting Leg						146						507						392						360						89	1494
Total						689						863						650						697						89	2988

PDI File #: 175894 (17) am
 Location: N: Warren Avenue S: Warren Avenue NE: Prospect Street
 Location: W: Concord Avenue SW: Prospect Street
 City, State: Somerville, MA
 Client: USSA/ J. Kunz
 Site Code: TBA
 Count Date: Thursday, October 5, 2017
 Start Time: 7:30 AM
 End Time: 9:30 AM
 Class:



Heavy Vehicles (Combined-Large Trucks and Buses)

	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
7:30 AM	0	0	0	0	0	0	0	0	0	3	0	3	3	1	0	1	0	5	0	2	0	0	0	2	0	0	0	0	0	0	10
7:45 AM	0	2	4	0	0	6	0	1	5	0	0	6	3	0	0	0	0	3	1	0	0	0	0	1	0	0	0	0	0	0	16
Total	0	2	4	0	0	6	0	1	5	3	0	9	6	1	0	1	0	8	1	2	0	0	0	3	0	0	0	0	0	0	26
8:00 AM	0	2	2	0	0	4	0	0	0	1	0	1	6	2	0	0	0	8	0	5	0	0	0	5	0	0	0	0	0	0	18
8:15 AM	0	0	1	0	0	1	0	1	2	3	0	6	5	0	0	0	0	5	0	3	0	0	0	3	0	0	0	0	0	0	15
8:30 AM	0	1	5	0	0	6	0	0	1	0	0	1	3	0	0	0	0	3	0	8	0	0	0	8	0	0	0	0	0	0	18
8:45 AM	0	1	2	0	0	3	0	0	3	0	0	3	7	2	0	2	0	11	0	9	1	0	0	10	0	0	0	0	0	0	27
Total	0	4	10	0	0	14	0	1	6	4	0	11	21	4	0	2	0	27	0	25	1	0	0	26	0	0	0	0	0	0	78
9:00 AM	0	0	3	0	0	3	0	0	3	0	0	3	10	1	0	1	0	12	0	9	1	0	0	10	0	0	0	0	0	0	28
9:15 AM	0	1	2	0	0	3	0	1	3	0	0	4	1	1	0	0	0	2	0	7	1	0	0	8	0	0	0	0	0	0	17
Total	0	1	5	0	0	6	0	1	6	0	0	7	11	2	0	1	0	14	0	16	2	0	0	18	0	0	0	0	0	0	45
Grand Total	0	7	19	0	0	26	0	3	17	7	0	27	38	7	0	4	0	49	1	43	3	0	0	47	0	0	0	0	0	0	149
Approach %	0.0	26.9	73.1	0.0	0.0		0.0	11.1	63.0	25.9	0.0		77.6	14.3	0.0	8.2	0.0		2.1	91.5	6.4	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	4.7	12.8	0.0	0.0	17.4	0.0	2.0	11.4	4.7	0.0	18.1	25.5	4.7	0.0	2.7	0.0	32.9	0.7	28.9	2.0	0.0	0.0	31.5	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	10						81						27						28						3						149
Large Trucks	0	5	9	0	0	14	0	3	15	5	0	23	26	4	0	4	0	34	1	23	3	0	0	27	0	0	0	0	0	0	98
% Large Trucks	0.0	71.4	47.4	0.0	0.0	53.8	0.0	100.0	88.2	71.4	0.0	85.2	68.4	57.1	0.0	100.0	0.0	69.4	100.0	53.5	100.0	0.0	0.0	57.4	0.0	0.0	0.0	0.0	0.0	0.0	65.8
Exiting Leg Total	7						49						15						24						3						98
Buses	0	2	10	0	0	12	0	0	2	2	0	4	12	3	0	0	0	15	0	20	0	0	0	20	0	0	0	0	0	0	51
% Buses	0.0	28.6	52.6	0.0	0.0	46.2	0.0	0.0	11.8	28.6	0.0	14.8	31.6	42.9	0.0	0.0	0.0	30.6	0.0	46.5	0.0	0.0	0.0	42.6	0.0	0.0	0.0	0.0	0.0	0.0	34.2
Exiting Leg Total	3						32						12						4						0						51

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:30 AM	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
8:30 AM	0	1	5	0	0	6	0	0	1	0	0	1	3	0	0	0	0	3	0	8	0	0	0	8	0	0	0	0	0	0	18
8:45 AM	0	1	2	0	0	3	0	0	3	0	0	3	7	2	0	2	0	11	0	9	1	0	0	10	0	0	0	0	0	0	27
9:00 AM	0	0	3	0	0	3	0	0	3	0	0	3	10	1	0	1	0	12	0	9	1	0	0	10	0	0	0	0	0	0	28
9:15 AM	0	1	2	0	0	3	0	1	3	0	0	4	1	1	0	0	0	2	0	7	1	0	0	8	0	0	0	0	0	0	17
Total Volume	0	3	12	0	0	15	0	1	10	0	0	11	21	4	0	3	0	28	0	33	3	0	0	36	0	0	0	0	0	0	90
% Approach Total	0.0	20.0	80.0	0.0	0.0		0.0	9.1	90.9	0.0	0.0		75.0	14.3	0.0	10.7	0.0		0.0	91.7	8.3	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.750	0.600	0.000	0.000	0.625	0.000	0.250	0.833	0.000	0.000	0.688	0.525	0.500	0.000	0.375	0.000	0.583	0.000	0.917	0.750	0.000	0.000	0.900	0.000	0.000	0.000	0.000	0.000	0.000	0.804
Large Trucks	0	3	6	0	0	9	0	1	8	0	0	9	14	3	0	3	0	20	0	15	3	0	0	18	0	0	0	0	0	0	56
Large Trucks %	0.0	100.0	50.0	0.0	0.0	60.0	0.0	100.0	80.0	0.0	0.0	81.8	66.7	75.0	0.0	100.0	0.0	71.4	0.0	45.5	100.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	62.2
Buses	0	0	6	0	0	6	0	0	2	0	0	2	7	1	0	0	0	8	0	18	0	0	0	18	0	0	0	0	0	0	34
Buses %	0.0	0.0	50.0	0.0	0.0	40.0	0.0	0.0	20.0	0.0	0.0	18.2	33.3	25.0	0.0	0.0	0.0	28.6	0.0	54.5	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	37.8
Trucks Enter Leg	0	3	6	0	0	9	0	1	8	0	0	9	14	3	0	3	0	20	0	15	3	0	0	18	0	0	0	0	0	0	56
Bus Enter Leg	0	0	6	0	0	6	0	0	2	0	0	2	7	1	0	0	0	8	0	18	0	0	0	18	0	0	0	0	0	0	34
Total Entering Leg	0	3	12	0	0	15	0	1	10	0	0	11	21	4	0	3	0	28	0	33	3	0	0	36	0	0	0	0	0	0	90
Trucks Exiting Leg	6						29						6						14						1						56
Buses Exiting Leg	1						25						6						2						0						34
Total Exiting Leg	7						54						12						16						1						90

PDI File #: **175894 (17) am**
 Location: **N: Warren Avenue S: Warren Avenue NE: Prospect Street**
 Location: **W: Concord Avenue SW: Prospect Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Large Trucks

	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
7:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	2	0	0	1	0	3	0	2	0	0	0	2	0	0	0	0	0	0	7
7:45 AM	0	1	2	0	0	3	0	1	5	0	0	6	2	0	0	0	0	2	1	0	0	0	0	1	0	0	0	0	0	0	12
Total	0	1	2	0	0	3	0	1	5	2	0	8	4	0	0	1	0	5	1	2	0	0	0	3	0	0	0	0	0	0	19
8:00 AM	0	1	0	0	0	1	0	0	0	1	0	1	5	1	0	0	0	6	0	4	0	0	0	4	0	0	0	0	0	0	12
8:15 AM	0	0	1	0	0	1	0	1	2	2	0	5	3	0	0	0	0	3	0	2	0	0	0	2	0	0	0	0	0	0	11
8:30 AM	0	1	4	0	0	5	0	0	1	0	0	1	1	0	0	0	0	1	0	3	0	0	0	3	0	0	0	0	0	0	10
8:45 AM	0	1	0	0	0	1	0	0	1	0	0	1	5	2	0	2	0	9	0	4	1	0	0	5	0	0	0	0	0	0	16
Total	0	3	5	0	0	8	0	1	4	3	0	8	14	3	0	2	0	19	0	13	1	0	0	14	0	0	0	0	0	0	49
9:00 AM	0	0	1	0	0	1	0	0	3	0	0	3	7	1	0	1	0	9	0	4	1	0	0	5	0	0	0	0	0	0	18
9:15 AM	0	1	1	0	0	2	0	1	3	0	0	4	1	0	0	0	0	1	0	4	1	0	0	5	0	0	0	0	0	0	12
Total	0	1	2	0	0	3	0	1	6	0	0	7	8	1	0	1	0	10	0	8	2	0	0	10	0	0	0	0	0	0	30
Grand Total	0	5	9	0	0	14	0	3	15	5	0	23	26	4	0	4	0	34	1	23	3	0	0	27	0	0	0	0	0	0	98
Approach %	0.0	35.7	64.3	0.0	0.0		0.0	13.0	65.2	21.7	0.0		76.5	11.8	0.0	11.8	0.0		3.7	85.2	11.1	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	5.1	9.2	0.0	0.0	14.3	0.0	3.1	15.3	5.1	0.0	23.5	26.5	4.1	0.0	4.1	0.0	34.7	1.0	23.5	3.1	0.0	0.0	27.6	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	7						49						15						24						3						98

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:30 AM	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue							
	North						Northeast						South						Southwest						West							
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total		
8:30 AM	0	1	4	0	0	5	0	0	1	0	0	1	1	0	0	0	0	1	0	3	0	0	0	3	0	0	0	0	0	0	10	
8:45 AM	0	1	0	0	0	1	1	0	0	1	0	0	1	5	2	0	2	0	9	0	4	1	0	0	5	0	0	0	0	0	0	16
9:00 AM	0	0	1	0	0	1	0	0	3	0	0	3	7	1	0	1	0	9	0	4	1	0	0	5	0	0	0	0	0	0	18	
9:15 AM	0	1	1	0	0	2	0	1	3	0	0	4	1	0	0	0	0	1	0	4	1	0	0	5	0	0	0	0	0	0	12	
Total Volume	0	3	6	0	0	9	0	1	8	0	0	9	14	3	0	3	0	20	0	15	3	0	0	18	0	0	0	0	0	0	56	
% Approach Total	0.0	33.3	66.7	0.0	0.0		0.0	11.1	88.9	0.0	0.0		70.0	15.0	0.0	15.0	0.0		0.0	83.3	16.7	0.0	0.0		0.0	0.0	0.0	0.0	0.0			
PHF	0.000	0.750	0.375	0.000	0.000	0.450	0.000	0.250	0.667	0.000	0.000	0.563	0.500	0.375	0.000	0.375	0.000	0.556	0.000	0.938	0.750	0.000	0.000	0.900	0.000	0.000	0.000	0.000	0.000	0.000	0.778	
Entering Leg	0	3	6	0	0	9	0	1	8	0	0	9	14	3	0	3	0	20	0	15	3	0	0	18	0	0	0	0	0	0	56	
Exiting Leg	6						29						6						14						1						56	
Total	15						38						26						32						1						112	

PDI File #: **175894 (17) am**
 Location: **N: Warren Avenue S: Warren Avenue NE: Prospect Street**
 Location: **W: Concord Avenue SW: Prospect Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Buses

	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
7:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
7:45 AM	0	1	2	0	0	3	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4
Total	0	1	2	0	0	3	0	0	0	1	0	1	2	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	7
8:00 AM	0	1	2	0	0	3	0	0	0	0	0	0	1	1	0	0	0	2	0	1	0	0	0	1	0	0	0	0	0	0	6
8:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	2	0	1	0	0	0	1	0	0	0	0	0	0	4
8:30 AM	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0	0	2	0	5	0	0	0	5	0	0	0	0	0	0	8
8:45 AM	0	0	2	0	0	2	0	0	2	0	0	2	2	0	0	0	0	2	0	5	0	0	0	5	0	0	0	0	0	0	11
Total	0	1	5	0	0	6	0	0	2	1	0	3	7	1	0	0	0	8	0	12	0	0	0	12	0	0	0	0	0	0	29
9:00 AM	0	0	2	0	0	2	0	0	0	0	0	0	3	0	0	0	0	3	0	5	0	0	0	5	0	0	0	0	0	0	10
9:15 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	3	0	0	0	3	0	0	0	0	0	0	5
Total	0	0	3	0	0	3	0	0	0	0	0	0	3	1	0	0	0	4	0	8	0	0	0	8	0	0	0	0	0	0	15
Grand Total	0	2	10	0	0	12	0	0	2	2	0	4	12	3	0	0	0	15	0	20	0	0	0	20	0	0	0	0	0	0	51
Approach %	0.0	16.7	83.3	0.0	0.0		0.0	0.0	50.0	50.0	0.0		80.0	20.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	3.9	19.6	0.0	0.0	23.5	0.0	0.0	3.9	3.9	0.0	7.8	23.5	5.9	0.0	0.0	0.0	29.4	0.0	39.2	0.0	0.0	0.0	39.2	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	3						32						12						4						0						51

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:30 AM	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
8:30 AM	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	2	0	5	0	0	0	5	0	0	0	0	0	8
8:45 AM	0	0	2	0	0	2	0	0	2	0	0	2	2	0	0	0	0	2	0	5	0	0	0	5	0	0	0	0	0	11	
9:00 AM	0	0	2	0	0	2	0	0	0	0	0	0	3	0	0	0	0	3	0	5	0	0	0	5	0	0	0	0	0	10	
9:15 AM	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	3	0	0	0	3	0	0	0	0	0	5
Total Volume	0	0	6	0	0	6	0	0	2	0	0	2	7	1	0	0	0	8	0	18	0	0	0	18	0	0	0	0	0	0	34
% Approach Total	0.0	0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0		87.5	12.5	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.750	0.000	0.000	0.750	0.000	0.000	0.250	0.000	0.000	0.250	0.583	0.250	0.000	0.000	0.000	0.667	0.000	0.900	0.000	0.000	0.000	0.900	0.000	0.000	0.000	0.000	0.000	0.000	0.773
Entering Leg	0	0	6	0	0	6	0	0	2	0	0	2	7	1	0	0	0	8	0	18	0	0	0	18	0	0	0	0	0	0	34
Exiting Leg	1						25						6						2						0						34
Total	7						27						14						20						0						68

PDI File #: **175894 (17) am**
 Location: **N: Warren Avenue S: Warren Avenue NE: Prospect Street**
 Location: **W: Concord Avenue SW: Prospect Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Bicycles (on Roadway and Crosswalks)

	Warren Avenue								Prospect Street								Warren Avenue								Prospect Street								Concord Avenue								Total	
	North								Northeast								South								Southwest								West									
	Right	Bear Right	Thru	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	CW-SEB	CW-NWB	Total	Bear Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total		
7:30 AM	0	4	13	0	0	0	0	17	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	1	0	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	22	
7:45 AM	0	0	6	0	0	0	0	6	0	0	0	1	0	0	0	1	0	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	11	
Total	0	4	19	0	0	0	0	23	0	0	0	2	0	0	0	2	1	2	0	0	0	0	0	3	0	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	33	
8:00 AM	0	7	31	0	0	0	0	38	0	0	1	1	0	0	0	2	0	1	1	0	0	0	1	3	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	45	
8:15 AM	0	4	48	0	0	0	0	52	0	0	1	2	0	0	0	3	0	3	0	0	0	0	0	3	0	2	0	0	0	0	0	0	2	1	0	0	0	0	0	1	61	
8:30 AM	0	5	59	1	0	0	0	65	0	0	3	0	0	0	0	3	4	1	0	0	0	0	0	5	0	3	0	0	0	1	0	4	0	0	0	0	0	0	0	0	77	
8:45 AM	0	2	53	0	0	0	0	55	0	0	0	1	0	0	0	1	2	2	1	0	0	1	0	6	0	1	1	0	0	0	0	1	3	0	0	0	0	1	1	2	67	
Total	0	18	191	1	0	0	0	210	0	0	5	4	0	0	0	9	6	7	2	0	0	1	1	17	0	8	1	0	0	1	1	11	1	0	0	0	0	1	1	3	250	
9:00 AM	0	5	31	0	0	0	0	36	0	0	1	0	0	0	0	1	1	1	0	0	0	0	0	2	0	3	1	0	0	0	0	1	5	0	0	0	0	0	1	2	3	47
9:15 AM	0	6	30	0	0	0	0	36	0	0	2	1	0	0	0	3	0	3	0	0	0	0	0	3	0	3	1	0	0	0	0	2	6	0	0	0	0	0	0	0	48	
Total	0	11	61	0	0	0	0	72	0	0	3	1	0	0	0	4	1	4	0	0	0	0	0	5	0	6	2	0	0	0	0	3	11	0	0	0	0	0	1	2	3	95
Grand Total	0	33	271	1	0	0	0	305	0	0	8	7	0	0	0	15	8	13	2	0	0	1	1	25	0	19	3	0	0	1	4	27	1	0	0	0	0	2	3	6	378	
Approach %	0.0	10.8	88.9	0.3	0.0	0.0	0.0		0.0	0.0	53.3	46.7	0.0	0.0	0.0		32.0	52.0	8.0	0.0	0.0	4.0	4.0		0.0	70.4	11.1	0.0	0.0	3.7	14.8		16.7	0.0	0.0	0.0	0.0	33.3	50.0			
Total %	0.0	8.7	71.7	0.3	0.0	0.0	0.0	80.7	0.0	0.0	2.1	1.9	0.0	0.0	0.0	4.0	2.1	3.4	0.5	0.0	0.0	0.3	0.3	6.6	0.0	5.0	0.8	0.0	0.0	0.3	1.1	7.1	0.3	0.0	0.0	0.0	0.0	0.5	0.8	1.6		
Exiting Leg Total	16								28								280								47								7								378	

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:15 AM	Warren Avenue								Prospect Street								Warren Avenue								Prospect Street								Concord Avenue								Total	
	North								Northeast								South								Southwest								West									
	Right	Bear Right	Thru	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	CW-SEB	CW-NWB	Total	Bear Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total		
8:15 AM	0	4	48	0	0	0	0	52	0	0	1	2	0	0	0	3	0	3	0	0	0	0	0	3	0	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	61
8:30 AM	0	5	59	1	0	0	0	65	0	0	3	0	0	0	0	3	4	1	0	0	0	0	0	5	0	3	0	0	0	1	0	4	0	0	0	0	0	0	0	0	77	
8:45 AM	0	2	53	0	0	0	0	55	0	0	0	1	0	0	0	1	2	2	1	0	0	1	0	6	0	1	1	0	0	0	1	3	0	0	0	0	0	1	1	2	67	
9:00 AM	0	5	31	0	0	0	0	36	0	0	1	0	0	0	0	1	1	1	0	0	0	0	0	2	0	3	1	0	0	0	1	5	0	0	0	0	0	1	2	3	47	
Total Volume	0	16	191	1	0	0	0	208	0	0	5	3	0	0	0	8	7	7	1	0	0	1	0	16	0	9	2	0	0	1	2	14	1	0	0	0	0	2	3	6	252	
% Approach Total	0.0	7.7	91.8	0.5	0.0	0.0	0.0		0.0	0.0	62.5	37.5	0.0	0.0	0.0		43.8	43.8	6.3	0.0	0.0	6.3	0.0		0.0	64.3	14.3	0.0	0.0	7.1	14.3		16.7	0.0	0.0	0.0	0.0	33.3	50.0			
PHF	0.000	0.800	0.809	0.250	0.000	0.000	0.000	0.800	0.000	0.000	0.417	0.375	0.000	0.000	0.000	0.667	0.438	0.583	0.250	0.000	0.000	0.250	0.000	0.667	0.000	0.750	0.500	0.000	0.000	0.250	0.500	0.700	0.250	0.000	0.000	0.000	0.000	0.500	0.375	0.500	0.818	
Entering Leg	0	16	191	1	0	0	0	208	0	0	5	3	0	0	0	8	7	7	1	0	0	1	0	16	0	9	2	0	0	1	2	14	1	0	0	0	0	2	3	6	252	
Exiting Leg	9								17								195								25								6								252	
Total	217								25								211								39								12								504	

PDI File #: **175894 (17) am**
 Location: **N: Warren Avenue S: Warren Avenue NE: Prospect Street**
 Location: **W: Concord Avenue SW: Prospect Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Pedestrians

	Warren Avenue								Prospect Street								Warren Avenue								Prospect Street								Concord Avenue								Total	
	North								Northeast								South								Southwest								West									
	Right	Bear Right	Thru	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	CW-SEB	CW-NWB	Total	Bear Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total		
7:30 AM	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1	9	0	0	0	0	0	2	4	6	0	0	0	0	0	6	10	16	33
7:45 AM	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	2	5	7	0	0	0	0	0	6	11	17	32	
Total	0	0	0	0	0	1	4	5	0	0	0	0	0	0	0	0	0	0	0	0	13	1	14	0	0	0	0	0	4	9	13	0	0	0	0	0	12	21	33	65		
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	6	0	0	0	0	0	9	10	19	25		
8:15 AM	0	0	0	0	0	0	5	5	0	0	0	0	0	3	0	3	0	0	0	0	0	5	6	11	0	0	0	0	0	0	23	23	0	0	0	0	0	5	34	39	81	
8:30 AM	0	0	0	0	0	1	5	6	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	0	0	0	0	0	5	12	17	0	0	0	0	0	4	17	21	49	
8:45 AM	0	0	0	0	0	0	2	2	0	0	0	0	0	1	1	2	0	0	0	0	0	2	0	2	0	0	0	0	0	6	7	13	0	0	0	0	0	5	11	16	35	
Total	0	0	0	0	0	1	12	13	0	0	0	0	0	6	1	7	0	0	0	0	0	10	6	16	0	0	0	0	0	14	45	59	0	0	0	0	0	23	72	95	190	
9:00 AM	0	0	0	0	0	1	2	3	0	0	0	0	0	3	0	3	0	0	0	0	0	2	2	4	0	0	0	0	0	2	2	4	0	0	0	0	0	2	10	12	26	
9:15 AM	0	0	0	0	0	0	2	2	0	0	0	0	0	1	1	2	0	0	0	0	0	0	1	1	0	0	0	0	0	1	2	3	0	0	0	0	0	1	6	7	15	
Total	0	0	0	0	0	1	4	5	0	0	0	0	0	4	1	5	0	0	0	0	0	2	3	5	0	0	0	0	0	3	4	7	0	0	0	0	0	3	16	19	41	
Grand Total	0	0	0	0	0	3	20	23	0	0	0	0	0	10	2	12	0	0	0	0	0	25	10	35	0	0	0	0	0	21	58	79	0	0	0	0	0	38	109	147	296	
Approach %	0.0	0.0	0.0	0.0	0.0	13.0	87.0		0.0	0.0	0.0	0.0	0.0	83.3	16.7		0.0	0.0	0.0	0.0	0.0	71.4	28.6		0.0	0.0	0.0	0.0	0.0	26.6	73.4		0.0	0.0	0.0	0.0	0.0	25.9	74.1			
Total %	0.0	0.0	0.0	0.0	0.0	1.0	6.8	7.8	0.0	0.0	0.0	0.0	0.0	3.4	0.7	4.1	0.0	0.0	0.0	0.0	0.0	8.4	3.4	11.8	0.0	0.0	0.0	0.0	0.0	7.1	19.6	26.7	0.0	0.0	0.0	0.0	0.0	12.8	36.8	49.7		
Exiting Leg Total	23								12								35								79								147								296	

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:15 AM	Warren Avenue								Prospect Street								Warren Avenue								Prospect Street								Concord Avenue								Total
	North								Northeast								South								Southwest								West								
	Right	Bear Right	Thru	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	CW-SEB	CW-NWB	Total	Bear Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total	
8:15 AM	0	0	0	0	0	0	5	5	0	0	0	0	0	3	0	3	0	0	0	0	0	5	6	11	0	0	0	0	0	0	23	23	0	0	0	0	0	5	34	39	
8:30 AM	0	0	0	0	0	1	5	6	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	0	0	0	0	0	5	12	17	0	0	0	0	0	4	17	21	
8:45 AM	0	0	0	0	0	0	2	2	0	0	0	0	0	1	1	2	0	0	0	0	0	2	0	2	0	0	0	0	0	6	7	13	0	0	0	0	0	5	11	16	
9:00 AM	0	0	0	0	0	1	2	3	0	0	0	0	0	3	0	3	0	0	0	0	0	2	2	4	0	0	0	0	0	2	2	4	0	0	0	0	0	2	10	12	
Total Volume	0	0	0	0	0	2	14	16	0	0	0	0	0	9	1	10	0	0	0	0	0	12	8	20	0	0	0	0	0	13	44	57	0	0	0	0	0	16	72	88	
% Approach Total	0.0	0.0	0.0	0.0	0.0	12.5	87.5		0.0	0.0	0.0	0.0	0.0	90.0	10.0		0.0	0.0	0.0	0.0	0.0	60.0	40.0		0.0	0.0	0.0	0.0	0.0	22.8	77.2		0.0	0.0	0.0	0.0	0.0	18.2	81.8		
PHF	0.000	0.000	0.000	0.000	0.000	0.500	0.700	0.667	0.000	0.000	0.000	0.000	0.000	0.750	0.250	0.833	0.000	0.000	0.000	0.000	0.000	0.600	0.333	0.455	0.000	0.000	0.000	0.000	0.000	0.542	0.478	0.620	0.000	0.000	0.000	0.000	0.000	0.800	0.529	0.564	0.590
Entering Leg	0	0	0	0	0	2	14	16	0	0	0	0	0	9	1	10	0	0	0	0	0	12	8	20	0	0	0	0	0	13	44	57	0	0	0	0	0	16	72	88	
Exiting Leg	16								10								20								57								88								
Total	32								20								40								114								176								

PDI File #: **175894 (17) pm**
 Location: **N: Warren Avenue S: Warren Avenue NE: Prospect Street**
 Location: **W: Concord Avenue SW: Prospect Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Cars and Heavy Vehicles (Combined)

	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
4:30 PM	4	24	37	16	0	81	3	11	65	7	0	86	60	52	10	0	0	122	2	129	23	3	0	157	0	0	0	0	0	0	446
4:45 PM	1	16	43	19	0	79	1	10	65	10	0	86	54	46	7	0	0	107	3	107	19	2	0	131	0	0	0	0	0	0	403
Total	5	40	80	35	0	160	4	21	130	17	0	172	114	98	17	0	0	229	5	236	42	5	0	288	0	0	0	0	0	0	849
5:00 PM	1	20	36	13	0	70	2	11	38	4	0	55	43	32	10	0	0	85	3	145	18	0	0	166	0	0	0	0	0	0	376
5:15 PM	2	18	44	25	0	89	2	11	73	8	0	94	48	25	5	0	0	78	3	102	14	2	0	121	0	0	0	0	0	0	382
5:30 PM	0	13	25	24	0	62	4	11	52	10	0	77	47	46	7	1	0	101	3	102	12	0	0	117	0	0	0	0	0	0	357
5:45 PM	1	23	38	24	0	86	9	12	70	15	0	106	53	38	5	2	0	98	2	96	15	2	0	115	0	0	0	0	0	0	405
Total	4	74	143	86	0	307	17	45	233	37	0	332	191	141	27	3	0	362	11	445	59	4	0	519	0	0	0	0	0	0	1520
6:00 PM	0	32	41	25	0	98	4	10	70	9	0	93	59	35	7	0	0	101	2	80	9	0	0	91	0	0	0	0	0	0	383
6:15 PM	0	24	46	12	0	82	4	13	63	10	0	90	59	44	2	0	0	105	2	109	18	0	0	129	0	0	0	0	0	0	406
Total	0	56	87	37	0	180	8	23	133	19	0	183	118	79	9	0	0	206	4	189	27	0	0	220	0	0	0	0	0	0	789
Grand Total	9	170	310	158	0	647	29	89	496	73	0	687	423	318	53	3	0	797	20	870	128	9	0	1027	0	0	0	0	0	0	3158
Approach %	1.4	26.3	47.9	24.4	0.0		4.2	13.0	72.2	10.6	0.0		53.1	39.9	6.6	0.4	0.0		1.9	84.7	12.5	0.9	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.3	5.4	9.8	5.0	0.0	20.5	0.9	2.8	15.7	2.3	0.0	21.8	13.4	10.1	1.7	0.1	0.0	25.2	0.6	27.5	4.1	0.3	0.0	32.5	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	475						1451						403						669						160						3158
Cars	8	167	299	157	0	631	29	88	491	73	0	681	409	315	53	3	0	780	20	854	126	9	0	1009	0	0	0	0	0	0	3101
% Cars	88.9	98.2	96.5	99.4	0.0	97.5	100.0	98.9	99.0	100.0	0.0	99.1	96.7	99.1	100.0	100.0	0.0	97.9	100.0	98.2	98.4	100.0	0.0	98.2	0.0	0.0	0.0	0.0	0.0	0.0	98.2
Exiting Leg Total	470						1420						392						661						158						3101
Heavy Vehicles	1	3	11	1	0	16	0	1	5	0	0	6	14	3	0	0	0	17	0	16	2	0	0	18	0	0	0	0	0	0	57
% Heavy Vehicles	11.1	1.8	3.5	0.6	0.0	2.5	0.0	1.1	1.0	0.0	0.0	0.9	3.3	0.9	0.0	0.0	0.0	2.1	0.0	1.8	1.6	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	1.8
Exiting Leg Total	5						31						11						8						2						57

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
4:30 PM	4	24	37	16	0	81	3	11	65	7	0	86	60	52	10	0	0	122	2	129	23	3	0	157	0	0	0	0	0	0	446
4:45 PM	1	16	43	19	0	79	1	10	65	10	0	86	54	46	7	0	0	107	3	107	19	2	0	131	0	0	0	0	0	0	403
5:00 PM	1	20	36	13	0	70	2	11	38	4	0	55	43	32	10	0	0	85	3	145	18	0	0	166	0	0	0	0	0	0	376
5:15 PM	2	18	44	25	0	89	2	11	73	8	0	94	48	25	5	0	0	78	3	102	14	2	0	121	0	0	0	0	0	0	382
Total Volume	8	78	160	73	0	319	8	43	241	29	0	321	205	155	32	0	0	392	11	483	74	7	0	575	0	0	0	0	0	0	1607
% Approach Total	2.5	24.5	50.2	22.9	0.0		2.5	13.4	75.1	9.0	0.0		52.3	39.5	8.2	0.0	0.0		1.9	84.0	12.9	1.2	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
PHF	0.500	0.813	0.909	0.730	0.000	0.896	0.667	0.977	0.825	0.725	0.000	0.854	0.854	0.745	0.800	0.000	0.000	0.803	0.917	0.833	0.804	0.583	0.000	0.866	0.000	0.000	0.000	0.000	0.000	0.000	0.901
Cars	7	76	155	73	0	311	8	42	238	29	0	317	196	152	32	0	0	380	11	477	73	7	0	568	0	0	0	0	0	0	1576
Cars %	87.5	97.4	96.9	100.0	0.0	97.5	100.0	97.7	98.8	100.0	0.0	98.8	95.6	98.1	100.0	0.0	0.0	96.9	100.0	98.8	98.6	100.0	0.0	98.8	0.0	0.0	0.0	0.0	0.0	0.0	98.1
Heavy Vehicles	1	2	5	0	0	8	0	1	3	0	0	4	9	3	0	0	0	12	0	6	1	0	0	7	0	0	0	0	0	0	31
Heavy Vehicles %	12.5	2.6	3.1	0.0	0.0	2.5	0.0	2.3	1.2	0.0	0.0	1.2	4.4	1.9	0.0	0.0	0.0	3.1	0.0	1.2	1.4	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	1.9
Cars Enter Leg	7	76	155	73	0	311	8	42	238	29	0	317	196	152	32	0	0	380	11	477	73	7	0	568	0	0	0	0	0	0	1576
Heavy Enter Leg	1	2	5	0	0	8	0	1	3	0	0	4	9	3	0	0	0	12	0	6	1	0	0	7	0	0	0	0	0	0	31
Total Entering Leg	8	78	160	73	0	319	8	43	241	29	0	321	205	155	32	0	0	392	11	483	74	7	0	575	0	0	0	0	0	0	1607
Cars Exiting Leg	233						746						195						314						88						1576
Heavy Exiting Leg	4						15						5						5						2						31
Total Exiting Leg	237						761						200						319						90						1607

PDI File #: **175894 (17) pm**
 Location: **N: Warren Avenue S: Warren Avenue NE: Prospect Street**
 Location: **W: Concord Avenue SW: Prospect Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Cars

	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
4:30 PM	3	24	36	16	0	79	3	10	64	7	0	84	55	51	10	0	0	116	2	126	22	3	0	153	0	0	0	0	0	0	432
4:45 PM	1	16	41	19	0	77	1	10	63	10	0	84	54	44	7	0	0	105	3	105	19	2	0	129	0	0	0	0	0	0	395
Total	4	40	77	35	0	156	4	20	127	17	0	168	109	95	17	0	0	221	5	231	41	5	0	282	0	0	0	0	0	0	827
5:00 PM	1	19	34	13	0	67	2	11	38	4	0	55	42	32	10	0	0	84	3	145	18	0	0	166	0	0	0	0	0	0	372
5:15 PM	2	17	44	25	0	88	2	11	73	8	0	94	45	25	5	0	0	75	3	101	14	2	0	120	0	0	0	0	0	0	377
5:30 PM	0	13	23	24	0	60	4	11	52	10	0	77	45	46	7	1	0	99	3	97	11	0	0	111	0	0	0	0	0	0	347
5:45 PM	1	23	38	24	0	86	9	12	69	15	0	105	53	38	5	2	0	98	2	94	15	2	0	113	0	0	0	0	0	0	402
Total	4	72	139	86	0	301	17	45	232	37	0	331	185	141	27	3	0	356	11	437	58	4	0	510	0	0	0	0	0	0	1498
6:00 PM	0	32	40	25	0	97	4	10	70	9	0	93	56	35	7	0	0	98	2	79	9	0	0	90	0	0	0	0	0	0	378
6:15 PM	0	23	43	11	0	77	4	13	62	10	0	89	59	44	2	0	0	105	2	107	18	0	0	127	0	0	0	0	0	0	398
Total	0	55	83	36	0	174	8	23	132	19	0	182	115	79	9	0	0	203	4	186	27	0	0	217	0	0	0	0	0	0	776
Grand Total	8	167	299	157	0	631	29	88	491	73	0	681	409	315	53	3	0	780	20	854	126	9	0	1009	0	0	0	0	0	0	3101
Approach %	1.3	26.5	47.4	24.9	0.0		4.3	12.9	72.1	10.7	0.0		52.4	40.4	6.8	0.4	0.0		2.0	84.6	12.5	0.9	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.3	5.4	9.6	5.1	0.0	20.3	0.9	2.8	15.8	2.4	0.0	22.0	13.2	10.2	1.7	0.1	0.0	25.2	0.6	27.5	4.1	0.3	0.0	32.5	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	470						1420						392						661						158						3101

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
4:30 PM	3	24	36	16	0	79	3	10	64	7	0	84	55	51	10	0	0	116	2	126	22	3	0	153	0	0	0	0	0	0	432
4:45 PM	1	16	41	19	0	77	1	10	63	10	0	84	54	44	7	0	0	105	3	105	19	2	0	129	0	0	0	0	0	0	395
5:00 PM	1	19	34	13	0	67	2	11	38	4	0	55	42	32	10	0	0	84	3	145	18	0	0	166	0	0	0	0	0	0	372
5:15 PM	2	17	44	25	0	88	2	11	73	8	0	94	45	25	5	0	0	75	3	101	14	2	0	120	0	0	0	0	0	0	377
Total Volume	7	76	155	73	0	311	8	42	238	29	0	317	196	152	32	0	0	380	11	477	73	7	0	568	0	0	0	0	0	0	1576
% Approach Total	2.3	24.4	49.8	23.5	0.0		2.5	13.2	75.1	9.1	0.0		51.6	40.0	8.4	0.0	0.0		1.9	84.0	12.9	1.2	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.583	0.792	0.881	0.730	0.000	0.884	0.667	0.955	0.815	0.725	0.000	0.843	0.891	0.745	0.800	0.000	0.000	0.819	0.917	0.822	0.830	0.583	0.000	0.855	0.000	0.000	0.000	0.000	0.000	0.000	0.912
Entering Leg	7	76	155	73	0	311	8	42	238	29	0	317	196	152	32	0	0	380	11	477	73	7	0	568	0	0	0	0	0	0	1576
Exiting Leg						233						746						195						314						88	1576
Total						544						1063						575						882						88	3152

PDI File #: 175894 (17) pm
 Location: N: Warren Avenue S: Warren Avenue NE: Prospect Street
 Location: W: Concord Avenue SW: Prospect Street
 City, State: Somerville, MA
 Client: USSA/ J. Kunz
 Site Code: TBA
 Count Date: Thursday, October 5, 2017
 Start Time: 4:30 PM
 End Time: 6:30 PM
 Class:



Heavy Vehicles (Combined-Large Trucks and Buses)

	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
4:30 PM	1	0	1	0	0	2	0	1	1	0	0	2	5	1	0	0	0	6	0	3	1	0	0	4	0	0	0	0	0	0	14
4:45 PM	0	0	2	0	0	2	0	0	2	0	0	2	0	2	0	0	0	2	0	2	0	0	0	2	0	0	0	0	0	0	8
Total	1	0	3	0	0	4	0	1	3	0	0	4	5	3	0	0	0	8	0	5	1	0	0	6	0	0	0	0	0	0	22
5:00 PM	0	1	2	0	0	3	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4
5:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	3	0	0	0	0	3	0	1	0	0	0	1	0	0	0	0	0	0	5
5:30 PM	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	0	0	2	0	5	1	0	0	6	0	0	0	0	0	0	10
5:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	3
Total	0	2	4	0	0	6	0	0	1	0	0	1	6	0	0	0	0	6	0	8	1	0	0	9	0	0	0	0	0	0	22
6:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	0	0	3	0	1	0	0	0	1	0	0	0	0	0	0	5
6:15 PM	0	1	3	1	0	5	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	8
Total	0	1	4	1	0	6	0	0	1	0	0	1	3	0	0	0	0	3	0	3	0	0	0	3	0	0	0	0	0	0	13
Grand Total	1	3	11	1	0	16	0	1	5	0	0	6	14	3	0	0	0	17	0	16	2	0	0	18	0	0	0	0	0	0	57
Approach %	6.3	18.8	68.8	6.3	0.0		0.0	16.7	83.3	0.0	0.0		82.4	17.6	0.0	0.0	0.0		0.0	88.9	11.1	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	1.8	5.3	19.3	1.8	0.0	28.1	0.0	1.8	8.8	0.0	0.0	10.5	24.6	5.3	0.0	0.0	0.0	29.8	0.0	28.1	3.5	0.0	0.0	31.6	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	5						31						11						8						2						57
Large Trucks	1	2	2	0	0	5	0	1	3	0	0	4	6	2	0	0	0	8	0	11	2	0	0	13	0	0	0	0	0	0	30
% Large Trucks	100.0	66.7	18.2	0.0	0.0	31.3	0.0	100.0	60.0	0.0	0.0	66.7	42.9	66.7	0.0	0.0	0.0	47.1	0.0	68.8	100.0	0.0	0.0	72.2	0.0	0.0	0.0	0.0	0.0	0.0	52.6
Exiting Leg Total	4						17						2						5						2						30
Buses	0	1	9	1	0	11	0	0	2	0	0	2	8	1	0	0	0	9	0	5	0	0	0	5	0	0	0	0	0	0	27
% Buses	0.0	33.3	81.8	100.0	0.0	68.8	0.0	0.0	40.0	0.0	0.0	33.3	57.1	33.3	0.0	0.0	0.0	52.9	0.0	31.3	0.0	0.0	0.0	27.8	0.0	0.0	0.0	0.0	0.0	0.0	47.4
Exiting Leg Total	1						14						9						3						0						27

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
4:30 PM	1	0	1	0	0	2	0	1	1	0	0	2	5	1	0	0	0	6	0	3	1	0	0	4	0	0	0	0	0	0	14
4:45 PM	0	0	2	0	0	2	0	0	2	0	0	2	0	2	0	0	0	2	0	2	0	0	0	2	0	0	0	0	0	0	8
5:00 PM	0	1	2	0	0	3	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4
5:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	3	0	0	0	0	3	0	1	0	0	0	1	0	0	0	0	0	0	5
Total Volume	1	2	5	0	0	8	0	1	3	0	0	4	9	3	0	0	0	12	0	6	1	0	0	7	0	0	0	0	0	0	31
% Approach Total	12.5	25.0	62.5	0.0	0.0		0.0	25.0	75.0	0.0	0.0		75.0	25.0	0.0	0.0	0.0		0.0	85.7	14.3	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.250	0.500	0.625	0.000	0.000	0.667	0.000	0.250	0.375	0.000	0.000	0.500	0.450	0.375	0.000	0.000	0.000	0.500	0.000	0.500	0.250	0.000	0.000	0.438	0.000	0.000	0.000	0.000	0.000	0.000	0.554
Large Trucks	1	2	1	0	0	4	0	1	2	0	0	3	4	2	0	0	0	6	0	3	1	0	0	4	0	0	0	0	0	0	17
Large Trucks %	100.0	100.0	20.0	0.0	0.0	50.0	0.0	100.0	66.7	0.0	0.0	75.0	44.4	66.7	0.0	0.0	0.0	50.0	0.0	50.0	100.0	0.0	0.0	57.1	0.0	0.0	0.0	0.0	0.0	0.0	54.8
Buses	0	0	4	0	0	4	0	0	1	0	0	1	5	1	0	0	0	6	0	3	0	0	0	3	0	0	0	0	0	0	14
Buses %	0.0	0.0	80.0	0.0	0.0	50.0	0.0	0.0	33.3	0.0	0.0	25.0	55.6	33.3	0.0	0.0	0.0	50.0	0.0	50.0	0.0	0.0	0.0	42.9	0.0	0.0	0.0	0.0	0.0	0.0	45.2
Trucks Enter Leg	1	2	1	0	0	4	0	1	2	0	0	3	4	2	0	0	0	6	0	3	1	0	0	4	0	0	0	0	0	0	17
Bus Enter Leg	0	0	4	0	0	4	0	0	1	0	0	1	5	1	0	0	0	6	0	3	0	0	0	3	0	0	0	0	0	0	14
Total Entering Leg	1	2	5	0	0	8	0	1	3	0	0	4	9	3	0	0	0	12	0	6	1	0	0	7	0	0	0	0	0	0	31
Trucks Exiting Leg	3						7						1						4						2						
Buses Exiting Leg	1						8						4						1						0						
Total Exiting Leg	4						15						5						5						2						

PDI File #: **175894 (17) pm**
 Location: **N: Warren Avenue S: Warren Avenue NE: Prospect Street**
 Location: **W: Concord Avenue SW: Prospect Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Large Trucks

	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
4:30 PM	1	0	0	0	0	1	0	1	1	0	0	2	3	0	0	0	0	3	0	1	1	0	0	2	0	0	0	0	0	0	8
4:45 PM	0	0	1	0	0	1	0	0	1	0	0	1	0	2	0	0	0	2	0	1	0	0	0	1	0	0	0	0	0	0	5
Total	1	0	1	0	0	2	0	1	2	0	0	3	3	2	0	0	0	5	0	2	1	0	0	3	0	0	0	0	0	0	13
5:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	4	1	0	0	5	0	0	0	0	0	0	6
5:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
Total	0	2	0	0	0	2	0	0	1	0	0	1	2	0	0	0	0	2	0	6	1	0	0	7	0	0	0	0	0	0	12
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	2
6:15 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	3
Total	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	3	0	0	0	3	0	0	0	0	0	0	5
Grand Total	1	2	2	0	0	5	0	1	3	0	0	4	6	2	0	0	0	8	0	11	2	0	0	13	0	0	0	0	0	0	30
Approach %	20.0	40.0	40.0	0.0	0.0		0.0	25.0	75.0	0.0	0.0		75.0	25.0	0.0	0.0	0.0		0.0	84.6	15.4	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	3.3	6.7	6.7	0.0	0.0	16.7	0.0	3.3	10.0	0.0	0.0	13.3	20.0	6.7	0.0	0.0	0.0	26.7	0.0	36.7	6.7	0.0	0.0	43.3	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	4						17						2						5						2						30

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total
	North						Northeast						South						Southwest						West						
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total	
4:30 PM	1	0	0	0	0	1	0	1	1	0	0	2	3	0	0	0	0	3	0	1	1	0	0	2	0	0	0	0	0	0	8
4:45 PM	0	0	1	0	0	1	0	0	1	0	0	1	0	2	0	0	0	2	0	1	0	0	0	1	0	0	0	0	0	0	5
5:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	3
Total Volume	1	2	1	0	0	4	0	1	2	0	0	3	4	2	0	0	0	6	0	3	1	0	0	4	0	0	0	0	0	0	17
% Approach Total	25.0	50.0	25.0	0.0	0.0		0.0	33.3	66.7	0.0	0.0		66.7	33.3	0.0	0.0	0.0		0.0	75.0	25.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.250	0.500	0.250	0.000	0.000	1.000	0.000	0.250	0.500	0.000	0.000	0.375	0.333	0.250	0.000	0.000	0.000	0.500	0.000	0.750	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.531
Entering Leg	1	2	1	0	0	4	0	1	2	0	0	3	4	2	0	0	0	6	0	3	1	0	0	4	0	0	0	0	0	0	17
Exiting Leg	3						7						1						4						2						17
Total	7						10						7						8						2						34

PDI File #: **175894 (17) pm**
 Location: **N: Warren Avenue S: Warren Avenue NE: Prospect Street**
 Location: **W: Concord Avenue SW: Prospect Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Buses

	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total		
	North						Northeast						South						Southwest						West								
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total			
4:30 PM	0	0	1	0	0	1	0	0	0	0	0	0	2	1	0	0	0	0	3	0	2	0	0	0	0	2	0	0	0	0	0	0	6
4:45 PM	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	3
Total	0	0	2	0	0	2	0	0	1	0	0	1	2	1	0	0	0	0	3	0	3	0	0	0	0	3	0	0	0	0	0	0	9
5:00 PM	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	4
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1
Total	0	0	4	0	0	4	0	0	0	0	0	0	4	0	0	0	0	0	4	0	2	0	0	0	0	2	0	0	0	0	0	0	10
6:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3
6:15 PM	0	1	2	1	0	4	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Total	0	1	3	1	0	5	0	0	1	0	0	1	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Grand Total	0	1	9	1	0	11	0	0	2	0	0	2	8	1	0	0	0	9	0	5	0	0	0	0	5	0	0	0	0	0	0	0	27
Approach %	0.0	9.1	81.8	9.1	0.0		0.0	0.0	100.0	0.0	0.0		88.9	11.1	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0			
Total %	0.0	3.7	33.3	3.7	0.0	40.7	0.0	0.0	7.4	0.0	0.0	7.4	29.6	3.7	0.0	0.0	0.0	33.3	0.0	18.5	0.0	0.0	0.0	18.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Exiting Leg Total	1						14						9						3						0						27		

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Warren Avenue						Prospect Street						Warren Avenue						Prospect Street						Concord Avenue						Total		
	North						Northeast						South						Southwest						West								
	Right	Bear Right	Thru	Hard Left	U-Turn	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	Total	Bear Right	Thru	Left	Hard Left	U-Turn	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	Total	Hard Right	Right	Bear Left	Left	U-Turn	Total			
4:30 PM	0	0	1	0	0	1	0	0	0	0	0	0	2	1	0	0	0	0	3	0	2	0	0	0	0	2	0	0	0	0	0	0	6
4:45 PM	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	3	
5:00 PM	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	
Total Volume	0	0	4	0	0	4	0	0	1	0	0	1	5	1	0	0	0	0	6	0	3	0	0	0	0	3	0	0	0	0	0	0	14
% Approach Total	0.0	0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0		83.3	16.7	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0				
PHF	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.250	0.000	0.000	0.250	0.625	0.250	0.000	0.000	0.000	0.500	0.000	0.375	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.583		
Entering Leg	0	0	4	0	0	4	0	0	1	0	0	1	5	1	0	0	0	6	0	3	0	0	0	0	3	0	0	0	0	0	0	14	
Exiting Leg						1						8						4						1							14		
Total						5						9						10						4							28		

PDI File #: **175894 (17) pm**
 Location: **N: Warren Avenue S: Warren Avenue NE: Prospect Street**
 Location: **W: Concord Avenue SW: Prospect Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Bicycles (on Roadway and Crosswalks)

	Warren Avenue								Prospect Street								Warren Avenue								Prospect Street								Concord Avenue								Total	
	North								Northeast								South								Southwest								West									
	Right	Bear Right	Thru	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	CW-SEB	CW-NWB	Total	Bear Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total		
4:30 PM	0	3	0	0	0	0	0	3	0	0	2	0	0	0	0	0	2	0	12	0	0	0	0	0	0	12	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	18
4:45 PM	0	1	2	0	0	0	0	3	0	0	1	0	0	0	0	0	1	0	7	0	0	0	0	0	0	7	0	1	2	0	0	0	0	3	0	0	0	0	0	0	0	14
Total	0	4	2	0	0	0	0	6	0	0	3	0	0	0	0	0	3	0	19	0	0	0	0	0	0	19	0	2	2	0	0	0	0	4	0	0	0	0	0	0	0	32
5:00 PM	0	1	3	0	0	0	0	4	0	0	0	1	0	0	0	0	1	0	16	1	0	0	0	0	17	0	4	2	0	0	0	0	6	0	1	0	0	0	0	0	1	29
5:15 PM	0	2	3	0	0	0	0	5	0	0	1	0	0	0	0	0	1	1	20	0	0	0	0	2	23	0	1	4	0	0	0	0	5	0	0	0	0	0	0	0	0	34
5:30 PM	0	0	5	0	0	0	0	5	2	0	1	0	0	0	0	0	3	3	23	0	0	0	0	0	26	0	7	4	0	0	0	0	11	0	0	0	0	0	0	0	0	45
5:45 PM	0	6	2	0	0	0	0	8	0	0	0	0	0	0	0	0	0	3	19	1	0	0	1	0	24	0	6	4	0	0	0	0	10	0	0	0	0	0	0	0	0	42
Total	0	9	13	0	0	0	0	22	2	0	2	1	0	0	0	0	5	7	78	2	0	0	1	2	90	0	18	14	0	0	0	0	32	0	1	0	0	0	0	0	1	150
6:00 PM	0	0	7	0	0	0	0	7	0	0	1	0	0	0	0	0	1	3	22	0	0	0	0	0	25	0	4	2	0	0	0	0	6	0	0	0	0	0	0	0	0	39
6:15 PM	0	2	6	1	0	2	0	11	1	0	1	0	0	0	0	0	2	2	27	0	0	0	1	1	31	0	6	3	0	0	0	0	9	0	0	0	0	0	2	0	2	55
Total	0	2	13	1	0	2	0	18	1	0	2	0	0	0	0	0	3	5	49	0	0	0	1	1	56	0	10	5	0	0	0	0	15	0	0	0	0	0	2	0	2	94
Grand Total	0	15	28	1	0	2	0	46	3	0	7	1	0	0	0	11	12	146	2	0	0	2	3	165	0	30	21	0	0	0	0	51	0	1	0	0	0	2	0	3	276	
Approach %	0.0	32.6	60.9	2.2	0.0	4.3	0.0		27.3	0.0	63.6	9.1	0.0	0.0	0.0		7.3	88.5	1.2	0.0	0.0	1.2	1.8		0.0	58.8	41.2	0.0	0.0	0.0	0.0		0.0	33.3	0.0	0.0	0.0	66.7	0.0			
Total %	0.0	5.4	10.1	0.4	0.0	0.7	0.0	16.7	1.1	0.0	2.5	0.4	0.0	0.0	0.0	4.0	4.3	52.9	0.7	0.0	0.0	0.7	1.1	59.8	0.0	10.9	7.6	0.0	0.0	0.0	0.0	18.5	0.0	0.4	0.0	0.0	0.0	0.7	0.0	1.1		
Exiting Leg Total	172								43								35								22								4								276	

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:30 PM	Warren Avenue								Prospect Street								Warren Avenue								Prospect Street								Concord Avenue								Total
	North								Northeast								South								Southwest								West								
	Right	Bear Right	Thru	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	CW-SEB	CW-NWB	Total	Bear Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total	
5:30 PM	0	0	5	0	0	0	0	5	2	0	1	0	0	0	0	3	3	23	0	0	0	0	0	26	0	7	4	0	0	0	0	11	0	0	0	0	0	0	0	0	45
5:45 PM	0	6	2	0	0	0	0	8	0	0	0	0	0	0	0	0	3	19	1	0	0	1	0	24	0	6	4	0	0	0	0	10	0	0	0	0	0	0	0	0	42
6:00 PM	0	0	7	0	0	0	0	7	0	0	1	0	0	0	0	1	3	22	0	0	0	0	0	25	0	4	2	0	0	0	0	6	0	0	0	0	0	0	0	0	39
6:15 PM	0	2	6	1	0	2	0	11	1	0	1	0	0	0	0	2	2	27	0	0	0	1	1	31	0	6	3	0	0	0	0	9	0	0	0	0	0	2	0	2	55
Total Volume	0	8	20	1	0	2	0	31	3	0	3	0	0	0	0	6	11	91	1	0	0	2	1	106	0	23	13	0	0	0	0	36	0	0	0	0	0	2	0	2	181
% Approach Total	0.0	25.8	64.5	3.2	0.0	6.5	0.0		50.0	0.0	50.0	0.0	0.0	0.0	0.0		10.4	85.8	0.9	0.0	0.0	1.9	0.9		0.0	63.9	36.1	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0	0.0		
PHF	0.000	0.333	0.714	0.250	0.000	0.250	0.000	0.705	0.375	0.000	0.750	0.000	0.000	0.000	0.500	0.500	0.917	0.843	0.250	0.000	0.000	0.500	0.250	0.855	0.000	0.821	0.813	0.000	0.000	0.000	0.000	0.818	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.823	
Entering Leg	0	8	20	1	0	2	0	31	3	0	3	0	0	0	0	6	11	91	1	0	0	2	1	106	0	23	13	0	0	0	0	36	0	0	0	0	0	2	0	2	181
Exiting Leg	109								35								23								11								3								181
Total	140								41								129								47								5								362

PDI File #: **175894 (17) pm**
 Location: **N: Warren Avenue S: Warren Avenue NE: Prospect Street**
 Location: **W: Concord Avenue SW: Prospect Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Pedestrians

	Warren Avenue								Prospect Street								Warren Avenue								Prospect Street								Concord Avenue								Total	
	North								Northeast								South								Southwest								West									
	Right	Bear Right	Thru	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	CW-SEB	CW-NWB	Total	Bear Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total		
4:30 PM	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	8	3	11	0	0	0	0	0	9	6	15	32
4:45 PM	0	0	0	0	0	3	1	4	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	4	4	0	0	0	0	3	1	4	0	0	0	0	0	9	5	14	27	
Total	0	0	0	0	0	5	2	7	0	0	0	0	0	1	0	1	0	0	0	0	0	1	6	7	0	0	0	0	0	11	4	15	0	0	0	0	0	18	11	29	59	
5:00 PM	0	0	0	0	0	4	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	6	3	9	0	0	0	0	0	9	9	18	34	
5:15 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2	2	0	0	0	0	0	1	3	4	0	0	0	0	0	5	5	10	0	0	0	0	0	9	7	16	33	
5:30 PM	0	0	0	0	0	3	6	9	0	0	0	0	0	2	0	2	0	0	0	0	0	0	3	3	0	0	0	0	0	3	5	8	0	0	0	0	0	14	9	23	45	
5:45 PM	0	0	0	0	0	6	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	9	3	12	0	0	0	0	0	5	3	8	0	0	0	0	0	12	2	14	42	
Total	0	0	0	0	0	13	10	23	0	0	0	0	0	2	2	4	0	0	0	0	0	10	11	21	0	0	0	0	0	19	16	35	0	0	0	0	0	44	27	71	154	
6:00 PM	0	0	0	0	0	4	3	7	0	0	0	0	0	0	1	1	0	0	0	0	0	0	4	4	0	0	0	0	0	4	4	8	0	0	0	0	0	11	13	24	44	
6:15 PM	0	0	0	0	0	6	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	1	6	7	0	0	0	0	0	7	6	13	30	
Total	0	0	0	0	0	10	4	14	0	0	0	0	0	0	1	1	0	0	0	0	0	1	6	7	0	0	0	0	0	5	10	15	0	0	0	0	0	18	19	37	74	
Grand Total	0	0	0	0	0	28	16	44	0	0	0	0	0	3	3	6	0	0	0	0	0	12	23	35	0	0	0	0	0	35	30	65	0	0	0	0	0	80	57	137	287	
Approach %	0.0	0.0	0.0	0.0	0.0	63.6	36.4		0.0	0.0	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	0.0	34.3	65.7		0.0	0.0	0.0	0.0	0.0	53.8	46.2		0.0	0.0	0.0	0.0	0.0	58.4	41.6			
Total %	0.0	0.0	0.0	0.0	0.0	9.8	5.6	15.3	0.0	0.0	0.0	0.0	0.0	1.0	1.0	2.1	0.0	0.0	0.0	0.0	0.0	4.2	8.0	12.2	0.0	0.0	0.0	0.0	0.0	12.2	10.5	22.6	0.0	0.0	0.0	0.0	0.0	27.9	19.9	47.7		
Exiting Leg Total	44								6								35								65								137								287	

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:15 PM	Warren Avenue								Prospect Street								Warren Avenue								Prospect Street								Concord Avenue								Total
	North								Northeast								South								Southwest								West								
	Right	Bear Right	Thru	Hard Left	U-Turn	CW-EB	CW-WB	Total	Hard Right	Bear Right	Thru	Bear Left	U-Turn	CW-SEB	CW-NWB	Total	Bear Right	Thru	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Thru	Bear Left	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Bear Left	Left	U-Turn	CW-NB	CW-SB	Total	
5:15 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2	2	0	0	0	0	0	1	3	4	0	0	0	0	0	5	5	10	0	0	0	0	0	9	7	16	33
5:30 PM	0	0	0	0	0	3	6	9	0	0	0	0	0	2	0	2	0	0	0	0	0	0	3	3	0	0	0	0	0	3	5	8	0	0	0	0	0	14	9	23	45
5:45 PM	0	0	0	0	0	6	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	9	3	12	0	0	0	0	0	5	3	8	0	0	0	0	0	12	2	14	42
6:00 PM	0	0	0	0	0	4	3	7	0	0	0	0	0	0	1	1	0	0	0	0	0	0	4	4	0	0	0	0	0	4	4	8	0	0	0	0	0	11	13	24	44
Total Volume	0	0	0	0	0	13	12	25	0	0	0	0	0	2	3	5	0	0	0	0	0	10	13	23	0	0	0	0	0	17	17	34	0	0	0	0	0	46	31	77	164
% Approach Total	0.0	0.0	0.0	0.0	0.0	52.0	48.0		0.0	0.0	0.0	0.0	0.0	40.0	60.0		0.0	0.0	0.0	0.0	0.0	43.5	56.5		0.0	0.0	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	0.0	59.7	40.3		
PHF	0.000	0.000	0.000	0.000	0.000	0.542	0.500	0.694	0.000	0.000	0.000	0.000	0.000	0.250	0.375	0.625	0.000	0.000	0.000	0.000	0.000	0.278	0.813	0.479	0.000	0.000	0.000	0.000	0.000	0.850	0.850	0.850	0.000	0.000	0.000	0.000	0.000	0.821	0.596	0.802	0.911
Entering Leg	0	0	0	0	0	13	12	25	0	0	0	0	0	2	3	5	0	0	0	0	0	10	13	23	0	0	0	0	0	17	17	34	0	0	0	0	0	46	31	77	164
Exiting Leg	25								5								23								34								77								164
Total	50								10								46								68								154								328

PDI File #: **175894 (19) am**
 Location: **N: Webster Avenue S: Webster Avenue**
 Location: **E: Columbia Street W: Tremont Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Cars and Heavy Vehicles (Combined)

	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	18	53	6	0	77	18	25	12	0	55	4	71	4	0	79	0	0	0	0	0	211
7:45 AM	12	71	15	0	98	11	33	4	0	48	4	56	6	0	66	0	0	0	0	0	212
Total	30	124	21	0	175	29	58	16	0	103	8	127	10	0	145	0	0	0	0	0	423
8:00 AM	16	73	7	0	96	15	12	8	0	35	2	47	2	0	51	0	0	0	0	0	182
8:15 AM	69	3	35	0	107	13	26	1	0	40	1	45	8	0	54	1	0	0	0	1	202
8:30 AM	58	11	36	0	105	16	18	3	0	37	4	34	5	0	43	0	0	0	0	0	185
8:45 AM	56	0	26	0	82	13	20	1	0	34	4	31	4	0	39	0	0	0	0	0	155
Total	199	87	104	0	390	57	76	13	0	146	11	157	19	0	187	1	0	0	0	1	724
9:00 AM	47	3	41	1	92	26	7	0	0	33	7	52	9	0	68	1	0	0	0	1	194
9:15 AM	37	4	36	0	77	20	9	3	0	32	6	37	8	0	51	0	0	0	0	0	160
Total	84	7	77	1	169	46	16	3	0	65	13	89	17	0	119	1	0	0	0	1	354
Grand Total	313	218	202	1	734	132	150	32	0	314	32	373	46	0	451	2	0	0	0	2	1501
Approach %	42.6	29.7	27.5	0.1		42.0	47.8	10.2	0.0		7.1	82.7	10.2	0.0		100.0	0.0	0.0	0.0		
Total %	20.9	14.5	13.5	0.1	48.9	8.8	10.0	2.1	0.0	20.9	2.1	24.9	3.1	0.0	30.0	0.1	0.0	0.0	0.0	0.1	
Exiting Leg Total	506					234					252					509					1501
Cars	308	207	200	1	716	117	142	30	0	289	31	340	40	0	411	2	0	0	0	2	1418
% Cars	98.4	95.0	99.0	100.0	97.5	88.6	94.7	93.8	0.0	92.0	96.9	91.2	87.0	0.0	91.1	100.0	0.0	0.0	0.0	100.0	94.5
Exiting Leg Total	458					231					239					490					1418
Heavy Vehicles	5	11	2	0	18	15	8	2	0	25	1	33	6	0	40	0	0	0	0	0	83
% Heavy Vehicles	1.6	5.0	1.0	0.0	2.5	11.4	5.3	6.3	0.0	8.0	3.1	8.8	13.0	0.0	8.9	0.0	0.0	0.0	0.0	0.0	5.5
Exiting Leg Total	48					3					13					19					83

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

7:30 AM	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	18	53	6	0	77	18	25	12	0	55	4	71	4	0	79	0	0	0	0	0	211
7:45 AM	12	71	15	0	98	11	33	4	0	48	4	56	6	0	66	0	0	0	0	0	212
8:00 AM	16	73	7	0	96	15	12	8	0	35	2	47	2	0	51	0	0	0	0	0	182
8:15 AM	69	3	35	0	107	13	26	1	0	40	1	45	8	0	54	1	0	0	0	1	202
Total Volume	115	200	63	0	378	57	96	25	0	178	11	219	20	0	250	1	0	0	0	1	807
% Approach Total	30.4	52.9	16.7	0.0		32.0	53.9	14.0	0.0		4.4	87.6	8.0	0.0		100.0	0.0	0.0	0.0	0.0	
PHF	0.417	0.685	0.450	0.000	0.883	0.792	0.727	0.521	0.000	0.809	0.688	0.771	0.625	0.000	0.791	0.250	0.000	0.000	0.000	0.250	0.952
Cars	112	192	62	0	366	49	90	23	0	162	11	209	19	0	239	1	0	0	0	1	768
Cars %	97.4	96.0	98.4	0.0	96.8	86.0	93.8	92.0	0.0	91.0	100.0	95.4	95.0	0.0	95.6	100.0	0.0	0.0	0.0	100.0	95.2
Heavy Vehicles	3	8	1	0	12	8	6	2	0	16	0	10	1	0	11	0	0	0	0	0	39
Heavy Vehicles %	2.6	4.0	1.6	0.0	3.2	14.0	6.3	8.0	0.0	9.0	0.0	4.6	5.0	0.0	4.4	0.0	0.0	0.0	0.0	0.0	4.8
Cars Enter Leg	112	192	62	0	366	49	90	23	0	162	11	209	19	0	239	1	0	0	0	1	768
Heavy Enter Leg	3	8	1	0	12	8	6	2	0	16	0	10	1	0	11	0	0	0	0	0	39
Total Entering Leg	115	200	63	0	378	57	96	25	0	178	11	219	20	0	250	1	0	0	0	1	807
Cars Exiting Leg	258					73					216					221					768
Heavy Exiting Leg	18					1					10					10					39
Total Exiting Leg	276					74					226					231					807

PDI File #: **175894 (19) am**
 Location: **N: Webster Avenue S: Webster Avenue**
 Location: **E: Columbia Street W: Tremont Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Cars

	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	17	50	6	0	73	17	25	11	0	53	4	68	4	0	76	0	0	0	0	0	202
7:45 AM	12	68	15	0	95	11	32	4	0	47	4	55	5	0	64	0	0	0	0	0	206
Total	29	118	21	0	168	28	57	15	0	100	8	123	9	0	140	0	0	0	0	0	408
8:00 AM	16	71	7	0	94	10	11	7	0	28	2	44	2	0	48	0	0	0	0	0	170
8:15 AM	67	3	34	0	104	11	22	1	0	34	1	42	8	0	51	1	0	0	0	1	190
8:30 AM	57	11	35	0	103	14	18	3	0	35	4	32	4	0	40	0	0	0	0	0	178
8:45 AM	55	0	26	0	81	11	19	1	0	31	4	21	4	0	29	0	0	0	0	0	141
Total	195	85	102	0	382	46	70	12	0	128	11	139	18	0	168	1	0	0	0	1	679
9:00 AM	47	1	41	1	90	23	7	0	0	30	7	43	7	0	57	1	0	0	0	1	178
9:15 AM	37	3	36	0	76	20	8	3	0	31	5	35	6	0	46	0	0	0	0	0	153
Total	84	4	77	1	166	43	15	3	0	61	12	78	13	0	103	1	0	0	0	1	331
Grand Total	308	207	200	1	716	117	142	30	0	289	31	340	40	0	411	2	0	0	0	2	1418
Approach %	43.0	28.9	27.9	0.1		40.5	49.1	10.4	0.0		7.5	82.7	9.7	0.0		100.0	0.0	0.0	0.0		
Total %	21.7	14.6	14.1	0.1	50.5	8.3	10.0	2.1	0.0	20.4	2.2	24.0	2.8	0.0	29.0	0.1	0.0	0.0	0.0	0.1	
Exiting Leg Total	458					231					239					490					1418

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

7:30 AM	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	17	50	6	0	73	17	25	11	0	53	4	68	4	0	76	0	0	0	0	0	202
7:45 AM	12	68	15	0	95	11	32	4	0	47	4	55	5	0	64	0	0	0	0	0	206
8:00 AM	16	71	7	0	94	10	11	7	0	28	2	44	2	0	48	0	0	0	0	0	170
8:15 AM	67	3	34	0	104	11	22	1	0	34	1	42	8	0	51	1	0	0	0	1	190
Total Volume	112	192	62	0	366	49	90	23	0	162	11	209	19	0	239	1	0	0	0	1	768
% Approach Total	30.6	52.5	16.9	0.0		30.2	55.6	14.2	0.0		4.6	87.4	7.9	0.0		100.0	0.0	0.0	0.0		
PHF	0.418	0.676	0.456	0.000	0.880	0.721	0.703	0.523	0.000	0.764	0.688	0.768	0.594	0.000	0.786	0.250	0.000	0.000	0.000	0.250	0.932
Entering Leg	112	192	62	0	366	49	90	23	0	162	11	209	19	0	239	1	0	0	0	1	768
Exiting Leg	258					73					216					221					768
Total	624					235					455					222					1536

PDI File #: **175894 (19) am**
 Location: **N: Webster Avenue S: Webster Avenue**
 Location: **E: Columbia Street W: Tremont Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Heavy Vehicles (Combined-Large Trucks and Buses)

	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	1	3	0	0	4	1	0	1	0	2	0	3	0	0	3	0	0	0	0	0	9
7:45 AM	0	3	0	0	3	0	1	0	0	1	0	1	1	0	2	0	0	0	0	0	6
Total	1	6	0	0	7	1	1	1	0	3	0	4	1	0	5	0	0	0	0	0	15
8:00 AM	0	2	0	0	2	5	1	1	0	7	0	3	0	0	3	0	0	0	0	0	12
8:15 AM	2	0	1	0	3	2	4	0	0	6	0	3	0	0	3	0	0	0	0	0	12
8:30 AM	1	0	1	0	2	2	0	0	0	2	0	2	1	0	3	0	0	0	0	0	7
8:45 AM	1	0	0	0	1	2	1	0	0	3	0	10	0	0	10	0	0	0	0	0	14
Total	4	2	2	0	8	11	6	1	0	18	0	18	1	0	19	0	0	0	0	0	45
9:00 AM	0	2	0	0	2	3	0	0	0	3	0	9	2	0	11	0	0	0	0	0	16
9:15 AM	0	1	0	0	1	0	1	0	0	1	1	2	2	0	5	0	0	0	0	0	7
Total	0	3	0	0	3	3	1	0	0	4	1	11	4	0	16	0	0	0	0	0	23
Grand Total	5	11	2	0	18	15	8	2	0	25	1	33	6	0	40	0	0	0	0	0	83
Approach %	27.8	61.1	11.1	0.0		60.0	32.0	8.0	0.0		2.5	82.5	15.0	0.0		0.0	0.0	0.0	0.0		
Total %	6.0	13.3	2.4	0.0	21.7	18.1	9.6	2.4	0.0	30.1	1.2	39.8	7.2	0.0	48.2	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	48					3					13					19					83
Large Trucks	3	3	2	0	8	14	7	2	0	23	1	18	6	0	25	0	0	0	0	0	56
% Large Trucks	60.0	27.3	100.0	0.0	44.4	93.3	87.5	100.0	0.0	92.0	100.0	54.5	100.0	0.0	62.5	0.0	0.0	0.0	0.0	0.0	67.5
Exiting Leg Total	32					3					5					16					56
Buses	2	8	0	0	10	1	1	0	0	2	0	15	0	0	15	0	0	0	0	0	27
% Buses	40.0	72.7	0.0	0.0	55.6	6.7	12.5	0.0	0.0	8.0	0.0	45.5	0.0	0.0	37.5	0.0	0.0	0.0	0.0	0.0	32.5
Exiting Leg Total	16					0					8					3					27

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:15 AM	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
8:15 AM	2	0	1	0	3	2	4	0	0	6	0	3	0	0	3	0	0	0	0	0	12
8:30 AM	1	0	1	0	2	2	0	0	0	2	0	2	1	0	3	0	0	0	0	0	7
8:45 AM	1	0	0	0	1	2	1	0	0	3	0	10	0	0	10	0	0	0	0	0	14
9:00 AM	0	2	0	0	2	3	0	0	0	3	0	9	2	0	11	0	0	0	0	0	16
Total Volume	4	2	2	0	8	9	5	0	0	14	0	24	3	0	27	0	0	0	0	0	49
% Approach Total	50.0	25.0	25.0	0.0		64.3	35.7	0.0	0.0		0.0	88.9	11.1	0.0		0.0	0.0	0.0	0.0		
PHF	0.500	0.250	0.500	0.000	0.667	0.750	0.313	0.000	0.000	0.583	0.000	0.600	0.375	0.000	0.614	0.000	0.000	0.000	0.000	0.000	0.766
Large Trucks	2	0	2	0	4	9	5	0	0	14	0	14	3	0	17	0	0	0	0	0	35
Large Trucks %	50.0	0.0	100.0	0.0	50.0	100.0	100.0	0.0	0.0	100.0	0.0	58.3	100.0	0.0	63.0	0.0	0.0	0.0	0.0	0.0	71.4
Buses	2	2	0	0	4	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	14
Buses %	50.0	100.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	41.7	0.0	0.0	37.0	0.0	0.0	0.0	0.0	0.0	28.6
Trucks Enter Leg	2	0	2	0	4	9	5	0	0	14	0	14	3	0	17	0	0	0	0	0	35
Bus Enter Leg	2	2	0	0	4	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	14
Total Entering Leg	4	2	2	0	8	9	5	0	0	14	0	24	3	0	27	0	0	0	0	0	49
Trucks Exiting Leg	23					2					0					10					35
Buses Exiting Leg	10					0					2					2					14
Total Exiting Leg	33					2					2					12					49

PDI File #: **175894 (19) am**
 Location: **N: Webster Avenue S: Webster Avenue**
 Location: **E: Columbia Street W: Tremont Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Large Trucks

	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	1	1	0	0	2	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	5
7:45 AM	0	2	0	0	2	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	4
Total	1	3	0	0	4	0	1	1	0	2	0	2	1	0	3	0	0	0	0	0	9
8:00 AM	0	0	0	0	0	5	1	1	0	7	0	1	0	0	1	0	0	0	0	0	8
8:15 AM	1	0	1	0	2	2	4	0	0	6	0	0	0	0	0	0	0	0	0	0	8
8:30 AM	1	0	1	0	2	2	0	0	0	2	0	0	1	0	1	0	0	0	0	0	5
8:45 AM	0	0	0	0	0	2	1	0	0	3	0	8	0	0	8	0	0	0	0	0	11
Total	2	0	2	0	4	11	6	1	0	18	0	9	1	0	10	0	0	0	0	0	32
9:00 AM	0	0	0	0	0	3	0	0	0	3	0	6	2	0	8	0	0	0	0	0	11
9:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	2	0	4	0	0	0	0	0	4
Total	0	0	0	0	0	3	0	0	0	3	1	7	4	0	12	0	0	0	0	0	15
Grand Total	3	3	2	0	8	14	7	2	0	23	1	18	6	0	25	0	0	0	0	0	56
Approach %	37.5	37.5	25.0	0.0		60.9	30.4	8.7	0.0		4.0	72.0	24.0	0.0		0.0	0.0	0.0	0.0		
Total %	5.4	5.4	3.6	0.0	14.3	25.0	12.5	3.6	0.0	41.1	1.8	32.1	10.7	0.0	44.6	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	32					3					5					16					56

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:15 AM	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
8:15 AM	1	0	1	0	2	2	4	0	0	6	0	0	0	0	0	0	0	0	0	0	8
8:30 AM	1	0	1	0	2	2	0	0	0	2	0	0	1	0	1	0	0	0	0	0	5
8:45 AM	0	0	0	0	0	2	1	0	0	3	0	8	0	0	8	0	0	0	0	0	11
9:00 AM	0	0	0	0	0	3	0	0	0	3	0	6	2	0	8	0	0	0	0	0	11
Total Volume	2	0	2	0	4	9	5	0	0	14	0	14	3	0	17	0	0	0	0	0	35
% Approach Total	50.0	0.0	50.0	0.0		64.3	35.7	0.0	0.0		0.0	82.4	17.6	0.0		0.0	0.0	0.0	0.0		
PHF	0.500	0.000	0.500	0.000	0.500	0.750	0.313	0.000	0.000	0.583	0.000	0.438	0.375	0.000	0.531	0.000	0.000	0.000	0.000	0.000	0.795
Entering Leg	2	0	2	0	4	9	5	0	0	14	0	14	3	0	17	0	0	0	0	0	35
Exiting Leg	23					2					0					10					35
Total	27					16					17					10					70

PDI File #: **175894 (19) am**
 Location: **N: Webster Avenue S: Webster Avenue**
 Location: **E: Columbia Street W: Tremont Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Buses

	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	0	2	0	0	2	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	4
7:45 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total	0	3	0	0	3	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	6
8:00 AM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
8:15 AM	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
8:45 AM	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
Total	2	2	0	0	4	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	13
9:00 AM	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	5
9:15 AM	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	3
Total	0	3	0	0	3	0	1	0	0	1	0	4	0	0	4	0	0	0	0	0	8
Grand Total	2	8	0	0	10	1	1	0	0	2	0	15	0	0	15	0	0	0	0	0	27
Approach %	20.0	80.0	0.0	0.0		50.0	50.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	7.4	29.6	0.0	0.0	37.0	3.7	3.7	0.0	0.0	7.4	0.0	55.6	0.0	0.0	55.6	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	16					0					8					3					27

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

7:30 AM	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:30 AM	0	2	0	0	2	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	4
7:45 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
8:00 AM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
8:15 AM	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
Total Volume	1	5	0	0	6	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0	14
% Approach Total	16.7	83.3	0.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.250	0.625	0.000	0.000	0.750	0.250	0.000	0.000	0.000	0.250	0.000	0.583	0.000	0.000	0.583	0.000	0.000	0.000	0.000	0.000	0.875
Entering Leg	1	5	0	0	6	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0	14
Exiting Leg	8					0					5					1					14
Total	14					1					12					1					28

PDI File #: **175894 (19) am**
 Location: **N: Webster Avenue S: Webster Avenue**
 Location: **E: Columbia Street W: Tremont Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Bicycles (on Roadway and Crosswalks)

	Webster Avenue							Columbia Street							Webster Avenue							Tremont Street							Total
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:30 AM	1	24	2	0	0	0	27	0	1	0	0	1	0	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	30
7:45 AM	0	17	0	0	0	0	17	0	0	0	0	0	0	0	1	2	0	0	0	0	3	0	0	0	0	0	0	0	20
Total	1	41	2	0	0	0	44	0	1	0	0	1	0	2	1	3	0	0	0	0	4	0	0	0	0	0	0	0	50
8:00 AM	4	39	1	0	0	0	44	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	45
8:15 AM	4	35	4	0	0	0	43	0	0	0	0	0	0	0	0	6	0	0	0	0	6	0	0	0	0	0	1	1	50
8:30 AM	5	62	2	0	0	0	69	0	0	0	0	0	0	0	1	5	0	0	0	0	6	0	0	0	0	0	0	0	75
8:45 AM	8	36	5	0	0	0	49	2	0	0	0	0	0	2	0	4	0	0	0	0	4	0	0	1	0	0	0	1	56
Total	21	172	12	0	0	0	205	2	0	0	0	0	0	2	1	16	0	0	0	0	17	0	0	1	0	0	1	2	226
9:00 AM	6	20	9	0	0	0	35	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	36
9:15 AM	5	22	5	0	0	0	32	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	36
Total	11	42	14	0	0	0	67	0	0	0	0	0	0	0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	72
Grand Total	33	255	28	0	0	0	316	2	1	0	0	1	0	4	2	24	0	0	0	0	26	0	0	1	0	0	1	2	348
Approach %	10.4	80.7	8.9	0.0	0.0	0.0		50.0	25.0	0.0	0.0	25.0	0.0		7.7	92.3	0.0	0.0	0.0	0.0		0.0	0.0	50.0	0.0	0.0	50.0		
Total %	9.5	73.3	8.0	0.0	0.0	0.0	90.8	0.6	0.3	0.0	0.0	0.3	0.0	1.1	0.6	6.9	0.0	0.0	0.0	0.0	7.5	0.0	0.0	0.3	0.0	0.0	0.3	0.6	
Exiting Leg Total	27							31							255							35							348

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:00 AM	Webster Avenue							Columbia Street							Webster Avenue							Tremont Street							Total	
	North							East							South							West								
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
8:00 AM	4	39	1	0	0	0	44	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	45	
8:15 AM	4	35	4	0	0	0	43	0	0	0	0	0	0	0	0	6	0	0	0	0	0	6	0	0	0	0	0	1	1	50
8:30 AM	5	62	2	0	0	0	69	0	0	0	0	0	0	0	0	1	5	0	0	0	0	6	0	0	0	0	0	0	0	75
8:45 AM	8	36	5	0	0	0	49	2	0	0	0	0	0	0	2	0	4	0	0	0	0	4	0	0	1	0	0	0	1	56
Total Volume	21	172	12	0	0	0	205	2	0	0	0	0	0	2	1	16	0	0	0	0	0	17	0	0	1	0	0	1	2	226
% Approach Total	10.2	83.9	5.9	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0	0.0		5.9	94.1	0.0	0.0	0.0	0.0		0.0	0.0	50.0	0.0	0.0	50.0			
PHF	0.656	0.694	0.600	0.000	0.000	0.000	0.743	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.667	0.000	0.000	0.000	0.000	0.708	0.000	0.000	0.250	0.000	0.000	0.250	0.500		0.753
Entering Leg	21	172	12	0	0	0	205	2	0	0	0	0	0	2	1	16	0	0	0	0	0	17	0	0	1	0	0	1	2	226
Exiting Leg	19							13							172							22							226	
Total	224							15							189							24							452	

PDI File #: **175894 (19) am**
 Location: **N: Webster Avenue S: Webster Avenue**
 Location: **E: Columbia Street W: Tremont Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Pedestrians

	Webster Avenue							Columbia Street							Webster Avenue							Tremont Street							Total
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:30 AM	0	0	0	0	0	1	1	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	2	9	11	15
7:45 AM	0	0	0	0	1	0	1	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	5	5	9
Total	0	0	0	0	1	1	2	0	0	0	0	4	2	6	0	0	0	0	0	0	0	0	0	0	0	2	14	16	24
8:00 AM	0	0	0	0	1	1	2	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	1	8	9	13
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0	2	21	23	29
8:30 AM	0	0	0	0	1	0	1	0	0	0	0	5	1	6	0	0	0	0	1	1	2	0	0	0	0	3	13	16	25
8:45 AM	0	0	0	0	1	2	3	0	0	0	0	2	3	5	0	0	0	0	0	1	1	0	0	0	0	4	8	12	21
Total	0	0	0	0	3	3	6	0	0	0	0	15	4	19	0	0	0	0	1	2	3	0	0	0	0	10	50	60	88
9:00 AM	0	0	0	0	2	0	2	0	0	0	0	11	1	12	0	0	0	0	0	0	0	0	0	0	0	1	4	5	19
9:15 AM	0	0	0	0	2	0	2	0	0	0	0	4	1	5	0	0	0	0	0	0	0	0	0	0	0	0	3	3	10
Total	0	0	0	0	4	0	4	0	0	0	0	15	2	17	0	0	0	0	0	0	0	0	0	0	0	1	7	8	29
Grand Total	0	0	0	0	8	4	12	0	0	0	0	34	8	42	0	0	0	0	1	2	3	0	0	0	0	13	71	84	141
Approach %	0.0	0.0	0.0	0.0	66.7	33.3		0.0	0.0	0.0	0.0	81.0	19.0		0.0	0.0	0.0	0.0	33.3	66.7		0.0	0.0	0.0	0.0	15.5	84.5		
Total %	0.0	0.0	0.0	0.0	5.7	2.8	8.5	0.0	0.0	0.0	0.0	24.1	5.7	29.8	0.0	0.0	0.0	0.0	0.7	1.4	2.1	0.0	0.0	0.0	0.0	9.2	50.4	59.6	
Exiting Leg Total	12							42							3							84							141

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:15 AM	Webster Avenue							Columbia Street							Webster Avenue							Tremont Street							Total
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0	2	21	23	29
8:30 AM	0	0	0	0	1	0	1	0	0	0	0	5	1	6	0	0	0	0	1	1	2	0	0	0	0	3	13	16	25
8:45 AM	0	0	0	0	1	2	3	0	0	0	0	2	3	5	0	0	0	0	0	1	1	0	0	0	0	4	8	12	21
9:00 AM	0	0	0	0	2	0	2	0	0	0	0	11	1	12	0	0	0	0	0	0	0	0	0	0	0	1	4	5	19
Total Volume	0	0	0	0	4	2	6	0	0	0	0	24	5	29	0	0	0	0	1	2	3	0	0	0	0	10	46	56	94
% Approach Total	0.0	0.0	0.0	0.0	66.7	33.3		0.0	0.0	0.0	0.0	82.8	17.2		0.0	0.0	0.0	0.0	33.3	66.7		0.0	0.0	0.0	0.0	17.9	82.1		
PHF	0.000	0.000	0.000	0.000	0.500	0.250	0.500	0.000	0.000	0.000	0.000	0.545	0.417	0.604	0.000	0.000	0.000	0.000	0.250	0.500	0.375	0.000	0.000	0.000	0.000	0.625	0.548	0.609	0.810
Entering Leg	0	0	0	0	4	2	6	0	0	0	0	24	5	29	0	0	0	0	1	2	3	0	0	0	0	10	46	56	94
Exiting Leg	6							29							3							56							94
Total	12							58							6							112							188

PDI File #: **175894 (19) pm**
 Location: **N: Webster Avenue S: Webster Avenue**
 Location: **E: Columbia Street W: Tremont Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Cars and Heavy Vehicles (Combined)

	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:30 PM	5	38	7	0	50	37	13	1	0	51	4	76	1	0	81	0	0	0	0	0	182
4:45 PM	10	35	8	0	53	29	8	5	0	42	3	87	1	0	91	0	0	0	0	0	186
Total	15	73	15	0	103	66	21	6	0	93	7	163	2	0	172	0	0	0	0	0	368
5:00 PM	4	37	4	0	45	29	6	2	0	37	1	47	6	0	54	0	0	0	0	0	136
5:15 PM	6	40	5	0	51	33	11	4	0	48	0	51	5	1	57	0	0	0	1	1	157
5:30 PM	10	34	2	0	46	40	21	1	0	62	0	52	2	0	54	0	0	0	0	0	162
5:45 PM	8	34	2	0	44	24	8	1	0	33	2	77	4	0	83	0	0	0	0	0	160
Total	28	145	13	0	186	126	46	8	0	180	3	227	17	1	248	0	0	0	1	1	615
6:00 PM	10	39	1	0	50	38	13	0	0	51	0	59	7	0	66	0	0	0	0	0	167
6:15 PM	11	39	5	0	55	39	19	5	0	63	1	66	3	0	70	0	1	0	0	1	189
Total	21	78	6	0	105	77	32	5	0	114	1	125	10	0	136	0	1	0	0	1	356
Grand Total	64	296	34	0	394	269	99	19	0	387	11	515	29	1	556	0	1	0	1	2	1339
Approach %	16.2	75.1	8.6	0.0		69.5	25.6	4.9	0.0		2.0	92.6	5.2	0.2		0.0	50.0	0.0	50.0		
Total %	4.8	22.1	2.5	0.0	29.4	20.1	7.4	1.4	0.0	28.9	0.8	38.5	2.2	0.1	41.5	0.0	0.1	0.0	0.1	0.1	
Exiting Leg Total	784					46					316					193					1339
Cars	64	287	32	0	383	264	97	19	0	380	11	500	28	1	540	0	0	0	1	1	1304
% Cars	100.0	97.0	94.1	0.0	97.2	98.1	98.0	100.0	0.0	98.2	100.0	97.1	96.6	100.0	97.1	0.0	0.0	0.0	100.0	50.0	97.4
Exiting Leg Total	764					43					307					190					1304
Heavy Vehicles	0	9	2	0	11	5	2	0	0	7	0	15	1	0	16	0	1	0	0	1	35
% Heavy Vehicles	0.0	3.0	5.9	0.0	2.8	1.9	2.0	0.0	0.0	1.8	0.0	2.9	3.4	0.0	2.9	0.0	100.0	0.0	0.0	50.0	2.6
Exiting Leg Total	20					3					9					3					35

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:30 PM	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
5:30 PM	10	34	2	0	46	40	21	1	0	62	0	52	2	0	54	0	0	0	0	0	162
5:45 PM	8	34	2	0	44	24	8	1	0	33	2	77	4	0	83	0	0	0	0	0	160
6:00 PM	10	39	1	0	50	38	13	0	0	51	0	59	7	0	66	0	0	0	0	0	167
6:15 PM	11	39	5	0	55	39	19	5	0	63	1	66	3	0	70	0	1	0	0	1	189
Total Volume	39	146	10	0	195	141	61	7	0	209	3	254	16	0	273	0	1	0	0	1	678
% Approach Total	20.0	74.9	5.1	0.0		67.5	29.2	3.3	0.0		1.1	93.0	5.9	0.0		0.0	100.0	0.0	0.0		
PHF	0.886	0.936	0.500	0.000	0.886	0.881	0.726	0.350	0.000	0.829	0.375	0.825	0.571	0.000	0.822	0.000	0.250	0.000	0.000	0.250	0.897
Cars	39	140	10	0	189	140	59	7	0	206	3	248	16	0	267	0	0	0	0	0	662
Cars %	100.0	95.9	100.0	0.0	96.9	99.3	96.7	100.0	0.0	98.6	100.0	97.6	100.0	0.0	97.8	0.0	0.0	0.0	0.0	0.0	97.6
Heavy Vehicles	0	6	0	0	6	1	2	0	0	3	0	6	0	0	6	0	1	0	0	1	16
Heavy Vehicles %	0.0	4.1	0.0	0.0	3.1	0.7	3.3	0.0	0.0	1.4	0.0	2.4	0.0	0.0	2.2	0.0	100.0	0.0	0.0	100.0	2.4
Cars Enter Leg	39	140	10	0	189	140	59	7	0	206	3	248	16	0	267	0	0	0	0	0	662
Heavy Enter Leg	0	6	0	0	6	1	2	0	0	3	0	6	0	0	6	0	1	0	0	1	16
Total Entering Leg	39	146	10	0	195	141	61	7	0	209	3	254	16	0	273	0	1	0	0	1	678
Cars Exiting Leg	388					13					147					114					662
Heavy Exiting Leg	7					1					6					2					16
Total Exiting Leg	395					14					153					116					678

PDI File #: **175894 (19) pm**
 Location: **N: Webster Avenue S: Webster Avenue**
 Location: **E: Columbia Street W: Tremont Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Cars

	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:30 PM	5	37	7	0	49	35	13	1	0	49	4	71	1	0	76	0	0	0	0	0	174
4:45 PM	10	34	7	0	51	27	8	5	0	40	3	86	1	0	90	0	0	0	0	0	181
Total	15	71	14	0	100	62	21	6	0	89	7	157	2	0	166	0	0	0	0	0	355
5:00 PM	4	36	3	0	43	29	6	2	0	37	1	46	6	0	53	0	0	0	0	0	133
5:15 PM	6	40	5	0	51	33	11	4	0	48	0	49	4	1	54	0	0	0	1	1	154
5:30 PM	10	32	2	0	44	40	20	1	0	61	0	49	2	0	51	0	0	0	0	0	156
5:45 PM	8	34	2	0	44	24	8	1	0	33	2	76	4	0	82	0	0	0	0	0	159
Total	28	142	12	0	182	126	45	8	0	179	3	220	16	1	240	0	0	0	1	1	602
6:00 PM	10	38	1	0	49	37	12	0	0	49	0	58	7	0	65	0	0	0	0	0	163
6:15 PM	11	36	5	0	52	39	19	5	0	63	1	65	3	0	69	0	0	0	0	0	184
Total	21	74	6	0	101	76	31	5	0	112	1	123	10	0	134	0	0	0	0	0	347
Grand Total	64	287	32	0	383	264	97	19	0	380	11	500	28	1	540	0	0	0	1	1	1304
Approach %	16.7	74.9	8.4	0.0		69.5	25.5	5.0	0.0		2.0	92.6	5.2	0.2		0.0	0.0	0.0	100.0		
Total %	4.9	22.0	2.5	0.0	29.4	20.2	7.4	1.5	0.0	29.1	0.8	38.3	2.1	0.1	41.4	0.0	0.0	0.0	0.1	0.1	
Exiting Leg Total	764					43					307					190					1304

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:30 PM	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
5:30 PM	10	32	2	0	44	40	20	1	0	61	0	49	2	0	51	0	0	0	0	0	156
5:45 PM	8	34	2	0	44	24	8	1	0	33	2	76	4	0	82	0	0	0	0	0	159
6:00 PM	10	38	1	0	49	37	12	0	0	49	0	58	7	0	65	0	0	0	0	0	163
6:15 PM	11	36	5	0	52	39	19	5	0	63	1	65	3	0	69	0	0	0	0	0	184
Total Volume	39	140	10	0	189	140	59	7	0	206	3	248	16	0	267	0	0	0	0	0	662
% Approach Total	20.6	74.1	5.3	0.0		68.0	28.6	3.4	0.0		1.1	92.9	6.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.886	0.921	0.500	0.000	0.909	0.875	0.738	0.350	0.000	0.817	0.375	0.816	0.571	0.000	0.814	0.000	0.000	0.000	0.000	0.000	0.899
Entering Leg	39	140	10	0	189	140	59	7	0	206	3	248	16	0	267	0	0	0	0	0	662
Exiting Leg	388					13					147					114					662
Total	577					219					414					114					1324

PDI File #: **175894 (19) pm**
 Location: **N: Webster Avenue S: Webster Avenue**
 Location: **E: Columbia Street W: Tremont Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Heavy Vehicles (Combined-Large Trucks and Buses)

	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:30 PM	0	1	0	0	1	2	0	0	0	2	0	5	0	0	5	0	0	0	0	0	8
4:45 PM	0	1	1	0	2	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	5
Total	0	2	1	0	3	4	0	0	0	4	0	6	0	0	6	0	0	0	0	0	13
5:00 PM	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	3
5:30 PM	0	2	0	0	2	0	1	0	0	1	0	3	0	0	3	0	0	0	0	0	6
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	3	1	0	4	0	1	0	0	1	0	7	1	0	8	0	0	0	0	0	13
6:00 PM	0	1	0	0	1	1	1	0	0	2	0	1	0	0	1	0	0	0	0	0	4
6:15 PM	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	5
Total	0	4	0	0	4	1	1	0	0	2	0	2	0	0	2	0	1	0	0	1	9
Grand Total	0	9	2	0	11	5	2	0	0	7	0	15	1	0	16	0	1	0	0	1	35
Approach %	0.0	81.8	18.2	0.0		71.4	28.6	0.0	0.0		0.0	93.8	6.3	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	25.7	5.7	0.0	31.4	14.3	5.7	0.0	0.0	20.0	0.0	42.9	2.9	0.0	45.7	0.0	2.9	0.0	0.0	2.9	
Exiting Leg Total	20					3					9					3					35
Large Trucks	0	1	1	0	2	4	2	0	0	6	0	5	1	0	6	0	0	0	0	0	14
% Large Trucks	0.0	11.1	50.0	0.0	18.2	80.0	100.0	0.0	0.0	85.7	0.0	33.3	100.0	0.0	37.5	0.0	0.0	0.0	0.0	0.0	40.0
Exiting Leg Total	9					1					1					3					14
Buses	0	8	1	0	9	1	0	0	0	1	0	10	0	0	10	0	1	0	0	1	21
% Buses	0.0	88.9	50.0	0.0	81.8	20.0	0.0	0.0	0.0	14.3	0.0	66.7	0.0	0.0	62.5	0.0	100.0	0.0	0.0	100.0	60.0
Exiting Leg Total	11					2					8					0					21

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total				
	North					East					South					West									
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total					
4:30 PM	0	1	0	0	1	2	0	0	0	2	0	5	0	0	5	0	0	0	0	0	8				
4:45 PM	0	1	1	0	2	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	5				
5:00 PM	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3				
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	3				
Total Volume	0	3	2	0	5	4	0	0	0	4	0	9	1	0	10	0	0	0	0	0	19				
% Approach Total	0.0	60.0	40.0	0.0		100.0	0.0	0.0	0.0		0.0	90.0	10.0	0.0		0.0	0.0	0.0	0.0						
PHF	0.000	0.750	0.500	0.000	0.625	0.500	0.000	0.000	0.000	0.500	0.000	0.450	0.250	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.594				
Large Trucks	0	0	1	0	1	3	0	0	0	3	0	4	1	0	5	0	0	0	0	0	9				
Large Trucks %	0.0	0.0	50.0	0.0	20.0	75.0	0.0	0.0	0.0	75.0	0.0	44.4	100.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	47.4				
Buses	0	3	1	0	4	1	0	0	0	1	0	5	0	0	5	0	0	0	0	0	10				
Buses %	0.0	100.0	50.0	0.0	80.0	25.0	0.0	0.0	0.0	25.0	0.0	55.6	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	52.6				
Trucks Enter Leg	0	0	1	0	1	3	0	0	0	3	0	4	1	0	5	0	0	0	0	0	9				
Bus Enter Leg	0	3	1	0	4	1	0	0	0	1	0	5	0	0	5	0	0	0	0	0	10				
Total Entering Leg	0	3	2	0	5	4	0	0	0	4	0	9	1	0	10	0	0	0	0	0	19				
Trucks Exiting Leg						7						1						0						1	9
Buses Exiting Leg						6						1						3						0	10
Total Exiting Leg						13						2						3						1	19

PDI File #: **175894 (19) pm**
 Location: **N: Webster Avenue S: Webster Avenue**
 Location: **E: Columbia Street W: Tremont Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Large Trucks

	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total	
	North					East					South					West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
4:30 PM	0	0	0	0	0	2	0	0	0	0	2	0	3	0	0	3	0	0	0	0	0	5
4:45 PM	0	0	1	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	1	0	1	3	0	0	0	0	3	0	3	0	0	3	0	0	0	0	0	7
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	0	1	0	2	1	0	3	0	0	0	0	0	4
6:00 PM	0	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
6:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	1	1	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
Grand Total	0	1	1	0	2	4	2	0	0	6	0	5	1	0	6	0	0	0	0	0	0	14
Approach %	0.0	50.0	50.0	0.0		66.7	33.3	0.0	0.0		0.0	83.3	16.7	0.0		0.0	0.0	0.0	0.0			
Total %	0.0	7.1	7.1	0.0	14.3	28.6	14.3	0.0	0.0	42.9	0.0	35.7	7.1	0.0	42.9	0.0	0.0	0.0	0.0	0.0		
Exiting Leg Total	9					1					1					3					14	

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total	
	North					East					South					West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
4:30 PM	0	0	0	0	0	2	0	0	0	0	2	0	3	0	0	3	0	0	0	0	0	5
4:45 PM	0	0	1	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	2
Total Volume	0	0	1	0	1	3	0	0	0	0	3	0	4	1	0	5	0	0	0	0	0	9
% Approach Total	0.0	0.0	100.0	0.0		100.0	0.0	0.0	0.0			0.0	80.0	20.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.250	0.000	0.250	0.375	0.000	0.000	0.000	0.375	0.000	0.333	0.250	0.000	0.417	0.000	0.000	0.000	0.000	0.000		0.450
Entering Leg	0	0	1	0	1	3	0	0	0	3	0	4	1	0	5	0	0	0	0	0		9
Exiting Leg	7					1					0					1					9	
Total	8					4					5					1					18	

PDI File #: **175894 (19) pm**
 Location: **N: Webster Avenue S: Webster Avenue**
 Location: **E: Columbia Street W: Tremont Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Buses

	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:30 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
4:45 PM	0	1	0	0	1	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	3
Total	0	2	0	0	2	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	6
5:00 PM	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
5:30 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	3	1	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	9
6:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
6:15 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	4
Total	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	6
Grand Total	0	8	1	0	9	1	0	0	0	1	0	10	0	0	10	0	1	0	0	1	21
Approach %	0.0	88.9	11.1	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	38.1	4.8	0.0	42.9	4.8	0.0	0.0	0.0	4.8	0.0	47.6	0.0	0.0	47.6	0.0	4.8	0.0	0.0	4.8	
Exiting Leg Total	11					2					8					0					21

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Webster Avenue					Columbia Street					Webster Avenue					Tremont Street					Total
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:30 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
4:45 PM	0	1	0	0	1	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	3
5:00 PM	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total Volume	0	3	1	0	4	1	0	0	0	1	0	5	0	0	5	0	0	0	0	0	10
% Approach Total	0.0	75.0	25.0	0.0		100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.750	0.250	0.000	0.500	0.250	0.000	0.000	0.000	0.250	0.000	0.625	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.833
Entering Leg	0	3	1	0	4	1	0	0	0	1	0	5	0	0	5	0	0	0	0	0	10
Exiting Leg	6					1					3					0					10
Total	10					2					8					0					20

PDI File #: **175894 (19) pm**
 Location: **N: Webster Avenue S: Webster Avenue**
 Location: **E: Columbia Street W: Tremont Street**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Bicycles (on Roadway and Crosswalks)

	Webster Avenue							Columbia Street							Webster Avenue							Tremont Street							Total
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
4:30 PM	0	2	0	0	0	0	2	0	0	0	0	0	7	7	0	7	0	0	0	0	7	0	0	2	0	0	0	2	18
4:45 PM	0	3	0	0	0	0	3	0	0	0	0	0	11	11	0	9	0	0	0	0	9	0	0	0	0	0	0	0	23
Total	0	5	0	0	0	0	5	0	0	0	0	0	18	18	0	16	0	0	0	0	16	0	0	2	0	0	0	2	41
5:00 PM	1	5	0	0	0	0	6	6	0	0	0	0	14	20	0	14	0	0	1	0	15	0	0	0	0	0	0	0	41
5:15 PM	0	3	0	0	0	0	3	4	0	0	0	0	10	14	0	13	0	0	0	0	13	0	0	0	0	1	0	1	31
5:30 PM	0	8	0	0	0	0	8	1	1	0	0	0	5	7	0	22	0	0	1	0	23	0	0	0	0	0	0	0	38
5:45 PM	0	4	0	0	0	0	4	5	0	0	0	0	3	8	0	14	0	0	0	0	14	0	0	0	0	0	0	0	26
Total	1	20	0	0	0	0	21	16	1	0	0	0	32	49	0	63	0	0	2	0	65	0	0	0	0	1	0	1	136
6:00 PM	0	9	0	0	0	0	9	2	0	0	0	0	10	12	0	16	0	0	0	0	16	0	0	0	0	0	0	0	37
6:15 PM	0	8	0	0	0	0	8	4	1	0	0	0	2	7	0	12	0	0	0	0	12	0	0	0	0	0	0	0	27
Total	0	17	0	0	0	0	17	6	1	0	0	0	12	19	0	28	0	0	0	0	28	0	0	0	0	0	0	0	64
Grand Total	1	42	0	0	0	0	43	22	2	0	0	0	62	86	0	107	0	0	2	0	109	0	0	2	0	1	0	3	241
Approach %	2.3	97.7	0.0	0.0	0.0	0.0		25.6	2.3	0.0	0.0	0.0	72.1		0.0	98.2	0.0	0.0	1.8	0.0		0.0	0.0	66.7	0.0	33.3	0.0		
Total %	0.4	17.4	0.0	0.0	0.0	0.0	17.8	9.1	0.8	0.0	0.0	0.0	25.7	35.7	0.0	44.4	0.0	0.0	0.8	0.0	45.2	0.0	0.0	0.8	0.0	0.4	0.0	1.2	
Exiting Leg Total	131							62							44							4							241

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:00 PM	Webster Avenue							Columbia Street							Webster Avenue							Tremont Street							Total
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
5:00 PM	1	5	0	0	0	0	6	6	0	0	0	0	14	20	0	14	0	0	1	0	15	0	0	0	0	0	0	0	41
5:15 PM	0	3	0	0	0	0	3	4	0	0	0	0	10	14	0	13	0	0	0	0	13	0	0	0	0	1	0	1	31
5:30 PM	0	8	0	0	0	0	8	1	1	0	0	0	5	7	0	22	0	0	1	0	23	0	0	0	0	0	0	0	38
5:45 PM	0	4	0	0	0	0	4	5	0	0	0	0	3	8	0	14	0	0	0	0	14	0	0	0	0	0	0	0	26
Total Volume	1	20	0	0	0	0	21	16	1	0	0	0	32	49	0	63	0	0	2	0	65	0	0	0	0	1	0	1	136
% Approach Total	4.8	95.2	0.0	0.0	0.0	0.0		32.7	2.0	0.0	0.0	0.0	65.3		0.0	96.9	0.0	0.0	3.1	0.0		0.0	0.0	0.0	0.0	100.0	0.0		
PHF	0.250	0.625	0.000	0.000	0.000	0.000	0.656	0.667	0.250	0.000	0.000	0.000	0.571	0.613	0.000	0.716	0.000	0.000	0.500	0.000	0.707	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.829
Entering Leg	1	20	0	0	0	0	21	16	1	0	0	0	32	49	0	63	0	0	2	0	65	0	0	0	0	1	0	1	136
Exiting Leg	79							32							22							3							136
Total	100							81							87							4							272

PDI File #: 175894 (19) pm
 Location: N: Webster Avenue S: Webster Avenue
 Location: E: Columbia Street W: Tremont Street
 City, State: Somerville, MA
 Client: USSA/ J. Kunz
 Site Code: TBA
 Count Date: Thursday, October 5, 2017
 Start Time: 4:30 PM
 End Time: 6:30 PM
 Class:



Pedestrians

	Webster Avenue							Columbia Street							Webster Avenue							Tremont Street							Total
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	12	3	15	17
4:45 PM	0	0	0	0	0	1	1	0	0	0	0	0	3	3	0	0	0	0	3	1	4	0	0	0	0	5	1	6	14
Total	0	0	0	0	0	1	1	0	0	0	0	0	5	5	0	0	0	0	3	1	4	0	0	0	0	17	4	21	31
5:00 PM	0	0	0	0	1	0	1	0	0	0	0	1	4	5	0	0	0	0	2	1	3	0	0	0	0	13	1	14	23
5:15 PM	0	0	0	0	1	1	2	0	0	0	0	0	9	9	0	0	0	0	0	1	1	0	0	0	0	15	5	20	32
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	3	2	5	0	0	0	0	0	1	1	0	0	0	0	17	1	18	24
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	14	2	16	17
Total	0	0	0	0	2	1	3	0	0	0	0	4	16	20	0	0	0	0	2	3	5	0	0	0	0	59	9	68	96
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	4	5	0	0	0	0	1	0	1	0	0	0	0	14	9	23	29
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	8	7	15	18
Total	0	0	0	0	0	0	0	0	0	0	0	1	7	8	0	0	0	0	1	0	1	0	0	0	0	22	16	38	47
Grand Total	0	0	0	0	2	2	4	0	0	0	0	5	28	33	0	0	0	0	6	4	10	0	0	0	0	98	29	127	174
Approach %	0.0	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	15.2	84.8		0.0	0.0	0.0	0.0	60.0	40.0		0.0	0.0	0.0	0.0	77.2	22.8		
Total %	0.0	0.0	0.0	0.0	1.1	1.1	2.3	0.0	0.0	0.0	0.0	2.9	16.1	19.0	0.0	0.0	0.0	0.0	3.4	2.3	5.7	0.0	0.0	0.0	0.0	56.3	16.7	73.0	
Exiting Leg Total	4							33							10							127							174

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:15 PM	Webster Avenue							Columbia Street							Webster Avenue							Tremont Street							Total
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
5:15 PM	0	0	0	0	1	1	2	0	0	0	0	0	9	9	0	0	0	0	0	1	1	0	0	0	0	15	5	20	32
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	3	2	5	0	0	0	0	0	1	1	0	0	0	0	17	1	18	24
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	14	2	16	17
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	4	5	0	0	0	0	1	0	1	0	0	0	0	14	9	23	29
Total Volume	0	0	0	0	1	1	2	0	0	0	0	4	16	20	0	0	0	0	1	2	3	0	0	0	0	60	17	77	102
% Approach Total	0.0	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	20.0	80.0		0.0	0.0	0.0	0.0	33.3	66.7		0.0	0.0	0.0	0.0	77.9	22.1		
PHF	0.000	0.000	0.000	0.000	0.250	0.250	0.250	0.000	0.000	0.000	0.000	0.333	0.444	0.556	0.000	0.000	0.000	0.000	0.250	0.500	0.750	0.000	0.000	0.000	0.000	0.882	0.472	0.837	0.797
Entering Leg	0	0	0	0	1	1	2	0	0	0	0	4	16	20	0	0	0	0	1	2	3	0	0	0	0	60	17	77	102
Exiting Leg	2							20							3							77							102
Total	4							40							6							154							204

PDI File #: **175894 (30) am**
 Location: **S: Columbia Street**
 Location: **E: Windsor Place W: Columbia Street SW: Auto Parts Driveway**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**



Cars and Heavy Vehicles (Combined)

	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
7:30 AM	48	0	7	0	55	0	2	0	0	2	0	0	0	0	0	0	5	6	0	11	68
7:45 AM	47	0	6	0	53	2	2	1	0	5	0	0	0	0	0	0	3	14	0	17	75
Total	95	0	13	0	108	2	4	1	0	7	0	0	0	0	0	0	8	20	0	28	143
8:00 AM	38	0	8	0	46	3	1	1	0	5	0	0	0	0	0	0	3	8	0	11	62
8:15 AM	42	0	5	0	47	0	0	0	0	0	0	0	0	0	0	0	18	18	0	36	83
8:30 AM	35	0	7	0	42	6	6	0	0	12	1	0	0	0	1	0	21	19	0	40	95
8:45 AM	28	0	6	0	34	5	8	1	1	15	0	0	0	0	0	0	14	20	0	34	83
Total	143	0	26	0	169	14	15	2	1	32	1	0	0	0	1	0	56	65	0	121	323
9:00 AM	29	0	3	0	32	4	4	0	0	8	1	0	0	0	1	0	18	28	0	46	87
9:15 AM	26	0	6	0	32	5	5	0	0	10	0	0	0	0	0	0	24	21	0	45	87
Total	55	0	9	0	64	9	9	0	0	18	1	0	0	0	1	0	42	49	0	91	174
Grand Total	293	0	48	0	341	25	28	3	1	57	2	0	0	0	2	0	106	134	0	240	640
Approach %	85.9	0.0	14.1	0.0		43.9	49.1	5.3	1.8		100.0	0.0	0.0	0.0		0.0	44.2	55.8	0.0		
Total %	45.8	0.0	7.5	0.0	53.3	3.9	4.4	0.5	0.2	8.9	0.3	0.0	0.0	0.0	0.3	0.0	16.6	20.9	0.0	37.5	
Exiting Leg Total	159					157					3					321					640
Cars	272	0	46	0	318	25	26	3	1	55	2	0	0	0	2	0	105	129	0	234	609
% Cars	92.8	0.0	95.8	0.0	93.3	100.0	92.9	100.0	100.0	96.5	100.0	0.0	0.0	0.0	100.0	0.0	99.1	96.3	0.0	97.5	95.2
Exiting Leg Total	154					154					3					298					609
Heavy Vehicles	21	0	2	0	23	0	2	0	0	2	0	0	0	0	0	0	1	5	0	6	31
% Heavy Vehicles	7.2	0.0	4.2	0.0	6.7	0.0	7.1	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.9	3.7	0.0	2.5	4.8
Exiting Leg Total	5					3					0					23					31

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:30 AM	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
8:30 AM	35	0	7	0	42	6	6	0	0	12	1	0	0	0	1	0	21	19	0	40	95
8:45 AM	28	0	6	0	34	5	8	1	1	15	0	0	0	0	0	0	14	20	0	34	83
9:00 AM	29	0	3	0	32	4	4	0	0	8	1	0	0	0	1	0	18	28	0	46	87
9:15 AM	26	0	6	0	32	5	5	0	0	10	0	0	0	0	0	0	24	21	0	45	87
Total Volume	118	0	22	0	140	20	23	1	1	45	2	0	0	0	2	0	77	88	0	165	352
% Approach Total	84.3	0.0	15.7	0.0		44.4	51.1	2.2	2.2		100.0	0.0	0.0	0.0		0.0	46.7	53.3	0.0		
PHF	0.843	0.000	0.786	0.000	0.833	0.833	0.719	0.250	0.250	0.750	0.500	0.000	0.000	0.000	0.500	0.000	0.802	0.786	0.000	0.897	0.926
Cars	109	0	20	0	129	20	21	1	1	43	2	0	0	0	2	0	76	86	0	162	336
Cars %	92.4	0.0	90.9	0.0	92.1	100.0	91.3	100.0	100.0	95.6	100.0	0.0	0.0	0.0	100.0	0.0	98.7	97.7	0.0	98.2	95.5
Heavy Vehicles	9	0	2	0	11	0	2	0	0	2	0	0	0	0	0	0	1	2	0	3	16
Heavy Vehicles %	7.6	0.0	9.1	0.0	7.9	0.0	8.7	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.0	0.0	1.3	2.3	0.0	1.8	4.5
Cars Enter Leg	109	0	20	0	129	20	21	1	1	43	2	0	0	0	2	0	76	86	0	162	336
Heavy Enter Leg	9	0	2	0	11	0	2	0	0	2	0	0	0	0	0	0	1	2	0	3	16
Total Entering Leg	118	0	22	0	140	20	23	1	1	45	2	0	0	0	2	0	77	88	0	165	352
Cars Exiting Leg	106					99					1					130					336
Heavy Exiting Leg	2					3					0					11					16
Total Exiting Leg	108					102					1					141					352

PDI File #: **175894 (30) am**
 Location: **S: Columbia Street**
 Location: **E: Windsor Place W: Columbia Street SW: Auto Parts Driveway**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Cars

	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
7:30 AM	46	0	7	0	53	0	2	0	0	2	0	0	0	0	0	0	5	4	0	9	64
7:45 AM	46	0	6	0	52	2	2	1	0	5	0	0	0	0	0	0	3	14	0	17	74
Total	92	0	13	0	105	2	4	1	0	7	0	0	0	0	0	0	8	18	0	26	138
8:00 AM	34	0	8	0	42	3	1	1	0	5	0	0	0	0	0	0	3	8	0	11	58
8:15 AM	37	0	5	0	42	0	0	0	0	0	0	0	0	0	0	0	18	17	0	35	77
8:30 AM	32	0	6	0	38	6	5	0	0	11	1	0	0	0	1	0	21	18	0	39	89
8:45 AM	26	0	6	0	32	5	7	1	1	14	0	0	0	0	0	0	14	20	0	34	80
Total	129	0	25	0	154	14	13	2	1	30	1	0	0	0	1	0	56	63	0	119	304
9:00 AM	26	0	3	0	29	4	4	0	0	8	1	0	0	0	1	0	18	27	0	45	83
9:15 AM	25	0	5	0	30	5	5	0	0	10	0	0	0	0	0	0	23	21	0	44	84
Total	51	0	8	0	59	9	9	0	0	18	1	0	0	0	1	0	41	48	0	89	167
Grand Total	272	0	46	0	318	25	26	3	1	55	2	0	0	0	2	0	105	129	0	234	609
Approach %	85.5	0.0	14.5	0.0		45.5	47.3	5.5	1.8		100.0	0.0	0.0	0.0		0.0	44.9	55.1	0.0		
Total %	44.7	0.0	7.6	0.0	52.2	4.1	4.3	0.5	0.2	9.0	0.3	0.0	0.0	0.0	0.3	0.0	17.2	21.2	0.0	38.4	
Exiting Leg Total	154					154					3					298					609

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:30 AM	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
8:30 AM	32	0	6	0	38	6	5	0	0	11	1	0	0	0	1	0	21	18	0	39	89
8:45 AM	26	0	6	0	32	5	7	1	1	14	0	0	0	0	0	0	14	20	0	34	80
9:00 AM	26	0	3	0	29	4	4	0	0	8	1	0	0	0	1	0	18	27	0	45	83
9:15 AM	25	0	5	0	30	5	5	0	0	10	0	0	0	0	0	0	23	21	0	44	84
Total Volume	109	0	20	0	129	20	21	1	1	43	2	0	0	0	2	0	76	86	0	162	336
% Approach Total	84.5	0.0	15.5	0.0		46.5	48.8	2.3	2.3		100.0	0.0	0.0	0.0		0.0	46.9	53.1	0.0		
PHF	0.852	0.000	0.833	0.000	0.849	0.833	0.750	0.250	0.250	0.768	0.500	0.000	0.000	0.000	0.500	0.000	0.826	0.796	0.000	0.900	0.944
Entering Leg	109	0	20	0	129	20	21	1	1	43	2	0	0	0	2	0	76	86	0	162	336
Exiting Leg	106					99					1					130					336
Total	235					142					3					292					672

PDI File #: **175894 (30) am**
 Location: **S: Columbia Street**
 Location: **E: Windsor Place W: Columbia Street SW: Auto Parts Driveway**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Heavy Vehicles (Combined-Large Trucks and Buses)

	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
7:30 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4
7:45 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	5
8:00 AM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
8:15 AM	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	6
8:30 AM	3	0	1	0	4	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	6
8:45 AM	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
Total	14	0	1	0	15	0	2	0	0	2	0	0	0	0	0	0	0	2	0	2	19
9:00 AM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4
9:15 AM	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3
Total	4	0	1	0	5	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	7
Grand Total	21	0	2	0	23	0	2	0	0	2	0	0	0	0	0	0	1	5	0	6	31
Approach %	91.3	0.0	8.7	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	16.7	83.3	0.0		
Total %	67.7	0.0	6.5	0.0	74.2	0.0	6.5	0.0	0.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	3.2	16.1	0.0	19.4	
Exiting Leg Total	5					3					0					23					31
Large Trucks	20	0	2	0	22	0	2	0	0	2	0	0	0	0	0	0	1	5	0	6	30
% Large Trucks	95.2	0.0	100.0	0.0	95.7	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	0.0	100.0	96.8
Exiting Leg Total	5					3					0					22					30
Buses	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Buses	4.8	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2
Exiting Leg Total	0					0					0					1					1

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:00 AM	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total	
	East					South					Southwest					West						
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total		
8:00 AM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
8:15 AM	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	6	
8:30 AM	3	0	1	0	4	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	6	
8:45 AM	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3	
Total Volume	14	0	1	0	15	0	2	0	0	2	0	0	0	0	0	0	0	2	0	2	19	
% Approach Total	93.3	0.0	6.7	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0			
PHF	0.700	0.000	0.250	0.000	0.750	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.792	
Large Trucks	14	0	1	0	15	0	2	0	0	2	0	0	0	0	0	0	0	2	0	2	19	
Large Trucks %	100.0	0.0	100.0	0.0	100.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	100.0	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Trucks Enter Leg	14	0	1	0	15	0	2	0	0	2	0	0	0	0	0	0	0	2	0	2	19	
Bus Enter Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Entering Leg	14	0	1	0	15	0	2	0	0	2	0	0	0	0	0	0	0	2	0	2	19	
Trucks Exiting Leg																					16	19
Buses Exiting Leg																					0	0
Total Exiting Leg																					16	19

PDI File #: **175894 (30) am**
 Location: **S: Columbia Street**
 Location: **E: Windsor Place W: Columbia Street SW: Auto Parts Driveway**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Large Trucks

	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
7:30 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	3
7:45 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4
8:00 AM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
8:15 AM	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	6
8:30 AM	3	0	1	0	4	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	6
8:45 AM	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
Total	14	0	1	0	15	0	2	0	0	2	0	0	0	0	0	0	0	2	0	2	19
9:00 AM	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4
9:15 AM	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3
Total	4	0	1	0	5	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	7
Grand Total	20	0	2	0	22	0	2	0	0	2	0	0	0	0	0	0	1	5	0	6	30
Approach %	90.9	0.0	9.1	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	16.7	83.3	0.0		
Total %	66.7	0.0	6.7	0.0	73.3	0.0	6.7	0.0	0.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0	3.3	16.7	0.0	20.0	
Exiting Leg Total	5					3					0					22					30

Peak Hour Analysis from 07:30 AM to 09:30 AM begins a

8:00 AM	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
8:00 AM	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
8:15 AM	5	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	6
8:30 AM	3	0	1	0	4	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	6
8:45 AM	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
Total Volume	14	0	1	0	15	0	2	0	0	2	0	0	0	0	0	0	0	2	0	2	19
% Approach Total	93.3	0.0	6.7	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.700	0.000	0.250	0.000	0.750	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.792
Entering Leg	14	0	1	0	15	0	2	0	0	2	0	0	0	0	0	0	0	2	0	2	19
Exiting Leg	2					1					0					16					19
Total	17					3					0					18					38

PDI File #: **175894 (30) am**
 Location: **S: Columbia Street**
 Location: **E: Windsor Place W: Columbia Street SW: Auto Parts Driveway**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Buses

	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
7:30 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Approach %	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	0					0					0					1					1

Peak Hour Analysis from 07:30 AM to 09:30 AM begins a

7:30 AM	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
7:30 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Approach Total	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Exiting Leg	0					0					0					1					1
Total	1					0					0					1					2

PDI File #: **175894 (30) am**
 Location: **S: Columbia Street**
 Location: **E: Windsor Place W: Columbia Street SW: Auto Parts Driveway**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Bicycles (on Roadway and Crosswalks)

	Windsor Place							Columbia Street							Auto Parts Driveway							Columbia Street							Total	
	East							South							Southwest							West								
	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	U-Turn	CW-NB	CW-SB	Total		
7:30 AM	4	0	0	0	0	0	4	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	7
7:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
Total	4	0	0	0	0	0	4	1	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	2	0	0	0	3	9
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	
8:15 AM	2	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	4	7	
8:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	3	0	0	0	5	7	
8:45 AM	3	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	4	7	
Total	5	0	1	0	0	0	6	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	5	9	0	0	0	14	22	
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	8	8	
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0	0	0	6	6	
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	8	0	0	0	14	14	
Grand Total	9	0	1	0	0	0	10	3	1	0	0	0	0	4	0	0	0	0	0	0	0	0	12	19	0	0	0	31	45	
Approach %	90.0	0.0	10.0	0.0	0.0	0.0		75.0	25.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	38.7	61.3	0.0	0.0	0.0			
Total %	20.0	0.0	2.2	0.0	0.0	0.0	22.2	6.7	2.2	0.0	0.0	0.0	0.0	8.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.7	42.2	0.0	0.0	0.0	68.9		
Exiting Leg Total	22							13							0							10							45	

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:15 AM	Windsor Place							Columbia Street							Auto Parts Driveway							Columbia Street							Total	
	East							South							Southwest							West								
	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	U-Turn	CW-NB	CW-SB	Total		
8:15 AM	2	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	4	7
8:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	3	0	0	0	5	7
8:45 AM	3	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	4	7
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	8	8
Total Volume	5	0	1	0	0	0	6	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	9	12	0	0	0	21	29
% Approach Total	83.3	0.0	16.7	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	42.9	57.1	0.0	0.0	0.0			
PHF	0.417	0.000	0.250	0.000	0.000	0.000	0.500	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.563	0.750	0.000	0.000	0.000	0.656	0.906	
Entering Leg	5	0	1	0	0	0	6	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	9	12	0	0	0	21	29	
Exiting Leg	14							10							0							5							29	
Total	20							12							0							26							58	

PDI File #: **175894 (30) am**
 Location: **S: Columbia Street**
 Location: **E: Windsor Place W: Columbia Street SW: Auto Parts Driveway**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **7:30 AM**
 End Time: **9:30 AM**
 Class:



Pedestrians

	Windsor Place							Columbia Street							Auto Parts Driveway							Columbia Street							Total
	East							South							Southwest							West							
	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	3	0	3	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Total	0	0	0	0	3	0	3	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
8:00 AM	0	0	0	0	0	1	1	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:15 AM	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:30 AM	0	0	0	0	2	0	2	0	0	0	0	4	0	4	0	0	0	0	1	0	1	0	0	0	0	0	0	0	7
8:45 AM	0	0	0	0	1	1	2	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	4
Total	0	0	0	0	6	2	8	0	0	0	0	5	2	7	0	0	0	0	2	0	2	0	0	0	0	0	0	0	17
9:00 AM	0	0	0	0	4	2	6	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2
Total	0	0	0	0	4	2	6	0	0	0	0	0	3	3	0	0	0	0	0	1	1	0	0	0	0	0	0	0	10
Grand Total	0	0	0	0	13	4	17	0	0	0	0	6	6	12	0	0	0	0	2	1	3	0	0	0	0	0	0	0	32
Approach %	0.0	0.0	0.0	0.0	76.5	23.5		0.0	0.0	0.0	0.0	50.0	50.0		0.0	0.0	0.0	0.0	66.7	33.3		0.0	0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	40.6	12.5	53.1	0.0	0.0	0.0	0.0	18.8	18.8	37.5	0.0	0.0	0.0	0.0	6.3	3.1	9.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	17							12							3							0							32

Peak Hour Analysis from 07:30 AM to 09:30 AM begins at:

8:15 AM	Windsor Place							Columbia Street							Auto Parts Driveway							Columbia Street							Total
	East							South							Southwest							West							
	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
8:15 AM	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:30 AM	0	0	0	0	2	0	2	0	0	0	0	4	0	4	0	0	0	0	1	0	1	0	0	0	0	0	0	0	7
8:45 AM	0	0	0	0	1	1	2	0	0	0	0	0	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	4
9:00 AM	0	0	0	0	4	2	6	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Total Volume	0	0	0	0	10	3	13	0	0	0	0	4	3	7	0	0	0	0	2	0	2	0	0	0	0	0	0	0	22
% Approach Total	0.0	0.0	0.0	0.0	76.9	23.1		0.0	0.0	0.0	0.0	57.1	42.9		0.0	0.0	0.0	0.0	100.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.625	0.375	0.542	0.000	0.000	0.000	0.000	0.250	0.375	0.438	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.688	
Entering Leg	0	0	0	0	10	3	13	0	0	0	0	4	3	7	0	0	0	0	2	0	2	0	0	0	0	0	0	0	22
Exiting Leg	13							7							2							0							22
Total	26							14							4							0							44

PDI File #: **175894 (30) pm**
 Location: **S: Columbia Street**
 Location: **E: Windsor Place W: Columbia Street SW: Auto Parts Driveway**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**



Cars and Heavy Vehicles (Combined)

	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
4:30 PM	44	0	5	0	49	7	14	1	0	22	0	0	0	0	0	0	3	9	0	12	83
4:45 PM	32	0	12	1	45	3	15	0	0	18	0	0	0	0	0	0	3	9	0	12	75
Total	76	0	17	1	94	10	29	1	0	40	0	0	0	0	0	0	6	18	0	24	158
5:00 PM	33	0	11	0	44	4	10	0	0	14	0	0	0	0	0	0	1	6	0	7	65
5:15 PM	30	0	7	0	37	10	15	0	0	25	0	0	0	0	0	0	1	7	0	8	70
5:30 PM	52	0	2	0	54	6	8	0	0	14	0	0	0	0	0	0	0	3	0	3	71
5:45 PM	34	0	3	0	37	1	7	0	0	8	0	0	0	0	0	0	0	6	0	6	51
Total	149	0	23	0	172	21	40	0	0	61	0	0	0	0	0	0	2	22	0	24	257
6:00 PM	40	0	7	0	47	6	18	0	1	25	0	0	0	0	0	0	1	1	0	2	74
6:15 PM	45	0	4	0	49	4	13	0	0	17	0	0	0	0	0	0	0	10	0	10	76
Total	85	0	11	0	96	10	31	0	1	42	0	0	0	0	0	0	1	11	0	12	150
Grand Total	310	0	51	1	362	41	100	1	1	143	0	0	0	0	0	0	9	51	0	60	565
Approach %	85.6	0.0	14.1	0.3		28.7	69.9	0.7	0.7		0.0	0.0	0.0	0.0		0.0	15.0	85.0	0.0		
Total %	54.9	0.0	9.0	0.2	64.1	7.3	17.7	0.2	0.2	25.3	0.0	0.0	0.0	0.0	0.0	0.0	1.6	9.0	0.0	10.6	
Exiting Leg Total	93					61					1					410					565
Cars	301	0	50	1	352	41	98	1	1	141	0	0	0	0	0	0	9	45	0	54	547
% Cars	97.1	0.0	98.0	100.0	97.2	100.0	98.0	100.0	100.0	98.6	0.0	0.0	0.0	0.0	0.0	0.0	100.0	88.2	0.0	90.0	96.8
Exiting Leg Total	87					60					1					399					547
Heavy Vehicles	9	0	1	0	10	0	2	0	0	2	0	0	0	0	0	0	0	6	0	6	18
% Heavy Vehicles	2.9	0.0	2.0	0.0	2.8	0.0	2.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8	0.0	10.0	3.2
Exiting Leg Total	6					1					0					11					18

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
4:30 PM	44	0	5	0	49	7	14	1	0	22	0	0	0	0	0	0	3	9	0	12	83
4:45 PM	32	0	12	1	45	3	15	0	0	18	0	0	0	0	0	0	3	9	0	12	75
5:00 PM	33	0	11	0	44	4	10	0	0	14	0	0	0	0	0	0	1	6	0	7	65
5:15 PM	30	0	7	0	37	10	15	0	0	25	0	0	0	0	0	0	1	7	0	8	70
Total Volume	139	0	35	1	175	24	54	1	0	79	0	0	0	0	0	0	8	31	0	39	293
% Approach Total	79.4	0.0	20.0	0.6		30.4	68.4	1.3	0.0		0.0	0.0	0.0	0.0		0.0	20.5	79.5	0.0		
PHF	0.790	0.000	0.729	0.250	0.893	0.600	0.900	0.250	0.000	0.790	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.861	0.000	0.813	0.883
Cars	134	0	34	1	169	24	53	1	0	78	0	0	0	0	0	0	8	27	0	35	282
Cars %	96.4	0.0	97.1	100.0	96.6	100.0	98.1	100.0	0.0	98.7	0.0	0.0	0.0	0.0	0.0	0.0	100.0	87.1	0.0	89.7	96.2
Heavy Vehicles	5	0	1	0	6	0	1	0	0	1	0	0	0	0	0	0	0	4	0	4	11
Heavy Vehicles %	3.6	0.0	2.9	0.0	3.4	0.0	1.9	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.9	0.0	10.3	3.8
Cars Enter Leg	134	0	34	1	169	24	53	1	0	78	0	0	0	0	0	0	8	27	0	35	282
Heavy Enter Leg	5	0	1	0	6	0	1	0	0	1	0	0	0	0	0	0	0	4	0	4	11
Total Entering Leg	139	0	35	1	175	24	54	1	0	79	0	0	0	0	0	0	8	31	0	39	293
Cars Exiting Leg					52					42					1					187	282
Heavy Exiting Leg					4					1					0					6	11
Total Exiting Leg					56					43					1					193	293

PDI File #: **175894 (30) pm**
 Location: **S: Columbia Street**
 Location: **E: Windsor Place W: Columbia Street SW: Auto Parts Driveway**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Cars

	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
4:30 PM	42	0	5	0	47	7	13	1	0	21	0	0	0	0	0	0	3	9	0	12	80
4:45 PM	30	0	11	1	42	3	15	0	0	18	0	0	0	0	0	0	3	7	0	10	70
Total	72	0	16	1	89	10	28	1	0	39	0	0	0	0	0	0	6	16	0	22	150
5:00 PM	32	0	11	0	43	4	10	0	0	14	0	0	0	0	0	0	1	5	0	6	63
5:15 PM	30	0	7	0	37	10	15	0	0	25	0	0	0	0	0	0	1	6	0	7	69
5:30 PM	51	0	2	0	53	6	8	0	0	14	0	0	0	0	0	0	0	3	0	3	70
5:45 PM	32	0	3	0	35	1	7	0	0	8	0	0	0	0	0	0	0	6	0	6	49
Total	145	0	23	0	168	21	40	0	0	61	0	0	0	0	0	0	2	20	0	22	251
6:00 PM	39	0	7	0	46	6	17	0	1	24	0	0	0	0	0	0	1	0	0	1	71
6:15 PM	45	0	4	0	49	4	13	0	0	17	0	0	0	0	0	0	0	9	0	9	75
Total	84	0	11	0	95	10	30	0	1	41	0	0	0	0	0	0	1	9	0	10	146
Grand Total	301	0	50	1	352	41	98	1	1	141	0	0	0	0	0	0	9	45	0	54	547
Approach %	85.5	0.0	14.2	0.3		29.1	69.5	0.7	0.7		0.0	0.0	0.0	0.0		0.0	16.7	83.3	0.0		
Total %	55.0	0.0	9.1	0.2	64.4	7.5	17.9	0.2	0.2	25.8	0.0	0.0	0.0	0.0	0.0	0.0	1.6	8.2	0.0	9.9	
Exiting Leg Total	87					60					1					399					547

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
4:30 PM	42	0	5	0	47	7	13	1	0	21	0	0	0	0	0	0	3	9	0	12	80
4:45 PM	30	0	11	1	42	3	15	0	0	18	0	0	0	0	0	0	3	7	0	10	70
5:00 PM	32	0	11	0	43	4	10	0	0	14	0	0	0	0	0	0	1	5	0	6	63
5:15 PM	30	0	7	0	37	10	15	0	0	25	0	0	0	0	0	0	1	6	0	7	69
Total Volume	134	0	34	1	169	24	53	1	0	78	0	0	0	0	0	0	8	27	0	35	282
% Approach Total	79.3	0.0	20.1	0.6		30.8	67.9	1.3	0.0		0.0	0.0	0.0	0.0		0.0	22.9	77.1	0.0		
PHF	0.798	0.000	0.773	0.250	0.899	0.600	0.883	0.250	0.000	0.780	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.750	0.000	0.729	0.881
Entering Leg	134	0	34	1	169	24	53	1	0	78	0	0	0	0	0	0	8	27	0	35	282
Exiting Leg	52					42					1					187					282
Total	221					120					1					222					564

PDI File #: **175894 (30) pm**
 Location: **S: Columbia Street**
 Location: **E: Windsor Place W: Columbia Street SW: Auto Parts Driveway**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**



Heavy Vehicles (Combined-Large Trucks and Buses)

	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
4:30 PM	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
4:45 PM	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	5
Total	4	0	1	0	5	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	8
5:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	6
6:00 PM	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	3
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	4
Grand Total	9	0	1	0	10	0	2	0	0	2	0	0	0	0	0	0	0	6	0	6	18
Approach %	90.0	0.0	10.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	50.0	0.0	5.6	0.0	55.6	0.0	11.1	0.0	0.0	11.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	33.3	
Exiting Leg Total	6					1					0					11					18
Large Trucks	8	0	1	0	9	0	2	0	0	2	0	0	0	0	0	0	0	5	0	5	16
% Large Trucks	88.9	0.0	100.0	0.0	90.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	83.3	0.0	83.3	88.9
Exiting Leg Total	5					1					0					10					16
Buses	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
% Buses	11.1	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0	16.7	11.1
Exiting Leg Total	1					0					0					1					2

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

4:30 PM	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
4:30 PM	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
4:45 PM	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	5
5:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	5	0	1	0	6	0	1	0	0	1	0	0	0	0	0	0	0	4	0	4	11
% Approach Total	83.3	0.0	16.7	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.625	0.000	0.250	0.000	0.500	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.550
Large Trucks	4	0	1	0	5	0	1	0	0	1	0	0	0	0	0	0	0	3	0	3	9
Large Trucks %	80.0	0.0	100.0	0.0	83.3	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.0	0.0	75.0	81.8
Buses	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Buses %	20.0	0.0	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	25.0	18.2
Trucks Enter Leg	4	0	1	0	5	0	1	0	0	1	0	0	0	0	0	0	0	3	0	3	9
Bus Enter Leg	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Total Entering Leg	5	0	1	0	6	0	1	0	0	1	0	0	0	0	0	0	0	4	0	4	11
Trucks Exiting Leg					3					1					0					5	9
Buses Exiting Leg					1					0					0					1	2
Total Exiting Leg					4					1					0					6	11

PDI File #: **175894 (30) pm**
 Location: **S: Columbia Street**
 Location: **E: Windsor Place W: Columbia Street SW: Auto Parts Driveway**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Large Trucks

	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
4:30 PM	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
4:45 PM	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4
Total	3	0	1	0	4	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	7
5:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5
6:00 PM	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	3
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	4
Grand Total	8	0	1	0	9	0	2	0	0	2	0	0	0	0	0	0	0	5	0	5	16
Approach %	88.9	0.0	11.1	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	50.0	0.0	6.3	0.0	56.3	0.0	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.3	0.0	31.3	
Exiting Leg Total	5					1					0					10					16

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at

4:30 PM	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
4:30 PM	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
4:45 PM	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	4
5:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	4	0	1	0	5	0	1	0	0	1	0	0	0	0	0	0	0	3	0	3	9
% Approach Total	80.0	0.0	20.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.500	0.000	0.250	0.000	0.625	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.375	0.563
Entering Leg	4	0	1	0	5	0	1	0	0	1	0	0	0	0	0	0	0	3	0	3	9
Exiting Leg	3					1					0					5					9
Total	8					2					0					8					18

PDI File #: **175894 (30) pm**
 Location: **S: Columbia Street**
 Location: **E: Windsor Place W: Columbia Street SW: Auto Parts Driveway**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Buses

	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Approach %	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
Total %	50.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	50.0	
Exiting Leg Total	1					0					0					1					2

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at

4:30 PM	Windsor Place					Columbia Street					Auto Parts Driveway					Columbia Street					Total
	East					South					Southwest					West					
	Thru	Bear Left	Left	U-Turn	Total	Right	Left	Hard Left	U-Turn	Total	Hard Right	Bear Right	Hard Left	U-Turn	Total	Hard Right	Right	Thru	U-Turn	Total	
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
% Approach Total	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0		
PHF	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.500
Entering Leg	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Exiting Leg					1					0					0					1	2
Total					2					0					0					2	4

PDI File #: **175894 (30) pm**
 Location: **S: Columbia Street**
 Location: **E: Windsor Place W: Columbia Street SW: Auto Parts Driveway**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Bicycles (on Roadway and Crosswalks)

	Windsor Place							Columbia Street							Auto Parts Driveway							Columbia Street							Total
	East							South							Southwest							West							
	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
4:30 PM	0	0	1	0	0	0	1	1	2	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
4:45 PM	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
Total	2	0	1	0	0	0	3	1	2	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
5:00 PM	5	0	0	0	0	0	5	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	7	
5:15 PM	0	0	0	0	0	2	2	0	10	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	12	
5:30 PM	3	0	0	0	0	0	3	0	5	0	0	0	0	5	0	0	0	0	1	0	1	0	0	0	0	0	0	9	
5:45 PM	4	0	0	0	0	0	4	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	1	7	
Total	12	0	0	0	0	2	14	0	18	0	0	0	0	18	0	0	0	0	1	0	1	0	1	1	0	0	2	35	
6:00 PM	1	0	1	0	0	0	2	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
6:15 PM	3	0	0	0	0	0	3	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	1	0	0	1	8	
Total	4	0	1	0	0	0	5	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0	0	1	0	0	1	11	
Grand Total	18	0	2	0	0	2	22	1	25	0	0	0	0	26	0	0	0	0	1	0	1	0	1	2	0	0	3	52	
Approach %	81.8	0.0	9.1	0.0	0.0	9.1		3.8	96.2	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	33.3	66.7	0.0	0.0	0.0		
Total %	34.6	0.0	3.8	0.0	0.0	3.8	42.3	1.9	48.1	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	1.9	0.0	1.9	0.0	1.9	3.8	0.0	0.0	0.0	5.8	
Exiting Leg Total	5							3							1							43							52

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:00 PM	Windsor Place							Columbia Street							Auto Parts Driveway							Columbia Street							Total	
	East							South							Southwest							West								
	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	U-Turn	CW-NB	CW-SB	Total		
5:00 PM	5	0	0	0	0	0	5	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	7
5:15 PM	0	0	0	0	0	2	2	0	10	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
5:30 PM	3	0	0	0	0	0	3	0	5	0	0	0	0	5	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	9
5:45 PM	4	0	0	0	0	0	4	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	1	7	
Total Volume	12	0	0	0	0	2	14	0	18	0	0	0	0	18	0	0	0	0	1	0	1	0	1	1	0	0	0	2	35	
% Approach Total	85.7	0.0	0.0	0.0	0.0	14.3		0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		0.0	50.0	50.0	0.0	0.0	0.0			
PHF	0.600	0.000	0.000	0.000	0.000	0.250	0.700	0.000	0.450	0.000	0.000	0.000	0.000	0.450	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.250	0.250	0.000	0.000	0.000	0.500	0.729	
Entering Leg	12	0	0	0	0	2	14	0	18	0	0	0	0	18	0	0	0	0	1	0	1	0	1	1	0	0	0	2	35	
Exiting Leg	3							1							1							30							35	
Total	17							19							2							32							70	

PDI File #: **175894 (30) pm**
 Location: **S: Columbia Street**
 Location: **E: Windsor Place W: Columbia Street SW: Auto Parts Driveway**
 City, State: **Somerville, MA**
 Client: **USSA/ J. Kunz**
 Site Code: **TBA**
 Count Date: **Thursday, October 5, 2017**
 Start Time: **4:30 PM**
 End Time: **6:30 PM**
 Class:



Pedestrians

	Windsor Place							Columbia Street							Auto Parts Driveway							Columbia Street							Total
	East							South							Southwest							West							
	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
4:30 PM	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	1	1	0	0	0	0	2	1	3	0	0	0	0	1	3	4	0	0	0	0	0	0	0	8
Total	0	0	0	0	0	2	2	0	0	0	0	2	2	4	0	0	0	0	1	3	4	0	0	0	0	0	0	0	10
5:00 PM	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	3
5:15 PM	0	0	0	0	6	2	8	0	0	0	0	6	2	8	0	0	0	0	0	1	1	0	0	0	0	0	0	0	17
5:30 PM	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4	
5:45 PM	0	0	0	0	0	9	9	0	0	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	15	
Total	0	0	0	0	8	14	22	0	0	0	0	6	8	14	0	0	0	0	0	2	2	0	0	0	0	0	1	1	39
6:00 PM	0	0	0	0	0	1	1	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4
6:15 PM	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
Total	0	0	0	0	0	3	3	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	6
Grand Total	0	0	0	0	8	19	27	0	0	0	0	9	11	20	0	0	0	0	1	5	6	0	0	0	0	1	1	2	55
Approach %	0.0	0.0	0.0	0.0	29.6	70.4		0.0	0.0	0.0	0.0	45.0	55.0		0.0	0.0	0.0	0.0	16.7	83.3		0.0	0.0	0.0	0.0	50.0	50.0		
Total %	0.0	0.0	0.0	0.0	14.5	34.5	49.1	0.0	0.0	0.0	0.0	16.4	20.0	36.4	0.0	0.0	0.0	0.0	1.8	9.1	10.9	0.0	0.0	0.0	0.0	1.8	1.8	3.6	
Exiting Leg Total	27							20							6							2							55

Peak Hour Analysis from 04:30 PM to 06:30 PM begins at:

5:15 PM	Windsor Place							Columbia Street							Auto Parts Driveway							Columbia Street							Total
	East							South							Southwest							West							
	Thru	Bear Left	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	Hard Left	U-Turn	CW-WB	CW-EB	Total	Hard Right	Bear Right	Hard Left	U-Turn	CW-NWB	CW-SEB	Total	Hard Right	Right	Thru	U-Turn	CW-NB	CW-SB	Total	
5:15 PM	0	0	0	0	6	2	8	0	0	0	0	6	2	8	0	0	0	0	0	1	1	0	0	0	0	0	0	0	17
5:30 PM	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4	
5:45 PM	0	0	0	0	0	9	9	0	0	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	15	
6:00 PM	0	0	0	0	0	1	1	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4
Total Volume	0	0	0	0	7	14	21	0	0	0	0	7	9	16	0	0	0	0	0	1	1	0	0	0	0	1	1	2	40
% Approach Total	0.0	0.0	0.0	0.0	33.3	66.7		0.0	0.0	0.0	0.0	43.8	56.3		0.0	0.0	0.0	0.0	0.0	100.0		0.0	0.0	0.0	0.0	50.0	50.0		
PHF	0.000	0.000	0.000	0.000	0.292	0.389	0.583	0.000	0.000	0.000	0.000	0.292	0.375	0.500	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.250	0.250	0.500	0.588
Entering Leg	0	0	0	0	7	14	21	0	0	0	0	7	9	16	0	0	0	0	0	1	1	0	0	0	0	1	1	2	40
Exiting Leg	21							16							1							2							40
Total	42							32							2							4							80

Client: Patrick T. Dunford
 Project #: 83168.17_102_010_VHB
 BTM #: Location 1
 Location: Somerville, MA
 Street 1: South Street
 Street 2: Windsor Street
 Count Date: 9/7/2017
 Day of Week: Thursday
 Weather: Rain/Clouds/Some Sun, 70°F

BOSTON

TRAFFIC DATA

PO BOX 1723, Framingham, MA 01701
 Office: 978-746-1259
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TOTAL (CARS & TRUCKS)

Hourly Counts (AM & PM)																
Windsor Street Northbound					Windsor Street Southbound				Eastbound				South Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	2	2	0	2	4	0	0	0	0	0	0	42	0	22
7:15 AM	0	0	5	3	0	2	5	0	0	0	0	0	0	50	0	32
7:30 AM	0	0	7	2	0	3	4	0	0	0	0	0	0	56	0	40
7:45 AM	0	0	6	3	0	3	3	0	0	0	0	0	0	54	0	44
8:00 AM	0	0	5	2	0	4	4	0	0	0	0	0	0	49	0	46
8:15 AM	0	0	5	3	0	2	3	0	0	0	0	0	0	48	0	44
8:30 AM	0	0	4	2	0	4	3	0	0	0	0	0	0	46	0	41
8:45 AM	0	0	5	2	0	2	2	0	0	0	0	0	0	43	0	37

Windsor Street Northbound					Windsor Street Southbound					Eastbound				South Street Westbound		
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	4	2	0	7	3	0	0	0	0	0	0	32	0	31
4:15 PM	0	0	5	2	0	8	4	0	0	0	0	0	0	37	0	32
4:30 PM	0	0	6	1	0	7	5	0	0	0	0	0	0	41	0	31
4:45 PM	0	0	7	2	0	5	4	0	0	0	0	0	0	44	0	39
5:00 PM	0	0	8	2	1	12	9	0	0	0	0	0	0	42	0	45
5:15 PM	0	0	8	3	0	18	13	0	0	0	0	0	0	40	0	44
5:30 PM	0	0	7	2	0	14	11	0	0	0	0	0	0	37	0	42
5:45 PM	0	0	8	1	0	10	8	0	0	0	0	0	0	35	0	38

AM PEAK HOUR		Windsor Street Northbound				Windsor Street Southbound				Eastbound				South Street Westbound			
7:30 AM to 8:30 AM		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
		0	0	23	10	0	12	14	0	0	0	0	0	0	207	0	174
PHF		0.92				0.81				0.00				0.97			
HV %		0.0%	0.0%	4.3%	10.0%	0.0%	0.0%	14.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.7%	0.0%	2.9%

PM PEAK HOUR		Windsor Street Northbound				Windsor Street Southbound				Eastbound				South Street Westbound			
4:45 PM to 5:45 PM		U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
		0	0	30	9	1	49	37	0	0	0	0	0	0	163	0	170
PHF		0.89				0.70				0.00				0.96			
HV %		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%

Client: Patrick T. Dunford
 Project #: 83168.17_102_010_VHB
 BTM #: Location 1
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BOSTON

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TRUCKS

Windsor Street Northbound					Windsor Street Southbound					Eastbound					South Street Westbound		
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	1	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	3	
7:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	6	0	2	
7:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	5	0	0	
8:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	2	
8:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	3	0	1	
8:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	1	
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	

Windsor Street Northbound					Windsor Street Southbound				Eastbound				South Street Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
4:30 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

AM PEAK HOUR 7:00 AM to 8:00 AM <i>PHF</i>	Windsor Street Northbound				Windsor Street Southbound				Eastbound				South Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	0	1	0	0	0	1	0	0	0	0	0	0	20	0	6
0.25				0.25				0.00				0.81				

PM PEAK HOUR 4:15 PM to 5:15 PM <i>PHF</i>	Windsor Street Northbound				Windsor Street Southbound				Eastbound				South Street Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	0	1	0	0	0	5	0	0	0	0	0	0	1	0	1
0.25				0.63				#DIV/0!				0.50				

Client: Patrick T. Dunford
 Project #: 83168.17_102_010_VHB
 BTM #: Location 1
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 Street 1: South Street
 Street 2: Windsor Street
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 Day of Week: Thursday
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PEDESTRIANS & BICYCLES

Windsor Street Northbound					Windsor Street Southbound					Eastbound					South Street Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED
7:00 AM	0	0	0	0		1	0	0	0		0	0	0	0		0	0	0	1
7:15 AM	0	0	1	0		0	0	0	1		0	0	0	0		0	0	0	0
7:30 AM	0	1	0	0		1	1	0	0		0	0	0	0		0	0	1	0
7:45 AM	0	0	0	0		0	0	0	1		0	0	0	0		0	0	0	0
8:00 AM	0	0	1	0		0	1	0	0		0	0	0	0		0	0	0	2
8:15 AM	0	0	0	0		1	0	0	0		0	0	0	0		0	0	0	0
8:30 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	1
8:45 AM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0

Windsor Street Northbound					Windsor Street Southbound					Eastbound					South Street Westbound				
Start Time	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED
4:00 PM	0	0	2	0		1	1	0	0		0	0	0	0		0	0	1	1
4:15 PM	0	1	0	0		0	0	0	0		0	0	0	0		0	0	0	0
4:30 PM	0	0	1	0		0	1	0	0		0	0	0	0		0	0	2	4
4:45 PM	0	0	0	0		1	0	0	0		0	0	0	0		0	0	0	2
5:00 PM	0	0	1	0		0	0	0	1		0	0	0	0		0	0	0	0
5:15 PM	0	1	2	0		0	1	0	0		0	0	0	0		0	0	1	1
5:30 PM	0	0	0	0		1	0	0	0		0	0	0	0		0	0	0	2
5:45 PM	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0

AM PEAK HOUR ¹ 7:30 AM to 8:30 AM	Windsor Street Northbound				Windsor Street Southbound					Eastbound					South Street Westbound				
	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED
	0	1	1	0		2	2	0	1		0	0	0	0		0	0	1	2

PM PEAK HOUR ¹ 4:45 PM to 5:45 PM	Windsor Street Northbound					Windsor Street Southbound					Eastbound					South Street Westbound				
	Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED		Left	Thru	Right	PED	
	0	1	3	0		2	1	0	1		0	0	0	0		0	0	1	5	

¹ Peak hours corresponds to vehicular peak hours.



Location: Webster Ave & Newton St

Date: 10/4/2017

Site Code: 14523209

Start Time	Webster Ave Southbound				Newton St Westbound				Webster Ave Northbound				Newton St Eastbound			
	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns
7:30 AM	25	118	7	0	0	0	0	0	3	37	2	0	12	0	16	0
7:45 AM	35	107	5	0	0	0	0	0	0	38	2	0	26	1	13	0
8:00 AM	17	87	1	0	0	0	0	0	0	29	3	0	24	0	9	0
8:15 AM	20	111	0	0	0	0	0	0	0	24	1	0	17	0	14	0
8:30 AM	9	100	0	0	0	0	0	0	1	23	1	0	13	0	9	0
8:45 AM	25	120	1	0	0	0	0	0	0	17	2	0	12	0	5	0
9:00 AM	17	119	0	0	0	0	0	0	0	27	2	0	12	1	9	0
9:15 AM	27	104	2	0	0	0	0	0	0	24	3	0	14	0	6	0
Total	175	866	16	0	0	0	0	0	4	219	16	0	130	2	81	0

Vehicles

Peak Hour: 7:30 AM - 8:30 AM

Peak 15: 7:45 AM - 8:00 AM

PHF: 0.885463

7:30 - 8:30 am	97	423	13	0
PHF	0.89			
HV	3	9	0	0
HV%	3%	2%	0%	

3	128	8	0	79	1	52	0
0.83				0.83			
0	4	0	0	0	0	0	0
0%	3%	0%		0%	0%	0%	



Location: Webster Ave & Newton St

Date: 10/4/2017

Site Code: 14523209

	Webster Ave Southbound					Newton St Westbound					Webster Ave Northbound					Newton St Eastbound						
Start Time	Right	Thru	Left	Peds	Bikes in Crosswalk	Right	Thru	Left	Peds	Bikes in Crosswalk	Right	Thru	Left	Peds	Bikes in Crosswalk	Right	Thru	Left	Peds	Bikes in Crosswalk	bike sum	ped sum
7:30 AM	1	11	0	22	2	0	0	0	6	0	0	3	0	0	0	3	0	0	12	0	20	40
7:45 AM	0	33	0	8	0	0	2	0	7	0	0	0	0	0	0	2	0	0	15	0	37	30
8:00 AM	2	26	0	14	0	0	0	0	5	1	0	0	0	0	0	4	0	0	21	0	33	40
8:15 AM	0	59	0	7	0	0	0	0	4	0	0	0	0	0	1	2	0	0	14	1	63	25
8:30 AM	2	48	0	7	0	0	2	1	3	0	0	3	0	0	0	1	0	0	18	0	57	28
8:45 AM	2	52	0	4	0	0	0	0	5	0	0	4	0	0	0	3	2	0	20	0	63	29
9:00 AM	1	41	0	4	0	0	0	0	5	0	0	1	0	0	0	0	0	0	15	0	43	24
9:15 AM	2	41	0	4	0	0	1	0	9	0	0	1	0	1	0	3	0	2	14	0	50	28
Total	10	311	0	70	2	0	5	1	44	1	0	12	0	1	1	18	2	2	129	1		

bike

8:15 - 9:15 am	5	200	0	0	0	2	1	0	0	8	0	1	6	2	0	1

ped

7:30 - 8:30 am			51				22			0				62



Location: Webster Ave & Newton St

Date: 10/4/2017

Site Code: 14523210

Start Time	Webster Ave Southbound				Newton St Westbound				Webster Ave Northbound				Newton St Eastbound			
	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns	Right	Thru	Left	U-Turns
4:30 PM	8	61	1	0	0	0	0	0	1	72	3	0	9	1	20	0
4:45 PM	14	67	3	0	0	0	0	0	0	68	4	0	9	0	13	0
5:00 PM	13	71	0	0	0	0	0	0	0	60	2	0	14	3	14	0
5:15 PM	22	49	0	0	0	0	0	0	0	47	1	0	8	0	22	0
5:30 PM	20	58	2	0	0	0	0	0	4	60	1	0	13	2	32	0
5:45 PM	15	78	1	0	0	0	0	0	2	54	1	0	16	2	17	0
6:00 PM	16	54	3	0	0	0	0	0	0	62	2	0	17	1	20	0
6:15 PM	12	60	0	0	0	0	0	0	1	56	2	0	8	4	11	0
Total	120	498	10	0	0	0	0	0	8	479	16	0	94	13	149	0

Vehicles

Peak Hour: 5:30 PM - 6:30 PM

Peak 15: 5:30 PM - 5:45 PM

PHF: 0.920573

4:30 - 5:30 pm	57	248	4	0
PHF	0.92			
HV	1	0	0	0
HV%	2%	0%	0%	

1	247	10	0	40	4	69	0
0.85				0.91			
0	5	0	0	1	0	0	0
0%	2%	0%		3%	0%	0%	



Location: Webster Ave & Newton St

Date: 10/4/2017

Site Code: 14523210

	Webster Ave Southbound					Newton St Westbound					Webster Ave Northbound					Newton St Eastbound						
Start Time	Right	Thru	Left	Peds	Bikes in Crosswalk	Right	Thru	Left	Peds	Bikes in Crosswalk	Right	Thru	Left	Peds	Bikes in Crosswalk	Right	Thru	Left	Peds	Bikes in Crosswalk	bike sum	ped sum
4:30 PM	1	3	0	6	0	0	0	0	1	0	0	10	1	0	0	0	1	0	20	0	16	27
4:45 PM	0	1	0	9	0	0	0	1	2	0	1	15	2	0	0	0	0	2	28	0	22	39
5:00 PM	3	6	0	4	0	0	0	8	8	1	0	19	1	0	0	0	1	1	28	0	40	40
5:15 PM	1	7	0	6	0	0	1	0	4	1	0	24	0	0	0	0	1	1	39	1	37	49
5:30 PM	1	9	0	8	1	0	1	0	6	1	0	16	0	1	0	1	0	1	24	0	31	39
5:45 PM	2	7	0	5	0	0	0	1	5	3	0	23	1	0	0	0	0	0	28	0	37	38
6:00 PM	2	9	0	7	0	0	2	0	6	0	0	24	1	0	0	1	1	0	35	0	40	48
6:15 PM	4	10	0	3	0	0	0	0	6	0	0	23	0	0	0	1	1	0	27	0	39	36
Total	14	52	0	48	1	0	4	10	38	6	1	154	6	1	0	3	5	5	229	1		

bike

5:30 - 6:30 pm	9	35	0	1	0	3	1	4	0	86	2	0	3	2	1	0

ped

5:15 - 6:15 pm			26				21				1				126



HOWARD STEIN HUDSON

Engineers + Planners

Appendix B

Crash Rate Worksheets

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville, MA COUNT DATE : 10/5/2017

DISTRICT : 6 UNSIGNALIZED : ☐ SIGNALIZED : ☒ **Yes**

~ INTERSECTION DATA ~

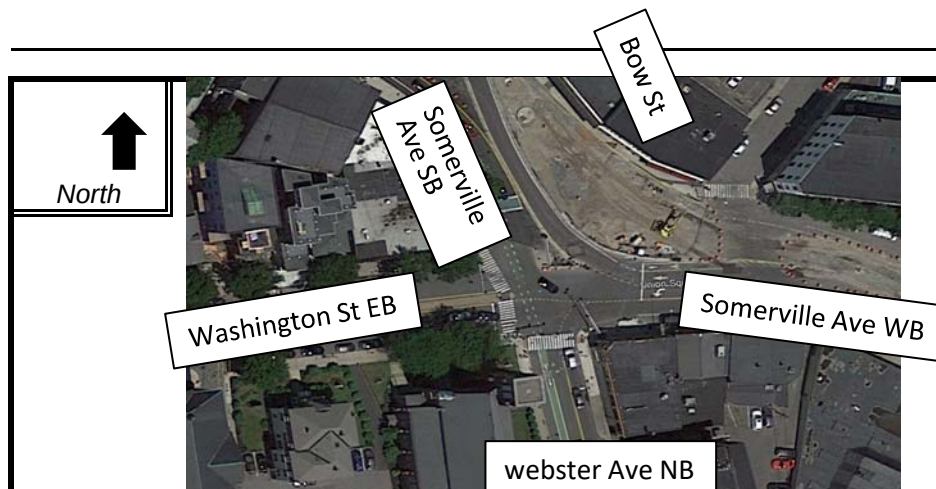
MAJOR STREET : Somerville Avenue/Union Square

MINOR STREET(S) : Webster Avenue

Washington Street

Bow Street

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	360	793	300	487		1,940

" K " FACTOR :

0.090

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

21,556

TOTAL # OF CRASHES :

24

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

4.80

CRASH RATE CALCULATION :

0.61

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

Comments : _____

Project Title & Date: Boynton Gateway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville, MA COUNT DATE : 10/5/2017

DISTRICT : 6 UNSIGNALIZED : ☐ SIGNALIZED : ☒ **Yes**

~ INTERSECTION DATA ~

MAJOR STREET : Somerville Avenue

MINOR STREET(S) : Prospect Street

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	516	224	703	771		2,214

" K " FACTOR :

0.090

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

24,600

TOTAL # OF CRASHES :

27

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

5.40

CRASH RATE CALCULATION :

0.60

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

Comments : _____

Project Title & Date: Boynton Gateway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville, MA COUNT DATE : 10/5/2017

DISTRICT : 6 UNSIGNALIZED : ☐ SIGNALIZED : ☒ **Yes**

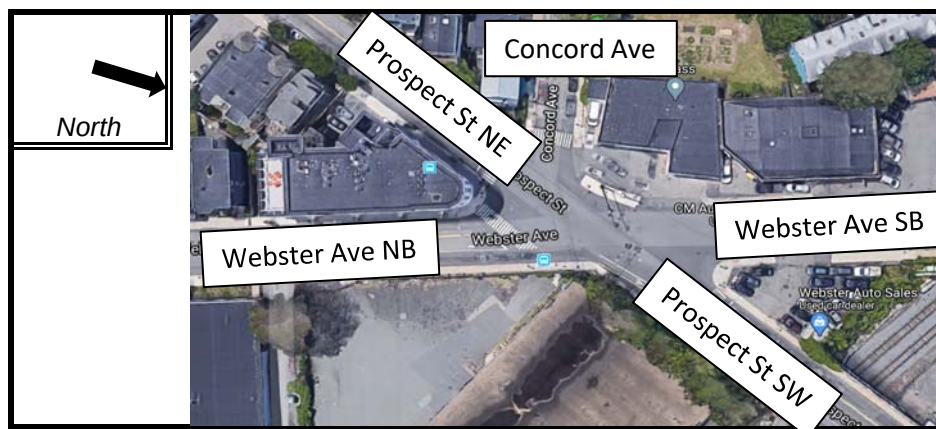
~ INTERSECTION DATA ~

MAJOR STREET : Webster Avenue

MINOR STREET(S) : Prospect Street

Concord Avenue

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	NE	SW		
PEAK HOURLY VOLUMES (AM/PM) :	392	319	585	327		1,623

" K " FACTOR :

0.090

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

18,033

TOTAL # OF CRASHES :

13

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

2.60

CRASH RATE CALCULATION :

0.40

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

Comments : _____

Project Title & Date: Boynton Gateway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville, MA COUNT DATE : 10/5/2017

DISTRICT : 6 UNSIGNALIZED : ☒ **Yes** SIGNALIZED : ☐

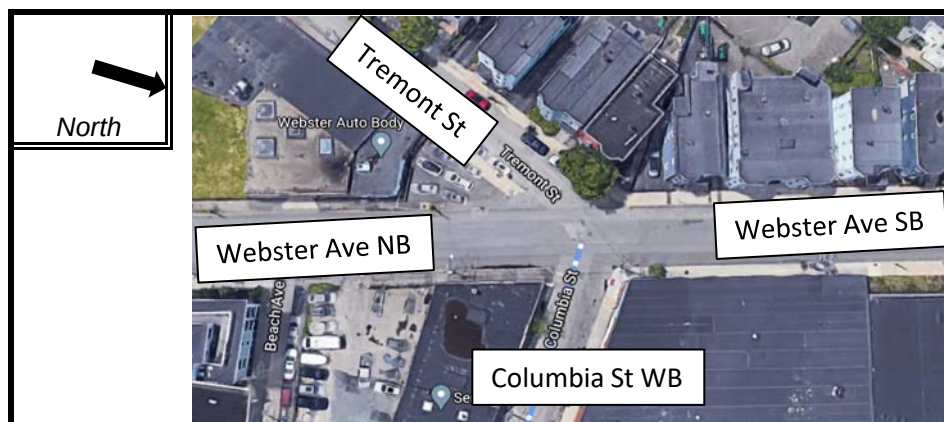
~ INTERSECTION DATA ~

MAJOR STREET : Webster Avenue

MINOR STREET(S) : Tremont Street

Columbia Street

**INTERSECTION
DIAGRAM
(Label Approaches)**



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	WB	NB	SB			
PEAK HOURLY VOLUMES (AM /PM) :	178	250	378			806

" K " FACTOR :

0.090

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

8,956

TOTAL # OF CRASHES :

14

OF YEARS :

5

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

2.80

CRASH RATE CALCULATION :

0.86

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

Comments : _____

Project Title & Date: Boynton Gateway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville, MA COUNT DATE : 10/1/2017

DISTRICT : 6 UNSIGNALIZED : ☒ **Yes** SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Columbia Street

MINOR STREET(S) : Windsor Place

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB			
PEAK HOURLY VOLUMES (AM/PM) :	39	174	78			291

" K " FACTOR :

0.090

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

3,233

TOTAL # OF CRASHES :

3

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

0.60

CRASH RATE CALCULATION :

0.51

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

Comments : _____

Project Title & Date: Boynton Gateway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville, MA COUNT DATE : 10/1/2017

DISTRICT : 6 UNSIGNALIZED : ☒ **Yes** SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Windsor Street

MINOR STREET(S) : South Street

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	WB	NB	SB			
PEAK HOURLY VOLUMES (AM/PM) :	381	33	26			440

" K " FACTOR :

0.090

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

4,889

TOTAL # OF CRASHES :

3

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

0.60

CRASH RATE CALCULATION :

0.34

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

Comments : _____

Project Title & Date: Boynton Gateway

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville, MA COUNT DATE : 10/1/2017

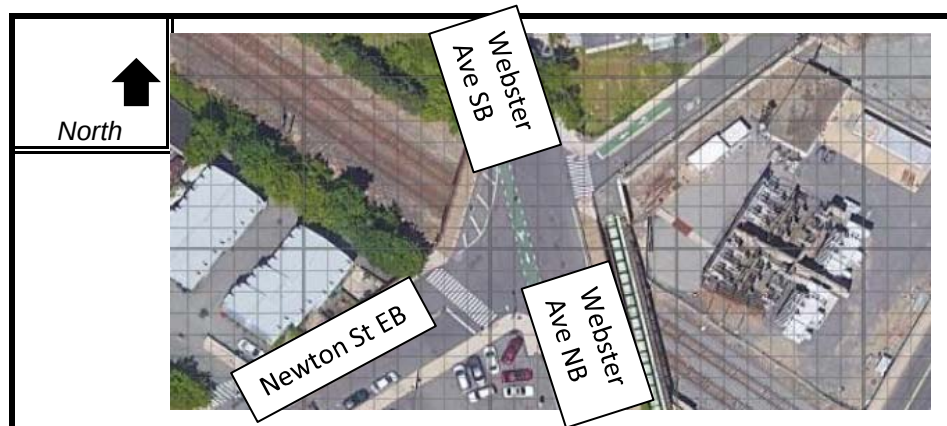
DISTRICT : 6 UNSIGNALIZED : ☒ **Yes** SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Webster Avenue

MINOR STREET(S) : Newton Street

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	NB	SB			
PEAK HOURLY VOLUMES (AM /PM) :	138	150	564			852

" K " FACTOR :

0.090

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

9,467

TOTAL # OF CRASHES :

8

OF YEARS :

5

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

1.60

CRASH RATE CALCULATION :

0.46

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

Comments : _____

Project Title & Date: Boynton Gateway



HOWARD STEIN HUDSON

Engineers + Planners

Appendix C

Trip Generation

Existing Site
Trip Generation Assessment

HOWARD STEIN HUDSON
11-Nov-2020

Land Use		Size	Category	Directional Split	Average Trip Rate	Unadjusted Vehicle Trips	Assumed National Vehicle Occupancy Rate ¹	Unadjusted Person-Trips	Primary Person-Trips	Transit Share	Transit Person-Trips	Walk/Bike/Other Share	Walk/ Bike/ Other Trips	Auto Share	Auto Person-Trips	Primary Auto-Person Trips	Assumed Local Auto Occupancy Rate	Taxi/TNC Auto Trips	Pass-By Auto-Trips	Primary Non-Taxi Auto Trips	Primary AutoTrips
Daily Peak Hour																					
LUC 151 - Mini-Warehouse	10.7	Total			1.510	16	1.18	18	18	0%	0	0%	0	100%	18	18	1.18	0	0	16	16
	KSF	In		50%	0.755	8	1.18	9	9	0%	0	0%	0	100%	9	9	1.18	0	0	8	8
		Out		50%	0.755	8	1.18	9	9	0%	0	0%	0	100%	9	9	1.18	0	0	8	8
LUC 942 - Automobile Care Center	20.2	Total			24.869	502	1.18	592	592	0%	0	0%	0	100%	592	592	1.18	0	0	502	502
	KSF	In		50%	12.435	251	1.18	296	296	0%	0	0%	0	100%	296	296	1.18	0	0	251	251
		Out		50%	12.435	251	1.18	296	296	0%	0	0%	0	100%	296	296	1.18	0	0	251	251
Total		Total				518		610	610		0		0		610			0	0		518
		In				259		305	305		0		0		305			0	0		259
		Out				259		305	305		0		0		305			0	0		259
AM Peak Hour																					
LUC 151 - Mini-Warehouse	10.7	Total			0.10	1	1.18	1	1		0		0		1	1	1.18	0	0	1	1
	KSF	In		60%	0.060	1	1.18	1	1	0%	0	0%	0	100%	1	1	1.18	0	0	1	1
		Out		40%	0.040	0	1.18	0	0	0%	0	0%	0	100%	0	0	1.18	0	0	0	0
LUC 942 - Automobile Care Center	20.2	Total			2.250	45	1.18	53	53		0		0		53	53	1.18	0	0	45	45
	KSF	In		66%	1.485	30	1.18	35	35	0%	0	0%	0	100%	35	35	1.18	0	0	30	30
		Out		34%	0.765	15	1.18	18	18	0%	0	0%	0	100%	18	18	1.18	0	0	15	15
Total		Total				46		54	54		0		0		54			0	0		46
		In				31		36	36		0		0		36			0	0		31
		Out				15		18	18		0		0		18			0	0		15
PM Peak Hour																					
LUC 151 - Mini-Warehouse	10.7	Total			0.17	2	1.18	2	2		0		0		2	2	1.18	0	0	2	2
	KSF	In		47%	0.080	1	1.18	1	1	0%	0	0%	0	100%	1	1	1.18	0	0	1	1
		Out		53%	0.090	1	1.18	1	1	0%	0	0%	0	100%	1	1	1.18	0	0	1	1
LUC 942 - Automobile Care Center	20.2	Total			3.110	63	1.18	74	74		0		0		74	74	1.18	0	0	63	63
	KSF	In		48%	1.493	30	1.18	35	35	0%	0	0%	0	100%	35	35	1.18	0	0	30	30
		Out		52%	1.617	33	1.18	39	39	0%	0	0%	0	100%	39	39	1.18	0	0	33	33
Total		Total				65		76	76		0		0		76			0	0		65
		In				31		36	36		0		0		36			0	0		31
		Out				34		40	40		0		0		40			0	0		34

1. 2017 National vehicle occupancy rates - 1.18:home to work; 1.82: family/personal business; 1.82: shopping; 2.1 social/recreational
2. Based on ITE Trip Generation Handbook, 3rd Edition method

Existing Land (Based on estimates from tax assessor property map)

Auto Service		Storage/Moving	
s.f.	Address	s.f.	Address
4673	64 Webster Ave	10592	495 Columbia Street
2464	513 Columbia Street		
6444	6 Beach Ave		
5390	497 Columbia Street		
18971	Total		

Existing Land (provided by VHB)			
Auto Service		Storage/Moving	
s.f.	Address	s.f.	Address
4650	Parcel B	10674	Parcel 6
1951	Parcel E		
7970	Parcel A		
5643	Parcel D		

Boynton Gateway, Somerville
Trip Generation Assessment

HOWARD STEIN HUDSON
2-Mar-2021

																	Assumed Local				Assumed Local	Total	Total		
				Directional		Average Trip	Unadjusted	Assumed Local	Unadjusted	Primary Person	Transit	Transit	Walk Person	Bike Person	Auto Person			% Taxi ⁴	Private Auto	Taxi Person	Vehicle	Auto	Total	Total	Adjusted
Land Use	Size	Category	Split	Rate	Vehicle Trips	Occupancy Rate ¹	Person-Trips	Trips	Share ³	Trips	Share ³	Trips	Share ³	Trips	Share ³	Trips		Person-Trips	Trips	Occupancy Rate ¹	Occupancy Rate for Taxis ⁶	Private Auto Trips	Taxi Trips	Taxi Trips	(Private + Taxi) Trips
Daily Peak Hour																									
Office Building ¹¹	202.6	Total		9.740	1,974	1.14	2,250	2,250	30%	676	16%	360	14%	316	40%	898	2%	880	18	1.14	1.20	772	16	788	
	KSF	In	50%	4.870	987	1.14	1,125	1,125	30%	338	16%	180	14%	158	40%	449	2%	440	9	1.14	1.20	386	8	394	
		Out	50%	4.870	987	1.14	1,125	1,125	30%	338	16%	180	14%	158	40%	449	2%	440	9	1.14	1.20	386	8	394	
Research & Development Center ¹²	136.6	Total		11.260	1,538	1.14	1,754	1,754	30%	526	16%	280	14%	246	40%	702	2%	688	14	1.14	1.20	604	12	616	
	KSF	In	50%	5.630	769	1.14	877	877	30%	263	16%	140	14%	123	40%	351	2%	344	7	1.14	1.20	302	6	308	
		Out	50%	5.630	769	1.14	877	877	30%	263	16%	140	14%	123	40%	351	2%	344	7	1.14	1.20	302	6	308	
Total		Total			3,512		4,004	4,004		1,202		640		562		1,600		1,568	32			1,376	28	1,404	
		In			1,756		2,002	2,002		601		320		281		800		784	16			688	14	702	
		Out			1,756		2,002	2,002		601		320		281		800		784	16			688	14	702	
AM Peak Hour																									
Office Building ¹¹	202.6	Total		1.16	235	1.14	268	268		80		44		37		107	2%	105	2	1.14	1.20	92	2	94	
	KSF	In	86%	0.998	202	1.14	230	230	30%	69	16%	37	14%	32	40%	92	2%	90	2	1.14	1.20	79	2	81	
		Out	14%	0.162	33	1.14	38	38	30%	11	16%	7	14%	5	40%	15	2%	15	0	1.14	1.20	13	0	13	
Research & Development Center ¹²	136.6	Total		0.420	57	1.14	65	65		19		11		9		26	2%	26	0	1.14	1.20	23	0	23	
	KSF	In	75%	0.315	43	1.14	49	49	30%	14	16%	8	14%	7	40%	20	2%	20	0	1.14	1.20	18	0	18	
		Out	25%	0.105	14	1.14	16	16	30%	5	16%	3	14%	2	40%	6	2%	6	0	1.14	1.20	5	0	5	
Total		Total			292		333	333		99		55		46		133		131	2			115	2	117	
		In			245		279	279		83		45		39		112		110	2			97	2	99	
		Out			47		54	54		16		10		7		21		21	0			18	0	18	
PM Peak Hour																									
Office Building ¹¹	202.6	Total		1.15	233	1.14	265	265		80		43		37		105	2%	103	2	1.14	1.20	90	2	92	
	KSF	In	16%	0.184	37	1.14	42	42	30%	13	16%	7	14%	6	40%	16	2%	16	0	1.14	1.20	14	0	14	
		Out	84%	0.966	196	1.14	223	223	30%	67	16%	36	14%	31	40%	89	2%	87	2	1.14	1.20	76	2	78	
Research & Development Center ¹²	136.6	Total		0.490	67	1.14	76	76		23		12		11		30	2%	29	1	1.14	1.20	26	1	27	
	KSF	In	15%	0.074	10	1.14	11	11	30%	3	16%	2	14%	2	40%	4	2%	4	0	1.14	1.20	4	0	4	
		Out	85%	0.417	57	1.14	65	65	30%	20	16%	10	14%	9	40%	26	2%	25	1	1.14	1.20	22	1	23	
Total		Total			300		341	341		103		55		48		135		132	3			116	3	119	
		In			47		53	53		16		9		8		20		20	0			18	0	18	
		Out			253		288	288		87		46		40		115		112	3			98	3	101	

1. Based on occupancy rates for census tract
2. Based on ITE Trip Generation Handbook, 3rd Edition method
3. Mode shares based on means of transportation to work from Census data for census tract project falls within
6. For taxi cabs, 1.2 passengers per cab. (2.2 minus 1 driver equals 1.2)
11. ITE Trip Generation Manual, 10th Edition, LUC 710 (General Office Building), average rate
12. ITE Trip Generation Manual, 10th Edition, LUC 760 (Research & Development Center), average rate



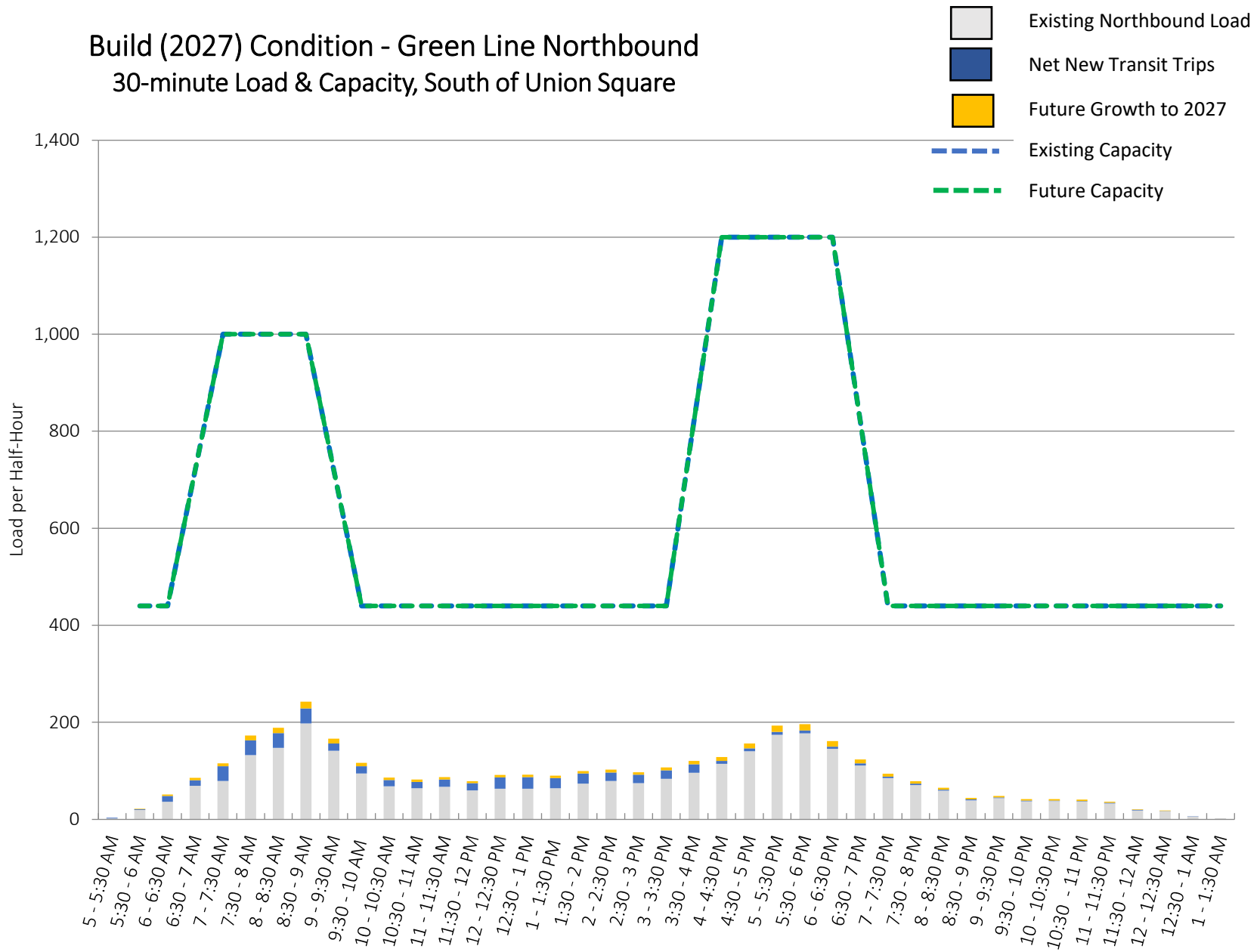
HOWARD STEIN HUDSON

Engineers + Planners

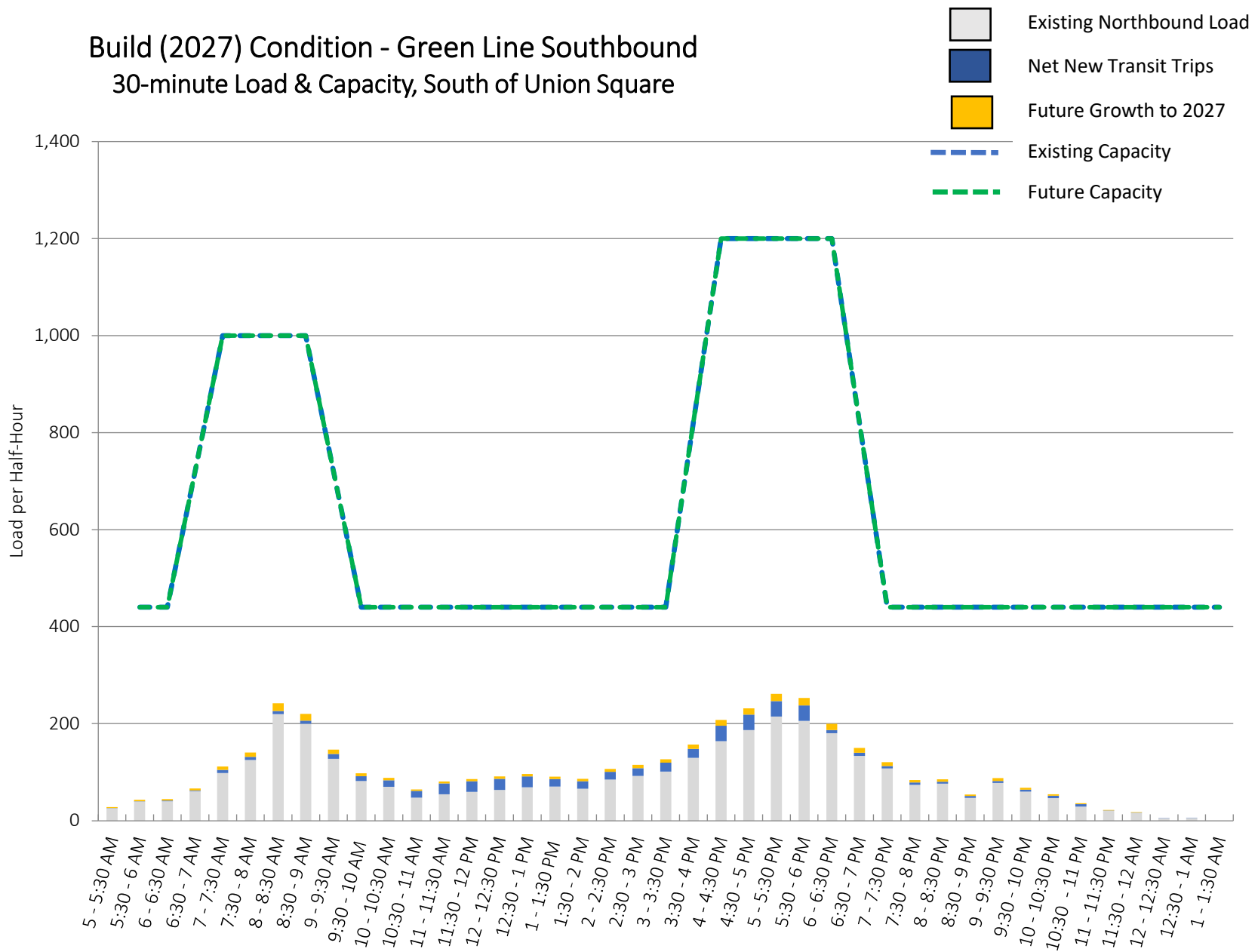
Appendix D

Transit Analysis Graphs and Tables

Build (2027) Condition - Green Line Northbound 30-minute Load & Capacity, South of Union Square



Build (2027) Condition - Green Line Southbound 30-minute Load & Capacity, South of Union Square



V/C Ratio Summary Table - Green Line at Union Square Station

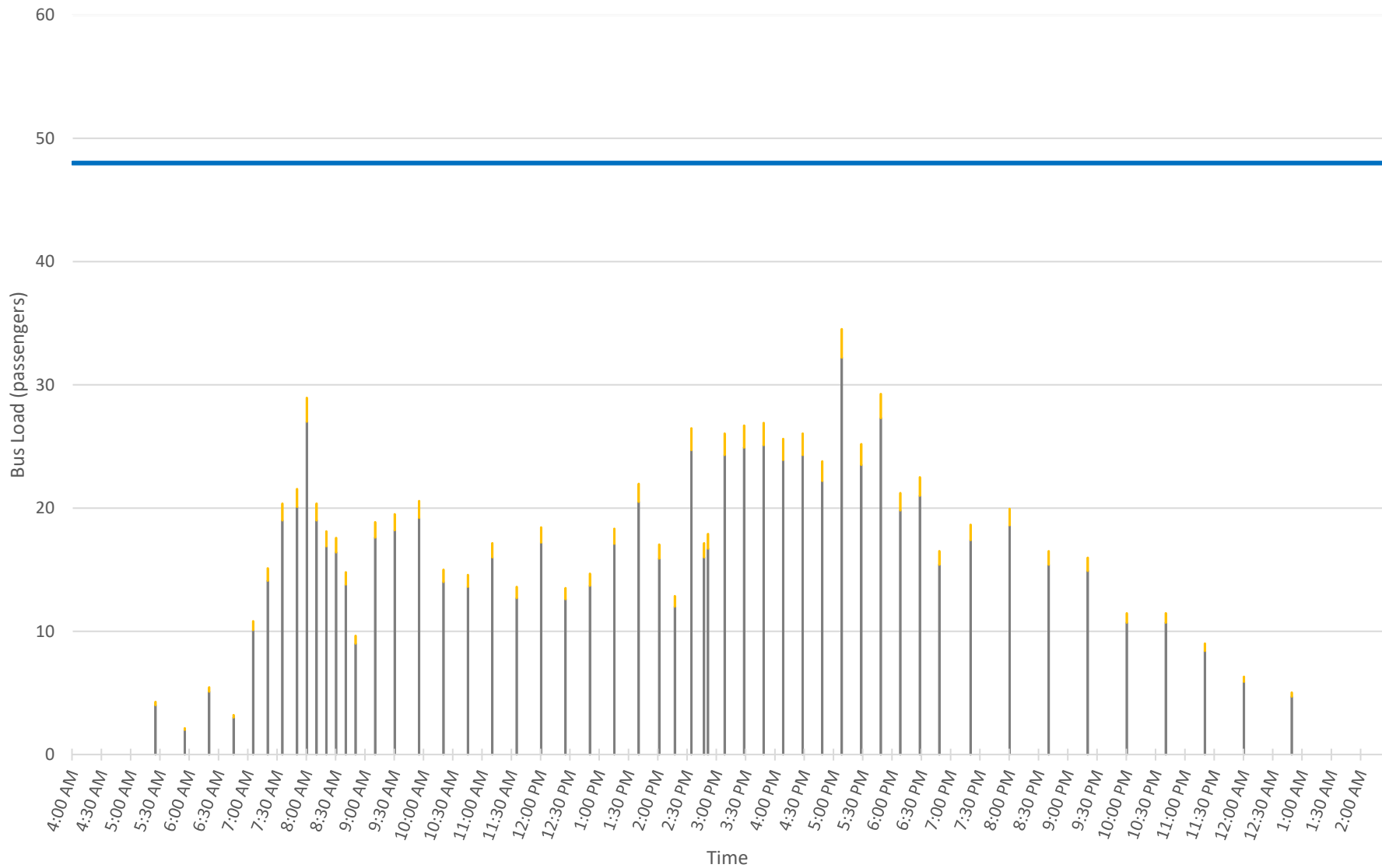
Time	Existing Capacity	Existing		Future Capacity	Build 2021		Build 2027	
		South of Union Square			South of Union Square		South of Union Square	
		NB	SB		NB	SB	NB	SB
5-530 AM	440	0.00	0.06	440	0.01	0.06	0.01	0.06
5:30 - 6AM	440	0.04	0.09	440	0.05	0.09	0.05	0.10
6- 6:30 AM	440	0.08	0.09	440	0.11	0.09	0.12	0.10
6:30 - 7 AM	1,000	0.07	0.06	1,000	0.08	0.06	0.09	0.07
7- 7:30 AM	1,000	0.08	0.10	1,000	0.11	0.10	0.12	0.11
7:30 - 8 AM	1,000	0.13	0.12	1,000	0.16	0.13	0.17	0.14
8 - 8:30 AM	1,000	0.15	0.22	1,000	0.18	0.23	0.19	0.24
8:30 - 9 AM	1,000	0.20	0.20	1,000	0.23	0.21	0.24	0.22
9 to 9:30 AM	440	0.32	0.29	440	0.36	0.31	0.38	0.33
9:30 - 10 AM	440	0.21	0.19	440	0.25	0.21	0.26	0.22
10 - 10:30 AM	440	0.15	0.16	440	0.18	0.19	0.20	0.20
10:30 - 11 AM	440	0.15	0.11	440	0.18	0.14	0.19	0.15
11 - 11:30 AM	440	0.15	0.12	440	0.19	0.17	0.20	0.18
11:30 - 12 PM	440	0.14	0.14	440	0.17	0.19	0.18	0.19
12 - 12:30 PM	440	0.14	0.14	440	0.20	0.20	0.21	0.21
12:30 - 1 PM	440	0.14	0.16	440	0.20	0.21	0.21	0.22
1 - 1:30 PM	440	0.15	0.16	440	0.19	0.20	0.21	0.21
1:30 - 2 PM	440	0.17	0.15	440	0.21	0.18	0.23	0.20
2 - 2:30 PM	440	0.18	0.19	440	0.22	0.23	0.23	0.24
2:30 - 3 PM	440	0.17	0.21	440	0.21	0.25	0.22	0.26
3 - 3:30 PM	440	0.19	0.23	440	0.23	0.27	0.24	0.29
3:30 - 4 PM	1,200	0.08	0.11	1,200	0.09	0.12	0.10	0.13
4 - 4:30 PM	1,200	0.10	0.14	1,200	0.10	0.16	0.11	0.17
4:30 - 5 PM	1,200	0.12	0.16	1,200	0.12	0.18	0.13	0.19
5 - 5:30 PM	1,200	0.15	0.18	1,200	0.15	0.21	0.16	0.22
5:30 - 6 PM	1,200	0.15	0.17	1,200	0.15	0.20	0.16	0.21
6 - 6:30 PM	1,200	0.12	0.15	1,200	0.13	0.16	0.13	0.17
6:30 - 7 PM	440	0.25	0.30	440	0.26	0.32	0.28	0.34
7 - 7:30 PM	440	0.19	0.24	440	0.20	0.26	0.21	0.27
7:30 - 8 PM	440	0.16	0.17	440	0.17	0.18	0.18	0.19
8 - 8:30 PM	440	0.13	0.17	440	0.14	0.18	0.15	0.19
8:30 - 9 PM	440	0.09	0.11	440	0.09	0.12	0.10	0.12
9 - 9:30 PM	440	0.10	0.18	440	0.10	0.19	0.11	0.20
9:30 - 10 PM	440	0.08	0.14	440	0.09	0.15	0.09	0.15
10 - 10:30 PM	440	0.09	0.11	440	0.09	0.12	0.09	0.12
10:30 - 11 PM	440	0.08	0.07	440	0.09	0.08	0.09	0.08
11 - 11:30 PM	440	0.07	0.05	440	0.08	0.05	0.08	0.05
11:30 - 12 AM	440	0.04	0.04	440	0.05	0.04	0.05	0.04
12 - 12:30 am	440	0.04	0.01	440	0.04	0.01	0.04	0.01

Volume Summary Table - Green Line at Union Square Station

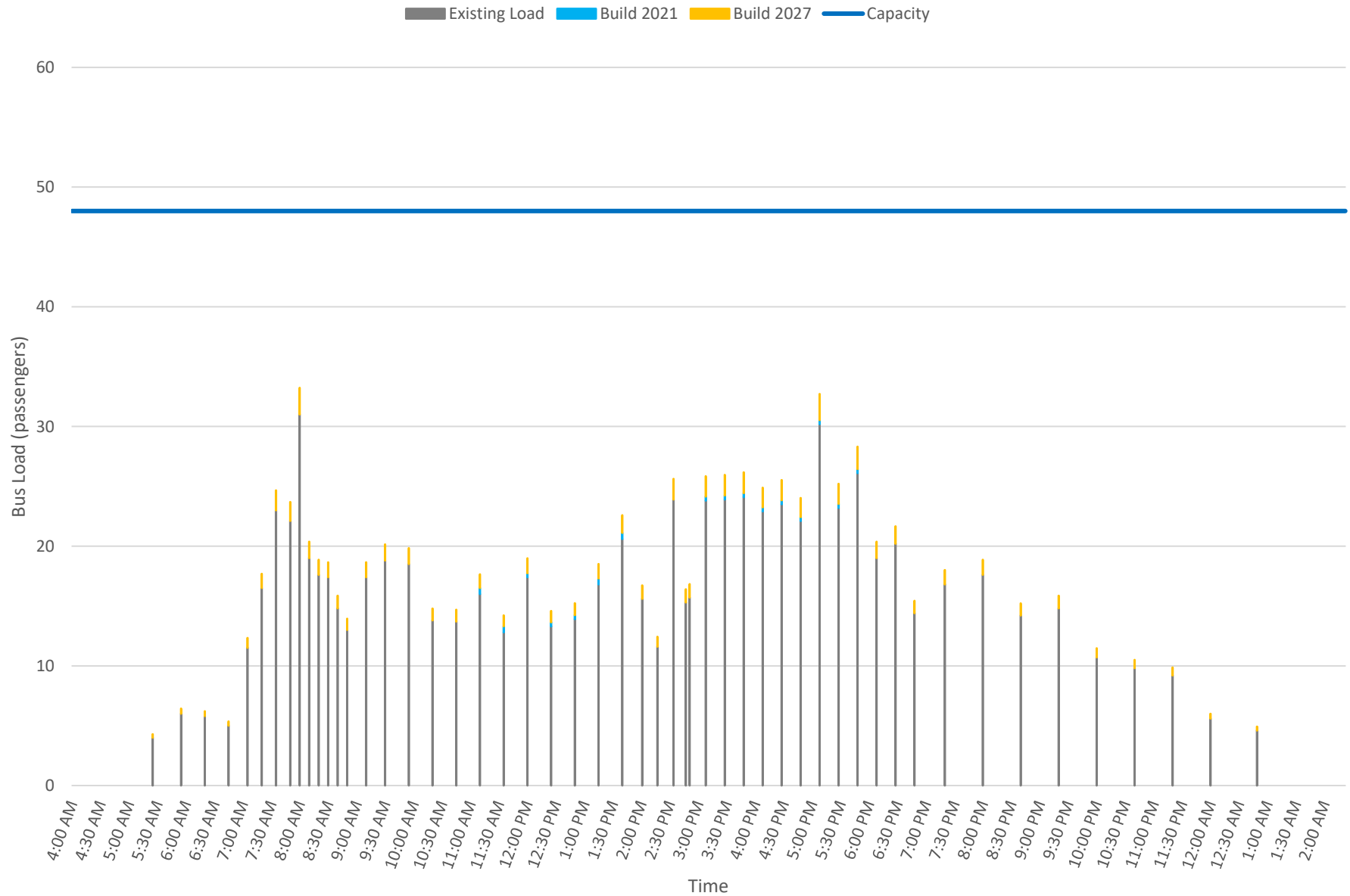
Time	Number of Existing Trains	Existing Load		Number of Future Trains	Build 2021 Load		Build 2027 Load	
		South of Union Square			South of Union Square		South of Union Square	
		NB	SB		NB	SB	NB	SB
5-530 AM	3	2	25	3	3	26	3	28
5:30 - 6AM	3	19	39	3	21	40	22	43
6- 6:30 AM	3	36	40	3	48	41	51	44
6:30 - 7 AM	5	69	61	5	81	62	86	66
7- 7:30 AM	5	79	98	5	109	105	115	112
7:30 - 8 AM	5	132	125	5	163	131	173	140
8 - 8:30 AM	5	147	219	5	178	226	189	242
8:30 - 9 AM	5	198	199	5	228	206	242	220
9 to 9:30 AM	3	141	127	3	156	137	166	146
9:30 - 10 AM	3	94	81	3	109	91	116	97
10 - 10:30 AM	3	68	70	3	81	83	86	88
10:30 - 11 AM	3	64	48	3	77	61	82	64
11 - 11:30 AM	3	67	54	3	82	76	87	80
11:30 - 12 PM	3	60	59	3	75	81	79	85
12 - 12:30 PM	3	63	64	3	87	86	92	91
12:30 - 1 PM	3	63	69	3	87	91	92	96
1 - 1:30 PM	3	64	70	3	85	86	90	91
1:30 - 2 PM	3	74	66	3	95	81	100	86
2 - 2:30 PM	3	79	84	3	96	100	102	106
2:30 - 3 PM	3	75	92	3	92	108	97	115
3 - 3:30 PM	3	84	101	3	101	119	107	126
3:30 - 4 PM	6	96	129	6	113	148	120	157
4 - 4:30 PM	6	114	164	6	120	196	128	208
4:30 - 5 PM	6	140	187	6	146	219	156	232
5 - 5:30 PM	6	174	215	6	180	247	193	262
5:30 - 6 PM	6	177	206	6	183	238	196	253
6 - 6:30 PM	6	146	180	6	150	187	161	200
6:30 - 7 PM	3	111	133	3	115	140	123	150
7 - 7:30 PM	3	85	108	3	88	113	94	121
7:30 - 8 PM	3	71	74	3	74	79	79	84
8 - 8:30 PM	3	59	76	3	61	80	65	85
8:30 - 9 PM	3	39	47	3	41	51	44	54
9 - 9:30 PM	3	43	78	3	45	82	48	88
9:30 - 10 PM	3	37	60	3	39	64	42	68
10 - 10:30 PM	3	38	46	3	39	51	42	54
10:30 - 11 PM	3	37	29	3	38	34	41	36
11 - 11:30 PM	3	33	20	3	34	21	36	22
11:30 PM- 12 AM	3	18	16	3	20	17	21	18
12 - 12:30 AM	3	17	5	3	17	5	18	5
12:30 - 1 AM	3	6	6	3	7	6	7	6
1 - 1:30 AM	3	2	0	3	2	0	2	0

Build (2027) Condition - Route 69 Inbound Arriving from Hampshire Street @ Inman Street Load & Capacity By Bus at Cambridge Street @ Norfolk Street

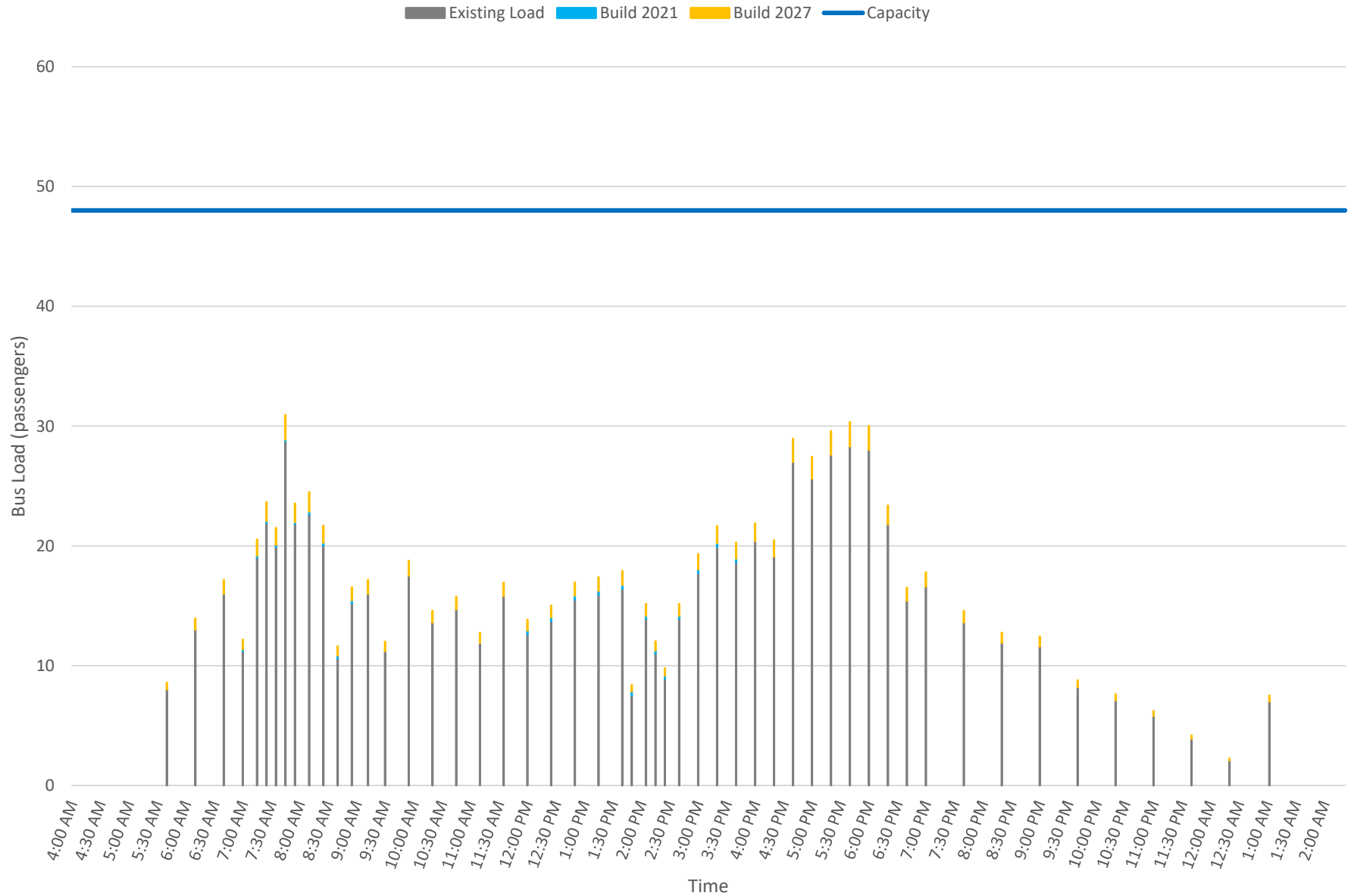
Existing Load Build 2021 Build 2027 Capacity



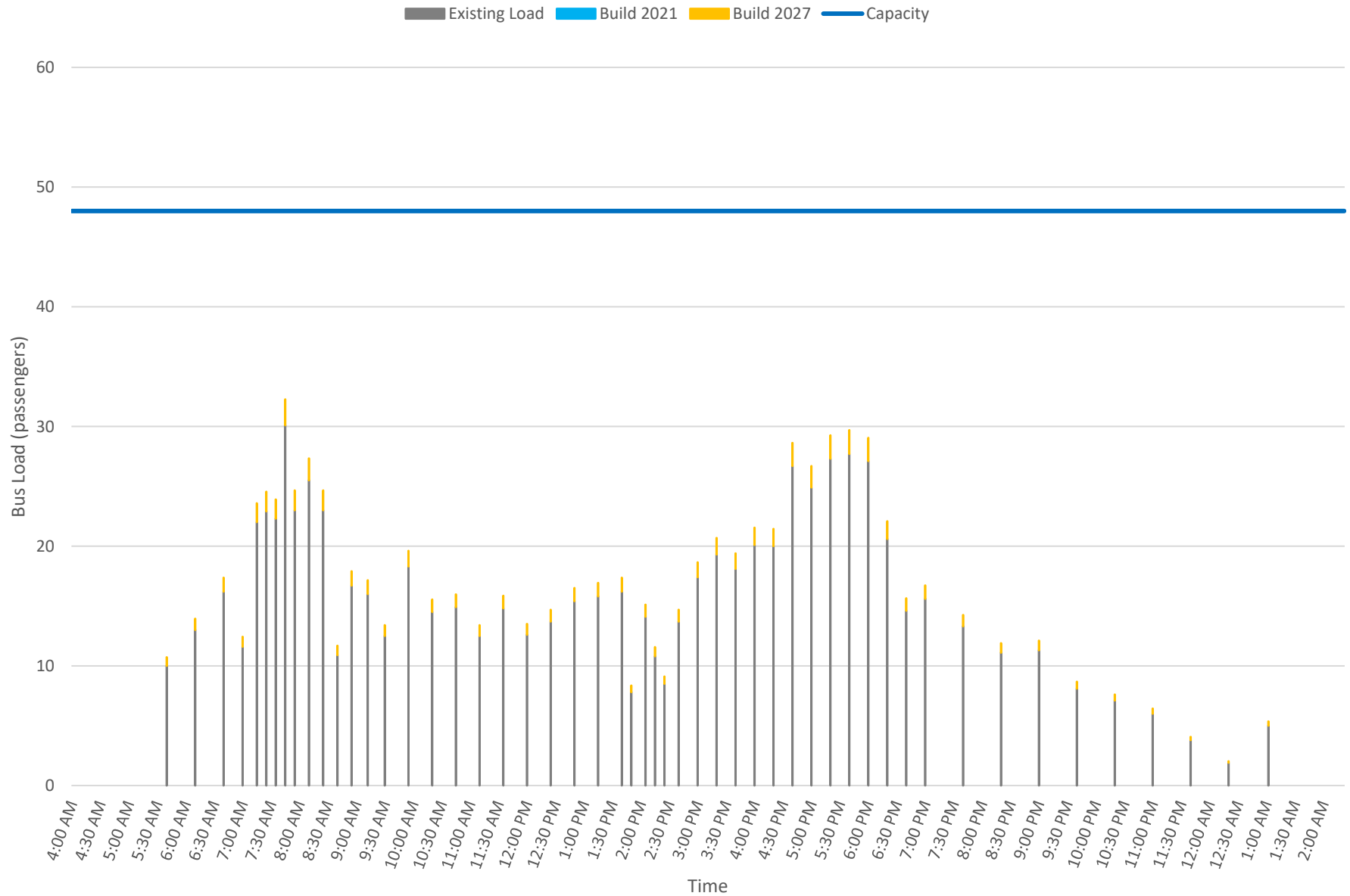
Build (2027) Condition - Route 69 Inbound Departing to Cambridge Street @ Columbia Street Load & Capacity By Bus at Cambridge Street @ Norfolk Street



Build (2027) Condition - Route 69 Outbound Arriving from Cambridge Street @ Windsor Street Load & Capacity By Bus at Cambridge Street @ Norfolk Street



Build (2027) Condition - Route 69 Outbound Departing to Cambridge Street @ Prospect Street Load & Capacity By Bus at Cambridge Street @ Norfolk Street



Bus Route 69 - Inbound Analysis Before CAMBRIDGE ST @ NORFOLK ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	4	0.08	4	0.08	4	0.09
5:30 AM	1	2	0.04	2	0.04	2	0.04
6:00 AM	1	5	0.11	5	0.11	5	0.11
6:30 AM	1	3	0.06	3	0.06	3	0.07
7:00 AM	2	24	0.25	24	0.25	26	0.27
7:30 AM	2	39	0.41	39	0.41	42	0.44
8:00 AM	3	63	0.44	63	0.44	67	0.47
8:30 AM	3	39	0.27	39	0.27	42	0.29
9:00 AM	1	18	0.37	18	0.37	19	0.39
9:30 AM	2	37	0.39	37	0.39	40	0.42
10:00 AM	1	14	0.29	14	0.29	15	0.31
10:30 AM	1	14	0.28	14	0.28	15	0.30
11:00 AM	1	16	0.33	16	0.33	17	0.36
11:30 AM	1	13	0.26	13	0.26	14	0.28
12:00 PM	2	30	0.31	30	0.31	32	0.33
12:30 PM	1	14	0.29	14	0.29	15	0.31
1:00 PM	1	17	0.36	17	0.36	18	0.38
1:30 PM	1	21	0.43	21	0.43	22	0.46
2:00 PM	2	28	0.29	28	0.29	30	0.31
2:30 PM	3	57	0.40	57	0.40	62	0.43
3:00 PM	2	49	0.51	49	0.51	53	0.55
3:30 PM	1	25	0.52	25	0.52	27	0.56
4:00 PM	2	48	0.50	48	0.50	52	0.54
4:30 PM	1	22	0.46	22	0.46	24	0.50
5:00 PM	2	56	0.58	56	0.58	60	0.62
5:30 PM	1	27	0.57	27	0.57	29	0.61
6:00 PM	2	41	0.43	41	0.43	44	0.46
6:30 PM	1	15	0.32	15	0.32	17	0.34
7:00 PM	1	17	0.36	17	0.36	19	0.39
7:30 PM	-	-	-	-	-	-	-
8:00 PM	1	19	0.39	19	0.39	20	0.42
8:30 PM	1	15	0.32	15	0.32	17	0.34
9:00 PM	1	15	0.31	15	0.31	16	0.33
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	11	0.22	11	0.22	11	0.24
10:30 PM	1	11	0.22	11	0.22	11	0.24
11:00 PM	1	8	0.18	8	0.18	9	0.19
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	6	0.12	6	0.12	6	0.13
12:30 AM	1	5	0.10	5	0.10	5	0.10
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 69 - Inbound Analysis After CAMBRIDGE ST @ NORFOLK ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	4	0.08	4	0.08	4	0.09
5:30 AM	1	6	0.13	6	0.13	6	0.13
6:00 AM	1	6	0.12	6	0.12	6	0.13
6:30 AM	1	5	0.10	5	0.10	5	0.11
7:00 AM	2	28	0.29	28	0.29	30	0.31
7:30 AM	2	45	0.47	45	0.47	48	0.50
8:00 AM	3	68	0.47	68	0.47	72	0.50
8:30 AM	3	45	0.31	45	0.31	48	0.34
9:00 AM	1	17	0.36	17	0.36	19	0.39
9:30 AM	2	37	0.39	37	0.39	40	0.42
10:00 AM	1	14	0.29	14	0.29	15	0.31
10:30 AM	1	14	0.29	14	0.29	15	0.31
11:00 AM	1	16	0.33	17	0.34	18	0.37
11:30 AM	1	13	0.27	13	0.28	14	0.30
12:00 PM	2	31	0.32	31	0.33	34	0.35
12:30 PM	1	14	0.29	14	0.30	15	0.32
1:00 PM	1	17	0.35	17	0.36	19	0.39
1:30 PM	1	21	0.43	21	0.44	23	0.47
2:00 PM	2	27	0.28	27	0.28	29	0.30
2:30 PM	3	55	0.38	55	0.38	59	0.41
3:00 PM	2	48	0.50	48	0.50	52	0.54
3:30 PM	1	24	0.50	24	0.51	26	0.55
4:00 PM	2	46	0.48	47	0.49	50	0.53
4:30 PM	1	22	0.46	22	0.47	24	0.50
5:00 PM	2	53	0.56	54	0.56	58	0.60
5:30 PM	1	26	0.54	26	0.55	28	0.59
6:00 PM	2	39	0.41	39	0.41	42	0.44
6:30 PM	1	14	0.30	14	0.30	15	0.32
7:00 PM	1	17	0.35	17	0.35	18	0.38
7:30 PM	-	-	-	-	-	-	-
8:00 PM	1	18	0.37	18	0.37	19	0.39
8:30 PM	1	14	0.30	14	0.30	15	0.32
9:00 PM	1	15	0.31	15	0.31	16	0.33
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	11	0.22	11	0.22	11	0.24
10:30 PM	1	10	0.20	10	0.20	11	0.22
11:00 PM	1	9	0.19	9	0.19	10	0.21
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	6	0.12	6	0.12	6	0.13
12:30 AM	1	5	0.10	5	0.10	5	0.10
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 69 - Outbound Analysis Before CAMBRIDGE ST @ NORFOLK ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	1	8	0.17	8	0.17	9	0.18
6:00 AM	1	13	0.27	13	0.27	14	0.29
6:30 AM	1	16	0.33	16	0.33	17	0.36
7:00 AM	3	52	0.36	53	0.37	56	0.39
7:30 AM	3	70	0.49	71	0.49	76	0.53
8:00 AM	2	43	0.44	43	0.45	46	0.48
8:30 AM	2	26	0.27	26	0.27	28	0.29
9:00 AM	1	16	0.33	16	0.33	17	0.36
9:30 AM	2	29	0.30	29	0.30	31	0.32
10:00 AM	1	14	0.28	14	0.28	15	0.30
10:30 AM	1	15	0.31	15	0.31	16	0.33
11:00 AM	1	12	0.25	12	0.25	13	0.27
11:30 AM	1	16	0.33	16	0.33	17	0.35
12:00 PM	2	26	0.27	27	0.28	29	0.30
12:30 PM	1	16	0.32	16	0.33	17	0.35
1:00 PM	1	16	0.33	16	0.34	17	0.36
1:30 PM	2	24	0.25	25	0.26	26	0.27
2:00 PM	3	34	0.23	35	0.24	37	0.26
2:30 PM	1	14	0.29	14	0.29	15	0.32
3:00 PM	2	38	0.39	38	0.40	41	0.43
3:30 PM	1	19	0.39	19	0.39	20	0.42
4:00 PM	2	40	0.41	40	0.41	42	0.44
4:30 PM	1	27	0.56	27	0.56	29	0.60
5:00 PM	2	53	0.55	53	0.55	57	0.59
5:30 PM	1	28	0.59	28	0.59	30	0.63
6:00 PM	2	50	0.52	50	0.52	53	0.56
6:30 PM	1	15	0.32	15	0.32	17	0.34
7:00 PM	1	17	0.35	17	0.35	18	0.37
7:30 PM	1	14	0.28	14	0.28	15	0.30
8:00 PM	1	12	0.25	12	0.25	13	0.27
8:30 PM	-	-	-	-	-	-	-
9:00 PM	1	12	0.24	12	0.24	12	0.26
9:30 PM	1	8	0.17	8	0.17	9	0.18
10:00 PM	1	7	0.15	7	0.15	8	0.16
10:30 PM	-	-	-	-	-	-	-
11:00 PM	1	6	0.12	6	0.12	6	0.13
11:30 PM	1	4	0.08	4	0.08	4	0.09
12:00 AM	1	2	0.04	2	0.04	2	0.05
12:30 AM	-	-	-	-	-	-	-
1:00 AM	1	7	0.15	7	0.15	8	0.16
1:30 AM	-	-	-	-	-	-	-

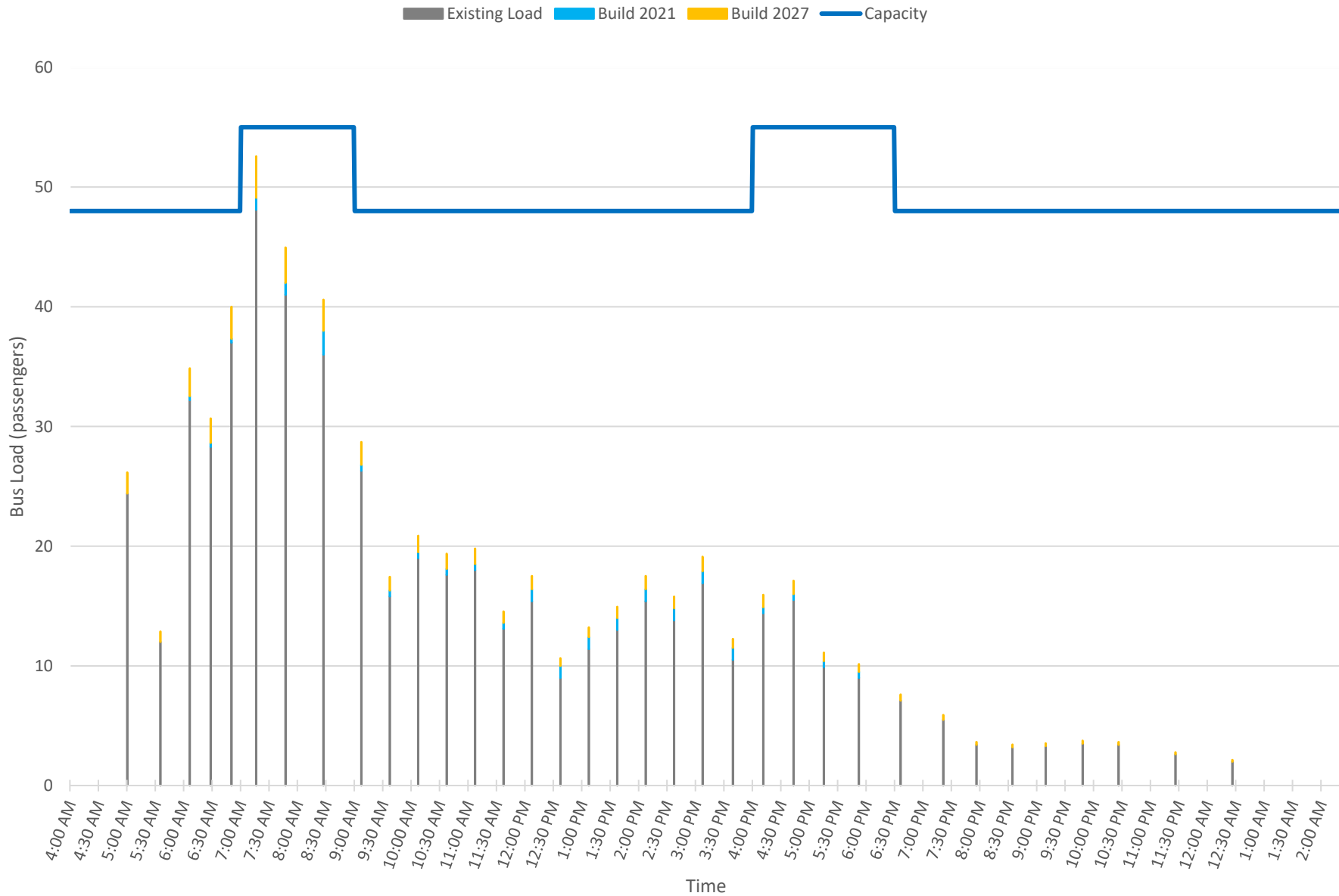
Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 69 - Outbound Analysis After CAMBRIDGE ST @ NORFOLK ST (Volume/VC Tables by 30 min)

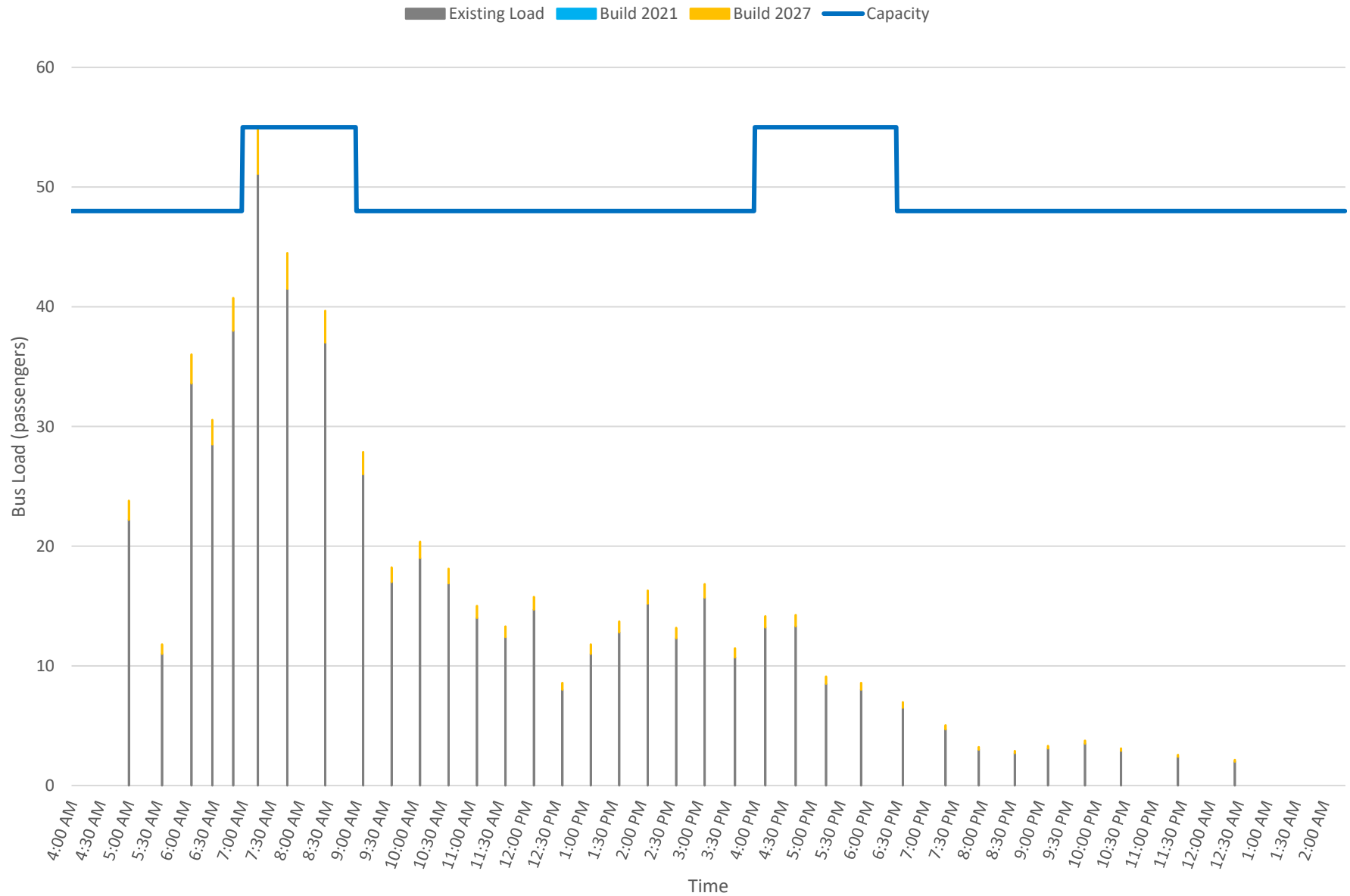
	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	1	10	0.21	10	0.21	11	0.22
6:00 AM	1	13	0.27	13	0.27	14	0.29
6:30 AM	1	16	0.34	16	0.34	17	0.36
7:00 AM	3	57	0.39	57	0.39	61	0.42
7:30 AM	3	75	0.52	75	0.52	81	0.56
8:00 AM	2	49	0.51	49	0.51	52	0.54
8:30 AM	2	28	0.29	28	0.29	30	0.31
9:00 AM	1	16	0.33	16	0.33	17	0.36
9:30 AM	2	31	0.32	31	0.32	33	0.34
10:00 AM	1	15	0.30	15	0.30	16	0.32
10:30 AM	1	15	0.31	15	0.31	16	0.33
11:00 AM	1	13	0.26	13	0.26	13	0.28
11:30 AM	1	15	0.31	15	0.31	16	0.33
12:00 PM	2	26	0.27	26	0.27	28	0.29
12:30 PM	1	15	0.32	15	0.32	17	0.34
1:00 PM	1	16	0.33	16	0.33	17	0.35
1:30 PM	2	24	0.25	24	0.25	26	0.27
2:00 PM	3	33	0.23	33	0.23	36	0.25
2:30 PM	1	14	0.29	14	0.29	15	0.31
3:00 PM	2	37	0.38	37	0.38	39	0.41
3:30 PM	1	18	0.38	18	0.38	19	0.40
4:00 PM	2	40	0.42	40	0.42	43	0.45
4:30 PM	1	27	0.56	27	0.56	29	0.60
5:00 PM	2	52	0.54	52	0.54	56	0.58
5:30 PM	1	28	0.58	28	0.58	30	0.62
6:00 PM	2	48	0.50	48	0.50	51	0.53
6:30 PM	1	15	0.30	15	0.30	16	0.33
7:00 PM	1	16	0.33	16	0.33	17	0.35
7:30 PM	1	13	0.28	13	0.28	14	0.30
8:00 PM	1	11	0.23	11	0.23	12	0.25
8:30 PM	-	-	-	-	-	-	-
9:00 PM	1	11	0.24	11	0.24	12	0.25
9:30 PM	1	8	0.17	8	0.17	9	0.18
10:00 PM	1	7	0.15	7	0.15	8	0.16
10:30 PM	-	-	-	-	-	-	-
11:00 PM	1	6	0.13	6	0.13	6	0.13
11:30 PM	1	4	0.08	4	0.08	4	0.08
12:00 AM	1	2	0.04	2	0.04	2	0.04
12:30 AM	-	-	-	-	-	-	-
1:00 AM	1	5	0.10	5	0.10	5	0.11
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

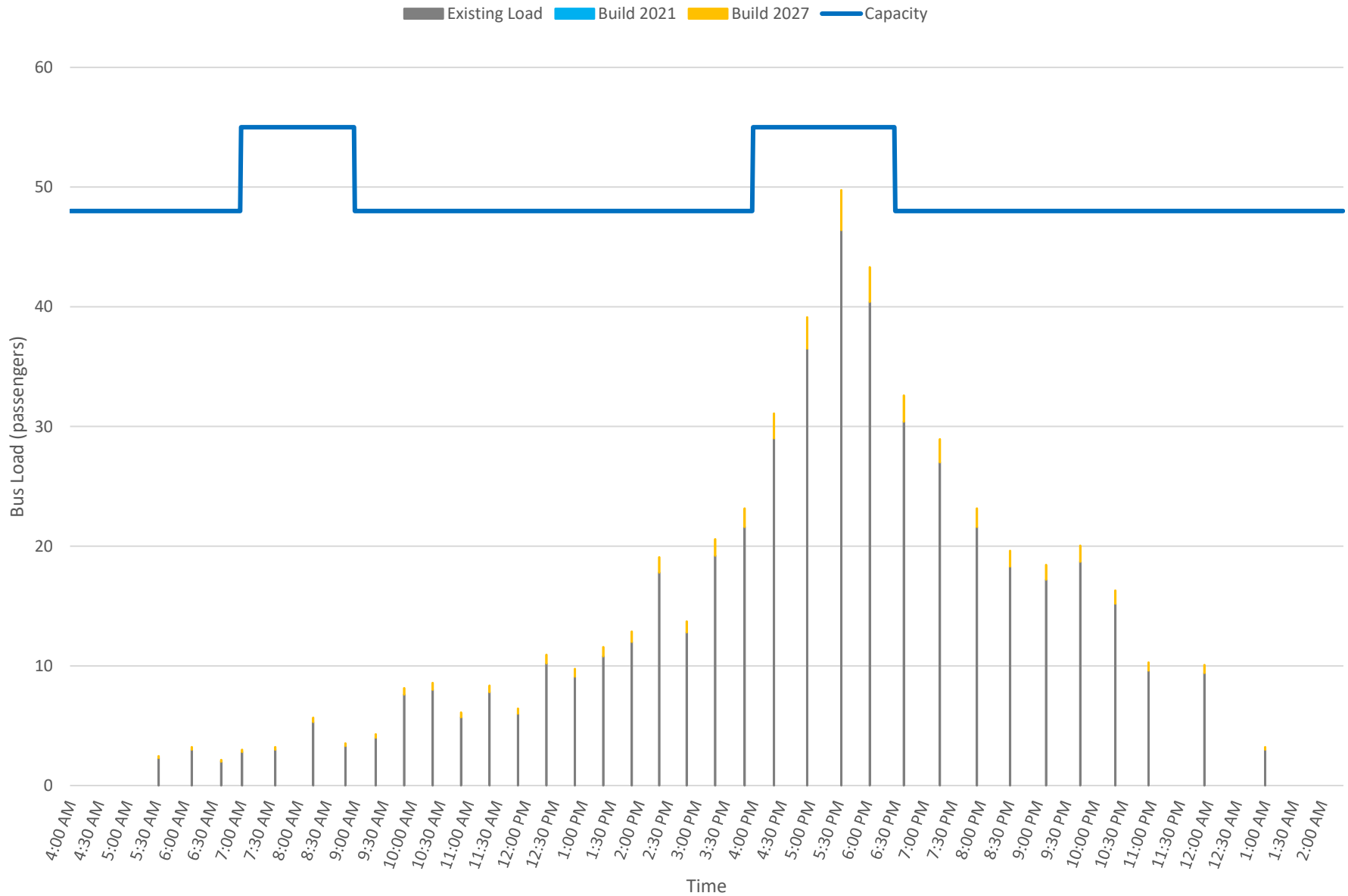
Build (2027) Condition - Route 80 Inbound Arriving from 422 McGrath Highway
Load & Capacity By Bus at Medford Street @ Washington Street



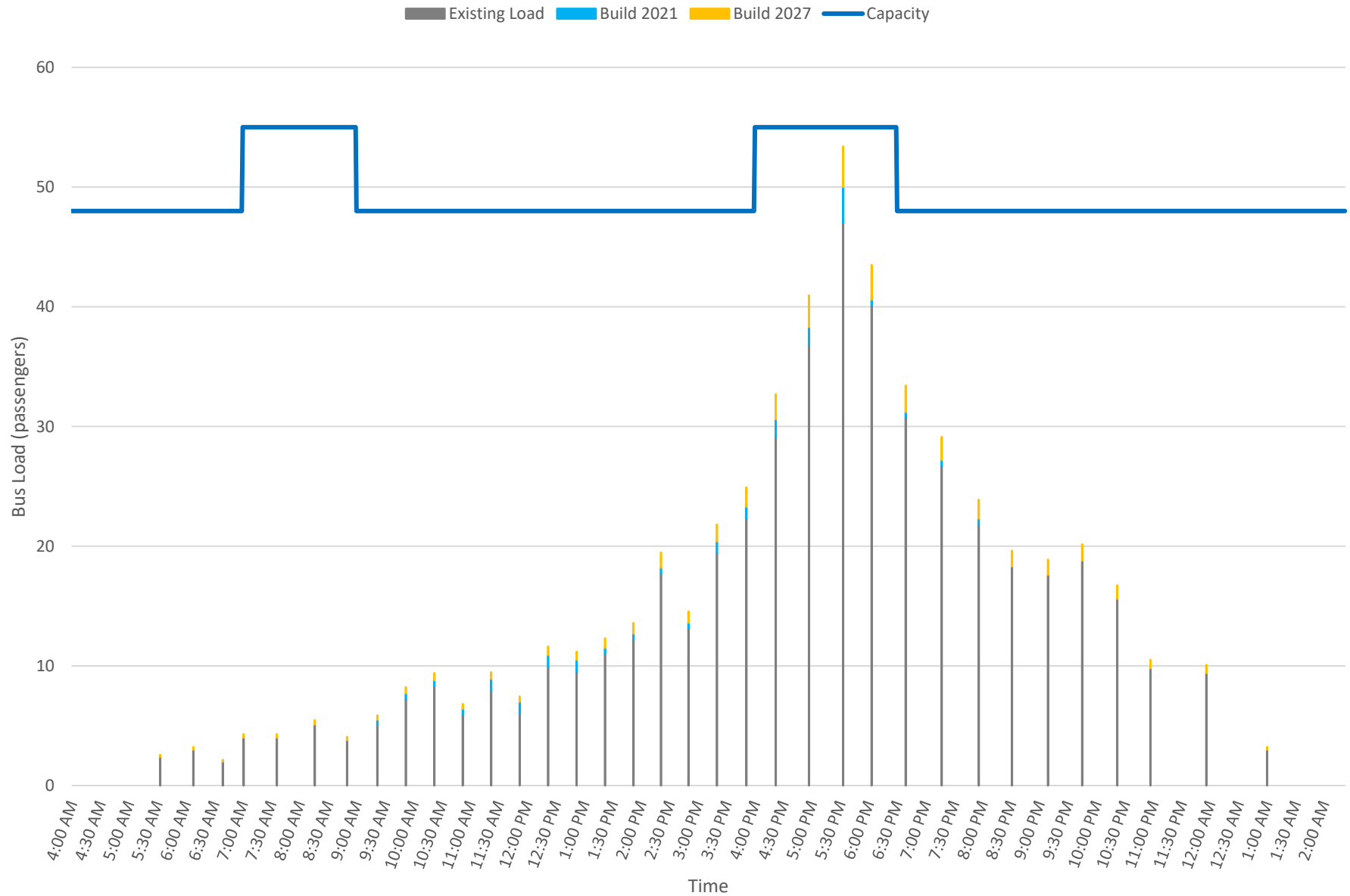
Build (2027) Condition - Route 80 Inbound Departing to McGrath Highway @ Medford Street Load & Capacity By Bus at Medford Street @ Washington Street



Build (2027) Condition - Route 80 Outbound Arriving from McGrath Hwy Opp. Twin City Plaza Load & Capacity By Bus at McGrath Highway @ Poplar Street



Build (2027) Condition - Route 80 Outbound Departing to McGrath Highway @ Alston Street Load & Capacity By Bus at McGrath Highway @ Poplar Street



Bus Route 80 - Inbound Analysis Before MEDFORD ST @ WASHINGTON ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	24	0.51	24	0.51	26	0.55
5:30 AM	1	12	0.25	12	0.25	13	0.27
6:00 AM	2	61	0.63	61	0.64	66	0.68
6:30 AM	1	37	0.67	37	0.68	40	0.73
7:00 AM	1	48	0.87	49	0.89	53	0.96
7:30 AM	1	41	0.75	42	0.76	45	0.82
8:00 AM	1	36	0.65	38	0.69	41	0.74
8:30 AM	-	-	-	-	-	-	-
9:00 AM	1	26	0.55	27	0.56	29	0.60
9:30 AM	1	16	0.33	16	0.34	17	0.36
10:00 AM	1	19	0.40	20	0.41	21	0.43
10:30 AM	1	18	0.37	18	0.38	19	0.40
11:00 AM	1	18	0.38	19	0.39	20	0.41
11:30 AM	1	13	0.27	14	0.28	15	0.30
12:00 PM	1	15	0.32	16	0.34	18	0.36
12:30 PM	1	9	0.19	10	0.21	11	0.22
1:00 PM	1	11	0.24	12	0.26	13	0.28
1:30 PM	1	13	0.27	14	0.29	15	0.31
2:00 PM	1	15	0.32	16	0.34	18	0.36
2:30 PM	1	14	0.29	15	0.31	16	0.33
3:00 PM	1	17	0.35	18	0.37	19	0.40
3:30 PM	1	11	0.19	12	0.21	12	0.22
4:00 PM	1	14	0.26	15	0.27	16	0.29
4:30 PM	1	16	0.28	16	0.29	17	0.31
5:00 PM	1	10	0.18	10	0.19	11	0.20
5:30 PM	1	9	0.16	10	0.17	10	0.18
6:00 PM	-	-	-	-	-	-	-
6:30 PM	1	7	0.15	7	0.15	8	0.16
7:00 PM	1	6	0.11	6	0.11	6	0.12
7:30 PM	1	3	0.07	3	0.07	4	0.08
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	3	0.07	3	0.07	3	0.07
9:00 PM	1	3	0.07	3	0.07	4	0.07
9:30 PM	1	4	0.07	4	0.07	4	0.08
10:00 PM	1	3	0.07	3	0.07	4	0.08
10:30 PM	-	-	-	-	-	-	-
11:00 PM	1	3	0.05	3	0.05	3	0.06
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	2	0.04	2	0.04	2	0.04
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 80 - Inbound Analysis After MEDFORD ST @ WASHINGTON ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	22	0.46	22	0.46	24	0.50
5:30 AM	1	11	0.23	11	0.23	12	0.25
6:00 AM	2	62	0.65	62	0.65	67	0.69
6:30 AM	1	38	0.69	38	0.69	41	0.74
7:00 AM	1	51	0.93	51	0.93	55	1.00
7:30 AM	1	42	0.75	42	0.75	44	0.81
8:00 AM	1	37	0.67	37	0.67	40	0.72
8:30 AM	-	-	-	-	-	-	-
9:00 AM	1	26	0.54	26	0.54	28	0.58
9:30 AM	1	17	0.35	17	0.35	18	0.38
10:00 AM	1	19	0.40	19	0.40	20	0.42
10:30 AM	1	17	0.35	17	0.35	18	0.38
11:00 AM	1	14	0.29	14	0.29	15	0.31
11:30 AM	1	12	0.26	12	0.26	13	0.28
12:00 PM	1	15	0.31	15	0.31	16	0.33
12:30 PM	1	8	0.17	8	0.17	9	0.18
1:00 PM	1	11	0.23	11	0.23	12	0.25
1:30 PM	1	13	0.27	13	0.27	14	0.29
2:00 PM	1	15	0.32	15	0.32	16	0.34
2:30 PM	1	12	0.26	12	0.26	13	0.27
3:00 PM	1	16	0.33	16	0.33	17	0.35
3:30 PM	1	11	0.19	11	0.19	11	0.21
4:00 PM	1	13	0.24	13	0.24	14	0.26
4:30 PM	1	13	0.24	13	0.24	14	0.26
5:00 PM	1	9	0.15	9	0.15	9	0.17
5:30 PM	1	8	0.15	8	0.15	9	0.16
6:00 PM	-	-	-	-	-	-	-
6:30 PM	1	7	0.14	7	0.14	7	0.15
7:00 PM	1	5	0.10	5	0.10	5	0.10
7:30 PM	1	3	0.06	3	0.06	3	0.07
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	3	0.06	3	0.06	3	0.06
9:00 PM	1	3	0.06	3	0.06	3	0.07
9:30 PM	1	4	0.07	4	0.07	4	0.08
10:00 PM	1	3	0.06	3	0.06	3	0.06
10:30 PM	-	-	-	-	-	-	-
11:00 PM	1	2	0.05	2	0.05	3	0.05
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	2	0.04	2	0.04	2	0.04
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 80 - Outbound Analysis Before MCGRATH HWY @ POPLAR ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	1	2	0.05	2	0.05	2	0.05
6:00 AM	1	3	0.06	3	0.06	3	0.07
6:30 AM	1	2	0.04	2	0.04	2	0.04
7:00 AM	1	3	0.05	3	0.05	3	0.05
7:30 AM	1	3	0.05	3	0.05	3	0.06
8:00 AM	1	5	0.10	5	0.10	6	0.10
8:30 AM	1	3	0.06	3	0.06	4	0.06
9:00 AM	1	4	0.08	4	0.08	4	0.09
9:30 AM	1	8	0.16	8	0.16	8	0.17
10:00 AM	1	8	0.17	8	0.17	9	0.18
10:30 AM	1	6	0.12	6	0.12	6	0.13
11:00 AM	1	8	0.16	8	0.16	8	0.17
11:30 AM	1	6	0.13	6	0.13	6	0.13
12:00 PM	1	10	0.21	10	0.21	11	0.23
12:30 PM	1	9	0.19	9	0.19	10	0.20
1:00 PM	1	11	0.23	11	0.23	12	0.24
1:30 PM	1	12	0.25	12	0.25	13	0.27
2:00 PM	1	18	0.37	18	0.37	19	0.40
2:30 PM	1	13	0.27	13	0.27	14	0.29
3:00 PM	1	19	0.40	19	0.40	21	0.43
3:30 PM	1	22	0.39	22	0.39	23	0.42
4:00 PM	1	29	0.53	29	0.53	31	0.57
4:30 PM	1	37	0.66	37	0.66	39	0.71
5:00 PM	-	-	-	-	-	-	-
5:30 PM	1	46	0.84	46	0.84	50	0.90
6:00 PM	1	40	0.73	40	0.73	43	0.79
6:30 PM	1	30	0.63	30	0.63	33	0.68
7:00 PM	1	27	0.56	27	0.56	29	0.60
7:30 PM	1	22	0.45	22	0.45	23	0.48
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	18	0.38	18	0.38	20	0.41
9:00 PM	1	17	0.36	17	0.36	18	0.38
9:30 PM	1	19	0.39	19	0.39	20	0.42
10:00 PM	1	15	0.32	15	0.32	16	0.34
10:30 PM	1	10	0.20	10	0.20	10	0.21
11:00 PM	-	-	-	-	-	-	-
11:30 PM	1	9	0.20	9	0.20	10	0.21
12:00 AM	-	-	-	-	-	-	-
12:30 AM	-	-	-	-	-	-	-
1:00 AM	1	3	0.06	3	0.06	3	0.07
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

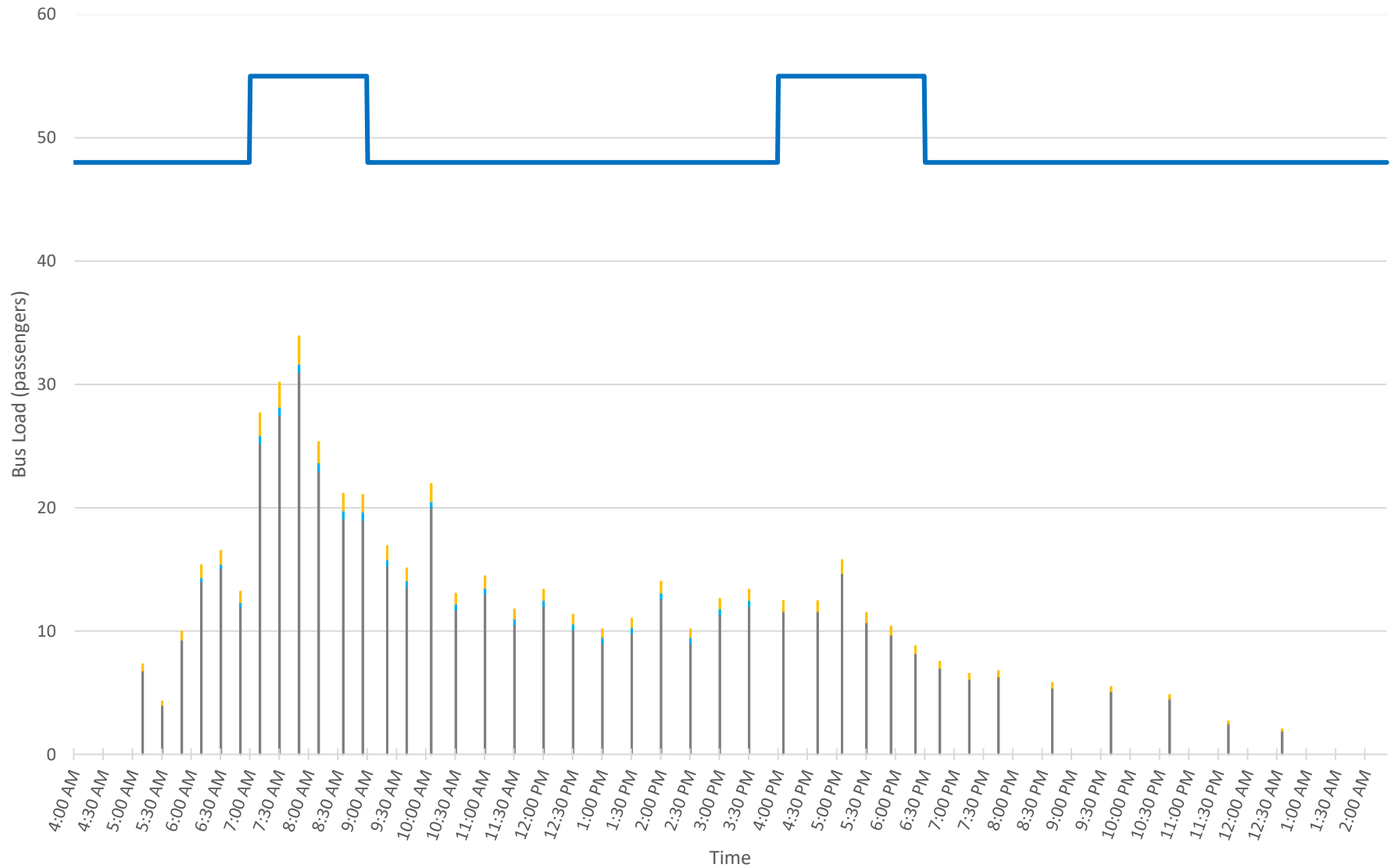
Bus Route 80 - Outbound Analysis After MCGRATH HWY @ POPLAR ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	1	2	0.05	2	0.05	3	0.05
6:00 AM	1	3	0.06	3	0.06	3	0.07
6:30 AM	1	2	0.04	2	0.04	2	0.04
7:00 AM	1	4	0.07	4	0.07	4	0.08
7:30 AM	1	4	0.07	4	0.07	4	0.08
8:00 AM	1	5	0.09	5	0.09	5	0.10
8:30 AM	1	4	0.07	4	0.07	4	0.07
9:00 AM	1	5	0.10	6	0.11	6	0.12
9:30 AM	1	7	0.15	8	0.16	8	0.17
10:00 AM	1	8	0.17	9	0.18	9	0.20
10:30 AM	1	6	0.12	6	0.13	7	0.14
11:00 AM	1	8	0.16	9	0.19	9	0.20
11:30 AM	1	6	0.13	7	0.15	7	0.15
12:00 PM	1	10	0.21	11	0.23	12	0.24
12:30 PM	1	10	0.20	11	0.22	11	0.23
1:00 PM	1	11	0.23	12	0.24	12	0.26
1:30 PM	1	12	0.25	13	0.26	14	0.28
2:00 PM	1	18	0.37	18	0.38	19	0.41
2:30 PM	1	13	0.27	14	0.28	15	0.30
3:00 PM	1	19	0.40	20	0.43	22	0.45
3:30 PM	1	22	0.41	23	0.42	25	0.45
4:00 PM	1	29	0.53	31	0.56	33	0.59
4:30 PM	1	37	0.67	38	0.70	41	0.74
5:00 PM	-	-	-	-	-	-	-
5:30 PM	1	47	0.85	50	0.91	53	0.97
6:00 PM	1	40	0.73	41	0.74	43	0.79
6:30 PM	1	31	0.64	31	0.65	33	0.70
7:00 PM	1	27	0.56	27	0.57	29	0.61
7:30 PM	1	22	0.45	22	0.46	24	0.50
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	18	0.38	18	0.38	20	0.41
9:00 PM	1	18	0.37	18	0.37	19	0.39
9:30 PM	1	19	0.39	19	0.39	20	0.42
10:00 PM	1	16	0.33	16	0.33	17	0.35
10:30 PM	1	10	0.20	10	0.20	11	0.22
11:00 PM	-	-	-	-	-	-	-
11:30 PM	1	9	0.20	9	0.20	10	0.21
12:00 AM	-	-	-	-	-	-	-
12:30 AM	-	-	-	-	-	-	-
1:00 AM	1	3	0.06	3	0.06	3	0.07
1:30 AM	-	-	-	-	-	-	-

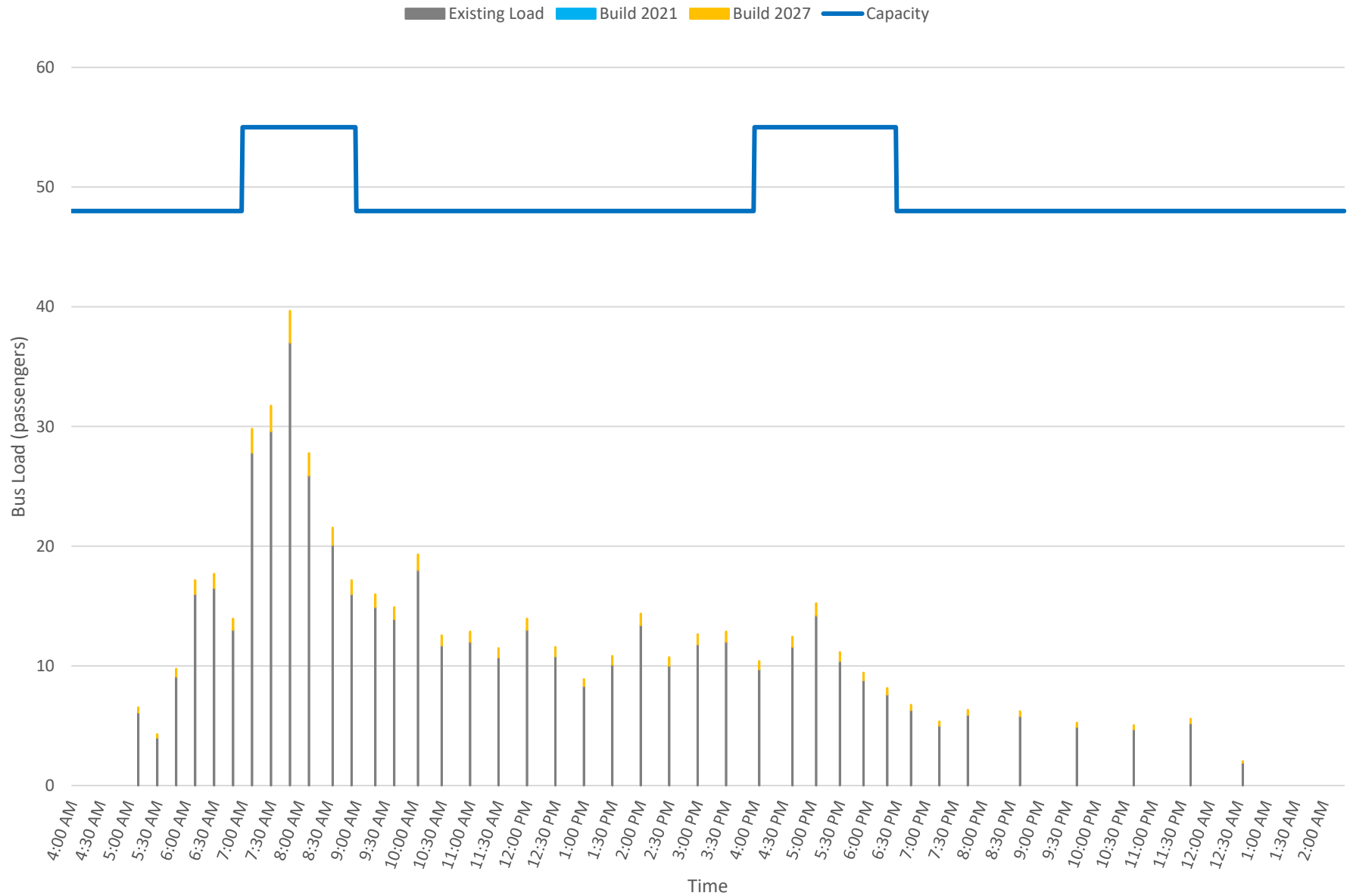
Red = transit demand is greater than planning capacity (V/C > 1.00)

Build (2027) Condition - Route 83 Inbound Arriving from Beacon Street Opp Concord Avenue Load & Capacity By Bus at Hampshire Street @ Inman Street

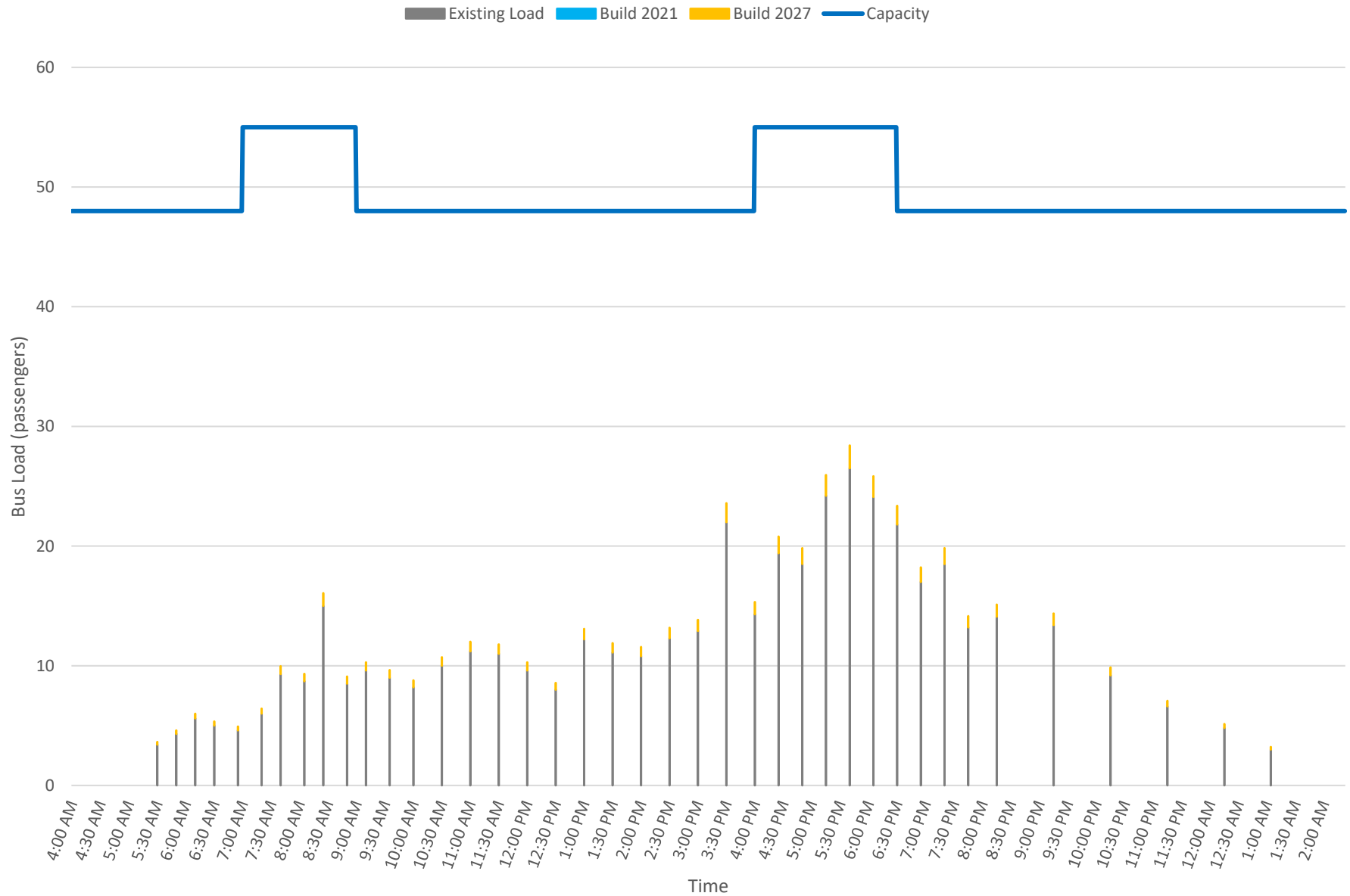
Existing Load Build 2021 Build 2027 Capacity



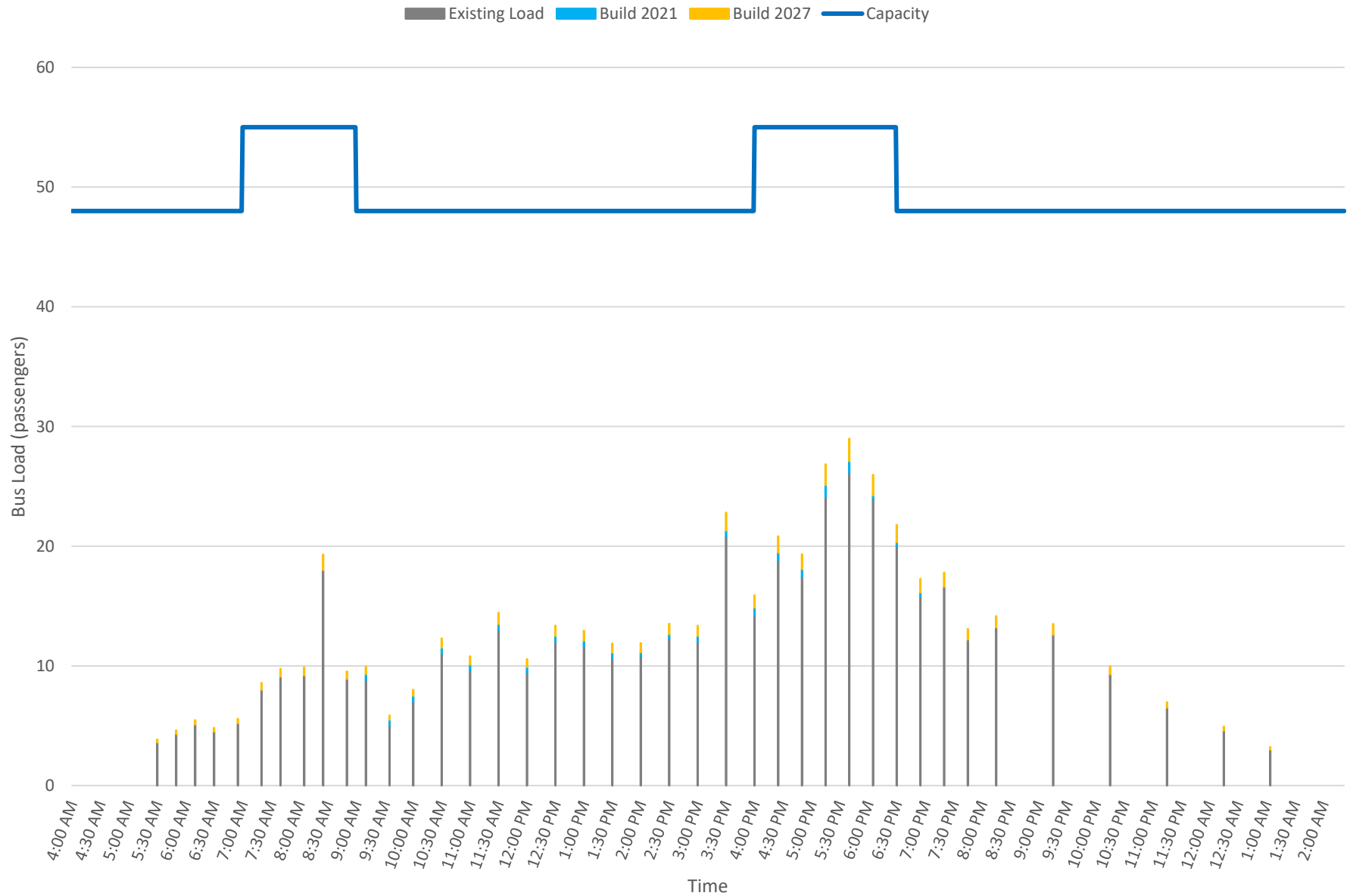
Build (2027) Condition - Route 83 Inbound Departing to Prospect Street @ St Mary Road Load & Capacity By Bus at Hampshire Street @ Inman Street



Build (2027) Condition - Route 83 Outbound Arriving from Prospect Street @ Gardner Street Load & Capacity By Bus at Hampshire Street @ Cambridge Street



Build (2027) Condition - Route 83 Outbound Departing to Beacon Street @ Dickinson Street Load & Capacity By Bus at Hampshire Street @ Cambridge Street



Bus Route 83 - Inbound Analysis Before HAMPSHIRE ST @ INMAN ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	7	0.14	7	0.14	7	0.15
5:30 AM	2	13	0.14	13	0.14	14	0.15
6:00 AM	1	14	0.29	14	0.30	15	0.32
6:30 AM	2	27	0.25	28	0.25	30	0.27
7:00 AM	1	25	0.46	26	0.47	28	0.50
7:30 AM	2	59	0.53	60	0.54	64	0.58
8:00 AM	1	23	0.42	24	0.43	25	0.46
8:30 AM	2	38	0.35	39	0.36	42	0.38
9:00 AM	1	15	0.32	16	0.33	17	0.35
9:30 AM	1	14	0.28	14	0.29	15	0.31
10:00 AM	1	20	0.42	21	0.43	22	0.46
10:30 AM	1	12	0.24	12	0.25	13	0.27
11:00 AM	1	13	0.27	14	0.28	14	0.30
11:30 AM	1	11	0.22	11	0.23	12	0.24
12:00 PM	1	12	0.25	13	0.26	13	0.28
12:30 PM	1	10	0.21	11	0.22	11	0.24
1:00 PM	1	9	0.19	10	0.20	10	0.21
1:30 PM	1	10	0.20	10	0.21	11	0.23
2:00 PM	1	13	0.26	13	0.27	14	0.29
2:30 PM	1	9	0.19	10	0.20	10	0.21
3:00 PM	1	11	0.24	12	0.25	13	0.26
3:30 PM	1	12	0.22	13	0.23	13	0.24
4:00 PM	1	12	0.21	12	0.21	12	0.23
4:30 PM	1	12	0.21	12	0.21	12	0.23
5:00 PM	1	15	0.27	15	0.27	16	0.29
5:30 PM	2	20	0.19	20	0.19	22	0.20
6:00 PM	1	8	0.15	8	0.15	9	0.16
6:30 PM	1	7	0.15	7	0.15	8	0.16
7:00 PM	1	6	0.13	6	0.13	7	0.14
7:30 PM	1	6	0.13	6	0.13	7	0.14
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	5	0.11	5	0.11	6	0.12
9:00 PM	-	-	-	-	-	-	-
9:30 PM	1	5	0.11	5	0.11	5	0.11
10:00 PM	-	-	-	-	-	-	-
10:30 PM	1	5	0.09	5	0.09	5	0.10
11:00 PM	-	-	-	-	-	-	-
11:30 PM	1	3	0.05	3	0.05	3	0.06
12:00 AM	-	-	-	-	-	-	-
12:30 AM	1	2	0.04	2	0.04	2	0.04
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 83 - Inbound Analysis After HAMPSHIRE ST @ INMAN ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	6	0.13	6	0.13	7	0.14
5:30 AM	2	13	0.14	13	0.14	14	0.15
6:00 AM	1	16	0.33	16	0.33	17	0.36
6:30 AM	2	30	0.27	30	0.27	32	0.29
7:00 AM	1	28	0.51	28	0.51	30	0.54
7:30 AM	2	67	0.61	67	0.61	71	0.65
8:00 AM	1	26	0.47	26	0.47	28	0.50
8:30 AM	2	36	0.33	36	0.33	39	0.35
9:00 AM	1	15	0.31	15	0.31	16	0.33
9:30 AM	1	14	0.29	14	0.29	15	0.31
10:00 AM	1	18	0.38	18	0.38	19	0.40
10:30 AM	1	12	0.24	12	0.24	13	0.26
11:00 AM	1	12	0.25	12	0.25	13	0.27
11:30 AM	1	11	0.22	11	0.22	11	0.24
12:00 PM	1	13	0.27	13	0.27	14	0.29
12:30 PM	1	11	0.23	11	0.23	12	0.24
1:00 PM	1	8	0.17	8	0.17	9	0.19
1:30 PM	1	10	0.21	10	0.21	11	0.23
2:00 PM	1	13	0.28	13	0.28	14	0.30
2:30 PM	1	10	0.21	10	0.21	11	0.22
3:00 PM	1	12	0.25	12	0.25	13	0.26
3:30 PM	1	12	0.22	12	0.22	13	0.23
4:00 PM	1	10	0.18	10	0.18	10	0.19
4:30 PM	1	12	0.21	12	0.21	12	0.23
5:00 PM	1	14	0.26	14	0.26	15	0.28
5:30 PM	2	19	0.17	19	0.17	21	0.19
6:00 PM	1	8	0.14	8	0.14	8	0.15
6:30 PM	1	6	0.13	6	0.13	7	0.14
7:00 PM	1	5	0.10	5	0.10	5	0.11
7:30 PM	1	6	0.12	6	0.12	6	0.13
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	6	0.12	6	0.12	6	0.13
9:00 PM	-	-	-	-	-	-	-
9:30 PM	1	5	0.10	5	0.10	5	0.11
10:00 PM	-	-	-	-	-	-	-
10:30 PM	1	5	0.10	5	0.10	5	0.10
11:00 PM	-	-	-	-	-	-	-
11:30 PM	1	5	0.11	5	0.11	6	0.12
12:00 AM	-	-	-	-	-	-	-
12:30 AM	1	2	0.04	2	0.04	2	0.04
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 83 - Outbound Analysis Before HAMPSHIRE ST @ CAMBRIDGE ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	2	8	0.08	8	0.08	8	0.09
6:00 AM	1	6	0.12	6	0.12	6	0.13
6:30 AM	2	10	0.09	10	0.09	10	0.09
7:00 AM	1	6	0.11	6	0.11	6	0.12
7:30 AM	1	9	0.17	9	0.17	10	0.18
8:00 AM	2	24	0.22	24	0.22	25	0.23
8:30 AM	1	9	0.15	9	0.15	9	0.17
9:00 AM	1	10	0.20	10	0.20	10	0.21
9:30 AM	1	9	0.19	9	0.19	10	0.20
10:00 AM	1	8	0.17	8	0.17	9	0.18
10:30 AM	1	10	0.21	10	0.21	11	0.22
11:00 AM	1	11	0.23	11	0.23	12	0.25
11:30 AM	1	11	0.23	11	0.23	12	0.25
12:00 PM	1	10	0.20	10	0.20	10	0.21
12:30 PM	1	8	0.17	8	0.17	9	0.18
1:00 PM	1	12	0.25	12	0.25	13	0.27
1:30 PM	1	11	0.23	11	0.23	12	0.25
2:00 PM	1	11	0.23	11	0.23	12	0.24
2:30 PM	1	12	0.26	12	0.26	13	0.27
3:00 PM	1	13	0.27	13	0.27	14	0.29
3:30 PM	1	22	0.40	22	0.40	24	0.43
4:00 PM	2	34	0.31	34	0.31	36	0.33
4:30 PM	1	19	0.34	19	0.34	20	0.36
5:00 PM	1	24	0.44	24	0.44	26	0.47
5:30 PM	1	27	0.48	27	0.48	28	0.52
6:00 PM	1	24	0.44	24	0.44	26	0.47
6:30 PM	2	39	0.40	39	0.40	42	0.43
7:00 PM	1	19	0.39	19	0.39	20	0.41
7:30 PM	1	13	0.28	13	0.28	14	0.29
8:00 PM	1	14	0.29	14	0.29	15	0.31
8:30 PM	-	-	-	-	-	-	-
9:00 PM	1	13	0.28	13	0.28	14	0.30
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	9	0.19	9	0.19	10	0.21
10:30 PM	-	-	-	-	-	-	-
11:00 PM	1	7	0.14	7	0.14	7	0.15
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	5	0.10	5	0.10	5	0.11
12:30 AM	-	-	-	-	-	-	-
1:00 AM	1	3	0.06	3	0.06	3	0.07
1:30 AM	-	-	-	-	-	-	-

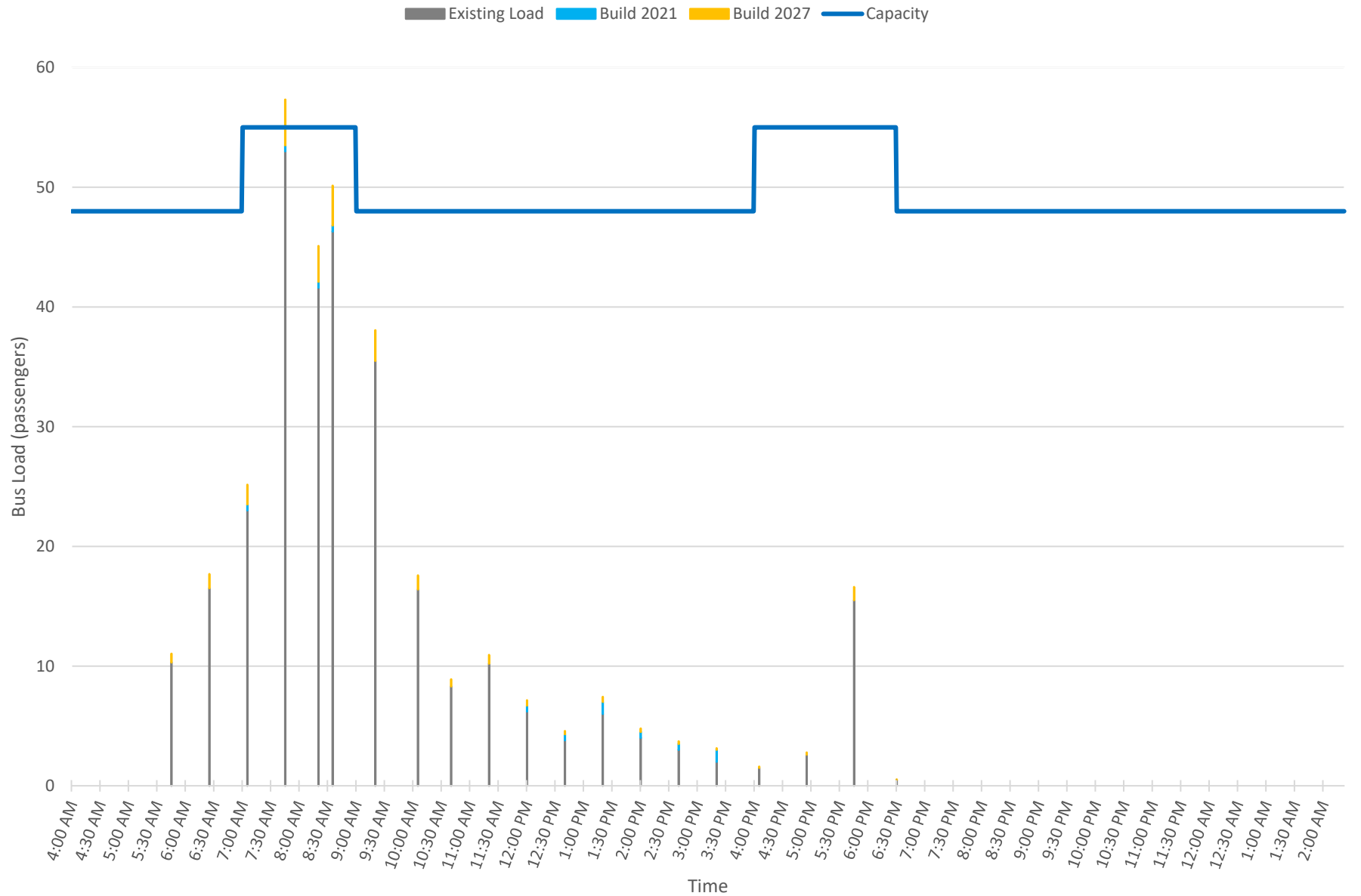
Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 83 - Outbound Analysis After HAMPSHIRE ST @ CAMBRIDGE ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	2	8	0.08	8	0.08	8	0.09
6:00 AM	1	5	0.11	5	0.11	5	0.11
6:30 AM	2	10	0.09	10	0.09	10	0.09
7:00 AM	1	8	0.15	8	0.15	9	0.16
7:30 AM	1	9	0.17	9	0.17	10	0.18
8:00 AM	2	27	0.25	27	0.25	29	0.27
8:30 AM	1	9	0.16	9	0.16	10	0.17
9:00 AM	1	9	0.18	9	0.19	10	0.21
9:30 AM	1	5	0.10	6	0.11	6	0.12
10:00 AM	1	7	0.15	8	0.16	8	0.17
10:30 AM	1	11	0.23	12	0.24	12	0.26
11:00 AM	1	10	0.20	10	0.21	11	0.22
11:30 AM	1	13	0.27	14	0.28	14	0.30
12:00 PM	1	9	0.20	10	0.21	11	0.22
12:30 PM	1	12	0.25	13	0.26	13	0.28
1:00 PM	1	12	0.24	12	0.25	13	0.27
1:30 PM	1	11	0.22	11	0.23	12	0.25
2:00 PM	1	11	0.23	11	0.23	12	0.25
2:30 PM	1	12	0.26	13	0.26	14	0.28
3:00 PM	1	12	0.25	13	0.26	13	0.28
3:30 PM	1	21	0.38	21	0.39	23	0.41
4:00 PM	2	33	0.30	34	0.31	37	0.33
4:30 PM	1	17	0.32	18	0.33	19	0.35
5:00 PM	1	24	0.44	25	0.46	27	0.49
5:30 PM	1	26	0.47	27	0.49	29	0.53
6:00 PM	1	24	0.43	24	0.44	26	0.47
6:30 PM	2	36	0.37	36	0.38	39	0.41
7:00 PM	1	17	0.35	17	0.35	18	0.37
7:30 PM	1	12	0.25	12	0.25	13	0.27
8:00 PM	1	13	0.28	13	0.28	14	0.29
8:30 PM	-	-	-	-	-	-	-
9:00 PM	1	13	0.26	13	0.26	14	0.28
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	9	0.19	9	0.19	10	0.21
10:30 PM	-	-	-	-	-	-	-
11:00 PM	1	7	0.14	7	0.14	7	0.15
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	5	0.10	5	0.10	5	0.10
12:30 AM	-	-	-	-	-	-	-
1:00 AM	1	3	0.06	3	0.06	3	0.07
1:30 AM	-	-	-	-	-	-	-

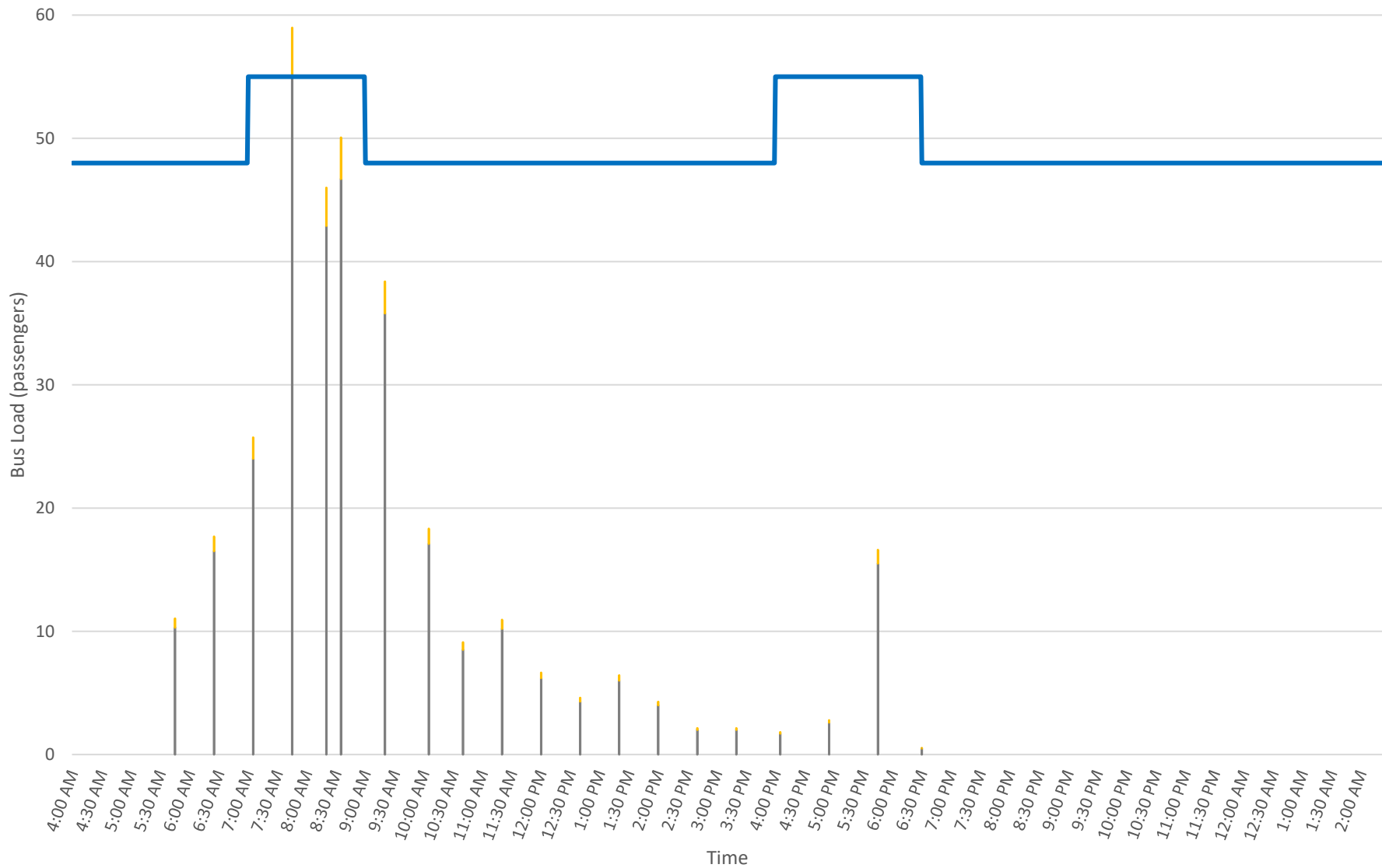
Red = transit demand is greater than planning capacity (V/C > 1.00)

Build (2027) Condition - Route 85 Inbound Arriving from 25 Webster Avenue @ Newton Street Load & Capacity By Bus at Webster Avenue @ Norfolk Street

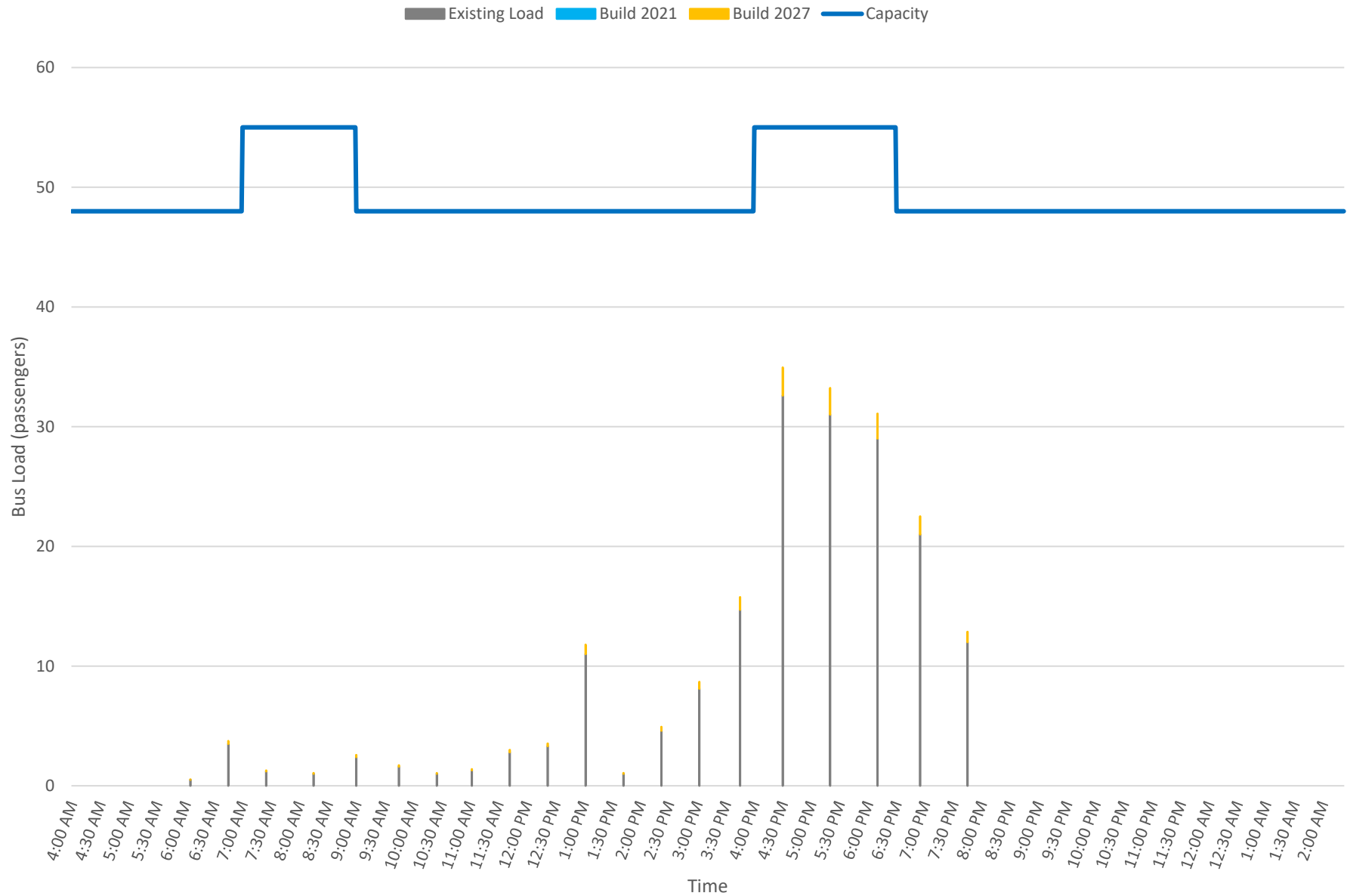


Build (2027) Condition - Route 85 Inbound Departing to Webster Avenue @ Cambridge Street Load & Capacity By Bus at Webster Avenue @ Norfolk Street

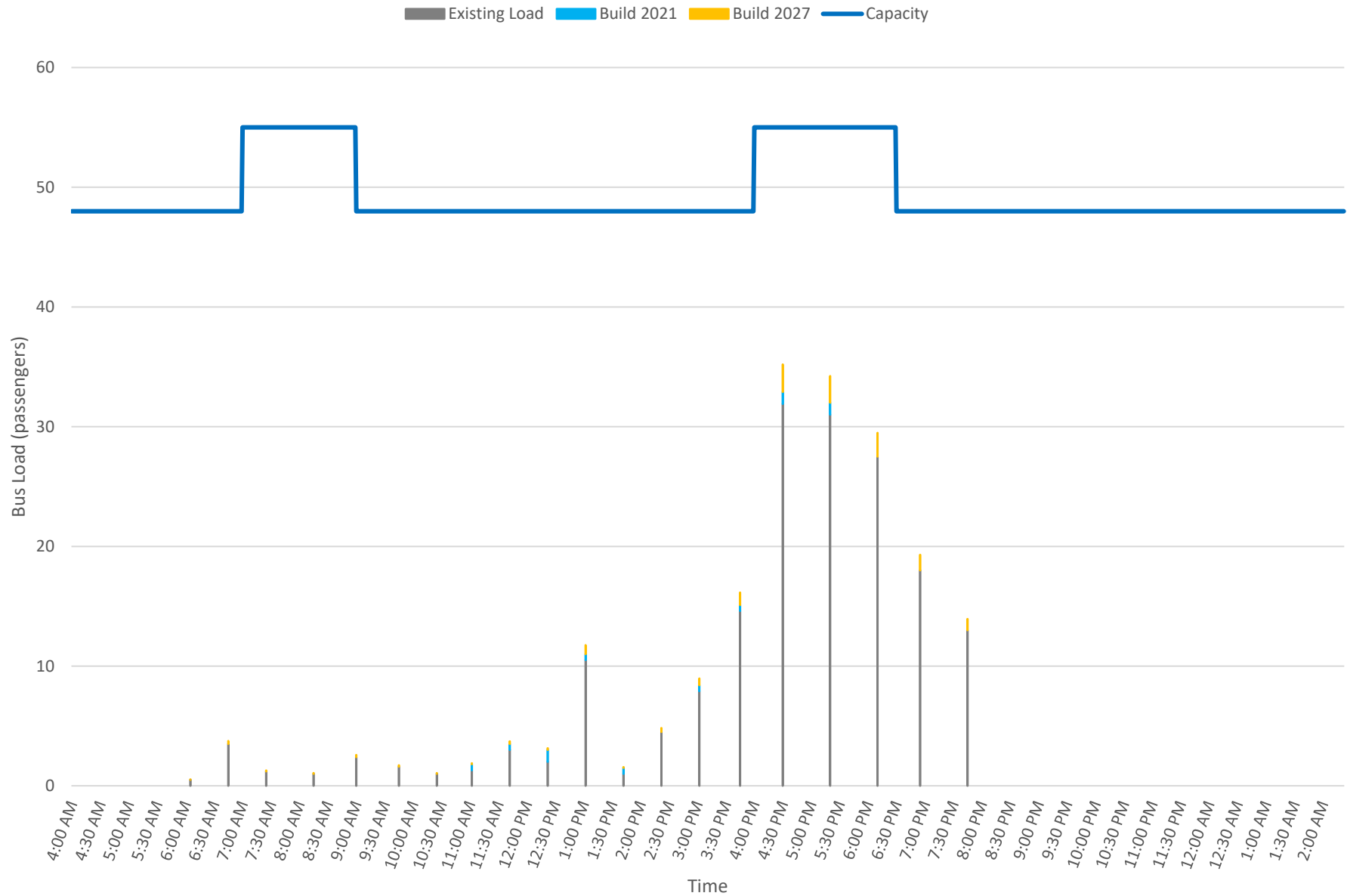
Existing Load Build 2021 Build 2027 Capacity



Build (2027) Condition - Route 85 Outbound Arriving from Columbia St @ Cambridge Street Load & Capacity By Bus at Webster Avenue @ Columbia Street



Build (2027) Condition - Route 85 Outbound Departing to Webster Avenue @ Prospect Street Load & Capacity By Bus at Webster Avenue @ Columbia Street



Bus Route 85 - Inbound Analysis Before WEBSTER AVE @ NORFOLK ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	1	10	0.21	10	0.21	11	0.23
6:00 AM	1	17	0.34	17	0.34	18	0.37
6:30 AM	-	-	-	-	-	-	-
7:00 AM	1	23	0.42	24	0.43	25	0.46
7:30 AM	1	53	0.96	54	0.97	57	1.04
8:00 AM	1	42	0.76	42	0.77	45	0.82
8:30 AM	1	46	0.84	47	0.85	50	0.91
9:00 AM	1	36	0.74	36	0.74	38	0.79
9:30 AM	-	-	-	-	-	-	-
10:00 AM	1	16	0.34	16	0.34	18	0.37
10:30 AM	1	8	0.17	8	0.17	9	0.19
11:00 AM	1	10	0.21	10	0.21	11	0.23
11:30 AM	-	-	-	-	-	-	-
12:00 PM	1	6	0.13	7	0.14	7	0.15
12:30 PM	1	4	0.08	4	0.09	5	0.10
1:00 PM	1	6	0.13	7	0.15	7	0.15
1:30 PM	-	-	-	-	-	-	-
2:00 PM	1	4	0.08	5	0.09	5	0.10
2:30 PM	1	3	0.06	4	0.07	4	0.08
3:00 PM	1	2	0.04	3	0.06	3	0.07
3:30 PM	-	-	-	-	-	-	-
4:00 PM	1	2	0.03	2	0.03	2	0.03
4:30 PM	1	3	0.05	3	0.05	3	0.05
5:00 PM	-	-	-	-	-	-	-
5:30 PM	1	16	0.28	16	0.28	17	0.30
6:00 PM	-	-	-	-	-	-	-
6:30 PM	1	1	0.01	1	0.01	1	0.01
7:00 PM	1	0	0.00	0	0.00	0	0.00
7:30 PM	-	-	-	-	-	-	-
8:00 PM	-	-	-	-	-	-	-
8:30 PM	-	-	-	-	-	-	-
9:00 PM	-	-	-	-	-	-	-
9:30 PM	-	-	-	-	-	-	-
10:00 PM	-	-	-	-	-	-	-
10:30 PM	-	-	-	-	-	-	-
11:00 PM	-	-	-	-	-	-	-
11:30 PM	-	-	-	-	-	-	-
12:00 AM	-	-	-	-	-	-	-
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 85 - Inbound Analysis After WEBSTER AVE @ NORFOLK ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	1	10	0.21	10	0.21	11	0.23
6:00 AM	1	17	0.34	17	0.34	18	0.37
6:30 AM	-	-	-	-	-	-	-
7:00 AM	1	24	0.44	24	0.44	26	0.47
7:30 AM	1	55	1.00	55	1.00	59	1.07
8:00 AM	1	43	0.78	43	0.78	46	0.84
8:30 AM	1	47	0.85	47	0.85	50	0.91
9:00 AM	1	36	0.75	36	0.75	38	0.80
9:30 AM	-	-	-	-	-	-	-
10:00 AM	1	17	0.36	17	0.36	18	0.38
10:30 AM	1	9	0.18	9	0.18	9	0.19
11:00 AM	1	10	0.21	10	0.21	11	0.23
11:30 AM	-	-	-	-	-	-	-
12:00 PM	1	6	0.13	6	0.13	7	0.14
12:30 PM	1	4	0.09	4	0.09	5	0.10
1:00 PM	1	6	0.13	6	0.13	6	0.13
1:30 PM	-	-	-	-	-	-	-
2:00 PM	1	4	0.08	4	0.08	4	0.09
2:30 PM	1	2	0.04	2	0.04	2	0.04
3:00 PM	1	2	0.04	2	0.04	2	0.04
3:30 PM	-	-	-	-	-	-	-
4:00 PM	1	2	0.03	2	0.03	2	0.03
4:30 PM	1	3	0.05	3	0.05	3	0.05
5:00 PM	-	-	-	-	-	-	-
5:30 PM	1	16	0.28	16	0.28	17	0.30
6:00 PM	-	-	-	-	-	-	-
6:30 PM	1	1	0.01	1	0.01	1	0.01
7:00 PM	1	0	0.00	0	0.00	0	0.00
7:30 PM	-	-	-	-	-	-	-
8:00 PM	-	-	-	-	-	-	-
8:30 PM	-	-	-	-	-	-	-
9:00 PM	-	-	-	-	-	-	-
9:30 PM	-	-	-	-	-	-	-
10:00 PM	-	-	-	-	-	-	-
10:30 PM	-	-	-	-	-	-	-
11:00 PM	-	-	-	-	-	-	-
11:30 PM	-	-	-	-	-	-	-
12:00 AM	-	-	-	-	-	-	-
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 85 - Outbound Analysis Before WEBSTER AVE @ COLUMBIA ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	-	-	-	-	-	-	-
6:00 AM	1	1	0.01	1	0.01	1	0.01
6:30 AM	1	4	0.06	4	0.06	4	0.07
7:00 AM	1	1	0.02	1	0.02	1	0.02
7:30 AM	-	-	-	-	-	-	-
8:00 AM	1	1	0.02	1	0.02	1	0.02
8:30 AM	-	-	-	-	-	-	-
9:00 AM	1	2	0.05	2	0.05	3	0.05
9:30 AM	1	2	0.03	2	0.03	2	0.04
10:00 AM	1	1	0.02	1	0.02	1	0.02
10:30 AM	-	-	-	-	-	-	-
11:00 AM	1	1	0.03	1	0.03	1	0.03
11:30 AM	1	3	0.06	3	0.06	3	0.06
12:00 PM	1	3	0.07	3	0.07	4	0.07
12:30 PM	-	-	-	-	-	-	-
1:00 PM	1	11	0.23	11	0.23	12	0.25
1:30 PM	1	1	0.02	1	0.02	1	0.02
2:00 PM	1	5	0.10	5	0.10	5	0.10
2:30 PM	-	-	-	-	-	-	-
3:00 PM	1	8	0.17	8	0.17	9	0.18
3:30 PM	1	15	0.27	15	0.27	16	0.29
4:00 PM	-	-	-	-	-	-	-
4:30 PM	1	33	0.59	33	0.59	35	0.64
5:00 PM	1	31	0.56	31	0.56	33	0.60
5:30 PM	-	-	-	-	-	-	-
6:00 PM	1	29	0.53	29	0.53	31	0.57
6:30 PM	1	21	0.44	21	0.44	23	0.47
7:00 PM	-	-	-	-	-	-	-
7:30 PM	1	12	0.25	12	0.25	13	0.27
8:00 PM	-	-	-	-	-	-	-
8:30 PM	-	-	-	-	-	-	-
9:00 PM	-	-	-	-	-	-	-
9:30 PM	-	-	-	-	-	-	-
10:00 PM	-	-	-	-	-	-	-
10:30 PM	-	-	-	-	-	-	-
11:00 PM	-	-	-	-	-	-	-
11:30 PM	-	-	-	-	-	-	-
12:00 AM	-	-	-	-	-	-	-
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

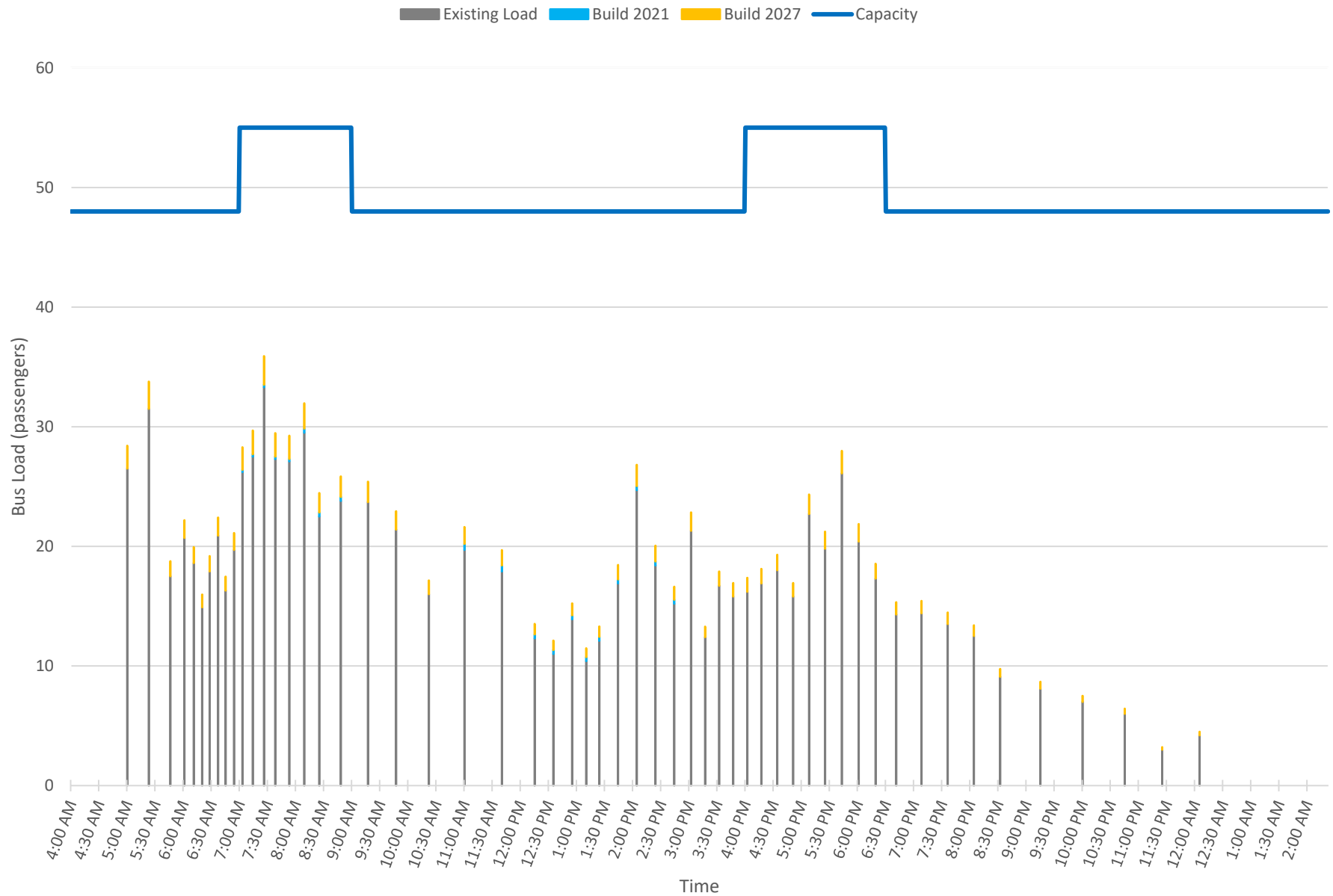
Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 85 - Outbound Analysis After WEBSTER AVE @ COLUMBIA ST (Volume/VC Tables by 30 min)

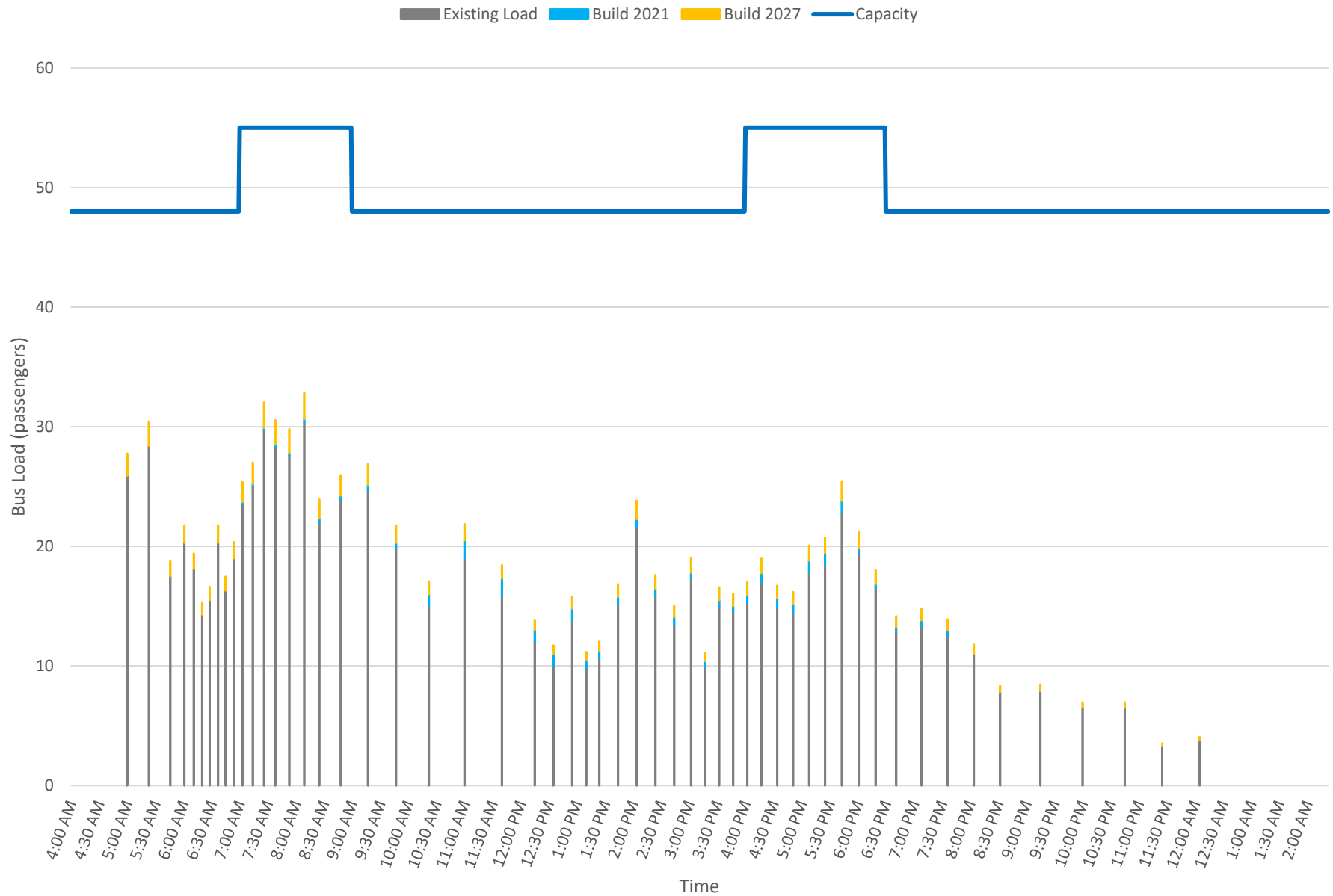
	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	-	-	-	-	-	-	-
6:00 AM	1	1	0.01	1	0.01	1	0.01
6:30 AM	1	4	0.06	4	0.06	4	0.07
7:00 AM	1	1	0.02	1	0.02	1	0.02
7:30 AM	-	-	-	-	-	-	-
8:00 AM	1	1	0.02	1	0.02	1	0.02
8:30 AM	-	-	-	-	-	-	-
9:00 AM	1	2	0.05	2	0.05	3	0.05
9:30 AM	1	2	0.03	2	0.03	2	0.04
10:00 AM	1	1	0.02	1	0.02	1	0.02
10:30 AM	-	-	-	-	-	-	-
11:00 AM	1	1	0.03	2	0.04	2	0.04
11:30 AM	1	3	0.06	4	0.07	4	0.08
12:00 PM	1	2	0.04	3	0.06	3	0.07
12:30 PM	-	-	-	-	-	-	-
1:00 PM	1	11	0.22	11	0.23	12	0.24
1:30 PM	1	1	0.02	2	0.03	2	0.03
2:00 PM	1	5	0.09	5	0.09	5	0.10
2:30 PM	-	-	-	-	-	-	-
3:00 PM	1	8	0.16	8	0.18	9	0.19
3:30 PM	1	15	0.27	15	0.27	16	0.29
4:00 PM	-	-	-	-	-	-	-
4:30 PM	1	32	0.58	33	0.60	35	0.64
5:00 PM	1	31	0.56	32	0.58	34	0.62
5:30 PM	-	-	-	-	-	-	-
6:00 PM	1	28	0.50	28	0.50	29	0.54
6:30 PM	1	18	0.38	18	0.38	19	0.40
7:00 PM	-	-	-	-	-	-	-
7:30 PM	1	13	0.27	13	0.27	14	0.29
8:00 PM	-	-	-	-	-	-	-
8:30 PM	-	-	-	-	-	-	-
9:00 PM	-	-	-	-	-	-	-
9:30 PM	-	-	-	-	-	-	-
10:00 PM	-	-	-	-	-	-	-
10:30 PM	-	-	-	-	-	-	-
11:00 PM	-	-	-	-	-	-	-
11:30 PM	-	-	-	-	-	-	-
12:00 AM	-	-	-	-	-	-	-
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

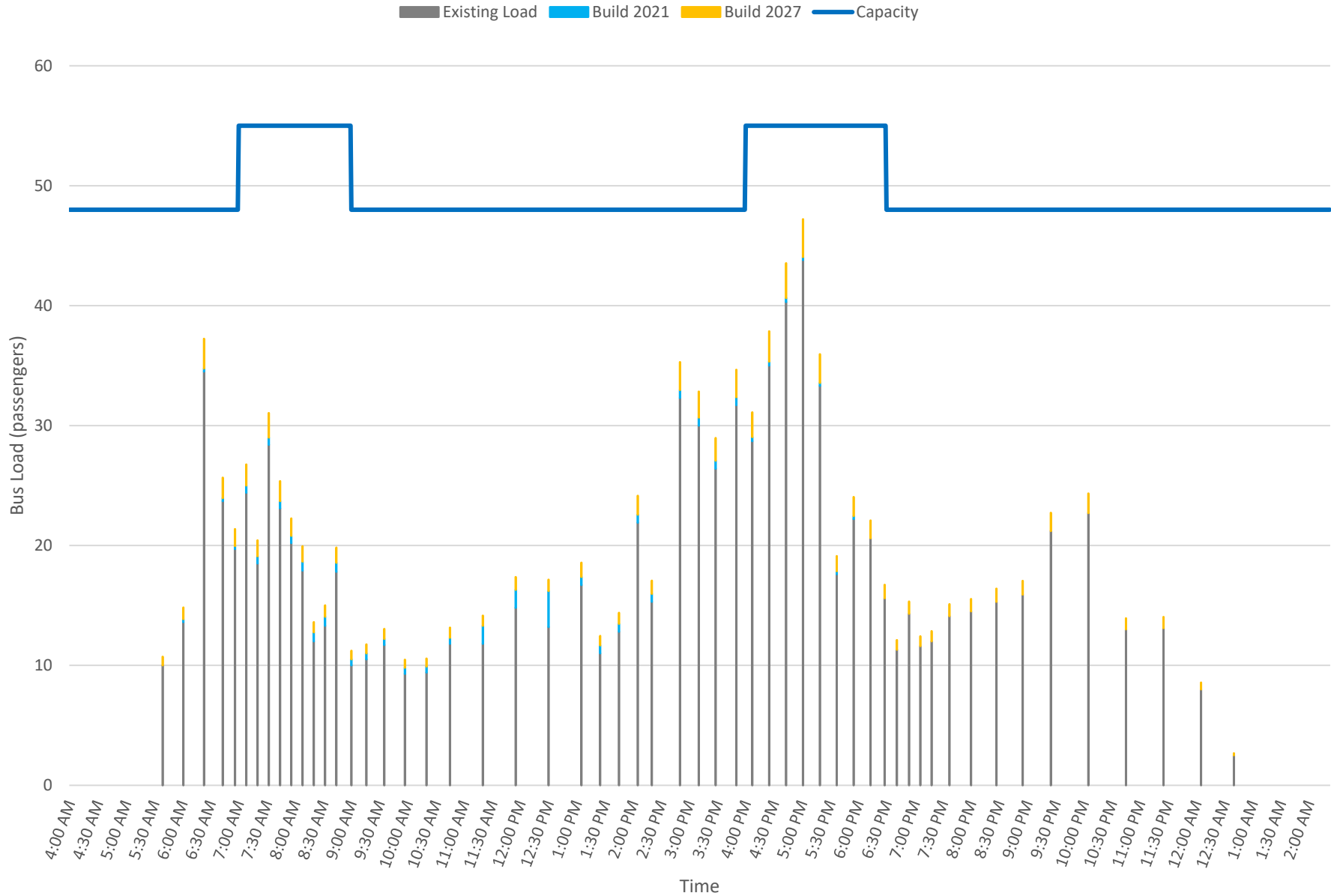
Build (2027) Condition - Route 86 Inbound Arriving from Washington St @ Washington Terrace Load & Capacity By Bus at Somerville Avenue @ Stone Avenue



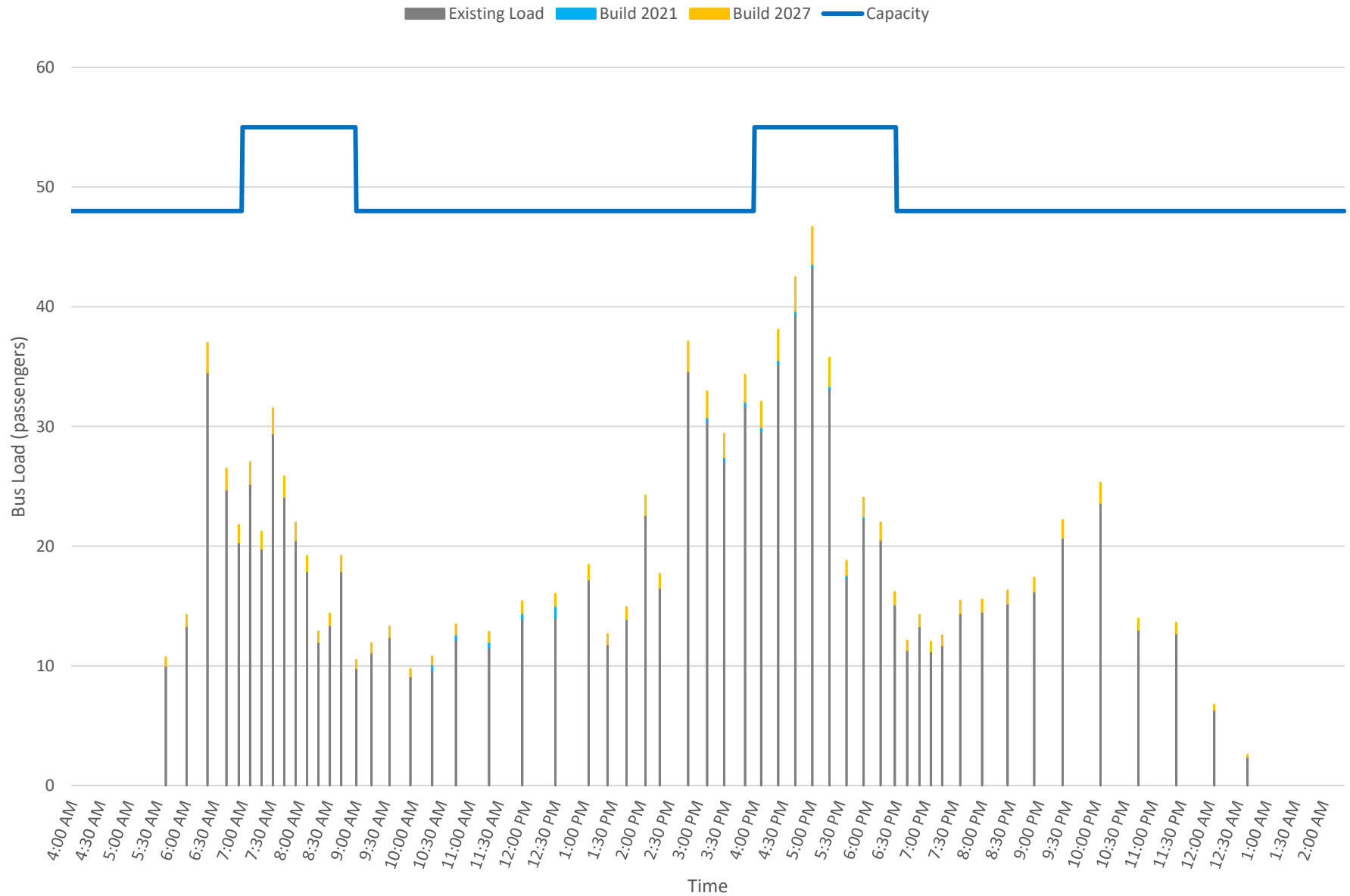
Build (2027) Condition - Route 86 Inbound Departing to Washington Street @ Webster Avenue Load & Capacity By Bus at Somerville Avenue @ Stone Avenue



Build (2027) Condition - Route 86 Outbound Arriving from Washington St @ Kingman Road
Load & Capacity By Bus at Somerville Avenue @ Prospect Street



Build (2027) Condition - Route 86 Outbound Departing to Washington St @ Merriam Street Load & Capacity By Bus at Somerville Avenue @ Prospect Street



Bus Route 86 - Inbound Analysis Before SOMERVILLE AVE @ STONE AVE (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	2	58	0.60	58	0.60	62	0.65
5:30 AM	1	18	0.36	18	0.36	19	0.39
6:00 AM	4	72	0.38	72	0.38	77	0.40
6:30 AM	3	57	0.34	57	0.34	61	0.37
7:00 AM	3	87	0.53	88	0.53	94	0.57
7:30 AM	2	54	0.49	55	0.50	59	0.53
8:00 AM	2	52	0.47	53	0.48	56	0.51
8:30 AM	1	24	0.43	24	0.44	26	0.47
9:00 AM	1	24	0.49	24	0.49	25	0.53
9:30 AM	1	21	0.45	21	0.45	23	0.48
10:00 AM	1	16	0.33	16	0.33	17	0.36
10:30 AM	-	-	-	-	-	-	-
11:00 AM	1	20	0.41	20	0.42	22	0.45
11:30 AM	1	18	0.37	18	0.38	20	0.41
12:00 PM	1	12	0.26	13	0.26	14	0.28
12:30 PM	2	25	0.26	26	0.27	27	0.29
1:00 PM	2	23	0.23	23	0.24	25	0.26
1:30 PM	1	17	0.35	17	0.36	18	0.38
2:00 PM	2	43	0.45	44	0.46	47	0.49
2:30 PM	1	15	0.32	16	0.32	17	0.35
3:00 PM	2	34	0.35	34	0.35	36	0.38
3:30 PM	2	33	0.30	33	0.30	35	0.32
4:00 PM	2	33	0.30	33	0.30	35	0.32
4:30 PM	2	34	0.31	34	0.31	36	0.33
5:00 PM	2	43	0.39	43	0.39	46	0.41
5:30 PM	1	26	0.47	26	0.47	28	0.51
6:00 PM	2	38	0.34	38	0.34	40	0.37
6:30 PM	1	14	0.30	14	0.30	15	0.32
7:00 PM	1	14	0.30	14	0.30	15	0.32
7:30 PM	1	14	0.28	14	0.28	14	0.30
8:00 PM	1	13	0.26	13	0.26	13	0.28
8:30 PM	1	9	0.19	9	0.19	10	0.20
9:00 PM	1	8	0.17	8	0.17	9	0.18
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	7	0.15	7	0.15	8	0.16
10:30 PM	1	6	0.13	6	0.13	6	0.13
11:00 PM	1	3	0.06	3	0.06	3	0.07
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	4	0.09	4	0.09	5	0.09
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 86 - Inbound Analysis After SOMERVILLE AVE @ STONE AVE (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	2	54	0.57	54	0.57	58	0.61
5:30 AM	1	18	0.36	18	0.36	19	0.39
6:00 AM	4	68	0.36	68	0.36	73	0.38
6:30 AM	3	56	0.34	56	0.34	60	0.36
7:00 AM	3	78	0.47	79	0.48	84	0.51
7:30 AM	2	56	0.51	56	0.51	60	0.55
8:00 AM	2	52	0.48	53	0.48	57	0.52
8:30 AM	1	24	0.43	24	0.44	26	0.47
9:00 AM	1	25	0.51	25	0.52	27	0.56
9:30 AM	1	20	0.41	20	0.42	22	0.45
10:00 AM	1	15	0.31	16	0.33	17	0.36
10:30 AM	-	-	-	-	-	-	-
11:00 AM	1	19	0.40	21	0.43	22	0.46
11:30 AM	1	16	0.33	17	0.36	18	0.38
12:00 PM	1	12	0.25	13	0.27	14	0.29
12:30 PM	2	24	0.25	26	0.27	28	0.29
1:00 PM	2	20	0.21	22	0.23	23	0.24
1:30 PM	1	15	0.31	16	0.33	17	0.35
2:00 PM	2	37	0.39	39	0.40	41	0.43
2:30 PM	1	13	0.28	14	0.29	15	0.31
3:00 PM	2	27	0.28	28	0.29	30	0.31
3:30 PM	2	30	0.27	31	0.28	33	0.30
4:00 PM	2	32	0.29	34	0.31	36	0.33
4:30 PM	2	29	0.27	31	0.28	33	0.30
5:00 PM	2	36	0.33	38	0.35	41	0.37
5:30 PM	1	23	0.41	24	0.43	25	0.46
6:00 PM	2	36	0.33	37	0.33	39	0.36
6:30 PM	1	13	0.27	13	0.28	14	0.30
7:00 PM	1	13	0.28	14	0.29	15	0.31
7:30 PM	1	13	0.26	13	0.27	14	0.29
8:00 PM	1	11	0.23	11	0.23	12	0.25
8:30 PM	1	8	0.16	8	0.16	8	0.17
9:00 PM	1	8	0.16	8	0.16	8	0.18
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	7	0.14	7	0.14	7	0.15
10:30 PM	1	7	0.14	7	0.14	7	0.15
11:00 PM	1	3	0.07	3	0.07	4	0.07
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	4	0.08	4	0.08	4	0.08
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 86 - Outbound Analysis Before SOMERVILLE AVE @ PROSPECT ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	1	10	0.21	10	0.21	11	0.22
6:00 AM	2	48	0.50	49	0.51	52	0.54
6:30 AM	2	43	0.39	44	0.40	47	0.43
7:00 AM	2	43	0.39	44	0.40	47	0.43
7:30 AM	3	72	0.43	74	0.45	79	0.48
8:00 AM	2	30	0.27	31	0.29	34	0.31
8:30 AM	2	31	0.28	33	0.30	35	0.32
9:00 AM	2	21	0.21	22	0.22	23	0.24
9:30 AM	2	21	0.22	22	0.23	24	0.24
10:00 AM	1	9	0.20	10	0.21	11	0.22
10:30 AM	1	12	0.25	12	0.26	13	0.27
11:00 AM	1	12	0.25	13	0.28	14	0.29
11:30 AM	1	15	0.31	16	0.34	17	0.36
12:00 PM	-	-	-	-	-	-	-
12:30 PM	1	13	0.28	16	0.34	17	0.36
1:00 PM	2	28	0.29	29	0.30	31	0.32
1:30 PM	1	13	0.27	13	0.28	14	0.30
2:00 PM	2	37	0.39	39	0.40	41	0.43
2:30 PM	1	32	0.67	33	0.69	35	0.74
3:00 PM	2	56	0.59	58	0.60	62	0.64
3:30 PM	1	32	0.58	32	0.59	35	0.63
4:00 PM	2	64	0.58	64	0.59	69	0.63
4:30 PM	1	40	0.73	41	0.74	44	0.79
5:00 PM	2	77	0.70	78	0.71	83	0.76
5:30 PM	2	40	0.36	40	0.37	43	0.39
6:00 PM	2	36	0.33	36	0.33	39	0.35
6:30 PM	2	26	0.27	26	0.27	27	0.29
7:00 PM	2	24	0.25	24	0.25	25	0.26
7:30 PM	1	14	0.29	14	0.29	15	0.31
8:00 PM	2	30	0.31	30	0.31	32	0.33
8:30 PM	1	16	0.33	16	0.33	17	0.36
9:00 PM	1	21	0.44	21	0.44	23	0.47
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	23	0.47	23	0.47	24	0.51
10:30 PM	1	13	0.27	13	0.27	14	0.29
11:00 PM	1	13	0.27	13	0.27	14	0.29
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	8	0.17	8	0.17	9	0.18
12:30 AM	1	3	0.05	3	0.05	3	0.06
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

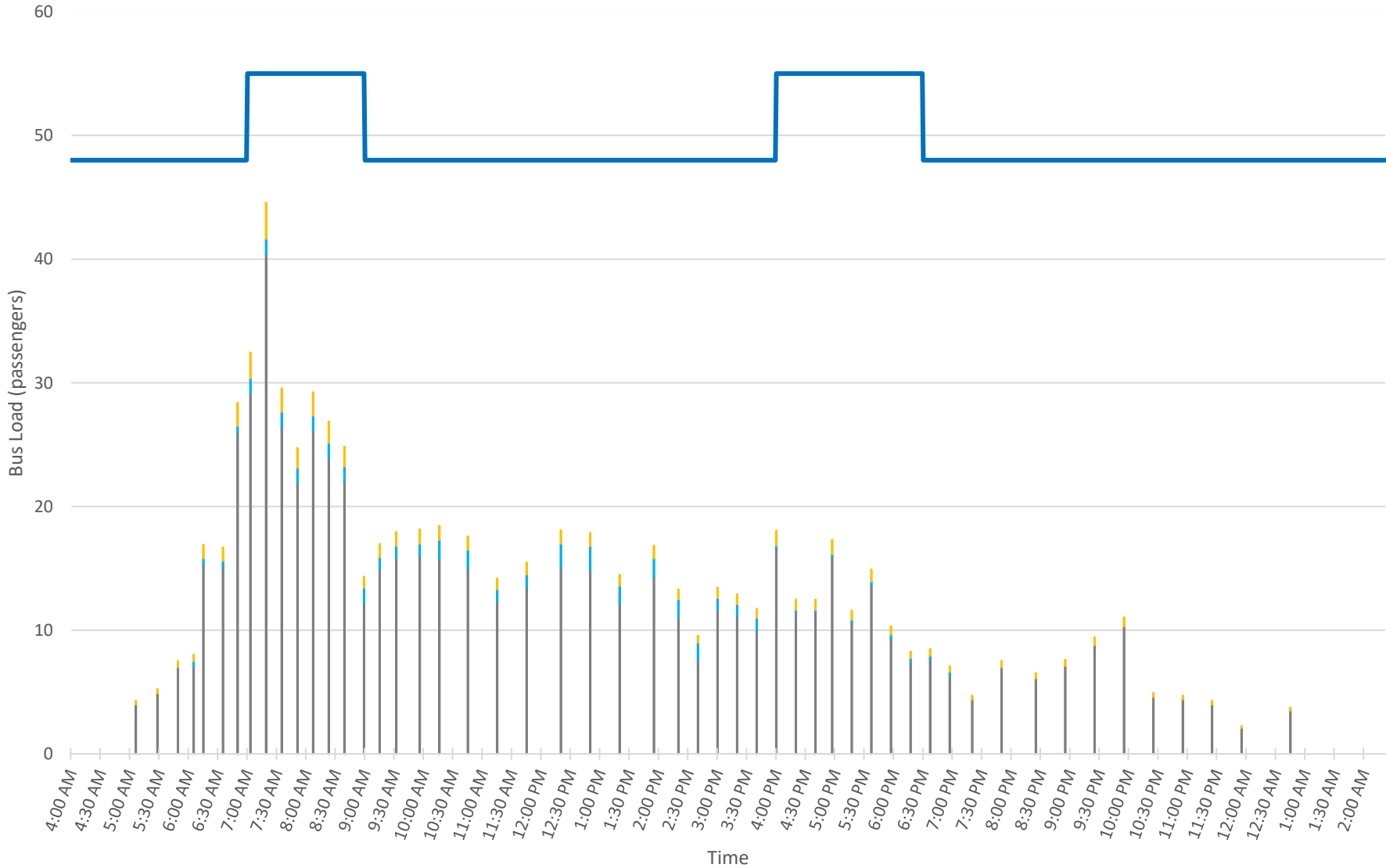
Bus Route 86 - Outbound Analysis After SOMERVILLE AVE @ PROSPECT ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	1	10	0.21	10	0.21	11	0.22
6:00 AM	2	48	0.50	48	0.50	51	0.53
6:30 AM	2	45	0.41	45	0.41	48	0.44
7:00 AM	2	45	0.41	45	0.41	48	0.44
7:30 AM	3	74	0.45	74	0.45	79	0.48
8:00 AM	2	30	0.27	30	0.27	32	0.29
8:30 AM	2	31	0.28	31	0.28	34	0.31
9:00 AM	2	21	0.22	21	0.22	22	0.23
9:30 AM	2	22	0.22	22	0.22	23	0.24
10:00 AM	1	10	0.20	10	0.21	11	0.22
10:30 AM	1	12	0.25	13	0.26	13	0.28
11:00 AM	1	12	0.24	12	0.25	13	0.27
11:30 AM	1	14	0.29	14	0.30	15	0.32
12:00 PM	-	-	-	-	-	-	-
12:30 PM	1	14	0.29	15	0.31	16	0.33
1:00 PM	2	29	0.30	29	0.30	31	0.32
1:30 PM	1	14	0.29	14	0.29	15	0.31
2:00 PM	2	39	0.41	39	0.41	42	0.44
2:30 PM	1	35	0.72	35	0.72	37	0.77
3:00 PM	2	58	0.60	58	0.61	62	0.65
3:30 PM	1	32	0.58	32	0.58	34	0.62
4:00 PM	2	65	0.59	65	0.60	70	0.64
4:30 PM	1	39	0.71	40	0.72	42	0.77
5:00 PM	2	76	0.69	77	0.70	82	0.75
5:30 PM	2	40	0.36	40	0.36	43	0.39
6:00 PM	2	36	0.32	36	0.32	38	0.35
6:30 PM	2	25	0.26	25	0.26	26	0.27
7:00 PM	2	23	0.24	23	0.24	25	0.26
7:30 PM	1	14	0.30	14	0.30	15	0.32
8:00 PM	2	30	0.31	30	0.31	32	0.33
8:30 PM	1	16	0.34	16	0.34	17	0.36
9:00 PM	1	21	0.43	21	0.43	22	0.46
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	24	0.49	24	0.49	25	0.53
10:30 PM	1	13	0.27	13	0.27	14	0.29
11:00 PM	1	13	0.26	13	0.26	14	0.28
11:30 PM	-	-	-	-	-	-	-
12:00 AM	1	6	0.13	6	0.13	7	0.14
12:30 AM	1	2	0.05	2	0.05	3	0.05
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

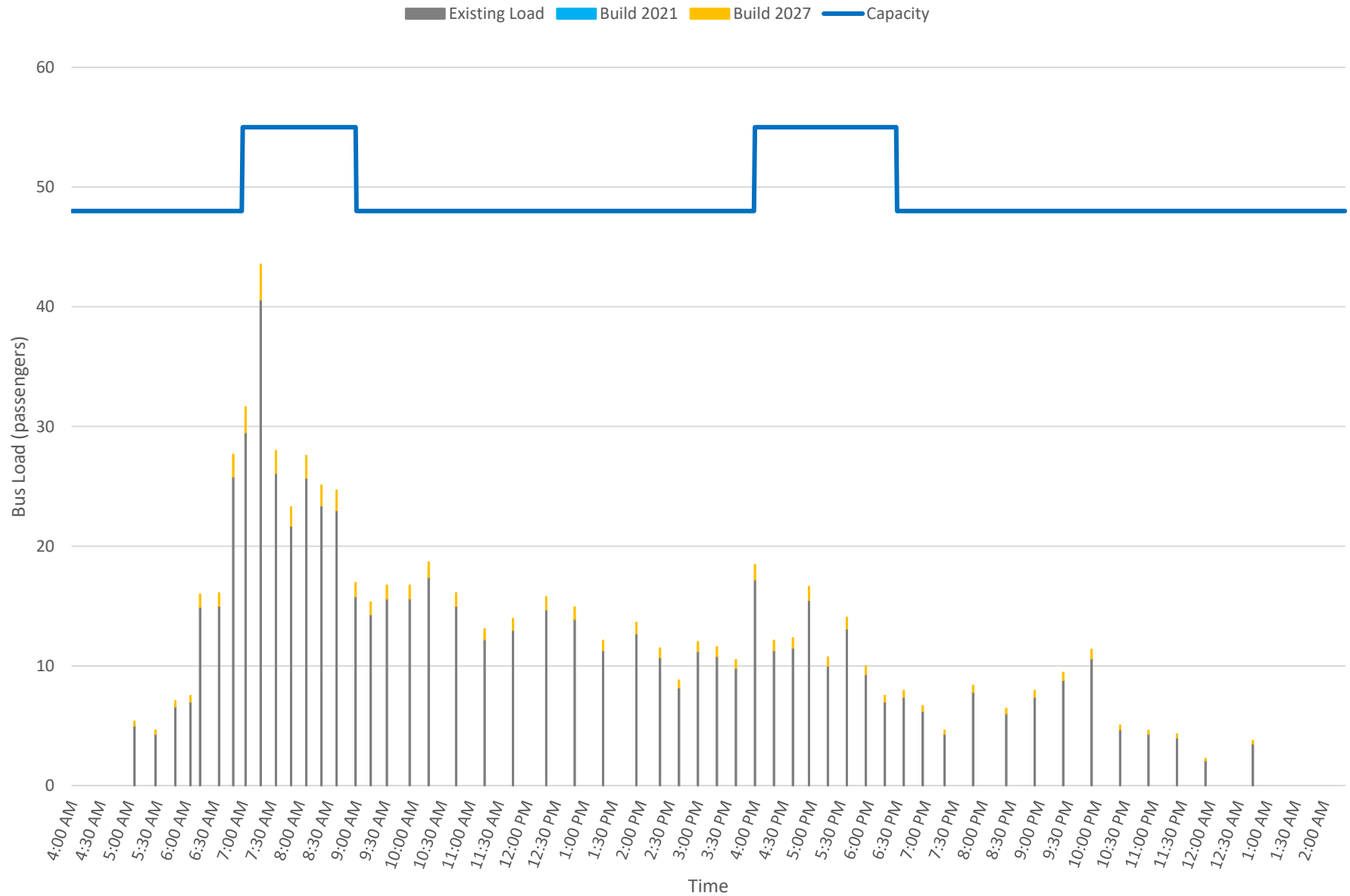
Red = transit demand is greater than planning capacity (V/C > 1.00)

Build (2027) Condition - Route 87 Inbound Arriving from Somerville Avenue @ Union Square
Load & Capacity By Bus at Somerville Avenue @ Prospect Street

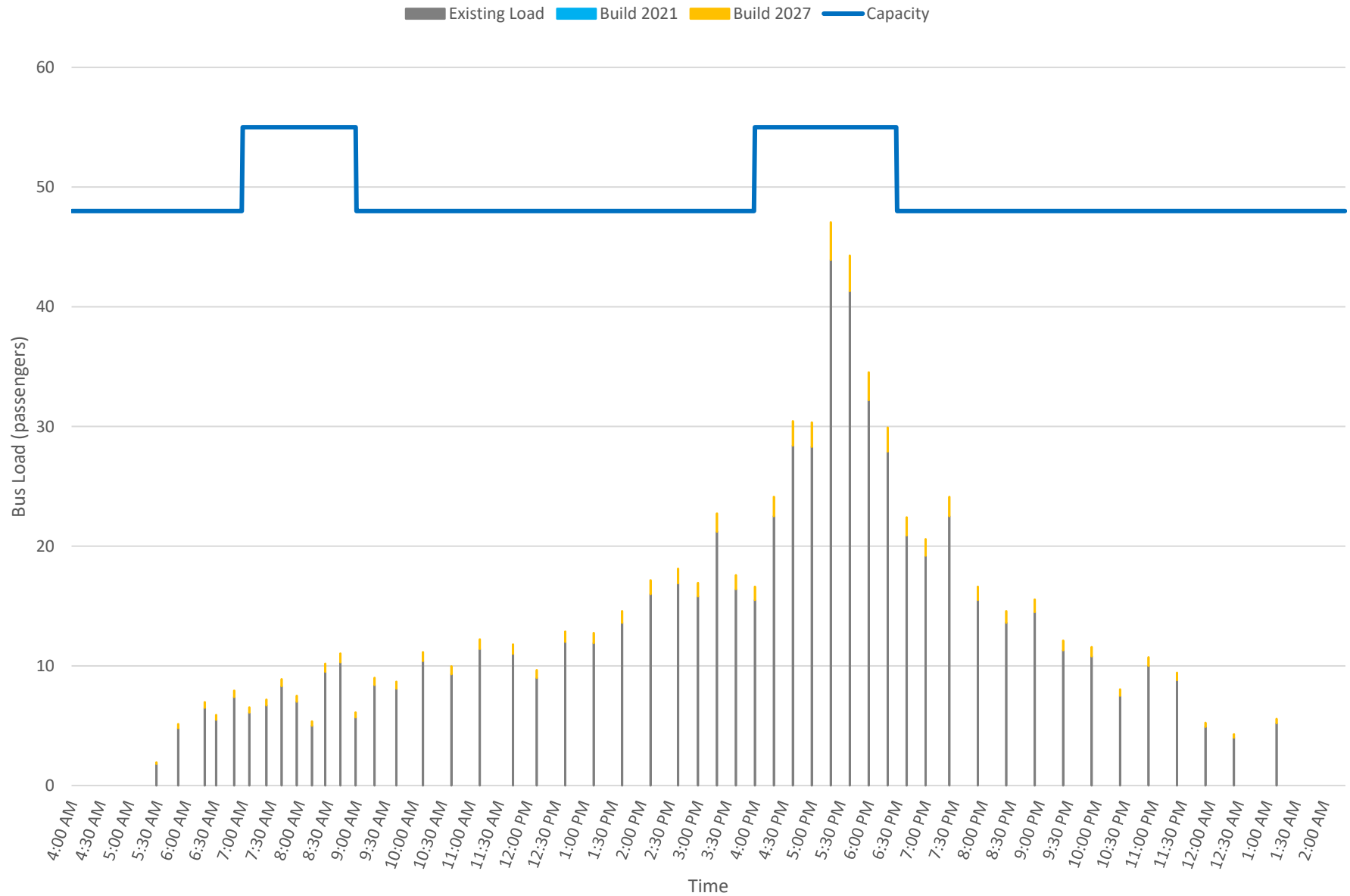
Existing Load Build 2021 Build 2027 Capacity



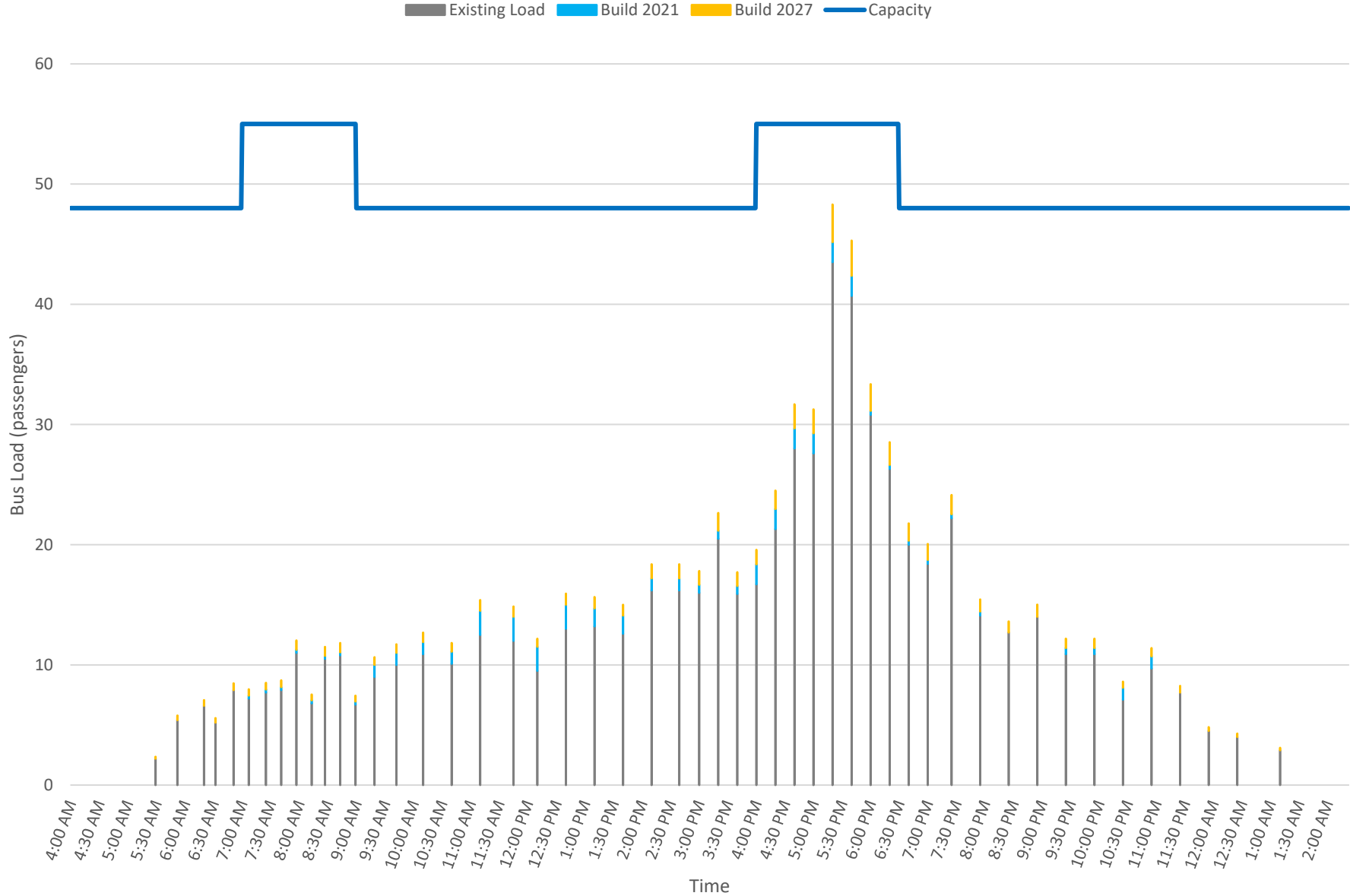
Build (2027) Condition - Route 87 Inbound Departing to Somerville Avenue @ Linden Street Load & Capacity By Bus at Somerville Avenue @ Prospect Street



Build (2027) Condition - Route 87 Outbound Arriving from Somerville Ave @ Merriam Street Load & Capacity By Bus at Somerville Avenue @ Stone Avenue



Build (2027) Condition - Route 87 Outbound Departing to Bow Street @ Warren Street
Load & Capacity By Bus at Somerville Avenue @ Stone Avenue



Bus Route 87 - Inbound Analysis Before SOMERVILLE AVE @ PROSPECT ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	2	9	0.09	9	0.09	10	0.10
5:30 AM	1	7	0.15	7	0.15	8	0.16
6:00 AM	2	22	0.23	23	0.24	25	0.26
6:30 AM	2	41	0.37	42	0.38	45	0.41
7:00 AM	2	70	0.63	72	0.65	77	0.70
7:30 AM	2	48	0.44	51	0.46	54	0.49
8:00 AM	2	50	0.45	53	0.48	56	0.51
8:30 AM	2	34	0.31	37	0.33	39	0.36
9:00 AM	1	15	0.31	16	0.33	17	0.35
9:30 AM	2	32	0.33	34	0.35	36	0.38
10:00 AM	1	16	0.33	17	0.36	18	0.38
10:30 AM	1	15	0.31	17	0.34	18	0.37
11:00 AM	1	12	0.26	13	0.28	14	0.30
11:30 AM	1	14	0.28	15	0.30	15	0.32
12:00 PM	1	15	0.31	17	0.35	18	0.38
12:30 PM	1	15	0.31	17	0.35	18	0.37
1:00 PM	1	12	0.25	14	0.28	14	0.30
1:30 PM	1	14	0.30	16	0.33	17	0.35
2:00 PM	1	11	0.23	13	0.26	13	0.28
2:30 PM	1	8	0.16	9	0.19	10	0.20
3:00 PM	2	23	0.24	25	0.26	26	0.27
3:30 PM	1	10	0.18	11	0.20	12	0.21
4:00 PM	2	28	0.25	29	0.26	31	0.28
4:30 PM	2	27	0.25	28	0.25	30	0.27
5:00 PM	1	11	0.19	11	0.20	12	0.21
5:30 PM	2	23	0.21	24	0.21	25	0.23
6:00 PM	1	7	0.13	8	0.14	8	0.15
6:30 PM	2	14	0.14	15	0.15	16	0.16
7:00 PM	1	4	0.09	4	0.09	5	0.10
7:30 PM	1	7	0.15	7	0.15	8	0.16
8:00 PM	1	6	0.13	6	0.13	7	0.14
8:30 PM	1	7	0.15	7	0.15	8	0.16
9:00 PM	1	9	0.18	9	0.18	9	0.20
9:30 PM	1	10	0.21	10	0.21	11	0.23
10:00 PM	1	5	0.10	5	0.10	5	0.10
10:30 PM	1	4	0.09	4	0.09	5	0.10
11:00 PM	1	4	0.08	4	0.08	4	0.09
11:30 PM	1	2	0.04	2	0.04	2	0.05
12:00 AM	-	-	-	-	-	-	-
12:30 AM	1	4	0.07	4	0.07	4	0.08
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 87 - Inbound Analysis After SOMERVILLE AVE @ PROSPECT ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	2	9	0.10	9	0.10	10	0.10
5:30 AM	1	7	0.14	7	0.14	7	0.15
6:00 AM	2	22	0.23	22	0.23	23	0.24
6:30 AM	2	41	0.37	41	0.37	44	0.40
7:00 AM	2	70	0.64	70	0.64	75	0.68
7:30 AM	2	48	0.43	48	0.43	51	0.47
8:00 AM	2	49	0.45	49	0.45	53	0.48
8:30 AM	2	39	0.35	39	0.35	42	0.38
9:00 AM	1	14	0.30	14	0.30	15	0.32
9:30 AM	2	31	0.33	31	0.33	33	0.35
10:00 AM	1	17	0.36	17	0.36	19	0.39
10:30 AM	1	15	0.31	15	0.31	16	0.34
11:00 AM	1	12	0.25	12	0.25	13	0.27
11:30 AM	1	13	0.27	13	0.27	14	0.29
12:00 PM	1	15	0.31	15	0.31	16	0.33
12:30 PM	1	14	0.29	14	0.29	15	0.31
1:00 PM	1	11	0.24	11	0.24	12	0.25
1:30 PM	1	13	0.26	13	0.26	14	0.28
2:00 PM	1	11	0.22	11	0.22	11	0.24
2:30 PM	1	8	0.17	8	0.17	9	0.18
3:00 PM	2	22	0.23	22	0.23	24	0.25
3:30 PM	1	10	0.18	10	0.18	11	0.19
4:00 PM	2	29	0.26	29	0.26	31	0.28
4:30 PM	2	27	0.25	27	0.25	29	0.26
5:00 PM	1	10	0.18	10	0.18	11	0.19
5:30 PM	2	22	0.20	22	0.20	24	0.22
6:00 PM	1	7	0.13	7	0.13	8	0.14
6:30 PM	2	14	0.14	14	0.14	15	0.15
7:00 PM	1	4	0.09	4	0.09	5	0.10
7:30 PM	1	8	0.16	8	0.16	8	0.17
8:00 PM	1	6	0.13	6	0.13	6	0.13
8:30 PM	1	7	0.15	7	0.15	8	0.17
9:00 PM	1	9	0.18	9	0.18	9	0.20
9:30 PM	1	11	0.22	11	0.22	11	0.24
10:00 PM	1	5	0.10	5	0.10	5	0.10
10:30 PM	1	4	0.09	4	0.09	5	0.10
11:00 PM	1	4	0.08	4	0.08	4	0.09
11:30 PM	1	2	0.04	2	0.04	2	0.05
12:00 AM	-	-	-	-	-	-	-
12:30 AM	1	4	0.07	4	0.07	4	0.08
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 87 - Outbound Analysis Before SOMERVILLE AVE @ STONE AVE (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	2	0.04	2	0.04	2	0.04
5:30 AM	1	5	0.10	5	0.10	5	0.11
6:00 AM	1	7	0.14	7	0.14	7	0.15
6:30 AM	2	13	0.12	13	0.12	14	0.13
7:00 AM	2	13	0.12	13	0.12	14	0.12
7:30 AM	2	15	0.14	15	0.14	16	0.15
8:00 AM	2	15	0.13	15	0.13	16	0.14
8:30 AM	2	16	0.15	16	0.15	17	0.16
9:00 AM	1	8	0.18	8	0.18	9	0.19
9:30 AM	1	8	0.17	8	0.17	9	0.18
10:00 AM	1	10	0.22	10	0.22	11	0.23
10:30 AM	1	9	0.19	9	0.19	10	0.21
11:00 AM	1	11	0.24	11	0.24	12	0.25
11:30 AM	1	11	0.23	11	0.23	12	0.25
12:00 PM	1	9	0.19	9	0.19	10	0.20
12:30 PM	1	12	0.25	12	0.25	13	0.27
1:00 PM	1	12	0.25	12	0.25	13	0.27
1:30 PM	1	14	0.28	14	0.28	15	0.30
2:00 PM	1	16	0.33	16	0.33	17	0.36
2:30 PM	1	17	0.35	17	0.35	18	0.38
3:00 PM	2	37	0.39	37	0.39	40	0.41
3:30 PM	1	16	0.30	16	0.30	18	0.32
4:00 PM	2	38	0.35	38	0.35	41	0.37
4:30 PM	1	28	0.52	28	0.52	30	0.55
5:00 PM	2	72	0.66	72	0.66	77	0.70
5:30 PM	1	41	0.75	41	0.75	44	0.81
6:00 PM	2	60	0.55	60	0.55	64	0.59
6:30 PM	1	21	0.44	21	0.44	22	0.47
7:00 PM	2	42	0.43	42	0.43	45	0.47
7:30 PM	1	16	0.32	16	0.32	17	0.35
8:00 PM	1	14	0.28	14	0.28	15	0.30
8:30 PM	1	15	0.30	15	0.30	16	0.32
9:00 PM	1	11	0.24	11	0.24	12	0.25
9:30 PM	1	11	0.23	11	0.23	12	0.24
10:00 PM	1	8	0.16	8	0.16	8	0.17
10:30 PM	1	10	0.21	10	0.21	11	0.22
11:00 PM	1	9	0.18	9	0.18	9	0.20
11:30 PM	1	5	0.10	5	0.10	5	0.11
12:00 AM	1	4	0.08	4	0.08	4	0.09
12:30 AM	-	-	-	-	-	-	-
1:00 AM	1	5	0.11	5	0.11	6	0.12
1:30 AM	-	-	-	-	-	-	-

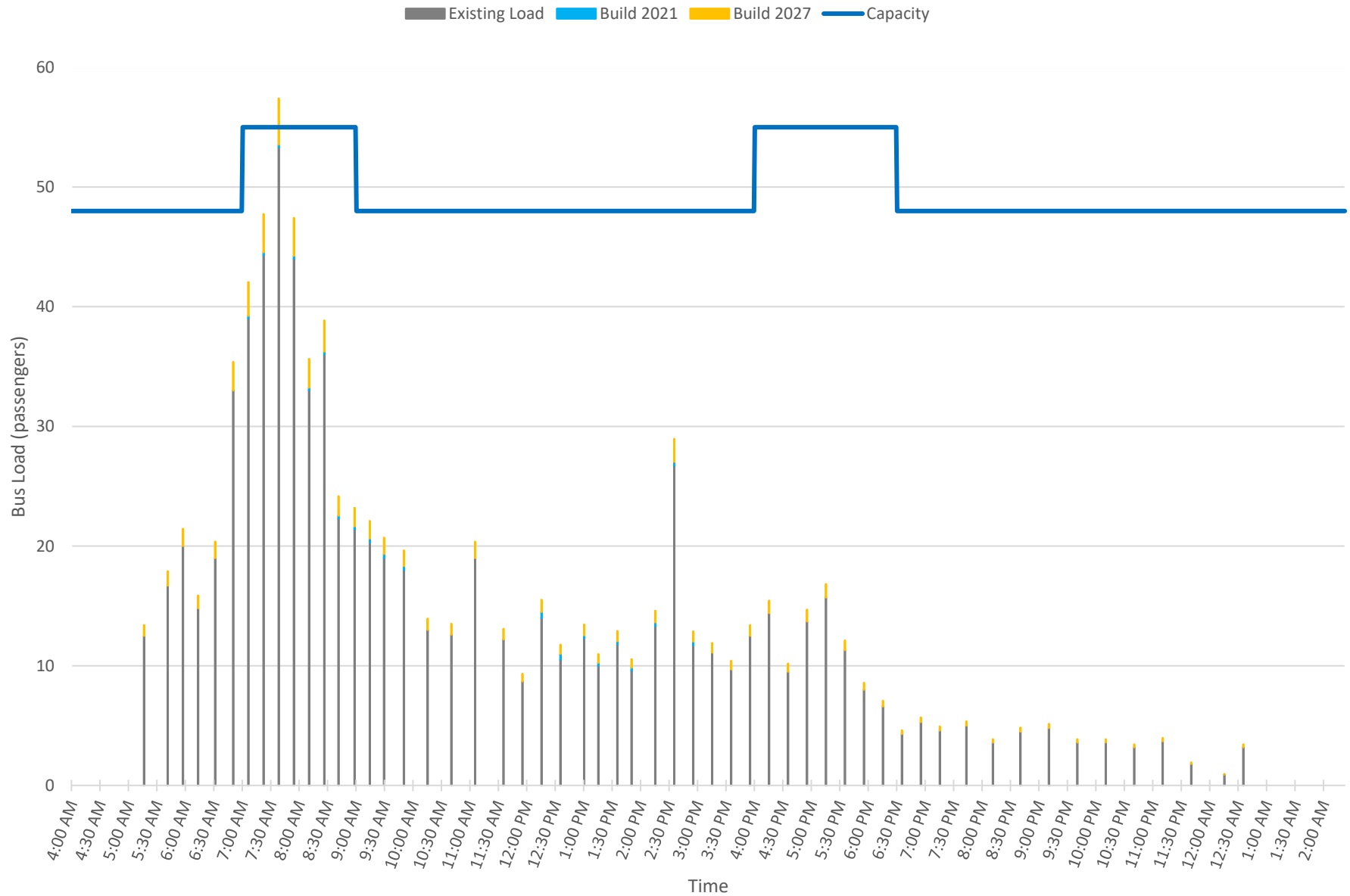
Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 87 - Outbound Analysis After SOMERVILLE AVE @ STONE AVE (Volume/VC Tables by 30 min)

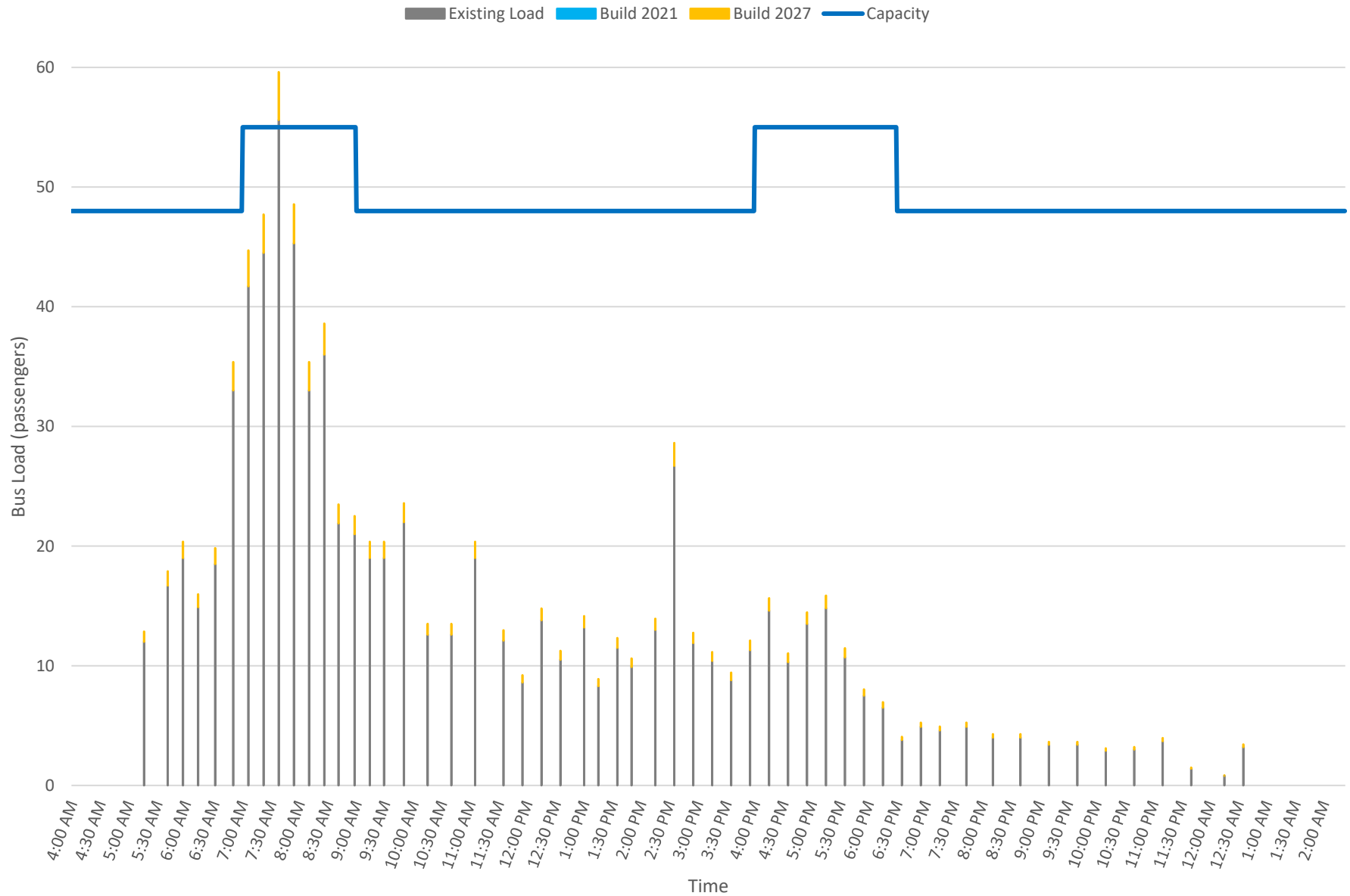
	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	2	0.05	2	0.05	2	0.05
5:30 AM	1	5	0.11	5	0.11	6	0.12
6:00 AM	1	7	0.14	7	0.14	7	0.15
6:30 AM	2	13	0.12	13	0.12	14	0.13
7:00 AM	2	15	0.14	15	0.14	16	0.15
7:30 AM	2	19	0.17	19	0.18	21	0.19
8:00 AM	2	17	0.16	18	0.16	19	0.17
8:30 AM	2	18	0.16	18	0.16	19	0.18
9:00 AM	1	9	0.19	10	0.21	11	0.22
9:30 AM	1	10	0.21	11	0.23	12	0.24
10:00 AM	1	11	0.23	12	0.25	13	0.26
10:30 AM	1	10	0.21	11	0.23	12	0.25
11:00 AM	1	13	0.26	15	0.30	15	0.32
11:30 AM	1	12	0.25	14	0.29	15	0.31
12:00 PM	1	10	0.20	12	0.24	12	0.25
12:30 PM	1	13	0.27	15	0.31	16	0.33
1:00 PM	1	13	0.28	15	0.31	16	0.33
1:30 PM	1	13	0.26	14	0.29	15	0.31
2:00 PM	1	16	0.34	17	0.36	18	0.38
2:30 PM	1	16	0.34	17	0.36	18	0.38
3:00 PM	2	37	0.38	38	0.39	40	0.42
3:30 PM	1	16	0.29	17	0.30	18	0.32
4:00 PM	2	38	0.35	41	0.38	44	0.40
4:30 PM	1	28	0.51	30	0.54	32	0.58
5:00 PM	2	71	0.65	74	0.68	80	0.72
5:30 PM	1	41	0.74	42	0.77	45	0.82
6:00 PM	2	57	0.52	58	0.53	62	0.56
6:30 PM	1	20	0.42	20	0.42	22	0.45
7:00 PM	2	41	0.42	41	0.43	44	0.46
7:30 PM	1	14	0.29	14	0.30	15	0.32
8:00 PM	1	13	0.26	13	0.26	14	0.28
8:30 PM	1	14	0.29	14	0.29	15	0.31
9:00 PM	1	11	0.23	11	0.24	12	0.25
9:30 PM	1	11	0.23	11	0.24	12	0.25
10:00 PM	1	7	0.15	8	0.17	9	0.18
10:30 PM	1	10	0.20	11	0.22	11	0.24
11:00 PM	1	8	0.16	8	0.16	8	0.17
11:30 PM	1	5	0.09	5	0.09	5	0.10
12:00 AM	1	4	0.08	4	0.08	4	0.09
12:30 AM	-	-	-	-	-	-	-
1:00 AM	1	3	0.06	3	0.06	3	0.06
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

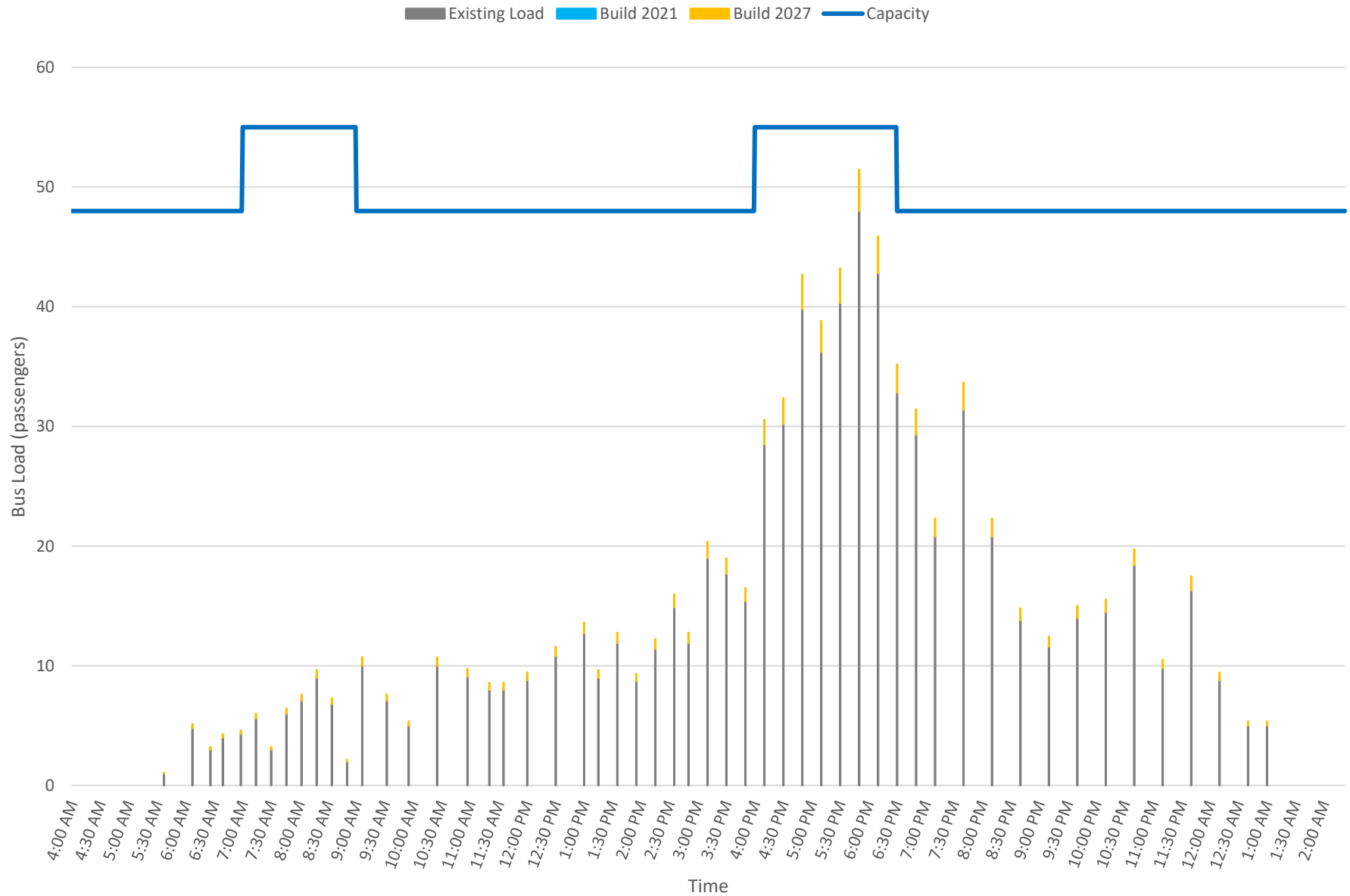
Build (2027) Condition - Route 88 Inbound Arriving from Medford Street @ Washington Street Load & Capacity By Bus at McGrath Highway @ Medford Street



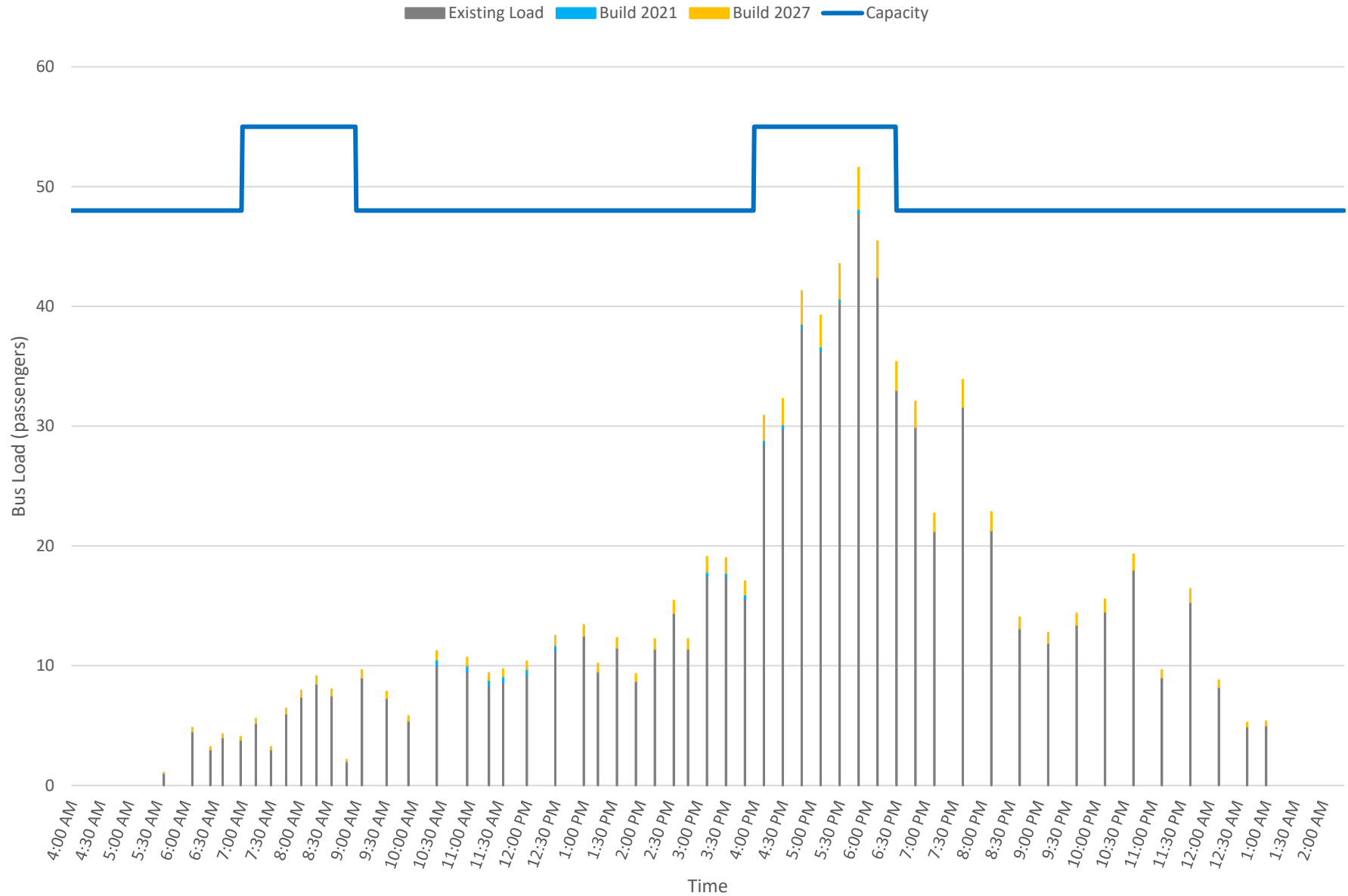
Build (2027) Condition - Route 88 Inbound Departing to McGrath Highway @ Twin City Plaza Load & Capacity By Bus at McGrath Highway @ Medford Street



Build (2027) Condition - Route 88 Outbound Arriving from McGrath Hwy Opp Twin City Plaza Load & Capacity By Bus at McGrath Highway @ Poplar Street



Build (2027) Condition - Route 88 Outbound Departing to McGrath Highway @ Alston Street Load & Capacity By Bus at McGrath Highway @ Poplar Street



Bus Route 88 - Inbound Analysis Before MCGRATH HWY @ MEDFORD ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	13	0.26	13	0.26	13	0.28
5:30 AM	2	37	0.38	37	0.38	39	0.41
6:00 AM	1	15	0.31	15	0.31	16	0.33
6:30 AM	2	52	0.47	52	0.47	56	0.51
7:00 AM	2	83	0.76	84	0.76	90	0.82
7:30 AM	2	97	0.88	98	0.89	105	0.95
8:00 AM	2	69	0.63	70	0.63	74	0.68
8:30 AM	2	44	0.40	44	0.40	47	0.43
9:00 AM	2	39	0.41	40	0.42	43	0.45
9:30 AM	1	18	0.38	18	0.38	20	0.41
10:00 AM	1	13	0.27	13	0.27	14	0.29
10:30 AM	1	13	0.26	13	0.26	14	0.28
11:00 AM	1	19	0.40	19	0.40	20	0.42
11:30 AM	2	21	0.22	21	0.22	22	0.23
12:00 PM	1	14	0.29	15	0.30	16	0.32
12:30 PM	1	11	0.22	11	0.23	12	0.24
1:00 PM	2	22	0.23	23	0.24	24	0.25
1:30 PM	2	21	0.22	22	0.23	23	0.24
2:00 PM	1	13	0.28	14	0.28	15	0.30
2:30 PM	2	38	0.40	39	0.41	42	0.44
3:00 PM	1	11	0.23	11	0.23	12	0.25
3:30 PM	2	22	0.20	22	0.20	24	0.22
4:00 PM	1	14	0.26	14	0.26	15	0.28
4:30 PM	2	23	0.21	23	0.21	25	0.23
5:00 PM	1	16	0.29	16	0.29	17	0.31
5:30 PM	2	19	0.18	19	0.18	21	0.19
6:00 PM	1	7	0.12	7	0.12	7	0.13
6:30 PM	2	10	0.10	10	0.10	10	0.11
7:00 PM	1	5	0.10	5	0.10	5	0.10
7:30 PM	1	5	0.10	5	0.10	5	0.11
8:00 PM	1	4	0.08	4	0.08	4	0.08
8:30 PM	1	5	0.09	5	0.09	5	0.10
9:00 PM	1	5	0.10	5	0.10	5	0.11
9:30 PM	1	4	0.08	4	0.08	4	0.08
10:00 PM	1	4	0.08	4	0.08	4	0.08
10:30 PM	1	3	0.07	3	0.07	3	0.07
11:00 PM	1	4	0.08	4	0.08	4	0.08
11:30 PM	1	2	0.04	2	0.04	2	0.04
12:00 AM	1	1	0.02	1	0.02	1	0.02
12:30 AM	1	3	0.07	3	0.07	3	0.07
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 88 - Inbound Analysis After MCGRATH HWY @ MEDFORD ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	12	0.25	12	0.25	13	0.27
5:30 AM	2	36	0.37	36	0.37	38	0.40
6:00 AM	1	15	0.31	15	0.31	16	0.33
6:30 AM	2	52	0.47	52	0.47	55	0.50
7:00 AM	2	86	0.78	86	0.78	92	0.84
7:30 AM	2	101	0.92	101	0.92	108	0.98
8:00 AM	2	69	0.63	69	0.63	74	0.67
8:30 AM	2	43	0.39	43	0.39	46	0.42
9:00 AM	2	38	0.40	38	0.40	41	0.42
9:30 AM	1	22	0.46	22	0.46	24	0.49
10:00 AM	1	13	0.26	13	0.26	14	0.28
10:30 AM	1	13	0.26	13	0.26	14	0.28
11:00 AM	1	19	0.40	19	0.40	20	0.42
11:30 AM	2	21	0.22	21	0.22	22	0.23
12:00 PM	1	14	0.29	14	0.29	15	0.31
12:30 PM	1	11	0.22	11	0.22	11	0.23
1:00 PM	2	22	0.22	22	0.22	23	0.24
1:30 PM	2	21	0.22	21	0.22	23	0.24
2:00 PM	1	13	0.27	13	0.27	14	0.29
2:30 PM	2	39	0.40	39	0.40	41	0.43
3:00 PM	1	10	0.22	10	0.22	11	0.23
3:30 PM	2	20	0.18	20	0.18	22	0.20
4:00 PM	1	15	0.27	15	0.27	16	0.28
4:30 PM	2	24	0.22	24	0.22	26	0.23
5:00 PM	1	15	0.27	15	0.27	16	0.29
5:30 PM	2	18	0.17	18	0.17	20	0.18
6:00 PM	1	7	0.12	7	0.12	7	0.13
6:30 PM	2	9	0.09	9	0.09	9	0.10
7:00 PM	1	5	0.10	5	0.10	5	0.10
7:30 PM	1	5	0.10	5	0.10	5	0.11
8:00 PM	1	4	0.08	4	0.08	4	0.09
8:30 PM	1	4	0.08	4	0.08	4	0.09
9:00 PM	1	3	0.07	3	0.07	4	0.08
9:30 PM	1	3	0.07	3	0.07	4	0.08
10:00 PM	1	3	0.06	3	0.06	3	0.06
10:30 PM	1	3	0.06	3	0.06	3	0.07
11:00 PM	1	4	0.08	4	0.08	4	0.08
11:30 PM	1	1	0.03	1	0.03	2	0.03
12:00 AM	1	1	0.02	1	0.02	1	0.02
12:30 AM	1	3	0.07	3	0.07	3	0.07
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 88 - Outbound Analysis Before MCGRATH HWY @ POPLAR ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	1	1	0.02	1	0.02	1	0.02
6:00 AM	2	8	0.08	8	0.08	8	0.09
6:30 AM	2	8	0.08	8	0.08	9	0.08
7:00 AM	1	6	0.10	6	0.10	6	0.11
7:30 AM	2	9	0.08	9	0.08	10	0.09
8:00 AM	2	16	0.15	16	0.15	17	0.16
8:30 AM	2	9	0.08	9	0.08	9	0.09
9:00 AM	1	10	0.21	10	0.21	11	0.22
9:30 AM	2	12	0.13	12	0.13	13	0.14
10:00 AM	1	10	0.21	10	0.21	11	0.22
10:30 AM	1	9	0.19	9	0.19	10	0.20
11:00 AM	1	8	0.17	8	0.17	9	0.18
11:30 AM	1	8	0.17	8	0.17	9	0.18
12:00 PM	1	9	0.18	9	0.18	9	0.20
12:30 PM	1	11	0.23	11	0.23	12	0.24
1:00 PM	2	22	0.23	22	0.23	23	0.24
1:30 PM	2	21	0.21	21	0.21	22	0.23
2:00 PM	1	11	0.24	11	0.24	12	0.25
2:30 PM	2	27	0.28	27	0.28	29	0.30
3:00 PM	1	19	0.40	19	0.40	20	0.42
3:30 PM	2	33	0.30	33	0.30	35	0.32
4:00 PM	1	29	0.52	29	0.52	31	0.56
4:30 PM	2	70	0.64	70	0.64	75	0.68
5:00 PM	1	36	0.66	36	0.66	39	0.71
5:30 PM	2	88	0.80	88	0.80	95	0.86
6:00 PM	1	43	0.78	43	0.78	46	0.83
6:30 PM	2	62	0.65	62	0.65	67	0.69
7:00 PM	1	21	0.43	21	0.43	22	0.46
7:30 PM	1	31	0.65	31	0.65	34	0.70
8:00 PM	1	21	0.43	21	0.43	22	0.46
8:30 PM	1	14	0.29	14	0.29	15	0.31
9:00 PM	1	12	0.24	12	0.24	12	0.26
9:30 PM	1	14	0.29	14	0.29	15	0.31
10:00 PM	1	15	0.30	15	0.30	16	0.32
10:30 PM	1	18	0.38	18	0.38	20	0.41
11:00 PM	1	10	0.20	10	0.20	11	0.22
11:30 PM	1	16	0.34	16	0.34	17	0.36
12:00 AM	1	9	0.18	9	0.18	9	0.20
12:30 AM	1	5	0.10	5	0.10	5	0.11
1:00 AM	1	5	0.10	5	0.10	5	0.11
1:30 AM	-	-	-	-	-	-	-

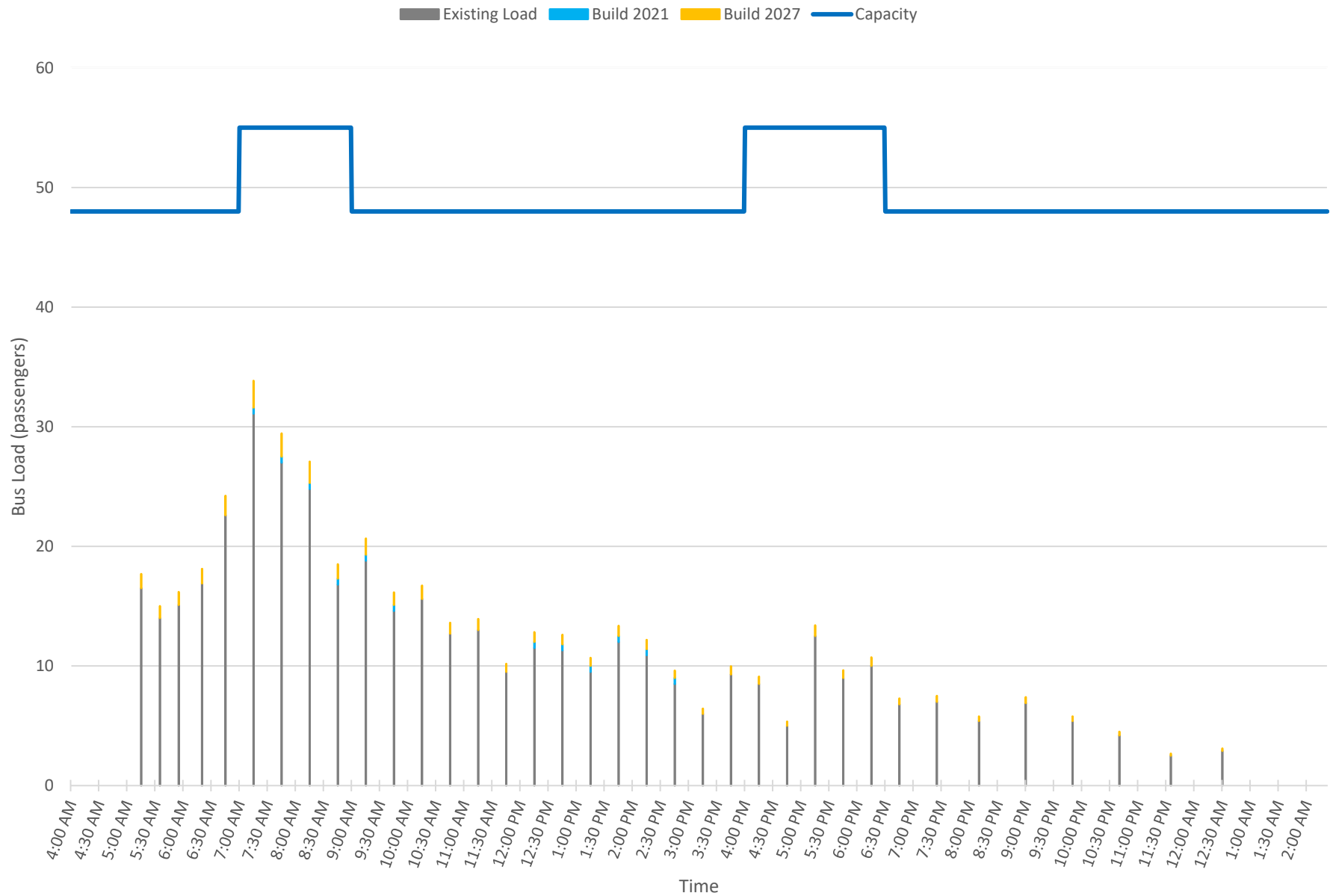
Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 88 - Outbound Analysis After MCGRATH HWY @ POPLAR ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	1	1	0.02	1	0.02	1	0.02
6:00 AM	2	8	0.08	8	0.08	8	0.08
6:30 AM	2	8	0.07	8	0.07	8	0.08
7:00 AM	1	5	0.09	5	0.09	6	0.10
7:30 AM	2	9	0.08	9	0.08	10	0.09
8:00 AM	2	16	0.14	16	0.14	17	0.15
8:30 AM	2	10	0.09	10	0.09	10	0.09
9:00 AM	1	9	0.19	9	0.19	10	0.20
9:30 AM	2	13	0.13	13	0.13	14	0.14
10:00 AM	1	10	0.21	11	0.22	11	0.23
10:30 AM	1	10	0.20	10	0.21	11	0.22
11:00 AM	1	8	0.17	9	0.18	9	0.20
11:30 AM	1	9	0.18	9	0.19	10	0.20
12:00 PM	1	9	0.19	10	0.20	10	0.22
12:30 PM	1	11	0.23	12	0.24	13	0.26
1:00 PM	2	22	0.23	22	0.23	24	0.25
1:30 PM	2	20	0.21	20	0.21	22	0.23
2:00 PM	1	11	0.24	11	0.24	12	0.25
2:30 PM	2	26	0.27	26	0.27	28	0.29
3:00 PM	1	18	0.36	18	0.37	19	0.40
3:30 PM	2	33	0.30	34	0.31	36	0.33
4:00 PM	1	29	0.52	29	0.52	31	0.56
4:30 PM	2	68	0.62	69	0.62	74	0.67
5:00 PM	1	36	0.66	37	0.67	39	0.71
5:30 PM	2	88	0.80	89	0.81	95	0.86
6:00 PM	1	42	0.77	42	0.77	45	0.83
6:30 PM	2	63	0.66	63	0.66	67	0.70
7:00 PM	1	21	0.44	21	0.44	23	0.47
7:30 PM	1	32	0.66	32	0.66	34	0.71
8:00 PM	1	21	0.44	21	0.44	23	0.48
8:30 PM	1	13	0.27	13	0.27	14	0.29
9:00 PM	1	12	0.25	12	0.25	13	0.27
9:30 PM	1	13	0.28	13	0.28	14	0.30
10:00 PM	1	15	0.30	15	0.30	16	0.32
10:30 PM	1	18	0.38	18	0.38	19	0.40
11:00 PM	1	9	0.19	9	0.19	10	0.20
11:30 PM	1	15	0.32	15	0.32	16	0.34
12:00 AM	1	8	0.17	8	0.17	9	0.18
12:30 AM	1	5	0.10	5	0.10	5	0.11
1:00 AM	1	5	0.10	5	0.10	5	0.11
1:30 AM	-	-	-	-	-	-	-

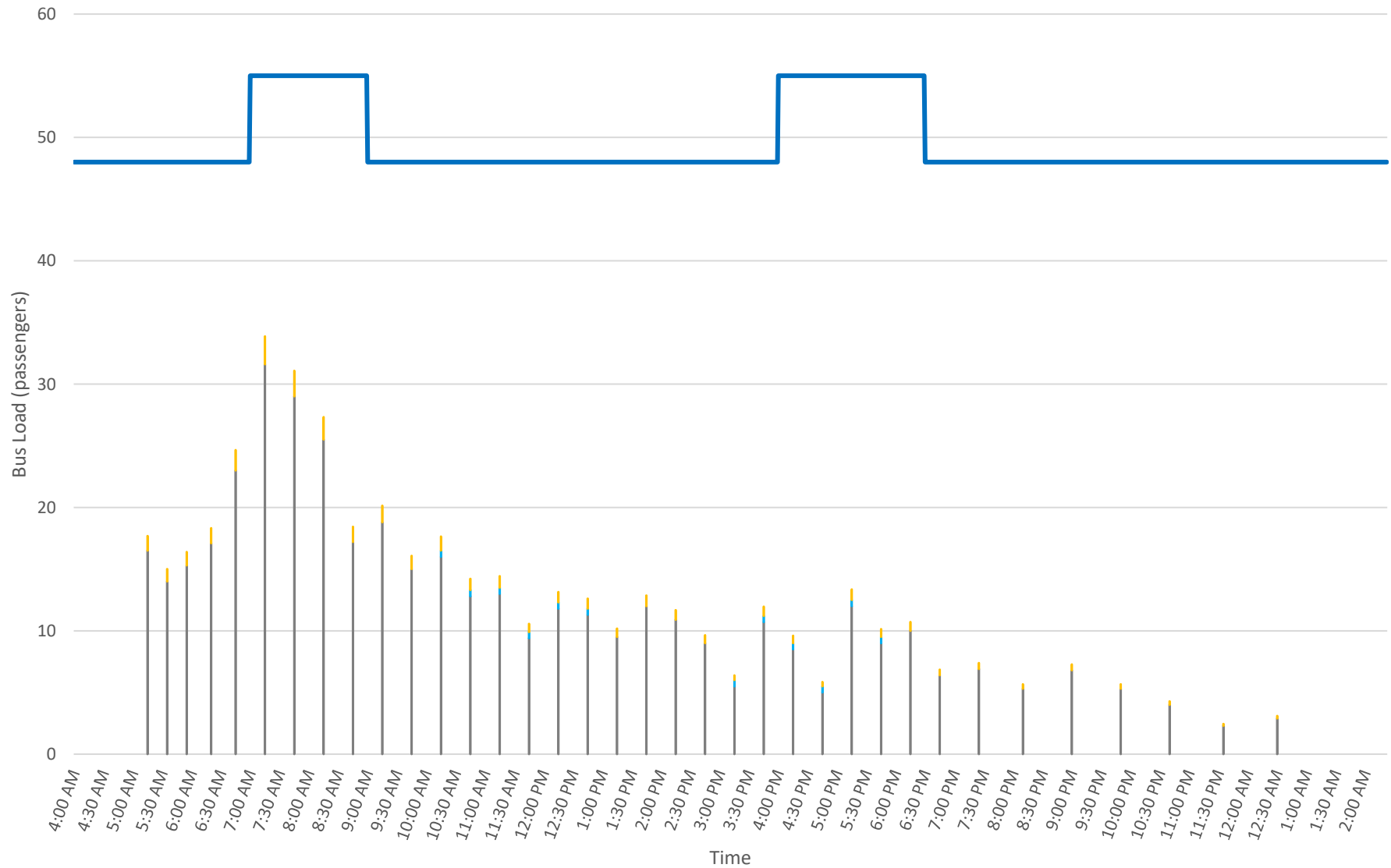
Red = transit demand is greater than planning capacity (V/C > 1.00)

Build (2027) Condition - Route 91 Inbound Arriving from 25 Webster Avenue @ Newton Street Load & Capacity By Bus at Newton Street @ Clark Street

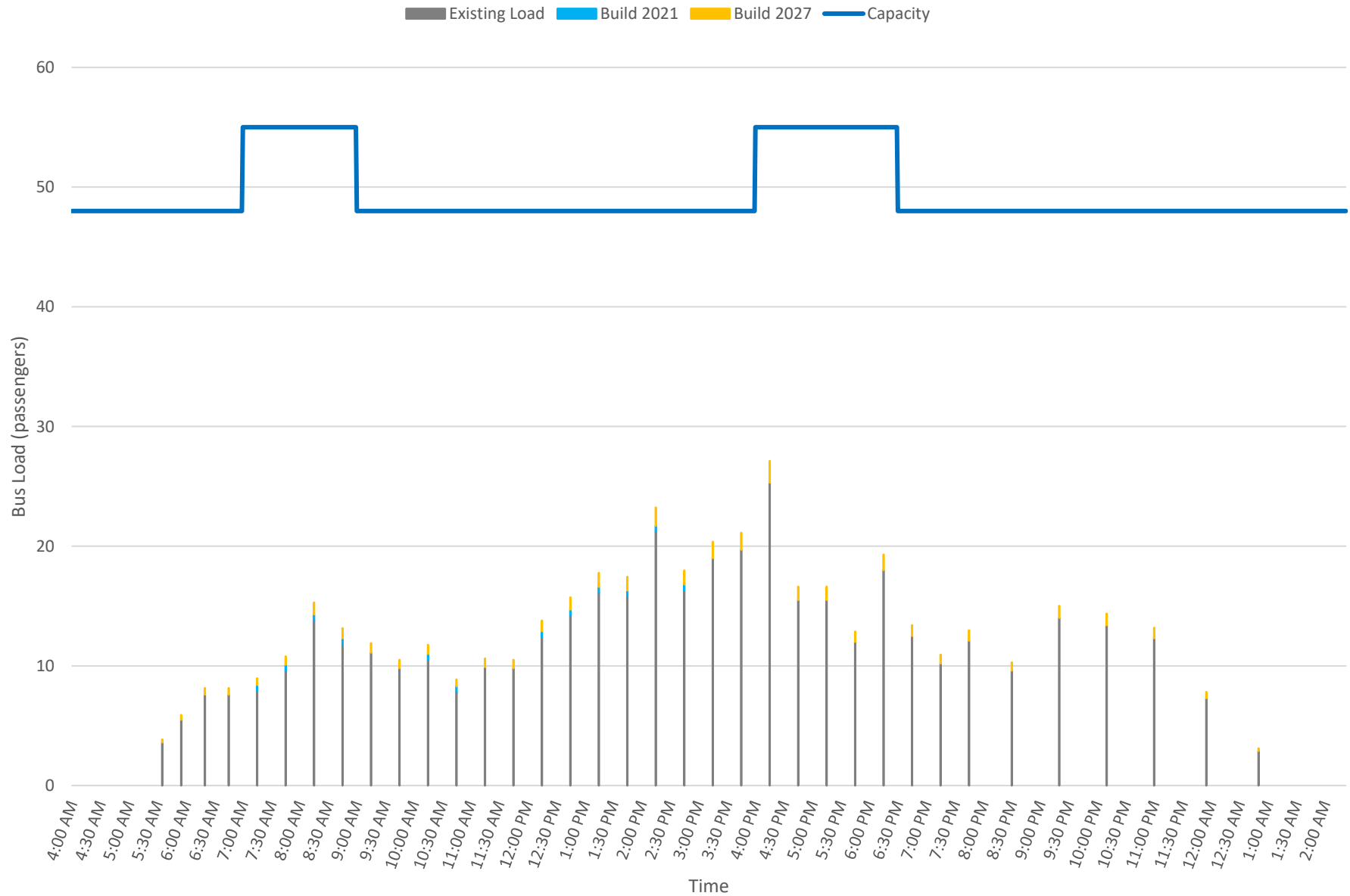


Build (2027) Condition - Route 91 Inbound Departing to Newton Street @ Concord Square Load & Capacity By Bus at Newton Street @ Clark Street

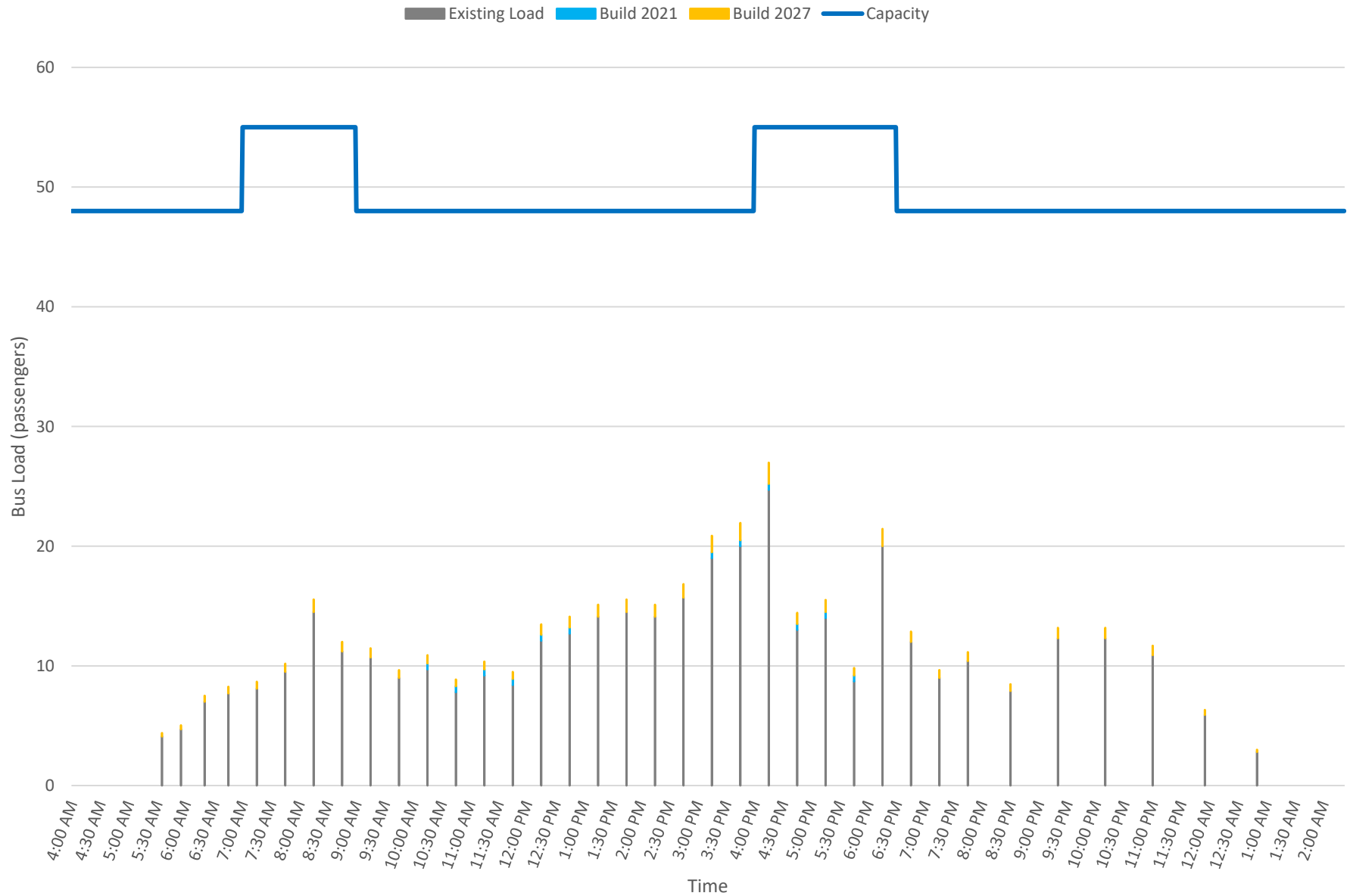
Existing Load Build 2021 Build 2027 Capacity



Build (2027) Condition - Route 91 Outbound Arriving from Newton Street @ Concord Square Load & Capacity By Bus at Newton Street @ Webster Avenue



Build (2027) Condition - Route 91 Outbound Departing to Somerville Ave @ Prospect Street Load & Capacity By Bus at Newton Street @ Webster Avenue



Bus Route 91 - Inbound Analysis Before NEWTON ST @ CLARK ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	17	0.34	17	0.34	18	0.37
5:30 AM	2	29	0.30	29	0.30	31	0.32
6:00 AM	1	17	0.35	17	0.35	18	0.38
6:30 AM	1	23	0.41	23	0.41	24	0.44
7:00 AM	1	31	0.57	32	0.57	34	0.62
7:30 AM	1	27	0.49	28	0.50	29	0.54
8:00 AM	1	25	0.45	25	0.46	27	0.49
8:30 AM	1	17	0.31	17	0.31	19	0.34
9:00 AM	1	19	0.39	19	0.40	21	0.43
9:30 AM	1	15	0.30	15	0.31	16	0.34
10:00 AM	1	16	0.33	16	0.33	17	0.35
10:30 AM	1	13	0.26	13	0.26	14	0.28
11:00 AM	1	13	0.27	13	0.27	14	0.29
11:30 AM	1	10	0.20	10	0.20	10	0.21
12:00 PM	1	12	0.24	12	0.25	13	0.27
12:30 PM	1	11	0.24	12	0.25	13	0.26
1:00 PM	1	10	0.20	10	0.21	11	0.22
1:30 PM	1	12	0.25	13	0.26	13	0.28
2:00 PM	1	11	0.23	11	0.24	12	0.25
2:30 PM	1	9	0.18	9	0.19	10	0.20
3:00 PM	1	6	0.13	6	0.13	6	0.13
3:30 PM	1	9	0.17	9	0.17	10	0.18
4:00 PM	1	9	0.15	9	0.15	9	0.17
4:30 PM	1	5	0.09	5	0.09	5	0.10
5:00 PM	1	13	0.23	13	0.23	13	0.24
5:30 PM	1	9	0.16	9	0.16	10	0.18
6:00 PM	1	10	0.18	10	0.18	11	0.19
6:30 PM	1	7	0.14	7	0.14	7	0.15
7:00 PM	1	7	0.15	7	0.15	8	0.16
7:30 PM	-	-	-	-	-	-	-
8:00 PM	1	5	0.11	5	0.11	6	0.12
8:30 PM	-	-	-	-	-	-	-
9:00 PM	1	7	0.14	7	0.14	7	0.15
9:30 PM	1	5	0.11	5	0.11	6	0.12
10:00 PM	-	-	-	-	-	-	-
10:30 PM	1	4	0.09	4	0.09	5	0.09
11:00 PM	-	-	-	-	-	-	-
11:30 PM	1	3	0.05	3	0.05	3	0.06
12:00 AM	-	-	-	-	-	-	-
12:30 AM	1	3	0.06	3	0.06	3	0.06
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 91 - Inbound Analysis After NEWTON ST @ CLARK ST (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	1	17	0.34	17	0.34	18	0.37
5:30 AM	2	29	0.31	29	0.31	31	0.33
6:00 AM	1	17	0.36	17	0.36	18	0.38
6:30 AM	1	23	0.42	23	0.42	25	0.45
7:00 AM	1	32	0.57	32	0.57	34	0.62
7:30 AM	1	29	0.53	29	0.53	31	0.57
8:00 AM	1	26	0.46	26	0.46	27	0.50
8:30 AM	1	17	0.31	17	0.31	18	0.34
9:00 AM	1	19	0.39	19	0.39	20	0.42
9:30 AM	1	15	0.31	15	0.31	16	0.34
10:00 AM	1	16	0.33	17	0.34	18	0.37
10:30 AM	1	13	0.27	13	0.28	14	0.30
11:00 AM	1	13	0.27	14	0.28	14	0.30
11:30 AM	1	9	0.20	10	0.21	11	0.22
12:00 PM	1	12	0.25	12	0.26	13	0.27
12:30 PM	1	11	0.24	12	0.25	13	0.26
1:00 PM	1	10	0.20	10	0.20	10	0.21
1:30 PM	1	12	0.25	12	0.25	13	0.27
2:00 PM	1	11	0.23	11	0.23	12	0.24
2:30 PM	1	9	0.19	9	0.19	10	0.20
3:00 PM	1	6	0.11	6	0.13	6	0.13
3:30 PM	1	11	0.19	11	0.20	12	0.22
4:00 PM	1	9	0.15	9	0.16	10	0.17
4:30 PM	1	5	0.09	6	0.10	6	0.11
5:00 PM	1	12	0.22	13	0.23	13	0.24
5:30 PM	1	9	0.16	10	0.17	10	0.18
6:00 PM	1	10	0.18	10	0.18	11	0.19
6:30 PM	1	6	0.13	6	0.13	7	0.14
7:00 PM	1	7	0.14	7	0.14	7	0.15
7:30 PM	-	-	-	-	-	-	-
8:00 PM	1	5	0.11	5	0.11	6	0.12
8:30 PM	-	-	-	-	-	-	-
9:00 PM	1	7	0.14	7	0.14	7	0.15
9:30 PM	1	5	0.11	5	0.11	6	0.12
10:00 PM	-	-	-	-	-	-	-
10:30 PM	1	4	0.08	4	0.08	4	0.09
11:00 PM	-	-	-	-	-	-	-
11:30 PM	1	2	0.05	2	0.05	2	0.05
12:00 AM	-	-	-	-	-	-	-
12:30 AM	1	3	0.06	3	0.06	3	0.06
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 91 - Outbound Analysis Before NEWTON ST @ WEBSTER AVE (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	2	9	0.09	9	0.09	10	0.10
6:00 AM	1	8	0.16	8	0.16	8	0.17
6:30 AM	1	8	0.14	8	0.14	8	0.15
7:00 AM	1	8	0.14	8	0.15	9	0.16
7:30 AM	1	10	0.17	10	0.18	11	0.20
8:00 AM	1	14	0.25	14	0.26	15	0.28
8:30 AM	1	12	0.21	12	0.22	13	0.24
9:00 AM	1	11	0.23	11	0.23	12	0.25
9:30 AM	1	10	0.20	10	0.20	11	0.22
10:00 AM	1	11	0.22	11	0.23	12	0.24
10:30 AM	1	8	0.16	8	0.17	9	0.18
11:00 AM	1	10	0.21	10	0.21	11	0.22
11:30 AM	1	10	0.20	10	0.20	11	0.22
12:00 PM	1	12	0.26	13	0.27	14	0.29
12:30 PM	1	14	0.30	15	0.31	16	0.33
1:00 PM	1	16	0.34	17	0.35	18	0.37
1:30 PM	1	16	0.33	16	0.34	17	0.36
2:00 PM	1	21	0.44	22	0.45	23	0.48
2:30 PM	1	16	0.34	17	0.35	18	0.37
3:00 PM	1	19	0.40	19	0.40	20	0.42
3:30 PM	1	20	0.36	20	0.36	21	0.38
4:00 PM	1	25	0.46	25	0.46	27	0.49
4:30 PM	1	16	0.28	16	0.28	17	0.30
5:00 PM	1	16	0.28	16	0.28	17	0.30
5:30 PM	1	12	0.22	12	0.22	13	0.23
6:00 PM	1	18	0.33	18	0.33	19	0.35
6:30 PM	1	13	0.26	13	0.26	13	0.28
7:00 PM	1	10	0.21	10	0.21	11	0.23
7:30 PM	1	12	0.25	12	0.25	13	0.27
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	10	0.20	10	0.20	10	0.21
9:00 PM	1	14	0.29	14	0.29	15	0.31
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	13	0.28	13	0.28	14	0.30
10:30 PM	-	-	-	-	-	-	-
11:00 PM	1	12	0.26	12	0.26	13	0.27
11:30 PM	1	7	0.15	7	0.15	8	0.16
12:00 AM	-	-	-	-	-	-	-
12:30 AM	1	3	0.06	3	0.06	3	0.06
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

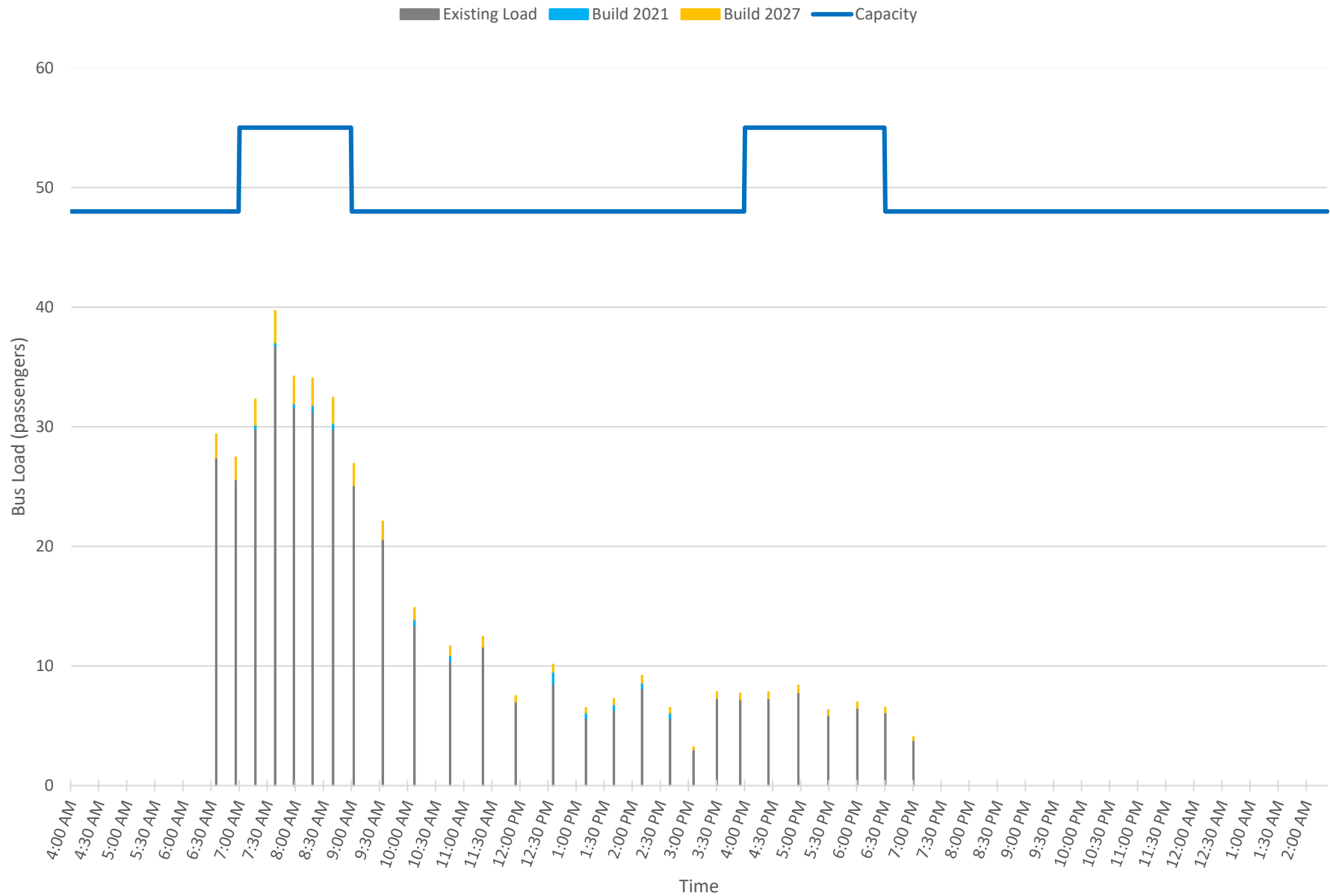
Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route 91 - Outbound Analysis After NEWTON ST @ WEBSTER AVE (Volume/VC Tables by 30 min)

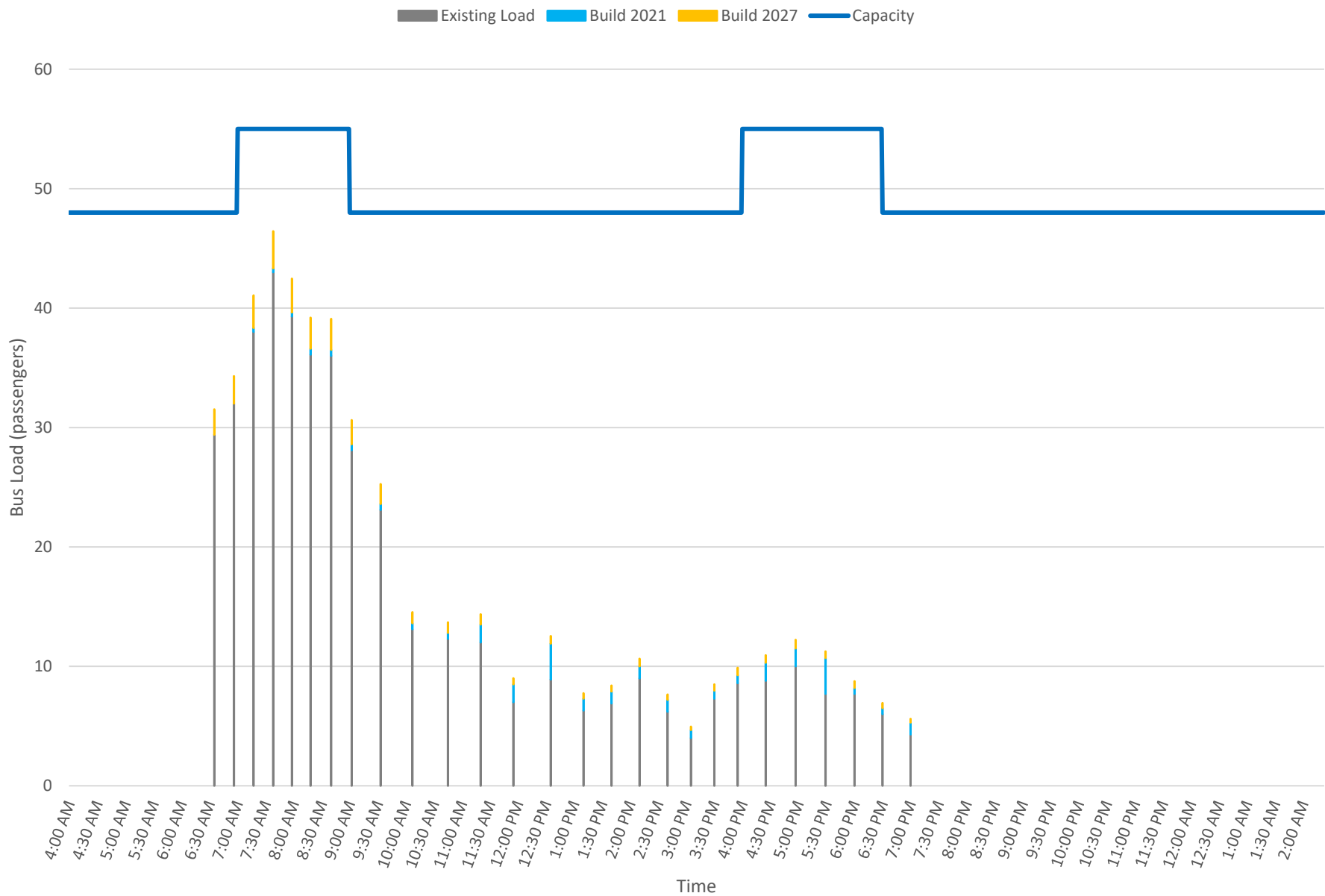
	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	2	9	0.09	9	0.09	9	0.10
6:00 AM	1	7	0.15	7	0.15	8	0.16
6:30 AM	1	8	0.14	8	0.14	8	0.15
7:00 AM	1	8	0.15	8	0.15	9	0.16
7:30 AM	1	10	0.17	10	0.17	10	0.19
8:00 AM	1	15	0.26	15	0.26	16	0.28
8:30 AM	1	11	0.20	11	0.20	12	0.22
9:00 AM	1	11	0.22	11	0.22	11	0.24
9:30 AM	1	9	0.19	9	0.19	10	0.20
10:00 AM	1	10	0.20	10	0.21	11	0.23
10:30 AM	1	8	0.16	8	0.17	9	0.18
11:00 AM	1	9	0.19	10	0.20	10	0.22
11:30 AM	1	8	0.18	9	0.19	10	0.20
12:00 PM	1	12	0.25	13	0.26	13	0.28
12:30 PM	1	13	0.26	13	0.28	14	0.29
1:00 PM	1	14	0.29	14	0.29	15	0.31
1:30 PM	1	15	0.30	15	0.30	16	0.32
2:00 PM	1	14	0.29	14	0.29	15	0.31
2:30 PM	1	16	0.33	16	0.33	17	0.35
3:00 PM	1	19	0.40	20	0.41	21	0.43
3:30 PM	1	20	0.36	21	0.37	22	0.40
4:00 PM	1	25	0.45	25	0.46	27	0.49
4:30 PM	1	13	0.24	14	0.25	14	0.26
5:00 PM	1	14	0.25	15	0.26	16	0.28
5:30 PM	1	9	0.16	9	0.17	10	0.18
6:00 PM	1	20	0.36	20	0.36	21	0.39
6:30 PM	1	12	0.25	12	0.25	13	0.27
7:00 PM	1	9	0.19	9	0.19	10	0.20
7:30 PM	1	10	0.22	10	0.22	11	0.23
8:00 PM	-	-	-	-	-	-	-
8:30 PM	1	8	0.16	8	0.16	8	0.18
9:00 PM	1	12	0.26	12	0.26	13	0.27
9:30 PM	-	-	-	-	-	-	-
10:00 PM	1	12	0.26	12	0.26	13	0.27
10:30 PM	-	-	-	-	-	-	-
11:00 PM	1	11	0.23	11	0.23	12	0.24
11:30 PM	1	6	0.12	6	0.12	6	0.13
12:00 AM	-	-	-	-	-	-	-
12:30 AM	1	3	0.06	3	0.06	3	0.06
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

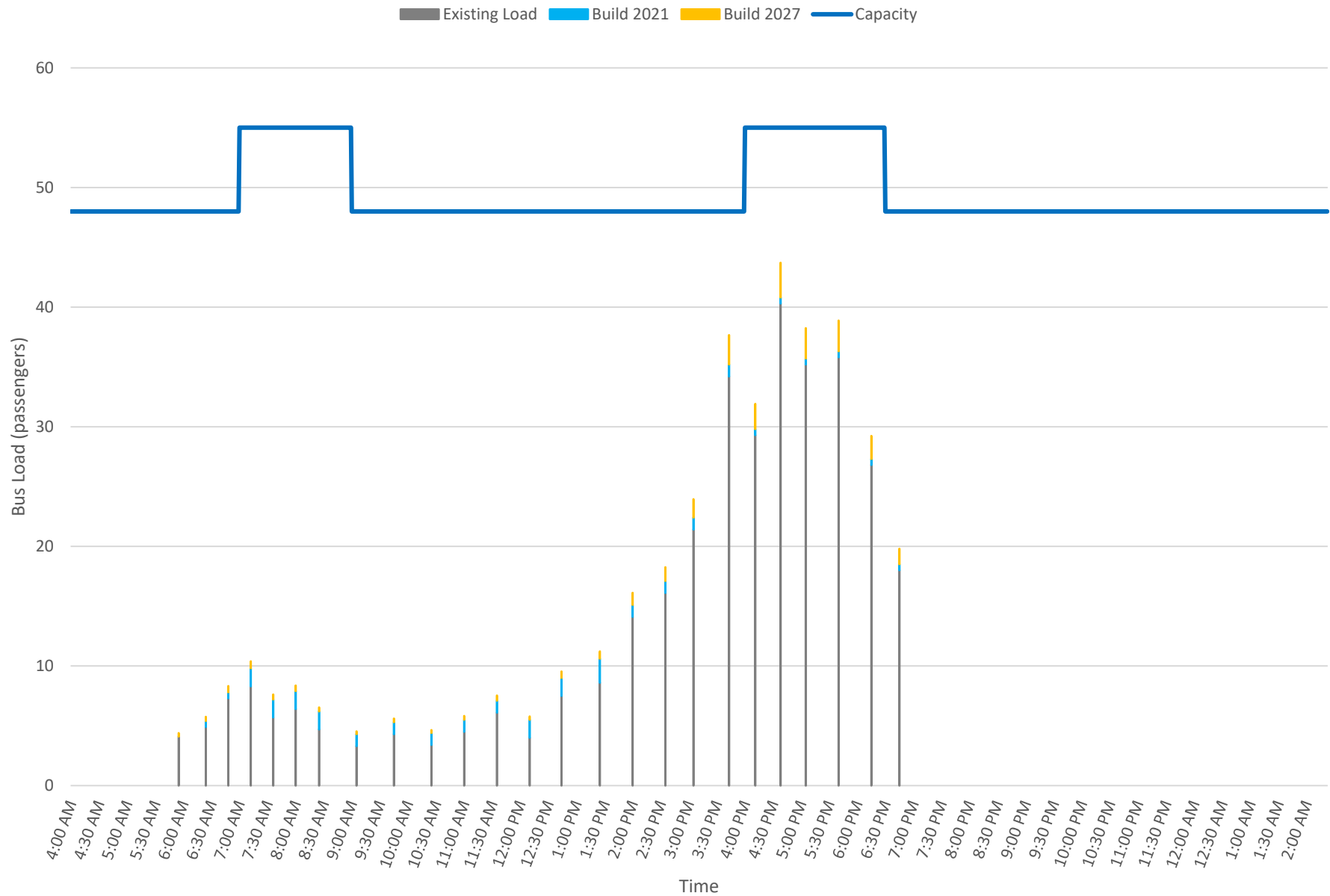
Build (2027) Condition - Route CT2 Inbound Arriving from Somerville Avenue @ Stone Avenue Load & Capacity By Bus at Cambridge Street @ Columbia Street



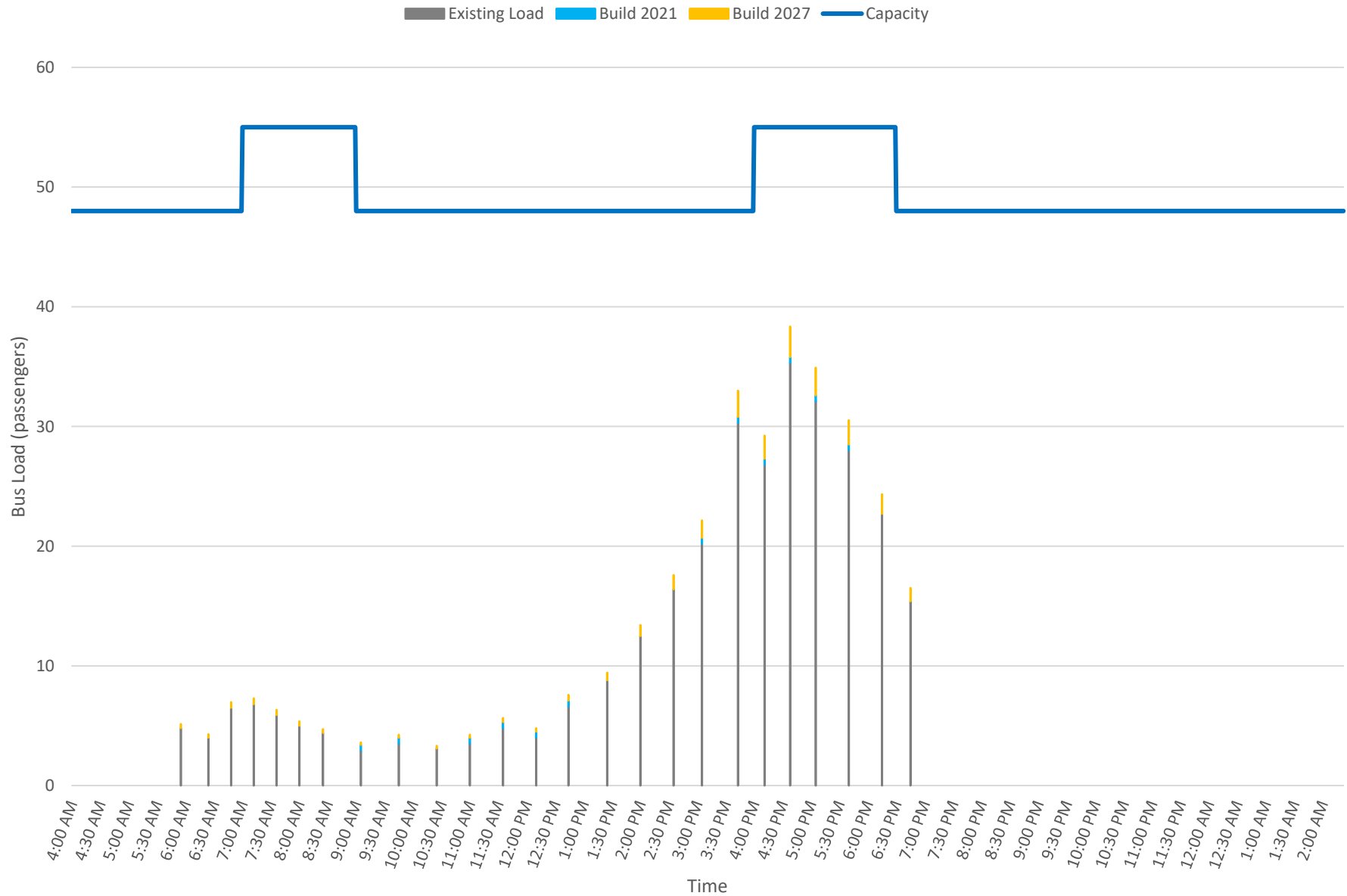
Build (2027) Condition - Route 91 Inbound Departing to Hampshire Street @ Portland Street Load & Capacity By Bus at Cambridge Street @ Columbia Street



Build (2027) Condition - Rte CT2 Outbound Arriving from Hampshire St @ Cardinal Medeiros Load & Capacity By Bus at Columbia Street @ Cambridge Street



Build (2027) Condition - Route CT2 Outbound Departing to Prospect Street @ Bennett Court Load & Capacity By Bus at Columbia Street @ Cambridge Street



Bus Route CT2 - Inbound Analysis Before Cambridge Street @ Columbia Street (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	-	-	-	-	-	-	-
6:00 AM	-	-	-	-	-	-	-
6:30 AM	2	53	0.48	53	0.48	57	0.52
7:00 AM	1	30	0.54	30	0.55	32	0.59
7:30 AM	2	68	0.62	69	0.63	74	0.67
8:00 AM	1	31	0.57	32	0.58	34	0.62
8:30 AM	1	30	0.54	30	0.55	32	0.59
9:00 AM	1	25	0.52	25	0.52	27	0.56
9:30 AM	1	21	0.43	21	0.43	22	0.46
10:00 AM	1	13	0.28	14	0.29	15	0.31
10:30 AM	1	10	0.22	11	0.23	12	0.24
11:00 AM	1	12	0.24	12	0.24	12	0.26
11:30 AM	1	7	0.15	7	0.15	8	0.16
12:00 PM	-	-	-	-	-	-	-
12:30 PM	1	9	0.18	10	0.20	10	0.21
1:00 PM	1	6	0.12	6	0.13	7	0.14
1:30 PM	1	6	0.13	7	0.14	7	0.15
2:00 PM	1	8	0.17	9	0.18	9	0.19
2:30 PM	1	6	0.12	6	0.13	7	0.14
3:00 PM	1	3	0.06	3	0.06	3	0.07
3:30 PM	2	15	0.13	15	0.13	16	0.14
4:00 PM	1	7	0.13	7	0.13	8	0.14
4:30 PM	1	8	0.14	8	0.14	8	0.15
5:00 PM	1	6	0.11	6	0.11	6	0.12
5:30 PM	-	-	-	-	-	-	-
6:00 PM	1	7	0.12	7	0.12	7	0.13
6:30 PM	1	6	0.13	6	0.13	7	0.14
7:00 PM	1	4	0.08	4	0.08	4	0.08
7:30 PM	-	-	-	-	-	-	-
8:00 PM	-	-	-	-	-	-	-
8:30 PM	-	-	-	-	-	-	-
9:00 PM	-	-	-	-	-	-	-
9:30 PM	-	-	-	-	-	-	-
10:00 PM	-	-	-	-	-	-	-
10:30 PM	-	-	-	-	-	-	-
11:00 PM	-	-	-	-	-	-	-
11:30 PM	-	-	-	-	-	-	-
12:00 AM	-	-	-	-	-	-	-
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route CT2 - Inbound Analysis After Cambridge Street @ Columbia Street (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	-	-	-	-	-	-	-
6:00 AM	-	-	-	-	-	-	-
6:30 AM	2	61	0.56	61	0.56	66	0.60
7:00 AM	1	38	0.69	38	0.70	41	0.75
7:30 AM	2	82	0.75	83	0.75	89	0.81
8:00 AM	1	36	0.66	37	0.67	39	0.71
8:30 AM	1	36	0.65	37	0.66	39	0.71
9:00 AM	1	28	0.59	29	0.60	31	0.64
9:30 AM	1	23	0.48	24	0.49	25	0.53
10:00 AM	1	13	0.27	14	0.28	15	0.30
10:30 AM	1	12	0.26	13	0.27	14	0.29
11:00 AM	1	12	0.25	14	0.28	14	0.30
11:30 AM	1	7	0.15	9	0.18	9	0.19
12:00 PM	-	-	-	-	-	-	-
12:30 PM	1	9	0.19	12	0.25	13	0.26
1:00 PM	1	6	0.13	7	0.15	8	0.16
1:30 PM	1	7	0.14	8	0.16	8	0.17
2:00 PM	1	9	0.19	10	0.21	11	0.22
2:30 PM	1	6	0.13	7	0.15	8	0.16
3:00 PM	1	4	0.08	5	0.10	5	0.10
3:30 PM	2	16	0.14	17	0.16	18	0.17
4:00 PM	1	9	0.16	10	0.19	11	0.20
4:30 PM	1	10	0.18	12	0.21	12	0.22
5:00 PM	1	8	0.14	11	0.19	11	0.20
5:30 PM	-	-	-	-	-	-	-
6:00 PM	1	8	0.14	8	0.15	9	0.16
6:30 PM	1	6	0.13	7	0.14	7	0.14
7:00 PM	1	4	0.09	5	0.11	6	0.12
7:30 PM	-	-	-	-	-	-	-
8:00 PM	-	-	-	-	-	-	-
8:30 PM	-	-	-	-	-	-	-
9:00 PM	-	-	-	-	-	-	-
9:30 PM	-	-	-	-	-	-	-
10:00 PM	-	-	-	-	-	-	-
10:30 PM	-	-	-	-	-	-	-
11:00 PM	-	-	-	-	-	-	-
11:30 PM	-	-	-	-	-	-	-
12:00 AM	-	-	-	-	-	-	-
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route CT2 - Outbound Analysis Before Columbia Street @ Cambridge Street (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	1	4	0.09	4	0.09	4	0.09
6:00 AM	1	5	0.10	5	0.11	6	0.12
6:30 AM	1	7	0.13	8	0.14	8	0.15
7:00 AM	1	8	0.15	10	0.18	10	0.19
7:30 AM	1	6	0.10	7	0.13	8	0.14
8:00 AM	2	11	0.10	14	0.13	15	0.14
8:30 AM	-	-	-	-	-	-	-
9:00 AM	1	3	0.07	4	0.09	5	0.09
9:30 AM	1	4	0.09	5	0.11	6	0.12
10:00 AM	1	3	0.07	4	0.09	5	0.10
10:30 AM	-	-	-	-	-	-	-
11:00 AM	1	5	0.09	6	0.11	6	0.12
11:30 AM	1	6	0.13	7	0.15	8	0.16
12:00 PM	1	4	0.08	6	0.11	6	0.12
12:30 PM	1	8	0.16	9	0.19	10	0.20
1:00 PM	1	9	0.18	11	0.22	11	0.23
1:30 PM	-	-	-	-	-	-	-
2:00 PM	1	14	0.29	15	0.31	16	0.34
2:30 PM	1	16	0.34	17	0.36	18	0.38
3:00 PM	1	21	0.45	22	0.47	24	0.50
3:30 PM	1	34	0.62	35	0.64	38	0.68
4:00 PM	1	29	0.53	30	0.54	32	0.58
4:30 PM	1	40	0.73	41	0.74	44	0.79
5:00 PM	1	35	0.64	36	0.65	38	0.70
5:30 PM	1	36	0.65	36	0.66	39	0.71
6:00 PM	1	27	0.49	27	0.50	29	0.53
6:30 PM	1	18	0.38	19	0.39	20	0.41
7:00 PM	-	-	-	-	-	-	-
7:30 PM	-	-	-	-	-	-	-
8:00 PM	-	-	-	-	-	-	-
8:30 PM	-	-	-	-	-	-	-
9:00 PM	-	-	-	-	-	-	-
9:30 PM	-	-	-	-	-	-	-
10:00 PM	-	-	-	-	-	-	-
10:30 PM	-	-	-	-	-	-	-
11:00 PM	-	-	-	-	-	-	-
11:30 PM	-	-	-	-	-	-	-
12:00 AM	-	-	-	-	-	-	-
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)

Bus Route CT2 - Outbound Analysis After Columbia Street @ Cambridge Street (Volume/VC Tables by 30 min)

	# of Buses	Existing		Build 2021		Build 2027	
		Half-Hourly Volume	V/C	Half-Hourly Volume	V/C	Half-Hourly Volume	V/C
5:00 AM	-	-	-	-	-	-	-
5:30 AM	1	5	0.10	5	0.10	5	0.11
6:00 AM	1	4	0.08	4	0.08	4	0.09
6:30 AM	1	7	0.12	7	0.12	7	0.13
7:00 AM	1	7	0.12	7	0.12	7	0.13
7:30 AM	1	6	0.11	6	0.11	6	0.12
8:00 AM	2	9	0.09	9	0.09	10	0.09
8:30 AM	-	-	-	-	-	-	-
9:00 AM	1	3	0.06	3	0.07	4	0.08
9:30 AM	1	4	0.07	4	0.08	4	0.09
10:00 AM	1	3	0.06	3	0.06	3	0.07
10:30 AM	-	-	-	-	-	-	-
11:00 AM	1	4	0.07	4	0.08	4	0.09
11:30 AM	1	5	0.10	5	0.11	6	0.12
12:00 PM	1	4	0.08	5	0.09	5	0.10
12:30 PM	1	7	0.14	7	0.15	8	0.16
1:00 PM	1	9	0.18	9	0.18	9	0.20
1:30 PM	-	-	-	-	-	-	-
2:00 PM	1	13	0.26	13	0.26	13	0.28
2:30 PM	1	16	0.34	16	0.34	18	0.37
3:00 PM	1	20	0.42	21	0.43	22	0.46
3:30 PM	1	30	0.55	31	0.56	33	0.60
4:00 PM	1	27	0.49	27	0.50	29	0.53
4:30 PM	1	35	0.64	36	0.65	38	0.70
5:00 PM	1	32	0.58	33	0.59	35	0.63
5:30 PM	1	28	0.51	29	0.52	31	0.55
6:00 PM	1	23	0.41	23	0.41	24	0.44
6:30 PM	1	15	0.32	15	0.32	17	0.34
7:00 PM	-	-	-	-	-	-	-
7:30 PM	-	-	-	-	-	-	-
8:00 PM	-	-	-	-	-	-	-
8:30 PM	-	-	-	-	-	-	-
9:00 PM	-	-	-	-	-	-	-
9:30 PM	-	-	-	-	-	-	-
10:00 PM	-	-	-	-	-	-	-
10:30 PM	-	-	-	-	-	-	-
11:00 PM	-	-	-	-	-	-	-
11:30 PM	-	-	-	-	-	-	-
12:00 AM	-	-	-	-	-	-	-
12:30 AM	-	-	-	-	-	-	-
1:00 AM	-	-	-	-	-	-	-
1:30 AM	-	-	-	-	-	-	-

Red = transit demand is greater than planning capacity (V/C > 1.00)



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Appendix E

BLTS Tables

- Showers/lockers for employee use
- Guaranteed emergency/bad weather ride home

Appendix A: Bicycle Level of Traffic Stress Methodology

Bicycle Level of Traffic Stress (BLTS) is based on methodology set forth by Mekuria, Furth, and Nixon in Mineta Transportation Institute (MTI) [Report 11-19](#). The goal of BLTS is to identify gaps in the low-stress bicycling network and prioritize improvements to allow low-stress bicycle travel throughout a city or region. BLTS uses readily available data that can be collected in the field or on a recent, high-quality aerial. BLTS acknowledges that different facilities are appropriate on different streets and that not all bicycle lanes are created equal.

BLTS analysis for the City of Somerville shall apply as required in Section 3.3.2. of the Somerville TIS standards. BLTS for any segment or intersection crossing is calculated by considering all applicable tables and applying the lowest-score (highest numerical value) to the segment/crossing in question. For example, a segment that scored LTS 1 on one table and LTS 4 on another table would automatically be classified as LTS 4. BLTS results are best shown graphically, though BLTS for street crossings may be best conveyed in a table.

BLTS Along Street Segments

BLTS can be determined along a segment by comparing the size of the bike lane (or bike lane plus parking lane) to the street width, prevailing speed, and the general amount of time a bike lane tends to be blocked. High BLTS along segments can be mitigated by reducing the number of vehicle travel lanes along the street to one lane in each direction, adding width or a buffer to the bike lane, reducing the speed along the roadway in question, or reducing the likelihood that a bike lane is blocked.

BLTS analysis for segments are as follows:

Table 1A. Criteria for Bike Lanes Alongside a Parking Lane

	LTS ≥ 1	LTS ≥ 2	LTS ≥ 3	LTS 4
Street Width (through lanes per direction)	1	(no effect)	2 or more	(no effect)
Sum of bike lane and parking lane width (includes marked buffer and paved gutter)	15 feet or more	14 or 14.5 feet ^a	13.5 feet or less	(no effect)
Speed limit or prevailing speed	25mph or less	30 mph	35 mph	40 mph or more

Transportation Impact Study (TIS) Guidelines

Bike lane blockage	Rare	(no effect)	Frequent	(no effect)

Note: (no effect) = factor does not trigger an increase to this level of traffic stress

a: if speed limit < 25mph or street type is residential, than any width is acceptable for LTS 2.

CITY OF SOMERVILLE

Transportation Impact Study (TIS) Guidelines

Table 1B. Criteria for Bike Lanes Not Alongside a Parking Lane

	LTS ≥ 1	LTS ≥ 2	LTS ≥ 3	LTS 4
Street Width (through lanes per direction)	1	(no effect)	2 or more	(no effect)
Bike lane width (includes marked buffer and paved gutter)	6 feet or more	5.5 feet or less	(no effect)	(no effect)
Speed limit or prevailing speed	25mph or less	30 mph	35 mph	40 mph or more
Bike lane blockage	Rare	(no effect)	Frequent	(no effect)

Note: (no effect) = factor does not trigger an increase to this level of traffic stress

Table 2. Criteria for BLTS in Mixed Traffic

Speed Limit/ Street Width	2-3 Lanes	4-5 Lanes	6+ Lanes
< 25 mph	LTS 1 or 2 ^a	LTS 3	LTS 4
25-30 mph	LTS 2 or 3 ^a	LTS 4	LTS 4
> 30 mph	LTS 4	LTS 4	LTS 4

a: Use lower value for streets without marked centerlines or classified as residential and with fewer than 3 travel lanes; use higher value otherwise.

BLTS along physically separated bicycle lanes is LTS 1 by default, between intersections. Physically separated facilities isolate users from typical traffic stress. This also applies to any standalone path, shared use path, etc. Sharing space with pedestrians does not increase BLTS; the added delay and level of awareness that comes with sharing a space with pedestrians or other, nonmotorized road users is different from the real safety concerns that come with riding next to or mixed with vehicle traffic. However, if a physically separated facility is interrupted by frequent commercial driveway crossings, or if the facility commonly ramps down to street level to accommodate driveways, the City or the transportation professional preparing this TIS may opt to assign a higher BLTS to a segment.

Transportation Impact Study (TIS) Guidelines

BLTS Along Intersection Approaches

BLTS can be used to analyze the level of comfort of a standard bicycle lane as it approaches an intersection. These “pocket bike lanes”, which run between a thru lane and a right-turn lane, can be stressful if drivers are not forced to deliberately turn through the bike lane at a slow speed. Right turn lanes in mixed traffic can be similarly stressful. BLTS analysis for *approaches to intersections* are as follows:

Table 3A. Level of Traffic Stress Criteria for Pocket Bike Lanes Approaching Intersections

Configuration	BLTS
Single right-turn lane up to 150 feet long, starting abruptly while the bike lane continues straight, and having an intersection angle and curb radius such that turning speed is ≤ 15 mph.	LTS ≥ 2
Single right-turn lane longer than 150 feet, starting abruptly while the bike lane continues straight, and having an intersection angle and curb radius such that turning speed is ≤ 20 mph.	LTS ≥ 3
> Single right-turn lane in which the bike lane shifts to the left but the intersection and curb radius are such that turning speed is ≤ 15 mph.	LTS ≥ 3
Single right-turn lane with any other configuration; dual right-turn lanes; or right-turn lane along with shared (thru/right) lane.	LTS 4

Table 3B. Level of Traffic Stress Criteria for Mixed Traffic in the Presence of a Right-turn Lane

Configuration	BLTS
Single right-turn lane with length ≤ 75 feet and intersection angle and curb radius limit turning speed to 15 mph.	LTS ≥ 3
Single right-turn lane with length between 75 feet and 150 feet and intersection angle and curb radius limit turning speed to 15 mph.	LTS ≥ 3
All other configurations	LTS 4

Transportation Impact Study (TIS) Guidelines

BLTS through Unsignalized Street Crossings

BLTS can be used to analyze the level of comfort of unsignalized intersections. Unsignalized crossings of major roadways can be a barrier to cycling, but this can be mitigated by reducing the size of the crossing, providing a median refuge, or reducing the prevailing speed of the street being crossed.

Crossings of major driveways should be considered a street crossing for the purposes of analysis. For the purposes of this analysis, the “speed limit” of driveways should be determined by the speed at which vehicles are able to make turns into a driveway. Typically, driveway crossings will be LTS 1 unless they are wider than 3 total lanes.

BLTS analysis for unsignalized intersection crossings are as follows:

Table 4A. Level of Traffic Stress Criteria for Unsignalized Crossings Without a Median Refuge

Speed Limit of Street Being Crossed	Width of Street Being Crossed		
	2-3 Lanes	4-5 Lanes	6+ Lanes
< 25 mph	LTS 1	LTS 2	LTS 4
25-30 mph	LTS 1	LTS 2	LTS 4
30-35mph	LTS 2	LTS 3	LTS 4
40+ mph	LTS 3	LTS 4	LTS 4

Table 4B. Level of Traffic Stress Criteria for Unsignalized Crossings With a Median Refuge at Least Six Feet Wide

Speed Limit of Street Being Crossed	Width of Street Being Crossed		
	2-3 Lanes	4-5 Lanes	6+ Lanes
< 25 mph	LTS 1	LTS 1	LTS 2
25-30 mph	LTS 1	LTS 2	LTS 3
30-35mph	LTS 2	LTS 3	LTS 4
40+ mph	LTS 3	LTS 4	LTS 4

BLTS does not apply through **Signalized Street Crossings**. These crossings should be evaluated **qualitatively**. Bike boxes, two-stage left-turn boxes, phase-separated right-turn lanes, dedicated bicycle signals, etc. can all improve bicyclists’ comfort at signalized intersections.



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Appendix F

PLTS Tables

Transportation Impact Study (TIS) Guidelines

Appendix B: Pedestrian Level of Traffic Stress Methodology

Pedestrian Level of Traffic Stress (PLTS) is based on methodology set forth by Oregon DOT. The goal of PLTS is to identify gaps in the low-stress pedestrian network and prioritize sidewalk enhancement. PLTS, like BLTS, uses readily available data that can be measured in the field or using recent, high-quality aerial imagery. PLTS acknowledges that, while bare minimum sidewalk widths must be achieved to ensure ADA compliance, the most comfortable sidewalks are physically separated from traffic and located along dense urban fabric.

Note that Oregon DOT's methodology includes a metric for the adjacent land uses along the sidewalk. While this is a valid metric for determining walkability and comfort level while walking, including this criterion is not appropriate for development proposals to analyze in the context of a TIS, as land uses outside of the proposed development site are outside both the City's and the Applicant's ability to mitigate in the short-term. As such, this criterion is not included in this methodology.

PLTS can be analyzed for sidewalk segments and intersection crossings. Sidewalk segment analysis should be presented graphically, while intersection analysis is likely best presented in tabular format. Like BLTS, PLTS is determined by applying the lowest score (highest numerical value) to a sidewalk segment after all metrics have been analyzed; for example, a sidewalk segment with a wide traffic buffer lined with trees would be PLTS 4 if the sidewalk itself was in poor condition or was less than four feet.

PLTS along Sidewalk Segments

PLTS is determined along sidewalk segments by comparing sidewalk condition and width to the size and material of the buffer between the sidewalk and moving vehicle traffic. Wider sidewalks and wider buffers, or buffers lined with trees, parked cars, or other vertical barriers provide the highest level of comfort for pedestrians. Mitigation for poor PLTS can be provided by repairing poor sidewalks, widening sidewalks, and/or providing a wider buffer with vertical barriers between the sidewalk and travel lanes. Note that, in order to achieve the highest level of comfort, the *effective* width of the sidewalk (the consistent usable width of the sidewalk, free of obstructions) must be at least six (6) feet.

Note that there is no PLTS metric for sidewalks that share a space with bicyclists, or sidewalks located alongside sidewalk-level bicycle lanes. Sidewalk segments that are PLTS 1 after applying all metrics may be adjusted to PLTS 2 if pedestrians on the sidewalk can expect to conflict with a significant number of bicyclists, such that the effective width available for pedestrians is less than 6 feet.

Table 1: Level of Stress Criteria Based on Sidewalk Width and Condition

Actual/Effective Sidewalk Width (ft)		Sidewalk Condition				
		Good	Fair	Poor	Very Poor	No Sidewalk
Actual	<4	PLTS 4	PLTS 4	PLTS 4	PLTS 4	PLTS 4
	≥4 to <5	PLTS 3	PLTS 3	PLTS 3		
	≥5	PLTS 2	PLTS 2	PLTS 2	PLTS 2	
Effective	≥6	PLTS 1	PLTS 1		PLTS 3	

Table 1B: Level of Stress Criteria Based on Buffer Type

Physical Buffer Type					
Buffer Type	Prevailing or Posted Speed				
	≤20 MPH	25 MPH	30 MPH	35 MPH	≥40 MPH
No buffer (curb tight)	PLTS 2	PLTS 1	PLTS 3	PLTS 3	PLTS 4
Solid surface (e.g. bike lanes)	PLTS 1		PLTS 2	PLTS 2	PLTS 2
Landscaped					
Landscaped with trees			PLTS 1	PLTS 1	
Vertical (e.g. parking)					

Table 1C: Level of Stress Criteria Based on Buffer Width

Total Number of Travel Lanes (both directions)	Total Buffering Width (ft)				
	≤5	≥5 to <10	≥10 to <15	≥15 to <25	≥25
2	PLTS 2	PLTS 2	PLTS 1	PLTS 1	PLTS 1
3	PLTS 3		PLTS 2		
4-5	PLTS 4	PLTS 3			
6+		PLTS 4	PLTS 3	PLTS 2	PLTS 2

PLTS at Unsignalized Crossings

At unsignalized crossings, pedestrians must judge the speed of vehicle traffic, often in multiple lanes and directions. Depending on the prevailing speed and traffic volume of a street crossing, this can be daunting. Median refuges help by reducing the number of lanes that a pedestrian must cross, but also allowing pedestrians to only judge the speed of one direction of traffic at a time. High levels of traffic stress can be mitigated by providing a median refuge, reducing the number of travel lanes to be crossed, and/or reducing the speed and/or volume of traffic.

Level of Stress Criteria Based on Curb Ramps: Crossing locations without ramps shall be PLTS 4. Crossing locations with substandard ramps, including ramps that are too steep, do not provide proper level landing areas, do not provide tactile warning panels, etc. shall be ranked no better than LTS 3.

Pedestrian Crossing Enhancements: This analysis does not account for pedestrian crossing enhancements, such as curb extensions, raised crosswalks, or activated beacons. Crossings one or more of treatments may improve the PLTS score that would otherwise be assigned to a given crossing by 1 point (0.5 points for curb extensions), up to a best possible score of PLTS 1. Multiple treatments do not provide a cumulative improvement to PLTS. For example, a crossing with a PLTS of 4 would improve to PLTS 3.5 if curb extensions were installed, and would improve to PLTS 3 if a ped activated beacon was installed. The application of such adjustments to PLTS is subject to the approval of the Director of Mobility. Engineering judgement should be exercised when applying these adjustments.

CITY OF SOMERVILLE

Transportation Impact Study (TIS) Guidelines

Table 2A: Level of Traffic Stress at Unsignalized Intersection Crossings of One or Two Lanes^{1, 2, 3, 4}

Speed Limit or Prevailing Speed	Width of Street Being Crossed		
	No median refuge		Median Refuge Present
	Total Lanes Crossed		
	1 Lane	2 Lanes	
< 25 mph	LTS 1	LTS 1	LTS 1
25-30 mph	LTS 1	LTS 2	LTS 1
30-35mph	LTS 2	LTS 2	LTS 2
40+ mph	LTS 3	LTS 3	LTS 3

1. For street being crossed.
2. Minimum PLTS 4 when crossing lacks ADA ramps, or PLTS 3 when ramps are non-compliant
3. Use Table 2C or Table 2D for oneway streets, when ADT exceeds 5,000, or total number of lanes exceeds two.
4. Street may be considered a one-lane road when no centerline is striped and when oncoming vehicles commonly yield to each other (yield streets).
5. Refuge should be at least 10 feet for PLTS 1, otherwise use PLTS 2 for refuges 6-10 feet. Narrower refuge islands shall not be considered a refuge island for the purposes of this analysis.

Table 2B: Unsignalized Intersection Crossings Without a Median Refuge^{1, 2}

Speed Limit or Prevailing Speed	Total Lanes Being Crossed (both directions)					
	2 Lanes			3 Lanes		
	<5,000 vpd	5,000-9,000 vpd ⁴	>9,000 vpd	<8,000 vpd	8,000-12,000 vpd ⁴	>12,000 vpd
< 25 mph	PLTS 2	PLTS 2	PLTS 3	PLTS 3	PLTS 3	PLTS 4
25-30 mph	PLTS 2	PLTS 3	PLTS 3	PLTS 3	PLTS 3	PLTS 4
30-35mph	PLTS 3	PLTS 3	PLTS 4	PLTS 3	PLTS 4	PLTS 4
40+ mph	PLTS 3	PLTS 4	PLTS 4	PLTS 4	PLTS 4	PLTS 4

1. For street being crossed.
2. Minimum PLTS 4 when crossing lacks ADA ramps, or PLTS 3 when ramps are non-compliant
3. For one-way streets, use Table 2D. Use PLTS 4 for crossings of four or more lanes.
4. Use these columns when ADT volumes are not available and unable to be confidently estimated.

CITY OF SOMERVILLE

Transportation Impact Study (TIS) Guidelines

Table 2C: Unsignalized Intersection Crossings (1 to 2 lanes) With a Median Refuge^{1, 2}

Speed Limit or Prevailing Speed	Maximum Through/Turn Lanes Crossed Per Direction			
	1 Lane	2 Lanes		
	Any	< 5,000 vpd	5,000-9,000 vpd ⁴	> 9,000 vpd
< 25 mph	PLTS 1 ³	PLTS 1 ³	PLTS 2	PLTS 2
25-30 mph	PLTS 2	PLTS 2	PLTS 2	PLTS 2
30-35mph	PLTS 2	PLTS 2	PLTS 2	PLTS 3
40+ mph	PLTS 3	PLTS 3	PLTS 3	PLTS 4

1. For street being crossed.
2. Minimum PLTS 4 when crossing lacks ADA ramps, or PLTS 3 when ramps are non-compliant
3. Refuge should be at least 10 feet for PLTS 1, otherwise use PLTS 2 for refuges 6-10 feet. Narrower refuge islands shall not be considered a refuge island for the purposes of this analysis.
4. Use this column when ADT volumes are not available and unable to be confidently estimated.

Table 2D: Unsignalized Intersection Crossings (3 or more lanes) With a Median Refuge^{1, 2}

Speed Limit or Prevailing Speed	Maximum Through/Turn Lanes Crossed Per Direction			
	1 Lane			4+ lanes
	< 8,000 VPD	8,000-12,000 vpd	> 12,000 vpd	Any
< 25 mph	PLTS 1 ³	PLTS 2	PLTS 3	PLTS 4
25-30 mph	PLTS 2	PLTS 3	PLTS 3	PLTS 3
30-35mph	PLTS 3	PLTS 3	PLTS 4	PLTS 4
40+ mph	PLTS 4	PLTS 4	PLTS 4	PLTS 4

5. For street being crossed.
6. Minimum PLTS 4 when crossing lacks ADA ramps, or PLTS 3 when ramps are non-compliant
7. Refuge should be at least 10 feet for PLTS 1, otherwise use PLTS 2 for refuges 6-10 feet. Narrower refuge islands shall not be considered a refuge island for the purposes of this analysis.
8. Use this column when ADT volumes are not available and unable to be confidently estimated.



HOWARD STEIN HUDSON

Engineers + Planners

Appendix G

Synchro Analysis Reports

HCM Signalized Intersection Capacity Analysis
2: Webster Avenue & Washington Street & Somerville Avenue

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	225	35	113	247	264	16	140	36	291	357	34
Future Volume (vph)	60	225	35	113	247	264	16	140	36	291	357	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	11	11	11	11	10	10	10
Total Lost time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		0.95		1.00	1.00	1.00		1.00		0.97	1.00	
Frpb, ped/bikes		0.96		1.00	1.00	1.00		0.96		1.00	0.95	
Flpb, ped/bikes		0.99		0.80	1.00	1.00		1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85		0.97		1.00	0.99	
Flt Protected		0.99		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		3009		1317	1743	1432		1647		3173	1618	
Flt Permitted		0.67		0.46	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		2037		637	1743	1432		1647		3173	1618	
Peak-hour factor, PHF	0.88	0.88	0.88	0.81	0.81	0.81	0.75	0.75	0.75	0.94	0.94	0.94
Adj. Flow (vph)	68	256	40	140	305	326	21	187	48	310	380	36
RTOR Reduction (vph)	0	8	0	0	0	238	0	7	0	0	3	0
Lane Group Flow (vph)	0	356	0	140	305	88	0	249	0	310	413	0
Confl. Peds. (#/hr)	43		161	161		43	150		118	118		150
Confl. Bikes (#/hr)			20			28			11			191
Heavy Vehicles (%)	7%	7%	7%	9%	9%	9%	4%	4%	4%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA	Over	Split	NA		Split	NA	
Protected Phases		2			2	4	8	8		4	4	
Permitted Phases	2			2								
Actuated Green, G (s)		32.0		32.0	32.0	32.4		22.0		32.4	32.4	
Effective Green, g (s)		32.0		32.0	32.0	32.4		22.0		32.4	32.4	
Actuated g/C Ratio		0.27		0.27	0.27	0.27		0.18		0.27	0.27	
Clearance Time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		543		169	464	386		301		856	436	
v/s Ratio Prot					0.17	0.06		c0.15		0.10	c0.26	
v/s Ratio Perm		0.17		c0.22								
v/c Ratio		0.66		0.83	0.66	0.23		0.83		0.36	0.95	
Uniform Delay, d1		39.1		41.4	39.1	34.1		47.2		35.4	43.0	
Progression Factor		1.00		0.86	0.85	2.02		0.96		1.00	1.00	
Incremental Delay, d2		6.1		31.9	6.3	0.3		15.8		0.3	29.8	
Delay (s)		45.2		67.5	39.7	69.2		61.1		35.7	72.7	
Level of Service		D		E	D	E		E		D	E	
Approach Delay (s)		45.2			57.2			61.1			56.9	
Approach LOS		D			E			E			E	
Intersection Summary												
HCM 2000 Control Delay			55.5		HCM 2000 Level of Service					E		
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					24.0		
Intersection Capacity Utilization			103.1%		ICU Level of Service					G		
Analysis Period (min)			15									

c Critical Lane Group

	↖	→	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3	Ø7				
Lane Configurations		↔		↔	↔	↔		↔		↔	↔								
Traffic Volume (vph)	60	225	35	113	247	264	16	140	36	291	357	34							
Future Volume (vph)	60	225	35	113	247	264	16	140	36	291	357	34							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900							
Lane Width (ft)	11	11	11	12	12	11	11	11	11	10	10	10							
Storage Length (ft)	0	0	50	0	0	0	0	0	0	0	0	0							
Storage Lanes	0	0	1	0	0	0	0	0	0	2	0	0							
Taper Length (ft)	25	25	25	25	25	25	25	25	25	25	25	25							
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00							
Ped Bike Factor		0.95		0.80				0.94		0.77	0.95								
Frt		0.984				0.850		0.975			0.987								
Flt Protected		0.991		0.950				0.996		0.950									
Satd. Flow (prot)	0	3040	0	1656	1743	1432	0	1647	0	3173	1619	0							
Flt Permitted		0.671		0.460				0.996		0.950									
Satd. Flow (perm)	0	2039	0	638	1743	1432	0	1619	0	2457	1619	0							
Right Turn on Red			Yes			Yes			Yes			Yes							
Satd. Flow (RTOR)		11				326		8			4								
Link Speed (mph)		30			30			30			30								
Link Distance (ft)		404			664			665			241								
Travel Time (s)		9.2			15.1			15.1			5.5								
Confl. Peds. (#/hr)	43		161	161		43	150		118	118		150							
Confl. Bikes (#/hr)			20			28			11			191							
Peak Hour Factor	0.88	0.88	0.88	0.81	0.81	0.81	0.75	0.75	0.75	0.94	0.94	0.94							
Heavy Vehicles (%)	7%	7%	7%	9%	9%	9%	4%	4%	4%	3%	3%	3%							
Adj. Flow (vph)	68	256	40	140	305	326	21	187	48	310	380	36							
Shared Lane Traffic (%)																			
Lane Group Flow (vph)	0	364	0	140	305	326	0	256	0	310	416	0							
Turn Type	Perm	NA		Perm	NA	Over	Split	NA		Split	NA								
Protected Phases		2			2	4	8	8		4	4		1	3	7				
Permitted Phases	2			2															
Detector Phase	2	2		2	2	4	8	8		4	4								
Switch Phase																			
Minimum Initial (s)	25.0	25.0		25.0	25.0	23.0	22.0	22.0		23.0	23.0		1.0	1.0	1.0				
Minimum Split (s)	32.0	32.0		32.0	32.0	30.0	28.0	28.0		30.0	30.0		5.0	5.0	5.0				
Total Split (s)	38.0	38.0		38.0	38.0	39.0	28.0	28.0		39.0	39.0		5.0	5.0	5.0				
Total Split (%)	31.7%	31.7%		31.7%	31.7%	32.5%	23.3%	23.3%		32.5%	32.5%		4%	4%	4%				
Maximum Green (s)	32.0	32.0		32.0	32.0	33.0	22.0	22.0		33.0	33.0		3.0	3.0	3.0				
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		2.0	2.0	2.0				
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		0.0	0.0	0.0				
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0								
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0								
Lead/Lag	Lag	Lag		Lag	Lag	Lag	Lag	Lag		Lag	Lag		Lead	Lead	Lead				
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes				
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0				
Recall Mode	C-Max	C-Max		C-Max	C-Max	None	None	None		None	None		Ped	Ped	Ped				
Walk Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0		3.0	3.0	3.0				
Flash Dont Walk (s)	22.0	22.0		22.0	22.0	20.0	18.0	18.0		20.0	20.0		0.0	0.0	0.0				
Pedestrian Calls (#/hr)	204	204		204	204	150	118	118		150	150		204	150	118				
Act Effct Green (s)	32.0	32.0		32.0	32.0	32.4	22.0	22.0		32.4	32.4								
Actuated g/C Ratio	0.27	0.27		0.27	0.27	0.27	0.18	0.18		0.27	0.27								
v/c Ratio	0.66	0.82		0.66	0.66	0.52	0.83	0.83		0.36	0.95								
Control Delay	44.6	69.0		69.0	40.3	10.5	65.6	65.6		36.7	74.5								
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0								
Total Delay	44.6	69.0		69.0	40.3	10.5	65.6	65.6		36.7	74.5								
LOS	D	E		D	B		E	D		D	E								
Approach Delay	44.6			32.9			65.6			58.4									
Approach LOS	D			C			E			E									
Queue Length 50th (ft)	128			97	203	40	195			99	312								
Queue Length 95th (ft)	179			m#182	272	61	m219			141	#509								
Internal Link Dist (ft)	324				584		585				161								
Turn Bay Length (ft)				50															
Base Capacity (vph)	551			170	464	630	308			872	448								
Starvation Cap Reductn	0			0	0	0	0			0	0								
Spillback Cap Reductn	0			0	0	0	0			0	0								
Storage Cap Reductn	0			0	0	0	0			0	0								
Reduced v/c Ratio	0.66			0.82	0.66	0.52	0.83			0.36	0.93								

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 67 (56%), Referenced to phase 2:EBWB, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 47.6

Intersection LOS: D

Intersection Capacity Utilization 103.1%

ICU Level of Service G

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Webster Avenue & Washington Street & Somerville Avenue



HCM Signalized Intersection Capacity Analysis
12: Prospect Street & Webster Avenue & Concord Avenue

04/21/2021

																			
Movement	NBL2	NBL	NBT	NBR	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	SWL	SWT	SWR	SWR2			
Lane Configurations																			
Traffic Volume (vph)	5	16	93	165	91	323	131	9	12	42	283	17	68	240	55	15			
Future Volume (vph)	5	16	93	165	91	323	131	9	12	42	283	17	68	240	55	15			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Total Lost time (s)		7.0	7.0		7.0	7.0					7.0			7.0					
Lane Util. Factor		1.00	1.00		1.00	1.00					1.00			1.00					
Frpb, ped/bikes		1.00	0.96		1.00	0.79					1.00			0.94					
Flpb, ped/bikes		1.00	1.00		0.98	1.00					0.99			1.00					
Frt		1.00	0.90		1.00	0.95					0.99			0.98					
Flt Protected		0.95	1.00		0.95	1.00					0.99			0.99					
Satd. Flow (prot)		1671	1526		1741	1400					1606			1649					
Flt Permitted		0.23	1.00		0.43	1.00					0.81			0.78					
Satd. Flow (perm)		401	1526		794	1400					1317			1290					
Peak-hour factor, PHF	0.76	0.76	0.76	0.76	0.88	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.86	0.86	0.86	0.86			
Adj. Flow (vph)	7	21	122	217	103	367	149	10	13	46	311	19	79	279	64	17			
RTOR Reduction (vph)	0	0	44	0	0	1	0	0	0	0	1	0	0	1	0	0			
Lane Group Flow (vph)	0	28	295	0	103	525	0	0	0	0	388	0	0	438	0	0			
Confl. Peds. (#/hr)	57	88		10	10		57	88	88	16		20	20		88	16			
Confl. Bikes (#/hr)				7			194	196				10			10	5			
Heavy Vehicles (%)	8%	8%	8%	8%	2%	2%	2%	2%	3%	3%	3%	3%	4%	4%	4%	4%			
Parking (#/hr)											0								
Turn Type	Perm	Perm	NA		Perm	NA			Perm	Perm	NA		Perm	NA					
Protected Phases			2			2					4			4					
Permitted Phases	2	2			2				4	4			4						
Actuated Green, G (s)		45.9	45.9		45.9	45.9					41.9			41.9					
Effective Green, g (s)		45.9	45.9		45.9	45.9					41.9			41.9					
Actuated g/C Ratio		0.38	0.38		0.38	0.38					0.35			0.35					
Clearance Time (s)		7.0	7.0		7.0	7.0					7.0			7.0					
Vehicle Extension (s)		3.0	3.0		3.0	3.0					3.0			3.0					
Lane Grp Cap (vph)		153	583		303	535					459			450					
v/s Ratio Prot			0.19			c0.38													
v/s Ratio Perm		0.07			0.13						0.29			c0.34					
v/c Ratio		0.18	0.51		0.34	0.98					0.84			0.97					
Uniform Delay, d1		24.6	28.4		26.3	36.6					36.0			38.5					
Progression Factor		1.00	1.00		0.90	0.82					1.00			1.71					
Incremental Delay, d2		2.6	3.1		2.3	30.1					13.3			32.7					
Delay (s)		27.2	31.5		26.1	60.0					49.4			98.5					
Level of Service		C	C		C	E					D			F					
Approach Delay (s)			31.2			54.5					49.4			98.5					
Approach LOS			C			D					D			F					
Intersection Summary																			
HCM 2000 Control Delay			59.3		HCM 2000 Level of Service						E								
HCM 2000 Volume to Capacity ratio			0.86																
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						20.0								
Intersection Capacity Utilization			83.3%		ICU Level of Service						E								
Analysis Period (min)			15																

c Critical Lane Group

Lanes, Volumes, Timings
12: Prospect Street & Webster Avenue & Concord Avenue

04/21/2021

																									
Lane Group	NBL2	NBL	NBT	NBR	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	SWL	SWT	SWR	SWR2	Ø1	Ø3	Ø9						
Lane Configurations																									
Traffic Volume (vph)	5	16	93	165	91	323	131	9	12	42	283	17	68	240	55	15									
Future Volume (vph)	5	16	93	165	91	323	131	9	12	42	283	17	68	240	55	15									
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900									
Storage Length (ft)		50		0	75		0				0		0	0		0									
Storage Lanes		1		0	1		0				0		0	0		0									
Taper Length (ft)		25			25						25		25												
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00									
Ped Bike Factor			0.96		0.99	0.76					0.98			0.93											
Frt			0.904			0.955					0.993			0.975											
Flt Protected		0.950			0.950						0.992			0.991											
Satd. Flow (prot)	0	1671	1522	0	1770	1347	0	0	0	0	1628	0	0	1656	0	0									
Flt Permitted		0.228			0.433						0.814			0.775											
Satd. Flow (perm)	0	401	1522	0	796	1347	0	0	0	0	1316	0	0	1290	0	0									
Right Turn on Red				Yes				Yes				Yes				Yes									
Satd. Flow (RTOR)			71			1					2			2											
Link Speed (mph)			30			30					30			30											
Link Distance (ft)			391			344					540			884											
Travel Time (s)			8.9			7.8					12.3			20.1											
Confl. Peds. (#/hr)	57	88		10	10		57	88	88	16		20	20		88	16									
Confl. Bikes (#/hr)				7			194	196				10			10	5									
Peak Hour Factor	0.76	0.76	0.76	0.76	0.88	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.86	0.86	0.86	0.86									
Heavy Vehicles (%)	8%	8%	8%	8%	2%	2%	2%	2%	3%	3%	3%	3%	4%	4%	4%	4%									
Parking (#/hr)											0														
Adj. Flow (vph)	7	21	122	217	103	367	149	10	13	46	311	19	79	279	64	17									
Shared Lane Traffic (%)																									
Lane Group Flow (vph)	0	28	339	0	103	526	0	0	0	0	389	0	0	439	0	0									
Turn Type	Perm	Perm	NA		Perm	NA			Perm	Perm	NA		Perm	NA											
Protected Phases			2			2					4			4							1	3	9		
Permitted Phases	2	2			2				4	4			4												
Detector Phase	2	2	2		2	2			4	4	4		4	4											
Switch Phase																									
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0			10.0	10.0	10.0		10.0	10.0			1.0	1.0	1.0						
Minimum Split (s)	23.0	23.0	23.0		23.0	23.0			27.0	27.0	27.0		27.0	27.0			5.0	5.0	23.0						
Total Split (s)	37.0	37.0	37.0		37.0	37.0			50.0	50.0	50.0		50.0	50.0			5.0	5.0	23.0						
Total Split (%)	30.8%	30.8%	30.8%		30.8%	30.8%			41.7%	41.7%	41.7%		41.7%	41.7%			4%	4%	19%						
Maximum Green (s)	30.0	30.0	30.0		30.0	30.0			43.0	43.0	43.0		43.0	43.0			3.0	3.0	21.0						
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0		3.0	3.0			2.0	2.0	2.0						
All-Red Time (s)	4.0	4.0	4.0		4.0	4.0			4.0	4.0	4.0		4.0	4.0			0.0	0.0	0.0						
Lost Time Adjust (s)		0.0	0.0		0.0	0.0					0.0			0.0											
Total Lost Time (s)		7.0	7.0		7.0	7.0					7.0			7.0											
Lead/Lag	Lag	Lag	Lag		Lag	Lag			Lag	Lag	Lag		Lag	Lag			Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes			Yes	Yes	Yes		Yes	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0						
Recall Mode	C-Max	C-Max	C-Max		C-Max	C-Max			None	None	None		None	None			Ped	Ped	None						
Walk Time (s)	4.0	4.0	4.0		4.0	4.0			4.0	4.0	4.0		4.0	4.0			3.0	3.0	9.0						
Flash Dont Walk (s)	12.0	12.0	12.0		12.0	12.0			16.0	16.0	16.0		16.0	16.0			0.0	0.0	12.0						
Pedestrian Calls (#/hr)	57	57	57		57	57			124	124	124		124	124			57	124	10						
Act Effct Green (s)		47.5	47.5		47.5	47.5					41.9			41.9											
Actuated g/C Ratio		0.40	0.40		0.40	0.40					0.35			0.35											
v/c Ratio		0.18	0.53		0.33	0.99					0.85			0.97											
Control Delay		32.4	27.2		29.0	62.8					53.7			96.8											
Queue Delay		0.0	0.0		0.0	0.0					0.0			0.0											
Total Delay		32.4	27.2		29.0	62.8					53.7			96.8											
LOS		C	C		C	E					D			F											
Approach Delay			27.6			57.3					53.7			96.8											
Approach LOS			C			E					D			F											
Queue Length 50th (ft)		13	148		41	293					271			361											
Queue Length 95th (ft)		40	240		m78	m#695					#441			#514											
Internal Link Dist (ft)			311			264					460			804											
Turn Bay Length (ft)		50			75																				
Base Capacity (vph)		158	644		314	533					472			463											
Starvation Cap Reductn		0	0		0	0					0			0											
Spillback Cap Reductn		0	0		0	0					0			0											
Storage Cap Reductn		0	0		0	0					0			0											
Reduced v/c Ratio		0.18	0.53		0.33	0.99					0.82			0.95											

Intersection Summary

Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 60.1	Intersection LOS: E
Intersection Capacity Utilization 83.3%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 12: Prospect Street & Webster Avenue & Concord Avenue



HCM Signalized Intersection Capacity Analysis
14: Prospect Street & Somerville Avenue

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	258	276	19	32	124	10	64	394	63	0	305	416
Future Volume (vph)	258	276	19	32	124	10	64	394	63	0	305	416
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.99		1.00	0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.97	1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1662	1680		1616	1664		1632	1707			1717	1459
Flt Permitted	0.95	1.00		0.95	1.00		0.39	1.00			1.00	1.00
Satd. Flow (perm)	1662	1680		1616	1664		675	1707			1717	1459
Peak-hour factor, PHF	0.81	0.81	0.81	0.77	0.77	0.77	0.84	0.84	0.84	0.94	0.94	0.94
Adj. Flow (vph)	319	341	23	42	161	13	76	469	75	0	324	443
RTOR Reduction (vph)	0	2	0	0	3	0	0	5	0	0	0	277
Lane Group Flow (vph)	319	362	0	42	171	0	76	539	0	0	324	166
Confl. Peds. (#/hr)	27		100	100		27	35		35	35		35
Confl. Bikes (#/hr)			110			9			20			11
Heavy Vehicles (%)	5%	5%	5%	8%	8%	8%	4%	4%	4%	0%	7%	7%
Turn Type	Split	NA		Split	NA		Perm	NA			NA	custom
Protected Phases	2	2		6	6			4			8 10	2 10
Permitted Phases							4					
Actuated Green, G (s)	32.0	32.0		16.0	16.0		38.9	38.9			38.9	44.9
Effective Green, g (s)	32.0	32.0		16.0	16.0		38.9	38.9			38.9	44.9
Actuated g/C Ratio	0.27	0.27		0.13	0.13		0.32	0.32			0.32	0.37
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	443	448		215	221		218	553			556	545
v/s Ratio Prot	0.19	c0.22		0.03	c0.10			c0.32			0.19	0.11
v/s Ratio Perm							0.11					
v/c Ratio	0.72	0.81		0.20	0.78		0.35	0.98			0.58	0.30
Uniform Delay, d1	39.9	41.1		46.3	50.3		30.9	40.1			33.8	26.5
Progression Factor	0.64	0.65		1.00	1.00		0.85	0.93			1.00	1.00
Incremental Delay, d2	8.8	13.2		0.4	15.6		0.7	27.2			1.6	0.3
Delay (s)	34.4	39.7		46.7	65.8		27.0	64.3			35.3	26.8
Level of Service	C	D		D	E		C	E			D	C
Approach Delay (s)		37.2			62.1			59.7			30.4	
Approach LOS		D			E			E			C	
Intersection Summary												
HCM 2000 Control Delay		43.4									D	
HCM 2000 Volume to Capacity ratio		0.85										
Actuated Cycle Length (s)		120.0							30.0			
Intersection Capacity Utilization		84.8%							E			
Analysis Period (min)		15										

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3	Ø5	Ø8	Ø10
Lane Configurations																	
Traffic Volume (vph)	258	276	19	32	124	10	64	394	63	0	305	416					
Future Volume (vph)	258	276	19	32	124	10	64	394	63	0	305	416					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900					
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11					
Storage Length (ft)	0	0	0	90	0	0	90	0	0	0	0	0					
Storage Lanes	1		0	1		0	1		0	0		1					
Taper Length (ft)	25			25			25			25							
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Ped Bike Factor	0.92	0.97		0.77	0.99		0.97	0.99									
Frt		0.991			0.989			0.979				0.850					
Flt Protected	0.950			0.950			0.950										
Satd. Flow (prot)	1662	1681	0	1616	1664	0	1678	1706	0	0	1717	1459					
Flt Permitted	0.950			0.950			0.393										
Satd. Flow (perm)	1530	1681	0	1250	1664	0	675	1706	0	0	1717	1459					
Right Turn on Red			Yes			Yes			Yes			Yes					
Satd. Flow (RTOR)		3			3			7				443					
Link Speed (mph)		30			30			30				30					
Link Distance (ft)		664			375			884				217					
Travel Time (s)		15.1			8.5			20.1				4.9					
Confl. Peds. (#/hr)	27		100	100		27	35		35	35		35					
Confl. Bikes (#/hr)			110			9			20			11					
Peak Hour Factor	0.81	0.81	0.81	0.77	0.77	0.77	0.84	0.84	0.84	0.94	0.94	0.94					
Heavy Vehicles (%)	5%	5%	5%	8%	8%	8%	4%	4%	4%	0%	7%	7%					
Adj. Flow (vph)	319	341	23	42	161	13	76	469	75	0	324	443					
Shared Lane Traffic (%)																	
Lane Group Flow (vph)	319	364	0	42	174	0	76	544	0	0	324	443					
Turn Type	Split	NA		Split	NA		Perm	NA			NA	custom					
Protected Phases	2	2		6	6			4			8 10	2 10	1	3	5	8	10
Permitted Phases								4									
Detector Phase	2	2		6	6			4	4		8 10	2 10					
Switch Phase																	
Minimum Initial (s)	15.0	15.0		16.0	16.0		22.0	22.0					1.0	1.0	1.0	7.0	7.0
Minimum Split (s)	22.0	22.0		22.0	22.0		28.0	28.0					5.0	5.0	5.0	27.0	13.0
Total Split (s)	38.0	38.0		22.0	22.0		45.0	45.0					5.0	5.0	5.0	27.0	18.0
Total Split (%)	31.7%	31.7%		18.3%	18.3%		37.5%	37.5%					4%	4%	4%	23%	15%
Maximum Green (s)	32.0	32.0		16.0	16.0		39.0	39.0					3.0	3.0	3.0	21.0	12.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0					2.0	2.0	2.0	3.0	3.0
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0					0.0	0.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0									
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0									
Lead/Lag	Lag	Lag		Lag	Lag								Lead	Lead		Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes								Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0					3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max		None	None		None	None					Ped	Ped	Ped	None	None
Walk Time (s)	4.0	4.0		4.0	4.0								3.0	3.0	3.0	4.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0								0.0	0.0	0.0	17.0	
Pedestrian Calls (#/hr)	100	100		27	27								100	27	70	70	
Act Effct Green (s)	32.0	32.0		16.0	16.0		38.9	38.9			38.9	44.9					
Actuated g/C Ratio	0.27	0.27		0.13	0.13		0.32	0.32			0.32	0.37					
v/c Ratio	0.72	0.81		0.20	0.78		0.35	0.97			0.58	0.54					
Control Delay	34.9	40.6		48.9	72.9		30.7	65.4			38.8	4.5					
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0					
Total Delay	34.9	40.6		48.9	72.9		30.7	65.4			38.8	4.5					
LOS	C	D		D	E		C	E			D	A					
Approach Delay		38.0			68.3			61.2			19.0						
Approach LOS		D			E			E			B						
Queue Length 50th (ft)	245	282		29	130		40	441			208	0					
Queue Length 95th (ft)	m307	347		55	#177		m62	#586			305	57					
Internal Link Dist (ft)		584			295			804			137						
Turn Bay Length (ft)				90			90										
Base Capacity (vph)	443	450		215	224		219	559			553	822					
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	0.72	0.81		0.20	0.78		0.35	0.97			0.59	0.54					

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 40.8

Intersection LOS: D

Intersection Capacity Utilization 84.8%

ICU Level of Service E

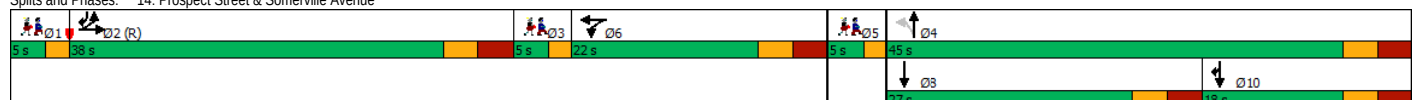
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Prospect Street & Somerville Avenue



HCM Unsignalized Intersection Capacity Analysis
3: Tremont Street & Webster Avenue & Columbia Street

04/21/2021

											
Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Traffic Volume (veh/h)	25	96	57	20	219	11	63	200	115	0	0
Future Volume (Veh/h)	25	96	57	20	219	11	63	200	115	0	0
Sign Control		Stop			Free			Free		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.81	0.81	0.81	0.79	0.79	0.79	0.88	0.88	0.88	0.92	0.92
Hourly flow rate (vph)	31	119	70	25	277	14	72	227	131	0	0
Pedestrians		29			3			6		56	
Lane Width (ft)		12.0			12.0			12.0		0.0	
Walking Speed (ft/s)		3.5			3.5			3.5		3.5	
Percent Blockage		3			0			1		0	
Right turn flare (veh)											
Median type					None			None			
Median storage (veh)											
Upstream signal (ft)								391			
pX, platoon unblocked											
vC, conflicting volume	802	921	319	414			320			962	862
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	802	921	319	414			320			962	862
tC, single (s)	7.2	6.6	6.3	4.1			4.1			7.1	6.5
tC, 2 stage (s)											
tF (s)	3.6	4.1	3.4	2.2			2.2			3.5	4.0
p0 queue free %	88	49	90	98			94			100	100
cM capacity (veh/h)	262	235	682	1134			1200			117	262
Direction, Lane #	WB 1	NB 1	SB 1								
Volume Total	220	316	430								
Volume Left	31	25	72								
Volume Right	70	14	131								
cSH	303	1134	1200								
Volume to Capacity	0.73	0.02	0.06								
Queue Length 95th (ft)	132	2	5								
Control Delay (s)	43.0	0.9	1.9								
Lane LOS	E	A	A								
Approach Delay (s)	43.0	0.9	1.9								
Approach LOS	E										
Intersection Summary											
Average Delay		10.9									
Intersection Capacity Utilization		54.8%			ICU Level of Service				A		
Analysis Period (min)		15									

HCM Unsignalized Intersection Capacity Analysis
6: Columbia Street & Windsor Place

04/21/2021

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↰	↰	
Traffic Volume (veh/h)	46	29	26	175	5	5
Future Volume (Veh/h)	46	29	26	175	5	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.52	0.52	0.91	0.91	0.60	0.60
Hourly flow rate (vph)	88	56	29	192	8	8
Pedestrians				13	7	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				1	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			151		373	136
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			151		373	136
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			98		99	99
cM capacity (veh/h)			1396		615	901
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	144	221	16			
Volume Left	0	29	8			
Volume Right	56	0	8			
cSH	1700	1396	731			
Volume to Capacity	0.08	0.02	0.02			
Queue Length 95th (ft)	0	2	2			
Control Delay (s)	0.0	1.2	10.0			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.2	10.0			
Approach LOS			B			
Intersection Summary						
Average Delay		1.1				
Intersection Capacity Utilization		30.8%	ICU Level of Service	A		
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
10: Windsor Street & South Street

04/21/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	207	174	23	10	12	14
Future Volume (Veh/h)	207	174	23	10	12	14
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.92	0.92	0.81	0.81
Hourly flow rate (vph)	213	179	25	11	15	17
Pedestrians	3					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	80	34			39	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80	34			39	
tC, single (s)	6.5	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	76	83			99	
cM capacity (veh/h)	900	1023			1529	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	392	36	32			
Volume Left	213	0	15			
Volume Right	179	11	0			
cSH	953	1700	1529			
Volume to Capacity	0.41	0.02	0.01			
Queue Length 95th (ft)	51	0	1			
Control Delay (s)	11.4	0.0	3.5			
Lane LOS	B		A			
Approach Delay (s)	11.4	0.0	3.5			
Approach LOS	B					
Intersection Summary						
Average Delay		10.0				
Intersection Capacity Utilization		36.9%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
20: Webster Avenue & Newton St/Newton Street

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	1	85	0	0	0	8	139	3	13	454	97
Future Volume (Veh/h)	52	1	85	0	0	0	8	139	3	13	454	97
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.92	0.92	0.92	0.83	0.83	0.83	0.89	0.89	0.89
Hourly flow rate (vph)	63	1	102	0	0	0	10	167	4	15	510	109
Pedestrians		62			22						51	
Lane Width (ft)		12.0			0.0						12.0	
Walking Speed (ft/s)		3.5			3.5						3.5	
Percent Blockage		6			0						5	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								344			665	
pX, platoon unblocked	0.73	0.73	0.73	0.73	0.73		0.73					
vC, conflicting volume	896	870	626	908	922	242	681			193		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	670	633	299	686	705	242	374			193		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	72	100	80	100	100	100	99			99		
cM capacity (veh/h)	228	267	510	197	241	758	818			1392		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	166	181	634									
Volume Left	63	10	15									
Volume Right	102	4	109									
cSH	346	818	1392									
Volume to Capacity	0.48	0.01	0.01									
Queue Length 95th (ft)	62	1	1									
Control Delay (s)	24.7	0.6	0.3									
Lane LOS	C	A	A									
Approach Delay (s)	24.7	0.6	0.3									
Approach LOS	C											
Intersection Summary												
Average Delay		4.5										
Intersection Capacity Utilization		49.6%	ICU Level of Service	A								
Analysis Period (min)		15										

HCM Signalized Intersection Capacity Analysis
2: Webster Avenue & Washington Street & Somerville Avenue

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	99	231	30	84	251	458	5	264	31	241	210	36
Future Volume (vph)	99	231	30	84	251	458	5	264	31	241	210	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	11	11	11	11	10	10	10
Total Lost time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		0.95		1.00	1.00	1.00		1.00		0.97	1.00	
Flpb, ped/bikes		0.98		1.00	1.00	1.00		0.98		1.00	0.93	
Flpb, ped/bikes		0.96		0.89	1.00	1.00		1.00		1.00	1.00	
Frt		0.99		1.00	1.00	0.85		0.99		1.00	0.98	
Flt Protected		0.99		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		3014		1552	1827	1501		1735		3173	1568	
Flt Permitted		0.69		0.41	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		2101		670	1827	1501		1735		3173	1568	
Peak-hour factor, PHF	0.83	0.83	0.83	0.96	0.96	0.96	0.80	0.80	0.80	0.96	0.96	0.96
Adj. Flow (vph)	119	278	36	88	261	477	6	330	39	251	219	38
RTOR Reduction (vph)	0	6	0	0	0	377	0	3	0	0	6	0
Lane Group Flow (vph)	0	427	0	88	261	100	0	372	0	251	251	0
Confl. Peds. (#/hr)	108		95	95		108	162		71	71		162
Confl. Bikes (#/hr)			19			11			106			44
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA	Over	Split	NA		Split	NA	
Protected Phases		2			2	4	8	8		4	4	
Permitted Phases	2			2								
Actuated Green, G (s)		35.0		35.0	35.0	25.2		26.0		25.2	25.2	
Effective Green, g (s)		35.0		35.0	35.0	25.2		26.0		25.2	25.2	
Actuated g/C Ratio		0.29		0.29	0.29	0.21		0.22		0.21	0.21	
Clearance Time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		612		195	532	315		375		666	329	
v/s Ratio Prot					0.14	0.07		c0.21		0.08	c0.16	
v/s Ratio Perm		c0.20		0.13								
v/c Ratio		0.70		0.45	0.49	0.32		0.99		0.38	0.76	
Uniform Delay, d1		37.8		34.7	35.1	40.1		46.9		40.7	44.6	
Progression Factor		1.00		0.94	0.93	1.80		0.83		1.00	1.00	
Incremental Delay, d2		6.5		5.4	2.4	0.4		37.3		0.4	10.1	
Delay (s)		44.3		38.0	35.0	72.6		76.4		41.0	54.7	
Level of Service		D		D	D	E		E		D	D	
Approach Delay (s)		44.3			57.1			76.4			48.0	
Approach LOS		D			E			E			D	
Intersection Summary												
HCM 2000 Control Delay			55.7		HCM 2000 Level of Service					E		
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					24.0		
Intersection Capacity Utilization			101.7%		ICU Level of Service					G		
Analysis Period (min)			15									

c Critical Lane Group

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3	Ø7
Lane Group															
Lane Configurations		↔↔		↔	↔	↔		↔		↔	↔				
Traffic Volume (vph)	99	231	30	84	251	458	5	264	31	241	210	36			
Future Volume (vph)	99	231	30	84	251	458	5	264	31	241	210	36			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	11	11	11	12	12	11	11	11	11	10	10	10			
Storage Length (ft)	0		0	50		0	0		0	0		0			
Storage Lanes	0		0	1		1	0		0	2		0			
Taper Length (ft)	25			25			25			25					
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00			
Ped Bike Factor		0.94		0.89				0.97		0.88	0.93				
Frt		0.988				0.850		0.986			0.978				
Flt Protected		0.986		0.950				0.999		0.950					
Satd. Flow (prot)	0	3139	0	1736	1827	1501	0	1734	0	3173	1569	0			
Flt Permitted		0.688		0.410				0.999		0.950					
Satd. Flow (perm)	0	2103	0	670	1827	1501	0	1726	0	2808	1569	0			
Right Turn on Red			Yes			Yes			Yes			Yes			
Satd. Flow (RTOR)		8				477		4			7				
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		404			664			665			241				
Travel Time (s)		9.2			15.1			15.1			5.5				
Confl. Peds. (#/hr)	108		95	95		108	162		71	71		162			
Confl. Bikes (#/hr)			19			11			106			44			
Peak Hour Factor	0.83	0.83	0.83	0.96	0.96	0.96	0.80	0.80	0.80	0.96	0.96	0.96			
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	2%	2%	2%	3%	3%	3%			
Adj. Flow (vph)	119	278	36	88	261	477	6	330	39	251	219	38			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	433	0	88	261	477	0	375	0	251	257	0			
Turn Type	Perm	NA		Perm	NA	Over	Split	NA		Split	NA				
Protected Phases		2			2	4	8	8		4	4		1	3	7
Permitted Phases	2			2											
Detector Phase	2	2		2	2	4	8	8		4	4				
Switch Phase															
Minimum Initial (s)	25.0	25.0		25.0	25.0	23.0	22.0	22.0		23.0	23.0		1.0	1.0	1.0
Minimum Split (s)	32.0	32.0		32.0	32.0	30.0	28.0	28.0		30.0	30.0		5.0	5.0	5.0
Total Split (s)	41.0	41.0		41.0	41.0	32.0	32.0	32.0		32.0	32.0		5.0	5.0	5.0
Total Split (%)	34.2%	34.2%		34.2%	34.2%	26.7%	26.7%	26.7%		26.7%	26.7%		4%	4%	4%
Maximum Green (s)	35.0	35.0		35.0	35.0	26.0	26.0	26.0		26.0	26.0		3.0	3.0	3.0
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		2.0	2.0	2.0
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		0.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0				
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0				
Lead/Lag	Lag	Lag		Lag	Lag	Lag	Lag	Lag		Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	C-Max	C-Max		C-Max	C-Max	None	None	None		None	None		Ped	Ped	Ped
Walk Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0		3.0	3.0	3.0
Flash Dont Walk (s)	22.0	22.0		22.0	22.0	20.0	18.0	18.0		20.0	20.0		0.0	0.0	0.0
Pedestrian Calls (#/hr)	203	203		203	203	162	71	71		162	162		203	162	71
Act Effct Green (s)		35.0		35.0	35.0	25.2		26.0		25.2	25.2				
Actuated g/C Ratio		0.29		0.29	0.29	0.21		0.22		0.21	0.21				
v/c Ratio		0.70		0.45	0.49	0.69		0.99		0.38	0.77				
Control Delay		44.2		39.5	35.6	11.0		77.6		42.4	59.5				
Queue Delay		0.0		0.0	0.0	0.0		0.0		0.0	0.0				
Total Delay		44.2		39.5	35.6	11.0		77.6		42.4	59.5				
LOS		D		D	D	B		E		D	E				
Approach Delay		44.2			21.8			77.6			51.1				
Approach LOS		D			C			E			D				
Queue Length 50th (ft)		154		43	128	96		279		86	182				
Queue Length 95th (ft)		193		m83	m195	m105		m#338		125	#299				
Internal Link Dist (ft)		324			584			585			161				
Turn Bay Length (ft)				50											
Base Capacity (vph)		619		195	532	698		378		687	345				
Starvation Cap Reductn		0		0	0	0		0		0	0				
Spillback Cap Reductn		0		0	0	0		0		0	0				
Storage Cap Reductn		0		0	0	0		0		0	0				
Reduced v/c Ratio		0.70		0.45	0.49	0.68		0.99		0.37	0.74				

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 47 (39%), Referenced to phase 2:EBWB, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 43.0

Intersection LOS: D

Intersection Capacity Utilization 101.7%

ICU Level of Service G

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Webster Avenue & Washington Street & Somerville Avenue



HCM Signalized Intersection Capacity Analysis
12: Prospect Street & Webster Avenue & Concord Avenue

04/21/2021

																
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	SWL	SWT	SWR	SWR2	
Lane Configurations																
Traffic Volume (vph)	32	155	205	73	160	78	8	7	75	492	11	30	245	44	8	
Future Volume (vph)	32	155	205	73	160	78	8	7	75	492	11	30	245	44	8	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	7.0	7.0		7.0	7.0					7.0			7.0			
Lane Util. Factor	1.00	1.00		1.00	1.00					1.00			1.00			
Frpb, ped/bikes	1.00	0.92		1.00	0.84					1.00			0.95			
Flpb, ped/bikes	0.85	1.00		1.00	1.00					0.98			1.00			
Frt	1.00	0.91		1.00	0.95					1.00			0.98			
Flt Protected	0.95	1.00		0.95	1.00					0.99			1.00			
Satd. Flow (prot)	1490	1550		1752	1468					1645			1738			
Flt Permitted	0.47	1.00		0.23	1.00					0.83			0.88			
Satd. Flow (perm)	737	1550		427	1468					1380			1540			
Peak-hour factor, PHF	0.80	0.80	0.80	0.90	0.90	0.90	0.90	0.87	0.87	0.87	0.87	0.85	0.85	0.85	0.85	
Adj. Flow (vph)	40	194	256	81	178	87	9	8	86	566	13	35	288	52	9	
RTOR Reduction (vph)	0	34	0	0	1	0	0	0	0	1	0	0	1	0	0	
Lane Group Flow (vph)	40	416	0	81	273	0	0	0	0	672	0	0	383	0	0	
Confl. Peds. (#/hr)	77		5	5		34	77	77	25		23	23		77	25	
Confl. Bikes (#/hr)			91			20	22				26			5	5	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%	1%	1%	
Parking (#/hr)										0						
Turn Type	Perm	NA		Perm	NA			Perm	Perm	NA		Perm	NA			
Protected Phases		2			2					4			4			
Permitted Phases	2			2				4	4			4				
Actuated Green, G (s)	37.8	37.8		37.8	37.8					50.0			50.0			
Effective Green, g (s)	37.8	37.8		37.8	37.8					50.0			50.0			
Actuated g/C Ratio	0.31	0.31		0.31	0.31					0.42			0.42			
Clearance Time (s)	7.0	7.0		7.0	7.0					7.0			7.0			
Vehicle Extension (s)	3.0	3.0		3.0	3.0					3.0			3.0			
Lane Grp Cap (vph)	232	488		134	462					575			641			
v/s Ratio Prot		c0.27			0.19											
v/s Ratio Perm	0.05			0.19						c0.49			0.25			
v/c Ratio	0.17	0.85		0.60	0.59					1.17			0.60			
Uniform Delay, d1	29.8	38.5		34.8	34.6					35.0			27.2			
Progression Factor	1.00	1.00		0.46	0.46					1.00			2.20			
Incremental Delay, d2	1.6	17.1		16.2	4.7					93.8			1.4			
Delay (s)	31.4	55.6		32.3	20.8					128.8			61.1			
Level of Service	C	E		C	C					F			E			
Approach Delay (s)		53.6			23.4					128.8			61.1			
Approach LOS		D			C					F			E			
Intersection Summary																
HCM 2000 Control Delay			76.1		HCM 2000 Level of Service					E						
HCM 2000 Volume to Capacity ratio			0.91													
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					20.0						
Intersection Capacity Utilization			94.0%		ICU Level of Service					F						
Analysis Period (min)			15													
c Critical Lane Group																

c Critical Lane Group

Intersection Summary	
Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:NBSB, Start of Green
Natural Cycle:	145
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.17
Intersection Signal Delay:	76.1
Intersection LOS:	E
Intersection Capacity Utilization	94.0%
ICU Level of Service	F
Analysis Period (min)	15
~	Volume exceeds capacity, queue is theoretically infinite.
	Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer.
	Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

01 02 (R) 03 04 09									
5 s 30 s 5 s 57 s 73 s									

HCM Signalized Intersection Capacity Analysis
14: Prospect Street & Somerville Avenue

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	243	264	9	24	194	6	128	503	72	0	296	475
Future Volume (vph)	243	264	9	24	194	6	128	503	72	0	296	475
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.96	1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1616	1673		1711	1772		1618	1727			1783	1516
Flt Permitted	0.95	1.00		0.95	1.00		0.43	1.00			1.00	1.00
Satd. Flow (perm)	1616	1673		1711	1772		730	1727			1783	1516
Peak-hour factor, PHF	0.83	0.83	0.83	0.88	0.88	0.88	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	293	318	11	27	220	7	139	547	78	0	318	511
RTOR Reduction (vph)	0	1	0	0	1	0	0	4	0	0	0	330
Lane Group Flow (vph)	293	328	0	27	226	0	139	621	0	0	318	181
Confl. Peds. (#/hr)	44		81	81		44	54		43	43		54
Confl. Bikes (#/hr)			25			83			24			9
Heavy Vehicles (%)	8%	8%	8%	2%	2%	2%	3%	3%	3%	0%	3%	3%
Turn Type	Split	NA		Split	NA		Perm	NA			NA	custom
Protected Phases	2	2		6	6			4			8 10	2 10
Permitted Phases							4					
Actuated Green, G (s)	28.0	28.0		16.0	16.0		43.0	43.0			43.0	42.6
Effective Green, g (s)	28.0	28.0		16.0	16.0		43.0	43.0			43.0	42.6
Actuated g/C Ratio	0.23	0.23		0.13	0.13		0.36	0.36			0.36	0.36
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	377	390		228	236		261	618			638	538
v/s Ratio Prot	0.18	c0.20		0.02	c0.13			c0.36			0.18	0.12
v/s Ratio Perm							0.19					
v/c Ratio	0.78	0.84		0.12	0.96		0.53	1.00			0.50	0.34
Uniform Delay, d1	43.1	43.9		45.8	51.7		30.5	38.5			30.1	28.4
Progression Factor	0.93	0.93		1.00	1.00		0.70	0.75			1.00	1.00
Incremental Delay, d2	12.8	17.1		0.2	46.4		0.2	11.8			0.6	0.4
Delay (s)	52.9	58.1		46.0	98.1		21.4	40.8			30.7	28.7
Level of Service	D	E		D	F		C	D			C	C
Approach Delay (s)		55.6			92.5			37.2			29.5	
Approach LOS		E			F			D			C	
Intersection Summary												
HCM 2000 Control Delay			45.0			HCM 2000 Level of Service					D	
HCM 2000 Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)					30.0	
Intersection Capacity Utilization			83.5%			ICU Level of Service					E	
Analysis Period (min)			15									

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3	Ø5	Ø8	Ø10
Lane Configurations																	
Traffic Volume (vph)	243	264	9	24	194	6	128	503	72	0	296	475					
Future Volume (vph)	243	264	9	24	194	6	128	503	72	0	296	475					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900					
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11					
Storage Length (ft)	0	0	0	90	0	0	90	0	0	0	0	0					
Storage Lanes	1		0	1		0	1		0	0		1					
Taper Length (ft)	25			25			25			25							
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Ped Bike Factor	0.88	0.99		0.81	0.99		0.96	0.99									
Frt		0.995			0.995			0.981				0.850					
Flt Protected	0.950			0.950			0.950										
Satd. Flow (prot)	1616	1673	0	1711	1771	0	1694	1727	0	0	1783	1516					
Flt Permitted	0.950			0.950			0.429										
Satd. Flow (perm)	1421	1673	0	1382	1771	0	731	1727	0	0	1783	1516					
Right Turn on Red			Yes			Yes			Yes			Yes					
Satd. Flow (RTOR)		1			1			7				511					
Link Speed (mph)		30			30			30				30					
Link Distance (ft)		664			375			884				217					
Travel Time (s)		15.1			8.5			20.1				4.9					
Confl. Peds. (#/hr)	44		81	81		44	54		43	43		54					
Confl. Bikes (#/hr)			25			83			24			9					
Peak Hour Factor	0.83	0.83	0.83	0.88	0.88	0.88	0.92	0.92	0.92	0.93	0.93	0.93					
Heavy Vehicles (%)	8%	8%	8%	2%	2%	2%	3%	3%	3%	0%	3%	3%					
Adj. Flow (vph)	293	318	11	27	220	7	139	547	78	0	318	511					
Shared Lane Traffic (%)																	
Lane Group Flow (vph)	293	329	0	27	227	0	139	625	0	0	318	511					
Turn Type	Split	NA		Split	NA		Perm	NA			NA	custom					
Protected Phases	2	2		6	6			4			8 10	2 10	1	3	5	8	10
Permitted Phases								4									
Detector Phase	2	2		6	6			4	4		8 10	2 10					
Switch Phase																	
Minimum Initial (s)	15.0	15.0		16.0	16.0		22.0	22.0					1.0	1.0	1.0	7.0	7.0
Minimum Split (s)	22.0	22.0		22.0	22.0		28.0	28.0					5.0	5.0	5.0	27.0	13.0
Total Split (s)	34.0	34.0		22.0	22.0		49.0	49.0					5.0	5.0	5.0	30.0	19.0
Total Split (%)	28.3%	28.3%		18.3%	18.3%		40.8%	40.8%					4%	4%	4%	25%	16%
Maximum Green (s)	28.0	28.0		16.0	16.0		43.0	43.0					3.0	3.0	3.0	24.0	13.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0					2.0	2.0	2.0	3.0	3.0
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0					0.0	0.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0									
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0									
Lead/Lag	Lag	Lag		Lag	Lag								Lead	Lead		Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes								Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0					3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max		None	None		None	None					Ped	Ped	Ped	None	None
Walk Time (s)	4.0	4.0		4.0	4.0								3.0	3.0	3.0	4.0	4.0
Flash Dont Walk (s)	12.0	12.0		12.0	12.0								0.0	0.0	0.0	17.0	
Pedestrian Calls (#/hr)	81	81		44	44								81	44	97	97	
Act Effct Green (s)	28.0	28.0		16.0	16.0		43.0	43.0			43.0	42.6					
Actuated g/C Ratio	0.23	0.23		0.13	0.13		0.36	0.36			0.36	0.36					
v/c Ratio	0.78	0.84		0.12	0.96		0.53	1.00			0.50	0.59					
Control Delay	53.8	58.8		47.3	100.4		22.9	41.8			33.4	4.9					
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0					
Total Delay	53.8	58.8		47.3	100.4		22.9	41.8			33.4	4.9					
LOS	D	E		D	F		C	D			C	A					
Approach Delay		56.4			94.8			38.3			15.8						
Approach LOS		E			F			D			B						
Queue Length 50th (ft)	240	270		19	176		69	~520			191	0					
Queue Length 95th (ft)	m302	m#342		46	#325		m69	m461			280	63					
Internal Link Dist (ft)		584			295			804			137						
Turn Bay Length (ft)				90			90										
Base Capacity (vph)	377	391		228	237		261	623			608	867					
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	0.78	0.84		0.12	0.96		0.53	1.00			0.52	0.59					

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 41.2

Intersection LOS: D

Intersection Capacity Utilization 83.5%

ICU Level of Service E

Analysis Period (min) 15

- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Prospect Street & Somerville Avenue



HCM Unsignalized Intersection Capacity Analysis
3: Tremont Street & Webster Avenue & Columbia Street

04/21/2021

											
Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Traffic Volume (veh/h)	12	38	128	13	261	8	24	150	25	0	0
Future Volume (Veh/h)	12	38	128	13	261	8	24	150	25	0	0
Sign Control		Stop			Free			Free		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.87	0.87	0.87	0.78	0.78	0.78	0.94	0.94	0.94	0.92	0.92
Hourly flow rate (vph)	14	44	147	17	335	10	26	160	27	0	0
Pedestrians		20			3			2		77	
Lane Width (ft)		12.0			12.0			12.0		0.0	
Walking Speed (ft/s)		3.5			3.5			3.5		3.5	
Percent Blockage		2			0			0		0	
Right turn flare (veh)											
Median type					None			None			
Median storage (veh)											
Upstream signal (ft)								391			
pX, platoon unblocked											
vC, conflicting volume	622	710	362	264			365			848	702
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	622	710	362	264			365			848	702
tC, single (s)	7.1	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)											
tF (s)	3.5	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	96	87	78	99			98			100	100
cM capacity (veh/h)	374	339	668	1289			1165			190	343
Direction, Lane #	WB 1	NB 1	SB 1								
Volume Total	205	362	213								
Volume Left	14	17	26								
Volume Right	147	10	27								
cSH	530	1289	1165								
Volume to Capacity	0.39	0.01	0.02								
Queue Length 95th (ft)	45	1	2								
Control Delay (s)	16.0	0.5	1.2								
Lane LOS	C	A	A								
Approach Delay (s)	16.0	0.5	1.2								
Approach LOS	C										
Intersection Summary											
Average Delay		4.8									
Intersection Capacity Utilization		36.9%		ICU Level of Service					A		
Analysis Period (min)		15									

HCM Unsignalized Intersection Capacity Analysis
6: Columbia Street & Windsor Place

04/21/2021

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↰	↰	
Traffic Volume (veh/h)	31	8	35	139	54	24
Future Volume (Veh/h)	31	8	35	139	54	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.81	0.81	0.89	0.89	0.79	0.79
Hourly flow rate (vph)	38	10	39	156	68	30
Pedestrians	2			21	16	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	0			2	2	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			64		295	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			64		295	80
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		90	97
cM capacity (veh/h)			1509		668	949
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	48	195	98			
Volume Left	0	39	68			
Volume Right	10	0	30			
cSH	1700	1509	735			
Volume to Capacity	0.03	0.03	0.13			
Queue Length 95th (ft)	0	2	11			
Control Delay (s)	0.0	1.7	10.7			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.7	10.7			
Approach LOS			B			
Intersection Summary						
Average Delay		4.0				
Intersection Capacity Utilization		31.8%	ICU Level of Service	A		
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
10: Windsor Street & South Street

04/21/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	167	159	29	8	42	31
Future Volume (Veh/h)	167	159	29	8	42	31
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.84	0.84	0.60	0.60
Hourly flow rate (vph)	178	169	35	10	70	52
Pedestrians	7					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	1					0
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	239	48			52	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	239	48			52	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	75	83			95	
cM capacity (veh/h)	712	1016			1512	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	347	45	122			
Volume Left	178	0	70			
Volume Right	169	10	0			
cSH	833	1700	1512			
Volume to Capacity	0.42	0.03	0.05			
Queue Length 95th (ft)	52	0	4			
Control Delay (s)	12.4	0.0	4.5			
Lane LOS	B		A			
Approach Delay (s)	12.4	0.0	4.5			
Approach LOS	B					
Intersection Summary						
Average Delay		9.4				
Intersection Capacity Utilization		36.3%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
20: Webster Avenue & Newton St/Newton Street

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	4	44	0	0	0	9	228	1	4	275	57
Future Volume (Veh/h)	69	4	44	0	0	0	9	228	1	4	275	57
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92
Hourly flow rate (vph)	76	4	48	0	0	0	11	268	1	4	299	62
Pedestrians		126			21			1			26	
Lane Width (ft)		12.0			0.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		12			0			0			2	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								344			665	
pX, platoon unblocked	0.88	0.88	0.88	0.88	0.88		0.88					
vC, conflicting volume	780	776	457	700	806	316	487			290		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	683	678	316	592	713	316	350			290		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	69	99	91	100	100	100	99			100		
cM capacity (veh/h)	248	288	559	299	273	707	946			1283		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	128	280	365									
Volume Left	76	11	4									
Volume Right	48	1	62									
cSH	316	946	1283									
Volume to Capacity	0.41	0.01	0.00									
Queue Length 95th (ft)	47	1	0									
Control Delay (s)	24.0	0.5	0.1									
Lane LOS	C	A	A									
Approach Delay (s)	24.0	0.5	0.1									
Approach LOS	C											
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utilization		34.3%										
Analysis Period (min)		15										
ICU Level of Service									A			

HCM Signalized Intersection Capacity Analysis
2: Webster Avenue & Washington Street & Somerville Avenue

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	225	35	113	247	264	16	140	36	291	365	34
Future Volume (vph)	60	225	35	113	247	264	16	140	36	291	365	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	11	11	11	11	10	10	10
Total Lost time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		0.95		1.00	1.00	1.00		1.00		0.97	1.00	
Frpb, ped/bikes		0.96		1.00	1.00	1.00		0.96		1.00	0.95	
Flpb, ped/bikes		0.99		0.80	1.00	1.00		1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85		0.97		1.00	0.99	
Flt Protected		0.99		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		3009		1317	1743	1432		1647		3173	1620	
Flt Permitted		0.67		0.46	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		2037		637	1743	1432		1647		3173	1620	
Peak-hour factor, PHF	0.88	0.88	0.88	0.81	0.81	0.81	0.75	0.75	0.75	0.94	0.94	0.94
Adj. Flow (vph)	68	256	40	140	305	326	21	187	48	310	388	36
RTOR Reduction (vph)	0	8	0	0	0	237	0	7	0	0	3	0
Lane Group Flow (vph)	0	356	0	140	305	89	0	249	0	310	421	0
Confl. Peds. (#/hr)	43		161	161		43	150		118	118		150
Confl. Bikes (#/hr)			20			28			11			191
Heavy Vehicles (%)	7%	7%	7%	9%	9%	9%	4%	4%	4%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA	Over	Split	NA		Split	NA	
Protected Phases		2			2	4	8	8		4	4	
Permitted Phases	2			2								
Actuated Green, G (s)		32.0		32.0	32.0	32.6		22.0		32.6	32.6	
Effective Green, g (s)		32.0		32.0	32.0	32.6		22.0		32.6	32.6	
Actuated g/C Ratio		0.27		0.27	0.27	0.27		0.18		0.27	0.27	
Clearance Time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		543		169	464	389		301		861	440	
v/s Ratio Prot					0.17	0.06		c0.15		0.10	c0.26	
v/s Ratio Perm		0.17		c0.22								
v/c Ratio		0.66		0.83	0.66	0.23		0.83		0.36	0.96	
Uniform Delay, d1		39.1		41.4	39.1	33.9		47.2		35.3	43.0	
Progression Factor		1.00		0.87	0.86	2.01		0.96		1.00	1.00	
Incremental Delay, d2		6.1		31.8	6.2	0.3		15.7		0.3	31.7	
Delay (s)		45.2		67.8	40.0	68.5		60.8		35.5	74.7	
Level of Service		D		E	D	E		E		D	E	
Approach Delay (s)		45.2			57.1			60.8			58.2	
Approach LOS		D			E			E			E	
Intersection Summary												
HCM 2000 Control Delay			55.9		HCM 2000 Level of Service					E		
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					24.0		
Intersection Capacity Utilization			103.5%		ICU Level of Service					G		
Analysis Period (min)			15									

c Critical Lane Group

	↖	→	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3	Ø7		
Lane Configurations		↔		↔	↔	↔		↔		↔	↔						
Traffic Volume (vph)	60	225	35	113	247	264	16	140	36	291	365	34					
Future Volume (vph)	60	225	35	113	247	264	16	140	36	291	365	34					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900					
Lane Width (ft)	11	11	11	12	12	11	11	11	11	10	10	10					
Storage Length (ft)	0	0	0	50		0	0		0	0		0					
Storage Lanes	0		0	1		1	0		0	2		0					
Taper Length (ft)	25			25			25			25							
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00					
Ped Bike Factor		0.95		0.80				0.94		0.77	0.95						
Frt		0.984				0.850		0.975			0.987						
Flt Protected		0.991		0.950				0.996		0.950							
Satd. Flow (prot)	0	3040	0	1656	1743	1432	0	1647	0	3173	1620	0					
Flt Permitted		0.671		0.460				0.996		0.950							
Satd. Flow (perm)	0	2039	0	638	1743	1432	0	1619	0	2457	1620	0					
Right Turn on Red			Yes			Yes			Yes			Yes					
Satd. Flow (RTOR)		11				326		8			4						
Link Speed (mph)		30			30			30			30						
Link Distance (ft)		404			664			665			241						
Travel Time (s)		9.2			15.1			15.1			5.5						
Confl. Peds. (#/hr)	43		161	161		43	150		118	118		150					
Confl. Bikes (#/hr)			20			28			11			191					
Peak Hour Factor	0.88	0.88	0.88	0.81	0.81	0.81	0.75	0.75	0.75	0.94	0.94	0.94					
Heavy Vehicles (%)	7%	7%	7%	9%	9%	9%	4%	4%	4%	3%	3%	3%					
Adj. Flow (vph)	68	256	40	140	305	326	21	187	48	310	388	36					
Shared Lane Traffic (%)																	
Lane Group Flow (vph)	0	364	0	140	305	326	0	256	0	310	424	0					
Turn Type	Perm	NA		Perm	NA	Over	Split	NA		Split	NA						
Protected Phases		2			2	4	8	8		4	4		1	3	7		
Permitted Phases	2			2													
Detector Phase	2	2		2	2	4	8	8		4	4						
Switch Phase																	
Minimum Initial (s)	25.0	25.0		25.0	25.0	23.0	22.0	22.0		23.0	23.0		1.0	1.0	1.0		
Minimum Split (s)	32.0	32.0		32.0	32.0	30.0	28.0	28.0		30.0	30.0		5.0	5.0	5.0		
Total Split (s)	38.0	38.0		38.0	38.0	39.0	28.0	28.0		39.0	39.0		5.0	5.0	5.0		
Total Split (%)	31.7%	31.7%		31.7%	31.7%	32.5%	23.3%	23.3%		32.5%	32.5%		4%	4%	4%		
Maximum Green (s)	32.0	32.0		32.0	32.0	33.0	22.0	22.0		33.0	33.0		3.0	3.0	3.0		
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		2.0	2.0	2.0		
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		0.0	0.0	0.0		
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0						
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0						
Lead/Lag	Lag	Lag		Lag	Lag	Lag	Lag	Lag		Lag	Lag		Lead	Lead	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0		
Recall Mode	C-Max	C-Max		C-Max	C-Max	None	None	None		None	None		Ped	Ped	Ped		
Walk Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0		3.0	3.0	3.0		
Flash Dont Walk (s)	22.0	22.0		22.0	22.0	20.0	18.0	18.0		20.0	20.0		0.0	0.0	0.0		
Pedestrian Calls (#/hr)	204	204		204	204	150	118	118		150	150		204	150	118		
Act Effct Green (s)		32.0		32.0	32.0	32.6		22.0		32.6	32.6						
Actuated g/C Ratio		0.27		0.27	0.27	0.27		0.18		0.27	0.27						
v/c Ratio		0.66		0.82	0.66	0.52		0.83		0.36	0.96						
Control Delay		44.6		69.2	40.6	10.4		65.2		36.6	76.3						
Queue Delay		0.0		0.0	0.0	0.0		0.0		0.0	0.0						
Total Delay		44.6		69.2	40.6	10.4		65.2		36.6	76.3						
LOS		D		E	D	B		E		D	E						
Approach Delay		44.6			33.0			65.2			59.5						
Approach LOS		D			C			E			E						
Queue Length 50th (ft)		128		97	203	43		195		99	320						
Queue Length 95th (ft)		179		m#182	274	60		m215		141	#524						
Internal Link Dist (ft)		324			584			585			161						
Turn Bay Length (ft)				50													
Base Capacity (vph)		551		170	464	630		308		872	448						
Starvation Cap Reductn		0		0	0	0		0		0	0						
Spillback Cap Reductn		0		0	0	0		0		0	0						
Storage Cap Reductn		0		0	0	0		0		0	0						
Reduced v/c Ratio		0.66		0.82	0.66	0.52		0.83		0.36	0.95						

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 67 (56%), Referenced to phase 2:EBWB, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 48.1

Intersection LOS: D

Intersection Capacity Utilization 103.5%

ICU Level of Service G

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Webster Avenue & Washington Street & Somerville Avenue



HCM Signalized Intersection Capacity Analysis
12: Prospect Street & Webster Avenue & Concord Avenue

04/21/2021

																				
Movement	NBL2	NBL	NBT	NBR	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	SWL	SWT	SWR	SWR2				
Lane Configurations																				
Traffic Volume (vph)	5	16	93	167	91	331	131	9	12	42	283	21	97	240	55	15				
Future Volume (vph)	5	16	93	167	91	331	131	9	12	42	283	21	97	240	55	15				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900				
Total Lost time (s)		7.0	7.0		7.0	7.0					7.0			7.0						
Lane Util. Factor		1.00	1.00		1.00	1.00					1.00			1.00						
Frpb, ped/bikes		1.00	0.96		1.00	0.79					0.99			0.94						
Flpb, ped/bikes		1.00	1.00		0.98	1.00					0.99			0.99						
Frt		1.00	0.90		1.00	0.96					0.99			0.98						
Flt Protected		0.95	1.00		0.95	1.00					0.99			0.99						
Satd. Flow (prot)		1671	1525		1742	1405					1605			1653						
Flt Permitted		0.21	1.00		0.42	1.00					0.82			0.70						
Satd. Flow (perm)		365	1525		776	1405					1329			1179						
Peak-hour factor, PHF	0.76	0.76	0.76	0.76	0.88	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.86	0.86	0.86	0.86				
Adj. Flow (vph)	7	21	122	220	103	376	149	10	13	46	311	23	113	279	64	17				
RTOR Reduction (vph)	0	0	45	0	0	1	0	0	0	0	2	0	0	1	0	0				
Lane Group Flow (vph)	0	28	297	0	103	534	0	0	0	0	391	0	0	472	0	0				
Confl. Peds. (#/hr)	57	88		10	10		57	88	88	16		20	20		88	16				
Confl. Bikes (#/hr)				7			194	196				10			10	5				
Heavy Vehicles (%)	8%	8%	8%	8%	2%	2%	2%	2%	3%	3%	3%	3%	4%	4%	4%	4%				
Parking (#/hr)											0									
Turn Type	Perm	Perm	NA		Perm	NA			Perm	Perm	NA		Perm	NA						
Protected Phases			2			2					4			4						
Permitted Phases	2	2			2				4	4			4							
Actuated Green, G (s)		44.8	44.8		44.8	44.8					43.0			43.0						
Effective Green, g (s)		44.8	44.8		44.8	44.8					43.0			43.0						
Actuated g/C Ratio		0.37	0.37		0.37	0.37					0.36			0.36						
Clearance Time (s)		7.0	7.0		7.0	7.0					7.0			7.0						
Vehicle Extension (s)		3.0	3.0		3.0	3.0					3.0			3.0						
Lane Grp Cap (vph)		136	569		289	524					476			422						
v/s Ratio Prot			0.19			c0.38														
v/s Ratio Perm		0.08			0.13						0.29			c0.40						
v/c Ratio		0.21	0.52		0.36	1.02					0.82			1.12						
Uniform Delay, d1		25.5	29.3		27.2	37.6					35.0			38.5						
Progression Factor		1.00	1.00		0.91	0.82					1.00			1.73						
Incremental Delay, d2		3.4	3.4		2.6	39.4					10.9			76.8						
Delay (s)		28.9	32.7		27.3	70.3					45.9			143.5						
Level of Service		C	C		C	E					D			F						
Approach Delay (s)			32.4			63.3					45.9			143.5						
Approach LOS			C			E					D			F						
Intersection Summary																				
HCM 2000 Control Delay			73.8		HCM 2000 Level of Service						E									
HCM 2000 Volume to Capacity ratio			0.94																	
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						20.0									
Intersection Capacity Utilization			90.0%		ICU Level of Service						E									
Analysis Period (min)			15																	

c Critical Lane Group

Intersection Summary	
Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:NBSB, Start of Green
Natural Cycle:	145
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.12
Intersection Signal Delay:	71.9
Intersection LOS:	E
Intersection Capacity Utilization	90.0%
ICU Level of Service	E
Analysis Period (min)	15
~	Volume exceeds capacity, queue is theoretically infinite.
	Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer.
	Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

01 02 (R)										03 04										09																			
6 s										37 s										50 s										23 s									

HCM Signalized Intersection Capacity Analysis
14: Prospect Street & Somerville Avenue

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	258	276	19	32	124	10	64	396	63	0	334	416
Future Volume (vph)	258	276	19	32	124	10	64	396	63	0	334	416
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.97		1.00	0.99		1.00	0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1662	1680		1616	1664		1637	1707			1717	1459
Flt Permitted	0.95	1.00		0.95	1.00		0.35	1.00			1.00	1.00
Satd. Flow (perm)	1662	1680		1616	1664		608	1707			1717	1459
Peak-hour factor, PHF	0.81	0.81	0.81	0.77	0.77	0.77	0.84	0.84	0.84	0.94	0.94	0.94
Adj. Flow (vph)	319	341	23	42	161	13	76	471	75	0	355	443
RTOR Reduction (vph)	0	2	0	0	3	0	0	5	0	0	0	278
Lane Group Flow (vph)	319	362	0	42	171	0	76	541	0	0	355	165
Confl. Peds. (#/hr)	27		100	100		27	35		35	35		35
Confl. Bikes (#/hr)			110			9			20			11
Heavy Vehicles (%)	5%	5%	5%	8%	8%	8%	4%	4%	4%	0%	7%	7%
Turn Type	Split	NA		Split	NA		Perm	NA			NA	custom
Protected Phases	2	2		6	6			4			8 10	2 10
Permitted Phases							4					
Actuated Green, G (s)	32.0	32.0		16.0	16.0		39.0	39.0			39.0	44.7
Effective Green, g (s)	32.0	32.0		16.0	16.0		39.0	39.0			39.0	44.7
Actuated g/C Ratio	0.27	0.27		0.13	0.13		0.32	0.32			0.32	0.37
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	443	448		215	221		197	554			558	543
v/s Ratio Prot	0.19	c0.22		0.03	c0.10			c0.32			0.21	0.11
v/s Ratio Perm							0.12					
v/c Ratio	0.72	0.81		0.20	0.78		0.39	0.98			0.64	0.30
Uniform Delay, d1	39.9	41.1		46.3	50.3		31.3	40.1			34.5	26.6
Progression Factor	0.64	0.65		1.00	1.00		0.85	0.93			1.00	1.00
Incremental Delay, d2	8.8	13.2		0.4	15.6		1.0	27.4			2.4	0.3
Delay (s)	34.4	39.8		46.7	65.8		27.6	64.5			36.8	27.0
Level of Service	C	D		D	E		C	E			D	C
Approach Delay (s)		37.3			62.1			60.0			31.4	
Approach LOS		D			E			E			C	
Intersection Summary												
HCM 2000 Control Delay		43.7									D	
HCM 2000 Volume to Capacity ratio		0.85										
Actuated Cycle Length (s)		120.0							30.0			
Intersection Capacity Utilization		85.3%							E			
Analysis Period (min)		15										

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3	Ø5	Ø8	Ø10
Lane Configurations																	
Traffic Volume (vph)	258	276	19	32	124	10	64	396	63	0	334	416					
Future Volume (vph)	258	276	19	32	124	10	64	396	63	0	334	416					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900					
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11					
Storage Length (ft)	0	0	0	90	0	0	90	0	0	0	0	0					
Storage Lanes	1		0	1		0	1		0	0		1					
Taper Length (ft)	25			25			25			25							
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Ped Bike Factor	0.92	0.97		0.77	0.99		0.98	0.99									
Frt		0.991			0.989			0.979				0.850					
Flt Protected	0.950			0.950			0.950										
Satd. Flow (prot)	1662	1681	0	1616	1664	0	1678	1707	0	0	1717	1459					
Flt Permitted	0.950			0.950			0.353										
Satd. Flow (perm)	1530	1681	0	1250	1664	0	608	1707	0	0	1717	1459					
Right Turn on Red			Yes			Yes			Yes			Yes					
Satd. Flow (RTOR)		3			3			7				443					
Link Speed (mph)		30			30			30				30					
Link Distance (ft)		664			375			884				217					
Travel Time (s)		15.1			8.5			20.1				4.9					
Confl. Peds. (#/hr)	27		100	100		27	35		35	35		35					
Confl. Bikes (#/hr)			110			9			20			11					
Peak Hour Factor	0.81	0.81	0.81	0.77	0.77	0.77	0.84	0.84	0.84	0.94	0.94	0.94					
Heavy Vehicles (%)	5%	5%	5%	8%	8%	8%	4%	4%	4%	0%	7%	7%					
Adj. Flow (vph)	319	341	23	42	161	13	76	471	75	0	355	443					
Shared Lane Traffic (%)																	
Lane Group Flow (vph)	319	364	0	42	174	0	76	546	0	0	355	443					
Turn Type	Split	NA		Split	NA		Perm	NA		NA	custom						
Protected Phases	2	2		6	6			4			8 10	2 10	1	3	5	8	10
Permitted Phases								4									
Detector Phase	2	2		6	6			4	4		8 10	2 10					
Switch Phase																	
Minimum Initial (s)	15.0	15.0		16.0	16.0		22.0	22.0					1.0	1.0	1.0	7.0	7.0
Minimum Split (s)	22.0	22.0		22.0	22.0		28.0	28.0					5.0	5.0	5.0	27.0	13.0
Total Split (s)	38.0	38.0		22.0	22.0		45.0	45.0					5.0	5.0	5.0	27.0	18.0
Total Split (%)	31.7%	31.7%		18.3%	18.3%		37.5%	37.5%					4%	4%	4%	23%	15%
Maximum Green (s)	32.0	32.0		16.0	16.0		39.0	39.0					3.0	3.0	3.0	21.0	12.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0					2.0	2.0	2.0	3.0	3.0
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0					0.0	0.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0									
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0									
Lead/Lag	Lag	Lag		Lag	Lag								Lead	Lead		Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes								Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0					3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max		None	None		None	None					Ped	Ped	Ped	None	None
Walk Time (s)	4.0	4.0		4.0	4.0								3.0	3.0	3.0	4.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0								0.0	0.0	0.0	17.0	
Pedestrian Calls (#/hr)	100	100		27	27								100	27	70	70	
Act Effct Green (s)	32.0	32.0		16.0	16.0		39.0	39.0			39.0	44.7					
Actuated g/C Ratio	0.27	0.27		0.13	0.13		0.32	0.32			0.32	0.37					
v/c Ratio	0.72	0.81		0.20	0.78		0.39	0.98			0.64	0.54					
Control Delay	35.0	40.7		48.9	72.9		32.2	65.5			40.6	4.5					
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0					
Total Delay	35.0	40.7		48.9	72.9		32.2	65.5			40.6	4.5					
LOS	C	D		D	E		C	E			D	A					
Approach Delay		38.0			68.3			61.4			20.6						
Approach LOS		D			E			E			C						
Queue Length 50th (ft)	245	282		29	130		41	443			233	0					
Queue Length 95th (ft)	m307	347		55	#177		m64	#590			340	57					
Internal Link Dist (ft)		584			295			804			137						
Turn Bay Length (ft)				90			90										
Base Capacity (vph)	443	450		215	224		197	559			551	821					
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	0.72	0.81		0.20	0.78		0.39	0.98			0.64	0.54					

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 41.1

Intersection LOS: D

Intersection Capacity Utilization 85.3%

ICU Level of Service E

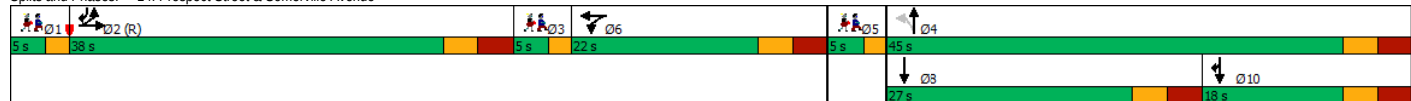
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Prospect Street & Somerville Avenue



HCM Unsignalized Intersection Capacity Analysis
3: Tremont Street & Webster Avenue & Columbia Street

04/21/2021

											
Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Traffic Volume (veh/h)	25	96	57	20	221	11	63	241	115	0	0
Future Volume (Veh/h)	25	96	57	20	221	11	63	241	115	0	0
Sign Control		Stop			Free			Free		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.81	0.81	0.81	0.79	0.79	0.79	0.88	0.88	0.88	0.92	0.92
Hourly flow rate (vph)	31	119	70	25	280	14	72	274	131	0	0
Pedestrians		29			3			6		56	
Lane Width (ft)		12.0			12.0			12.0		0.0	
Walking Speed (ft/s)		3.5			3.5			3.5		3.5	
Percent Blockage		3			0			1		0	
Right turn flare (veh)											
Median type					None			None			
Median storage (veh)											
Upstream signal (ft)								391			
pX, platoon unblocked											
vC, conflicting volume	852	971	322	461			323			1012	912
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	852	971	322	461			323			1012	912
tC, single (s)	7.2	6.6	6.3	4.1			4.1			7.1	6.5
tC, 2 stage (s)											
tF (s)	3.6	4.1	3.4	2.2			2.2			3.5	4.0
p0 queue free %	87	46	90	98			94			100	100
cM capacity (veh/h)	242	220	680	1090			1197			103	244
Direction, Lane #	WB 1	NB 1	SB 1								
Volume Total	220	319	477								
Volume Left	31	25	72								
Volume Right	70	14	131								
cSH	285	1090	1197								
Volume to Capacity	0.77	0.02	0.06								
Queue Length 95th (ft)	148	2	5								
Control Delay (s)	50.3	0.9	1.8								
Lane LOS	F	A	A								
Approach Delay (s)	50.3	0.9	1.8								
Approach LOS	F										
Intersection Summary											
Average Delay		12.0									
Intersection Capacity Utilization		56.6%			ICU Level of Service				B		
Analysis Period (min)		15									

HCM Unsignalized Intersection Capacity Analysis
6: Columbia Street & Windsor Place

04/21/2021

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	46	29	26	175	5	5
Future Volume (Veh/h)	46	29	26	175	5	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.52	0.52	0.91	0.91	0.60	0.60
Hourly flow rate (vph)	88	56	29	192	8	8
Pedestrians				13	7	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				1	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			151		373	136
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			151		373	136
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			98		99	99
cM capacity (veh/h)			1396		615	901
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	144	221	16			
Volume Left	0	29	8			
Volume Right	56	0	8			
cSH	1700	1396	731			
Volume to Capacity	0.08	0.02	0.02			
Queue Length 95th (ft)	0	2	2			
Control Delay (s)	0.0	1.2	10.0			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.2	10.0			
Approach LOS			B			
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			30.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
10: Windsor Street & South Street

04/21/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	207	174	23	10	12	14
Future Volume (Veh/h)	207	174	23	10	12	14
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.92	0.92	0.81	0.81
Hourly flow rate (vph)	213	179	25	11	15	17
Pedestrians	3					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	80	34			39	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80	34			39	
tC, single (s)	6.5	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	76	83			99	
cM capacity (veh/h)	900	1023			1529	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	392	36	32			
Volume Left	213	0	15			
Volume Right	179	11	0			
cSH	953	1700	1529			
Volume to Capacity	0.41	0.02	0.01			
Queue Length 95th (ft)	51	0	1			
Control Delay (s)	11.4	0.0	3.5			
Lane LOS	B		A			
Approach Delay (s)	11.4	0.0	3.5			
Approach LOS	B					
Intersection Summary						
Average Delay		10.0				
Intersection Capacity Utilization		36.9%		ICU Level of Service	A	
Analysis Period (min)		15				

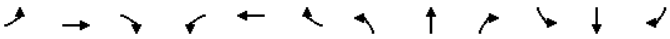
HCM Unsignalized Intersection Capacity Analysis
20: Webster Avenue & Newton St/Newton Street

04/21/2021

	↖	→	↗	↖	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Volume (veh/h)	52	1	85	0	0	0	8	139	3	13	462	97
Future Volume (Veh/h)	52	1	85	0	0	0	8	139	3	13	462	97
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.92	0.92	0.92	0.83	0.83	0.83	0.89	0.89	0.89
Hourly flow rate (vph)	63	1	102	0	0	0	10	167	4	15	519	109
Pedestrians		62			22						51	
Lane Width (ft)		12.0			0.0						12.0	
Walking Speed (ft/s)		3.5			3.5						3.5	
Percent Blockage		6			0						5	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								344			665	
pX, platoon unblocked	0.72	0.72	0.72	0.72	0.72		0.72					
vC, conflicting volume	906	878	636	917	931	242	690			193		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	677	640	304	693	713	242	379			193		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	72	100	80	100	100	100	99			99		
cM capacity (veh/h)	224	263	504	193	237	758	809			1392		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	166	181	643									
Volume Left	63	10	15									
Volume Right	102	4	109									
cSH	341	809	1392									
Volume to Capacity	0.49	0.01	0.01									
Queue Length 95th (ft)	64	1	1									
Control Delay (s)	25.2	0.6	0.3									
Lane LOS	D	A	A									
Approach Delay (s)	25.2	0.6	0.3									
Approach LOS	D											
Intersection Summary												
Average Delay			4.5									
Intersection Capacity Utilization			50.0%									
Analysis Period (min)			15									
ICU Level of Service									A			

HCM Signalized Intersection Capacity Analysis
2: Webster Avenue & Washington Street & Somerville Avenue

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔		↔	↔	↔		↔		↔	↔	
Traffic Volume (vph)	99	231	30	84	251	458	5	272	31	241	210	36
Future Volume (vph)	99	231	30	84	251	458	5	272	31	241	210	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	11	11	11	11	10	10	10
Total Lost time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		0.95		1.00	1.00	1.00		1.00		0.97	1.00	
Frpb, ped/bikes		0.98		1.00	1.00	1.00		0.98		1.00	0.93	
Flpb, ped/bikes		0.96		0.89	1.00	1.00		1.00		1.00	1.00	
Frt		0.99		1.00	1.00	0.85		0.99		1.00	0.98	
Flt Protected		0.99		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		3014		1552	1827	1501		1736		3173	1568	
Flt Permitted		0.69		0.41	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		2101		670	1827	1501		1736		3173	1568	
Peak-hour factor, PHF	0.83	0.83	0.83	0.96	0.96	0.96	0.80	0.80	0.80	0.96	0.96	0.96
Adj. Flow (vph)	119	278	36	88	261	477	6	340	39	251	219	38
RTOR Reduction (vph)	0	6	0	0	0	377	0	3	0	0	6	0
Lane Group Flow (vph)	0	427	0	88	261	100	0	382	0	251	251	0
Confl. Peds. (#/hr)	108		95	95		108	162		71	71		162
Confl. Bikes (#/hr)			19			11			106			44
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA	Over	Split	NA		Split	NA	
Protected Phases		2			2	4	8	8		4	4	
Permitted Phases	2			2								
Actuated Green, G (s)		35.0		35.0	35.0	25.2		26.0		25.2	25.2	
Effective Green, g (s)		35.0		35.0	35.0	25.2		26.0		25.2	25.2	
Actuated g/C Ratio		0.29		0.29	0.29	0.21		0.22		0.21	0.21	
Clearance Time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		612		195	532	315		376		666	329	
v/s Ratio Prot					0.14	0.07		c0.22		0.08	c0.16	
v/s Ratio Perm		c0.20		0.13								
v/c Ratio		0.70		0.45	0.49	0.32		1.02		0.38	0.76	
Uniform Delay, d1		37.8		34.7	35.1	40.1		47.0		40.7	44.6	
Progression Factor		1.00		0.94	0.93	1.80		0.84		1.00	1.00	
Incremental Delay, d2		6.5		5.4	2.4	0.4		41.9		0.4	10.1	
Delay (s)		44.3		38.0	35.1	72.6		81.4		41.0	54.7	
Level of Service		D		D	D	E		F		D	D	
Approach Delay (s)		44.3			57.1			81.4			48.0	
Approach LOS		D			E			F			D	
Intersection Summary												
HCM 2000 Control Delay			56.7		HCM 2000 Level of Service					E		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					24.0		
Intersection Capacity Utilization			101.7%		ICU Level of Service					G		
Analysis Period (min)			15									

c Critical Lane Group

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3	Ø7
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3	Ø7
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔			
Traffic Volume (vph)	99	231	30	84	251	458	5	272	31	241	210	36			
Future Volume (vph)	99	231	30	84	251	458	5	272	31	241	210	36			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	11	11	11	12	12	11	11	11	11	10	10	10			
Storage Length (ft)	0	0	0	50	0	0	0	0	0	0	0	0			
Storage Lanes	0	0	0	1	0	1	0	0	0	2	0	0			
Taper Length (ft)	25	25	25	25	25	25	25	25	25	25	25	25			
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00			
Ped Bike Factor	0.94	0.94	0.89	0.89	0.89	0.89	0.97	0.97	0.89	0.93	0.93	0.93			
Frt	0.988	0.988	0.988	0.988	0.988	0.988	0.986	0.986	0.986	0.978	0.978	0.978			
Flt Protected	0.986	0.986	0.950	0.950	0.950	0.950	0.999	0.999	0.950	0.950	0.950	0.950			
Satd. Flow (prot)	0	3139	0	1736	1827	1501	0	1735	0	3173	1569	0			
Flt Permitted	0.688	0.688	0.410	0.410	0.410	0.410	0.999	0.999	0.950	0.950	0.950	0.950			
Satd. Flow (perm)	0	2103	0	670	1827	1501	0	1728	0	2813	1569	0			
Right Turn on Red		Yes			Yes			Yes			Yes				
Satd. Flow (RTOR)	8	8	8	8	8	8	4	4	4	4	4	4			
Link Speed (mph)	30	30	30	30	30	30	30	30	30	30	30	30			
Link Distance (ft)	404	404	404	404	404	404	665	665	665	241	241	241			
Travel Time (s)	9.2	9.2	9.2	9.2	9.2	9.2	15.1	15.1	15.1	5.5	5.5	5.5			
Confl. Peds. (#/hr)	108	108	95	95	108	162	71	71	71	162	162	162			
Confl. Bikes (#/hr)	19	19	19	19	19	106	106	106	106	44	44	44			
Peak Hour Factor	0.83	0.83	0.83	0.96	0.96	0.96	0.80	0.80	0.80	0.96	0.96	0.96			
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	2%	2%	2%	3%	3%	3%			
Adj. Flow (vph)	119	278	36	88	261	477	6	340	39	251	219	38			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	0	433	0	88	261	477	0	385	0	251	257	0			
Turn Type	Perm	NA	Perm	NA	Over	Split	NA	Split	NA	Split	NA	NA			
Protected Phases	2	2	2	2	4	8	8	4	4	4	4	4	1	3	7
Permitted Phases	2	2	2	2	4	8	8	4	4	4	4	4			
Detector Phase	2	2	2	2	4	8	8	4	4	4	4	4			
Switch Phase															
Minimum Initial (s)	25.0	25.0	25.0	25.0	23.0	22.0	22.0	23.0	23.0	1.0	1.0	1.0			
Minimum Split (s)	32.0	32.0	32.0	32.0	30.0	28.0	28.0	30.0	30.0	5.0	5.0	5.0			
Total Split (s)	41.0	41.0	41.0	41.0	32.0	32.0	32.0	32.0	32.0	5.0	5.0	5.0			
Total Split (%)	34.2%	34.2%	34.2%	34.2%	26.7%	26.7%	26.7%	26.7%	26.7%	4%	4%	4%			
Maximum Green (s)	35.0	35.0	35.0	35.0	26.0	26.0	26.0	26.0	26.0	3.0	3.0	3.0			
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0			
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	0.0	0.0			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0			
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	Ped	Ped	Ped	Ped	Ped	Ped
Walk Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0
Flash Dont Walk (s)	22.0	22.0	22.0	22.0	20.0	18.0	18.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	203	203	203	203	162	71	71	162	162	203	162	162	203	162	71
Act Effct Green (s)	35.0	35.0	35.0	35.0	25.2	26.0	26.0	25.2	25.2	3.0	3.0	3.0			
Actuated g/C Ratio	0.29	0.29	0.29	0.29	0.21	0.22	0.22	0.21	0.21	0.21	0.21	0.21			
v/c Ratio	0.70	0.70	0.45	0.49	0.69	1.02	1.02	0.38	0.77	0.38	0.77	0.77			
Control Delay	44.2	44.2	39.4	35.6	11.0	81.9	81.9	42.4	59.5	42.4	59.5	59.5			
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total Delay	44.2	44.2	39.4	35.6	11.0	81.9	81.9	42.4	59.5	42.4	59.5	59.5			
LOS	D	D	D	D	B	F	F	D	E	D	E	E			
Approach Delay	44.2	44.2	21.8	21.8	81.9	81.9	81.9	51.1	51.1	51.1	51.1	51.1			
Approach LOS	D	D	C	C	F	F	F	D	D	D	D	D			
Queue Length 50th (ft)	154	154	43	128	95	~285	~285	86	182	86	182	182			
Queue Length 95th (ft)	193	193	m83	m196	m105	m#321	m#321	125	#299	125	#299	#299			
Internal Link Dist (ft)	324	324	584	584	585	585	585	161	161	161	161	161			
Turn Bay Length (ft)	50	50	50	50	50	50	50	50	50	50	50	50			
Base Capacity (vph)	619	619	195	532	698	379	379	687	345	687	345	345			
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0			
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0			
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0			
Reduced v/c Ratio	0.70	0.70	0.45	0.49	0.68	1.02	1.02	0.37	0.74	0.37	0.74	0.74			

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 47 (39%), Referenced to phase 2:EBWB, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 44.0

Intersection LOS: D

Intersection Capacity Utilization 101.7%

ICU Level of Service G

Analysis Period (min) 15

- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Webster Avenue & Washington Street & Somerville Avenue



HCM Signalized Intersection Capacity Analysis
12: Prospect Street & Webster Avenue & Concord Avenue

04/21/2021

																
Movement	NBL2	NBL	NBT	NBR	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	SWL	SWT	SWR	SWR2
Lane Configurations																
Traffic Volume (vph)	3	32	163	234	73	160	78	8	7	75	492	11	30	245	44	8
Future Volume (vph)	3	32	163	234	73	160	78	8	7	75	492	11	30	245	44	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0	7.0		7.0	7.0					7.0			7.0		
Lane Util. Factor		1.00	1.00		1.00	1.00					1.00			1.00		
Frpb, ped/bikes		1.00	0.92		1.00	0.84					1.00			0.95		
Flpb, ped/bikes		0.78	1.00		1.00	1.00					0.98			1.00		
Frt		1.00	0.91		1.00	0.95					1.00			0.98		
Flt Protected		0.95	1.00		0.95	1.00					0.99			1.00		
Satd. Flow (prot)		1375	1539		1752	1468					1645			1738		
Flt Permitted		0.47	1.00		0.17	1.00					0.83			0.88		
Satd. Flow (perm)		680	1539		316	1468					1380			1540		
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.90	0.90	0.90	0.90	0.87	0.87	0.87	0.87	0.85	0.85	0.85	0.85
Adj. Flow (vph)	4	40	204	292	81	178	87	9	8	86	566	13	35	288	52	9
RTOR Reduction (vph)	0	0	36	0	0	1	0	0	0	0	1	0	0	1	0	0
Lane Group Flow (vph)	0	44	461	0	81	273	0	0	0	0	672	0	0	383	0	0
Confl. Peds. (#/hr)	34	77		5	5		34	77	77	25		23	23		77	25
Confl. Bikes (#/hr)				91			20	22				26			5	5
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%	1%	1%
Parking (#/hr)											0					
Turn Type	Perm	Perm	NA		Perm	NA			Perm	Perm	NA		Perm	NA		
Protected Phases			2			2					4			4		
Permitted Phases	2	2			2				4	4			4			
Actuated Green, G (s)		37.8	37.8		37.8	37.8					50.0			50.0		
Effective Green, g (s)		37.8	37.8		37.8	37.8					50.0			50.0		
Actuated g/C Ratio		0.31	0.31		0.31	0.31					0.42			0.42		
Clearance Time (s)		7.0	7.0		7.0	7.0					7.0			7.0		
Vehicle Extension (s)		3.0	3.0		3.0	3.0					3.0			3.0		
Lane Grp Cap (vph)		214	484		99	462					575			641		
v/s Ratio Prot			c0.30			0.19										
v/s Ratio Perm		0.06			0.26						c0.49			0.25		
v/c Ratio		0.21	0.95		0.82	0.59					1.17			0.60		
Uniform Delay, d1		30.1	40.2		37.9	34.6					35.0			27.2		
Progression Factor		1.00	1.00		0.45	0.46					1.00			2.20		
Incremental Delay, d2		2.2	30.5		45.3	4.7					93.8			1.4		
Delay (s)		32.3	70.7		62.5	20.8					128.8			61.1		
Level of Service		C	E		E	C					F			E		
Approach Delay (s)			67.6			30.3					128.8			61.1		
Approach LOS			E			C					F			E		
Intersection Summary																
HCM 2000 Control Delay			80.6		HCM 2000 Level of Service						F					
HCM 2000 Volume to Capacity ratio			0.94													
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						20.0					
Intersection Capacity Utilization			96.2%		ICU Level of Service						F					
Analysis Period (min)			15													
c Critical Lane Group																

Lanes, Volumes, Timings
12: Prospect Street & Webster Avenue & Concord Avenue

04/21/2021

																			
Lane Group	NBL2	NBL	NBT	NBR	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	SWL	SWT	SWR	SWR2	Ø1	Ø3	Ø9
Lane Configurations																			
Traffic Volume (vph)	3	32	163	234	73	160	78	8	7	75	492	11	30	245	44	8			
Future Volume (vph)	3	32	163	234	73	160	78	8	7	75	492	11	30	245	44	8			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Storage Length (ft)		50		0	75		0				0		0	0		0			
Storage Lanes		1		0	1		0				0		0	0		0			
Taper Length (ft)		25			25					25			25						
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped Bike Factor		0.81	0.88			0.83					0.98			0.95					
Frt			0.912			0.947					0.997			0.979					
Flt Protected		0.950			0.950						0.993			0.995					
Satd. Flow (prot)	0	1752	1473	0	1752	1456	0	0	0	0	1673	0	0	1738	0	0			
Flt Permitted		0.470			0.171						0.833			0.882					
Satd. Flow (perm)	0	701	1473	0	315	1456	0	0	0	0	1379	0	0	1540	0	0			
Right Turn on Red				Yes				Yes				Yes				Yes			
Satd. Flow (RTOR)			53			1					1			1					
Link Speed (mph)			30			30					30			30					
Link Distance (ft)			391			344					540			884					
Travel Time (s)			8.9			7.8					12.3			20.1					
Confl. Peds. (#/hr)	34	77		5	5		34	77	77	25		23	23		77	25			
Confl. Bikes (#/hr)			91				20	22				26			5	5			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.90	0.90	0.90	0.90	0.87	0.87	0.87	0.87	0.85	0.85	0.85	0.85			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%	1%	1%			
Parking (#/hr)											0								
Adj. Flow (vph)	4	40	204	293	81	178	87	9	8	86	566	13	35	288	52	9			
Shared Lane Traffic (%)																			
Lane Group Flow (vph)	0	44	497	0	81	274	0	0	0	0	673	0	0	384	0	0			
Turn Type	Perm	Perm	NA		Perm	NA			Perm	Perm	NA		Perm	NA					
Protected Phases			2			2					4			4			1	3	9
Permitted Phases	2	2			2				4	4			4						
Detector Phase	2	2	2		2	2			4	4	4		4	4					
Switch Phase																			
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0			10.0	10.0	10.0		10.0	10.0			1.0	1.0	1.0
Minimum Split (s)	23.0	23.0	23.0		23.0	23.0			27.0	27.0	27.0		27.0	27.0			5.0	5.0	23.0
Total Split (s)	30.0	30.0	30.0		30.0	30.0			57.0	57.0	57.0		57.0	57.0			5.0	5.0	23.0
Total Split (%)	25.0%	25.0%	25.0%		25.0%	25.0%			47.5%	47.5%	47.5%		47.5%	47.5%			4%	4%	19%
Maximum Green (s)	23.0	23.0	23.0		23.0	23.0			50.0	50.0	50.0		50.0	50.0			3.0	3.0	21.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0		3.0	3.0			2.0	2.0	2.0
All-Red Time (s)	4.0	4.0	4.0		4.0	4.0			4.0	4.0	4.0		4.0	4.0			0.0	0.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0					0.0			0.0					
Total Lost Time (s)		7.0	7.0		7.0	7.0					7.0			7.0					
Lead/Lag	Lag	Lag	Lag		Lag	Lag			Lag	Lag	Lag		Lag	Lag			Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes			Yes	Yes	Yes		Yes	Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max		C-Max	C-Max			None	None	None		None	None			Ped	Ped	None
Walk Time (s)	4.0	4.0	4.0		4.0	4.0			4.0	4.0	4.0		4.0	4.0			3.0	3.0	9.0
Flash Dont Walk (s)	12.0	12.0	12.0		12.0	12.0			16.0	16.0	16.0		16.0	16.0			0.0	0.0	12.0
Pedestrian Calls (#/hr)	34	34	34		34	34			125	125	125		125	125			34	125	5
Act Effct Green (s)		39.4	39.4		39.4	39.4					50.0			50.0					
Actuated g/C Ratio		0.33	0.33		0.33	0.33					0.42			0.42					
v/c Ratio		0.19	0.96		0.79	0.57					1.17			0.60					
Control Delay		35.7	66.4		64.4	23.5					127.3			64.8					
Queue Delay		0.0	0.0		0.0	0.0					0.0			0.0					
Total Delay		35.7	66.4		64.4	23.5					127.3			64.8					
LOS		D	E		E	C					F			E					
Approach Delay			63.9			32.8					127.3			64.8					
Approach LOS			E			C					F			E					
Queue Length 50th (ft)		23	325		30	98					-623			292					
Queue Length 95th (ft)		60	#608		m#151	m#371					#814			m391					
Internal Link Dist (ft)			311			264					460			804					
Turn Bay Length (ft)		50			75														
Base Capacity (vph)		230	519		103	478					575			642					
Starvation Cap Reductn		0	0		0	0					0			0					
Spillback Cap Reductn		0	0		0	0					0			0					
Storage Cap Reductn		0	0		0	0					0			0					
Reduced v/c Ratio		0.19	0.96		0.79	0.57					1.17			0.60					

Intersection Summary

Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.17	
Intersection Signal Delay: 80.3	Intersection LOS: F
Intersection Capacity Utilization 96.2%	ICU Level of Service F
Analysis Period (min) 15	
- Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 12: Prospect Street & Webster Avenue & Concord Avenue



HCM Signalized Intersection Capacity Analysis
14: Prospect Street & Somerville Avenue

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	243	264	9	24	194	6	128	532	72	0	296	475
Future Volume (vph)	243	264	9	24	194	6	128	532	72	0	296	475
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.96	1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1616	1673		1711	1772		1618	1730			1783	1516
Flt Permitted	0.95	1.00		0.95	1.00		0.43	1.00			1.00	1.00
Satd. Flow (perm)	1616	1673		1711	1772		730	1730			1783	1516
Peak-hour factor, PHF	0.83	0.83	0.83	0.88	0.88	0.88	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	293	318	11	27	220	7	139	578	78	0	318	511
RTOR Reduction (vph)	0	1	0	0	1	0	0	4	0	0	0	330
Lane Group Flow (vph)	293	328	0	27	226	0	139	652	0	0	318	181
Confl. Peds. (#/hr)	44		81	81		44	54		43	43		54
Confl. Bikes (#/hr)			25			83			24			9
Heavy Vehicles (%)	8%	8%	8%	2%	2%	2%	3%	3%	3%	0%	3%	3%
Turn Type	Split	NA		Split	NA		Perm	NA			NA	custom
Protected Phases	2	2		6	6			4			8 10	2 10
Permitted Phases							4					
Actuated Green, G (s)	28.0	28.0		16.0	16.0		43.0	43.0			43.0	42.6
Effective Green, g (s)	28.0	28.0		16.0	16.0		43.0	43.0			43.0	42.6
Actuated g/C Ratio	0.23	0.23		0.13	0.13		0.36	0.36			0.36	0.36
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	377	390		228	236		261	619			638	538
v/s Ratio Prot	0.18	c0.20		0.02	c0.13			c0.38			0.18	0.12
v/s Ratio Perm							0.19					
v/c Ratio	0.78	0.84		0.12	0.96		0.53	1.05			0.50	0.34
Uniform Delay, d1	43.1	43.9		45.8	51.7		30.5	38.5			30.1	28.4
Progression Factor	0.93	0.93		1.00	1.00		0.72	0.78			1.00	1.00
Incremental Delay, d2	12.7	17.1		0.2	46.4		0.2	28.5			0.6	0.4
Delay (s)	52.9	58.1		46.0	98.1		22.3	58.6			30.7	28.7
Level of Service	D	E		D	F		C	E			C	C
Approach Delay (s)		55.6			92.5			52.2			29.5	
Approach LOS		E			F			D			C	
Intersection Summary												
HCM 2000 Control Delay		49.6									D	
HCM 2000 Volume to Capacity ratio		0.93										
Actuated Cycle Length (s)		120.0						30.0				
Intersection Capacity Utilization		83.5%									E	
Analysis Period (min)		15										

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3	Ø5	Ø8	Ø10
Lane Configurations																	
Traffic Volume (vph)	243	264	9	24	194	6	128	532	72	0	296	475					
Future Volume (vph)	243	264	9	24	194	6	128	532	72	0	296	475					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900					
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11					
Storage Length (ft)	0	0	0	90	0	0	90	0	0	0	0	0					
Storage Lanes	1		0	1		0	1		0	0		1					
Taper Length (ft)	25			25			25			25							
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Ped Bike Factor	0.88	0.99		0.81	0.99		0.96	0.99									
Frt		0.995			0.995			0.982				0.850					
Flt Protected	0.950			0.950			0.950										
Satd. Flow (prot)	1616	1673	0	1711	1771	0	1694	1730	0	0	1783	1516					
Flt Permitted	0.950			0.950			0.429										
Satd. Flow (perm)	1421	1673	0	1382	1771	0	731	1730	0	0	1783	1516					
Right Turn on Red			Yes			Yes			Yes			Yes					
Satd. Flow (RTOR)		1			1			6				511					
Link Speed (mph)		30			30			30				30					
Link Distance (ft)		664			375			884				217					
Travel Time (s)		15.1			8.5			20.1				4.9					
Confl. Peds. (#/hr)	44		81	81		44	54		43	43		54					
Confl. Bikes (#/hr)			25			83			24			9					
Peak Hour Factor	0.83	0.83	0.83	0.88	0.88	0.88	0.92	0.92	0.92	0.93	0.93	0.93					
Heavy Vehicles (%)	8%	8%	8%	2%	2%	2%	3%	3%	3%	0%	3%	3%					
Adj. Flow (vph)	293	318	11	27	220	7	139	578	78	0	318	511					
Shared Lane Traffic (%)																	
Lane Group Flow (vph)	293	329	0	27	227	0	139	656	0	0	318	511					
Turn Type	Split	NA		Split	NA		Perm	NA			NA	custom					
Protected Phases	2	2		6	6			4			8 10	2 10	1	3	5	8	10
Permitted Phases								4									
Detector Phase	2	2		6	6			4	4		8 10	2 10					
Switch Phase																	
Minimum Initial (s)	15.0	15.0		16.0	16.0		22.0	22.0					1.0	1.0	1.0	7.0	7.0
Minimum Split (s)	22.0	22.0		22.0	22.0		28.0	28.0					5.0	5.0	5.0	27.0	13.0
Total Split (s)	34.0	34.0		22.0	22.0		49.0	49.0					5.0	5.0	5.0	30.0	19.0
Total Split (%)	28.3%	28.3%		18.3%	18.3%		40.8%	40.8%					4%	4%	4%	25%	16%
Maximum Green (s)	28.0	28.0		16.0	16.0		43.0	43.0					3.0	3.0	3.0	24.0	13.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0					2.0	2.0	2.0	3.0	3.0
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0					0.0	0.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0									
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0									
Lead/Lag	Lag	Lag		Lag	Lag								Lead	Lead		Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes								Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0					3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max		None	None		None	None					Ped	Ped	Ped	None	None
Walk Time (s)	4.0	4.0		4.0	4.0								3.0	3.0	3.0	4.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0								0.0	0.0	0.0	17.0	
Pedestrian Calls (#/hr)	81	81		44	44								81	44	97	97	
Act Effct Green (s)	28.0	28.0		16.0	16.0		43.0	43.0			43.0	42.6					
Actuated g/C Ratio	0.23	0.23		0.13	0.13		0.36	0.36			0.36	0.36					
v/c Ratio	0.78	0.84		0.12	0.96		0.53	1.05			0.50	0.59					
Control Delay	53.8	58.8		47.3	100.4		23.9	59.0			33.4	4.9					
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0					
Total Delay	53.8	58.8		47.3	100.4		23.9	59.0			33.4	4.9					
LOS	D	E		D	F		C	E			C	A					
Approach Delay		56.4			94.8			52.8			15.8						
Approach LOS		E			F			D			B						
Queue Length 50th (ft)	240	270		19	176		72	~573			191	0					
Queue Length 95th (ft)	m301	m#340		46	#325		m66	m484			280	63					
Internal Link Dist (ft)		584			295			804			137						
Turn Bay Length (ft)				90			90										
Base Capacity (vph)	377	391		228	237		261	623			608	867					
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	0.78	0.84		0.12	0.96		0.53	1.05			0.52	0.59					

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 45.7

Intersection LOS: D

Intersection Capacity Utilization 83.5%

ICU Level of Service E

Analysis Period (min) 15

- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Prospect Street & Somerville Avenue



HCM Unsignalized Intersection Capacity Analysis
3: Tremont Street & Webster Avenue & Columbia Street

04/21/2021

											
Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Traffic Volume (veh/h)	12	38	128	15	301	8	24	150	25	0	0
Future Volume (Veh/h)	12	38	128	15	301	8	24	150	25	0	0
Sign Control		Stop			Free			Free		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.87	0.87	0.87	0.78	0.78	0.78	0.94	0.94	0.94	0.92	0.92
Hourly flow rate (vph)	14	44	147	19	386	10	26	160	27	0	0
Pedestrians		20			3			2		77	
Lane Width (ft)		12.0			12.0			12.0		0.0	
Walking Speed (ft/s)		3.5			3.5			3.5		3.5	
Percent Blockage		2			0			0		0	
Right turn flare (veh)											
Median type					None			None			
Median storage (veh)											
Upstream signal (ft)								391			
pX, platoon unblocked											
vC, conflicting volume	678	765	413	264			416			902	756
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	678	765	413	264			416			902	756
tC, single (s)	7.1	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)											
tF (s)	3.5	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	96	86	77	99			98			100	100
cM capacity (veh/h)	343	315	626	1289			1116			169	318
Direction, Lane #	WB 1	NB 1	SB 1								
Volume Total	205	415	213								
Volume Left	14	19	26								
Volume Right	147	10	27								
cSH	493	1289	1116								
Volume to Capacity	0.42	0.01	0.02								
Queue Length 95th (ft)	51	1	2								
Control Delay (s)	17.4	0.5	1.2								
Lane LOS	C	A	A								
Approach Delay (s)	17.4	0.5	1.2								
Approach LOS	C										
Intersection Summary											
Average Delay			4.8								
Intersection Capacity Utilization		36.9%			ICU Level of Service				A		
Analysis Period (min)		15									

HCM Unsignalized Intersection Capacity Analysis
6: Columbia Street & Windsor Place

04/21/2021

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↰	↰	
Traffic Volume (veh/h)	31	8	35	139	54	24
Future Volume (Veh/h)	31	8	35	139	54	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.81	0.81	0.89	0.89	0.79	0.79
Hourly flow rate (vph)	38	10	39	156	68	30
Pedestrians	2			21	16	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	0			2	2	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			64		295	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			64		295	80
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		90	97
cM capacity (veh/h)			1509		668	949
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	48	195	98			
Volume Left	0	39	68			
Volume Right	10	0	30			
cSH	1700	1509	735			
Volume to Capacity	0.03	0.03	0.13			
Queue Length 95th (ft)	0	2	11			
Control Delay (s)	0.0	1.7	10.7			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.7	10.7			
Approach LOS			B			
Intersection Summary						
Average Delay		4.0				
Intersection Capacity Utilization		31.8%	ICU Level of Service	A		
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
10: Windsor Street & South Street

04/21/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	167	159	29	8	42	31
Future Volume (Veh/h)	167	159	29	8	42	31
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.84	0.84	0.60	0.60
Hourly flow rate (vph)	178	169	35	10	70	52
Pedestrians	7					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	1					0
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	239	48			52	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	239	48			52	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	75	83			95	
cM capacity (veh/h)	712	1016			1512	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	347	45	122			
Volume Left	178	0	70			
Volume Right	169	10	0			
cSH	833	1700	1512			
Volume to Capacity	0.42	0.03	0.05			
Queue Length 95th (ft)	52	0	4			
Control Delay (s)	12.4	0.0	4.5			
Lane LOS	B		A			
Approach Delay (s)	12.4	0.0	4.5			
Approach LOS	B					
Intersection Summary						
Average Delay		9.4				
Intersection Capacity Utilization		36.3%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
20: Webster Avenue & Newton St/Newton Street

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	4	44	0	0	0	9	236	1	4	275	57
Future Volume (Veh/h)	69	4	44	0	0	0	9	236	1	4	275	57
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92
Hourly flow rate (vph)	76	4	48	0	0	0	11	278	1	4	299	62
Pedestrians		126			21			1			26	
Lane Width (ft)		12.0			0.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		12			0			0			2	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								344			665	
pX, platoon unblocked	0.88	0.88	0.88	0.88	0.88		0.88					
vC, conflicting volume	790	786	457	710	816	326	487			300		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	695	689	316	604	724	326	350			300		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	69	99	91	100	100	100	99			100		
cM capacity (veh/h)	244	283	559	293	269	698	946			1273		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	128	290	365									
Volume Left	76	11	4									
Volume Right	48	1	62									
cSH	311	946	1273									
Volume to Capacity	0.41	0.01	0.00									
Queue Length 95th (ft)	48	1	0									
Control Delay (s)	24.4	0.5	0.1									
Lane LOS	C	A	A									
Approach Delay (s)	24.4	0.5	0.1									
Approach LOS	C											
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utilization			34.3%									
Analysis Period (min)			15									
ICU Level of Service											A	

HCM Signalized Intersection Capacity Analysis
2: Webster Avenue & Washington Street & Somerville Avenue

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	246	63	113	256	286	24	188	48	358	575	35
Future Volume (vph)	60	246	63	113	256	286	24	188	48	358	575	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	11	11	11	11	10	10	10
Total Lost time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		0.95		1.00	1.00	1.00		1.00		0.97	1.00	
Frpb, ped/bikes		0.93		1.00	1.00	1.00		0.96		1.00	0.97	
Flpb, ped/bikes		0.99		0.82	1.00	1.00		1.00		1.00	1.00	
Frt		0.97		1.00	1.00	0.85		0.98		1.00	0.99	
Flt Protected		0.99		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		2912		1354	1743	1432		1648		3173	1654	
Flt Permitted		0.67		0.41	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		1964		579	1743	1432		1648		3173	1654	
Peak-hour factor, PHF	0.88	0.88	0.88	0.81	0.81	0.81	0.75	0.75	0.75	0.94	0.94	0.94
Adj. Flow (vph)	68	280	72	140	316	353	32	251	64	381	612	37
RTOR Reduction (vph)	0	15	0	0	0	256	0	7	0	0	2	0
Lane Group Flow (vph)	0	405	0	140	316	97	0	340	0	381	647	0
Confl. Peds. (#/hr)	43		161	161		43	150		118	118		150
Confl. Bikes (#/hr)			20			28			11			191
Heavy Vehicles (%)	7%	7%	7%	9%	9%	9%	4%	4%	4%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA	Over	Split	NA		Split	NA	
Protected Phases		2			2	4	8	8		4	4	
Permitted Phases	2			2								
Actuated Green, G (s)		32.0		32.0	32.0	33.0		22.0		33.0	33.0	
Effective Green, g (s)		32.0		32.0	32.0	33.0		22.0		33.0	33.0	
Actuated g/C Ratio		0.27		0.27	0.27	0.28		0.18		0.28	0.28	
Clearance Time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		523		154	464	393		302		872	454	
v/s Ratio Prot					0.18	0.07		c0.21		0.12	c0.39	
v/s Ratio Perm		0.21		c0.24								
v/c Ratio		0.78		0.91	0.68	0.25		1.13		0.44	1.42	
Uniform Delay, d1		40.7		42.6	39.4	33.8		49.0		35.8	43.5	
Progression Factor		1.00		1.00	0.99	1.57		0.86		1.00	1.00	
Incremental Delay, d2		10.7		40.5	5.5	0.2		85.0		0.4	203.6	
Delay (s)		51.4		83.1	44.7	53.2		127.1		36.2	247.1	
Level of Service		D		F	D	D		F		D	F	
Approach Delay (s)		51.4			55.1			127.1			169.1	
Approach LOS		D			E			F			F	
Intersection Summary												
HCM 2000 Control Delay			109.1				HCM 2000 Level of Service			F		
HCM 2000 Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			24.0		
Intersection Capacity Utilization			114.5%				ICU Level of Service			H		
Analysis Period (min)			15									

c Critical Lane Group

																								
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3	Ø7									
Lane Configurations																								
Traffic Volume (vph)	60	246	63	113	256	286	24	188	48	358	575	35												
Future Volume (vph)	60	246	63	113	256	286	24	188	48	358	575	35												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900												
Lane Width (ft)	11	11	11	12	12	11	11	11	11	10	10	10												
Storage Length (ft)	0		0	50		0	0		0	0		0												
Storage Lanes	0		0	1		1	0		0	2		0												
Taper Length (ft)	25			25			25			25														
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00												
Ped Bike Factor		0.92		0.82				0.95		0.80	0.97													
Frt		0.974				0.850		0.975			0.991													
Flt Protected		0.992		0.950				0.995		0.950														
Satd. Flow (prot)	0	2934	0	1656	1743	1432	0	1647	0	3173	1653	0												
Flt Permitted		0.669		0.406				0.995		0.950														
Satd. Flow (perm)	0	1963	0	579	1743	1432	0	1624	0	2542	1653	0												
Right Turn on Red			Yes			Yes			Yes			Yes												
Satd. Flow (RTOR)		20				353		8			3													
Link Speed (mph)		30			30			30			30													
Link Distance (ft)		404			664			665			241													
Travel Time (s)		9.2			15.1			15.1			5.5													
Confl. Peds. (#/hr)	43		161	161		43	150		118	118		150												
Confl. Bikes (#/hr)			20			28			11			191												
Peak Hour Factor	0.88	0.88	0.88	0.81	0.81	0.81	0.75	0.75	0.75	0.94	0.94	0.94												
Heavy Vehicles (%)	7%	7%	7%	9%	9%	9%	4%	4%	4%	3%	3%	3%												
Adj. Flow (vph)	68	280	72	140	316	353	32	251	64	381	612	37												
Shared Lane Traffic (%)																								
Lane Group Flow (vph)	0	420	0	140	316	353	0	347	0	381	649	0												
Turn Type	Perm	NA		Perm	NA	Over	Split	NA		Split	NA													
Protected Phases		2			2	4	8	8		4	4		1	3	7									
Permitted Phases	2			2																				
Detector Phase	2	2		2	2	4	8	8		4	4													
Switch Phase																								
Minimum Initial (s)	25.0	25.0		25.0	25.0	23.0	22.0	22.0		23.0	23.0		1.0	1.0	1.0									
Minimum Split (s)	32.0	32.0		32.0	32.0	30.0	28.0	28.0		30.0	30.0		5.0	5.0	5.0									
Total Split (s)	38.0	38.0		38.0	38.0	39.0	28.0	28.0		39.0	39.0		5.0	5.0	5.0									
Total Split (%)	31.7%	31.7%		31.7%	31.7%	32.5%	23.3%	23.3%		32.5%	32.5%		4%	4%	4%									
Maximum Green (s)	32.0	32.0		32.0	32.0	33.0	22.0	22.0		33.0	33.0		3.0	3.0	3.0									
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		2.0	2.0	2.0									
All-Red Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		0.0	0.0	0.0									
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0		0.0	0.0													
Total Lost Time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0													
Lead/Lag	Lag	Lag		Lag	Lag	Lag	Lag	Lag		Lag	Lag		Lead	Lead	Lead									
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes									
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0									
Recall Mode	C-Max	C-Max		C-Max	C-Max	None	None	None		None	None		Ped	Ped	Ped									
Walk Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0		3.0	3.0	3.0									
Flash Dont Walk (s)	22.0	22.0		22.0	22.0	20.0	18.0	18.0		20.0	20.0		0.0	0.0	0.0									
Pedestrian Calls (#/hr)	204	204		204	204	150	118	118		150	150		204	150	118									
Act Effct Green (s)		32.0		32.0	32.0	33.0		22.0		33.0	33.0													
Actuated g/C Ratio		0.27		0.27	0.27	0.28		0.18		0.28	0.28													
v/c Ratio		0.78		0.91	0.68	0.54		1.13		0.44	1.42													
Control Delay		50.2		84.9	45.5	8.1		123.2		37.7	236.8													
Queue Delay		0.0		0.0	0.0	0.0		0.0		0.0	0.0													
Total Delay		50.2		84.9	45.5	8.1		123.2		37.7	236.8													
LOS		D		F	D	A		F		D	F													
Approach Delay		50.2			36.0			123.2			163.2													
Approach LOS		D			D			F			F													
Queue Length 50th (ft)		152		106	230	38		~313		125	~681													
Queue Length 95th (ft)		210		m#168	m272	m45		m#343		172	#914													
Internal Link Dist (ft)		324			584			585			161													
Turn Bay Length (ft)				50																				
Base Capacity (vph)		538		154	464	649		308		872	456													
Starvation Cap Reductn		0		0	0	0		0		0	0													
Spillback Cap Reductn		0		0	0	0		0		0	0													
Storage Cap Reductn		0		0	0	0		0		0	0													
Reduced v/c Ratio		0.78		0.91	0.68	0.54		1.13		0.44	1.42													

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 67 (56%), Referenced to phase 2:EBWB, Start of Green

Natural Cycle: 145

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.42

Intersection Signal Delay: 100.1

Intersection LOS: F

Intersection Capacity Utilization 114.5%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Webster Avenue & Washington Street & Somerville Avenue



HCM Signalized Intersection Capacity Analysis
12: Prospect Street & Webster Avenue & Concord Avenue

04/21/2021

																										
Movement	NBL2	NBL	NBT	NBR	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	SWL	SWT	SWR	SWR2										
Lane Configurations																										
Traffic Volume (vph)	24	20	141	244	190	457	132	25	15	43	353	70	281	270	66	15										
Future Volume (vph)	24	20	141	244	190	457	132	25	15	43	353	70	281	270	66	15										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900										
Total Lost time (s)		7.0	7.0		7.0	7.0					7.0			7.0												
Lane Util. Factor		1.00	1.00		1.00	1.00					1.00			1.00												
Frpb, ped/bikes		1.00	0.96		1.00	0.82					0.99			0.96												
Flpb, ped/bikes		1.00	1.00		1.00	1.00					1.00			1.00												
Frt		1.00	0.91		1.00	0.96					0.98			0.98												
Flt Protected		0.95	1.00		0.95	1.00					0.99			0.98												
Satd. Flow (prot)		1671	1528		1770	1467					1597			1681												
Flt Permitted		0.09	1.00		0.24	1.00					0.86			0.47												
Satd. Flow (perm)		157	1528		443	1467					1387			811												
Peak-hour factor, PHF	0.76	0.76	0.76	0.76	0.88	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.86	0.86	0.86	0.86										
Adj. Flow (vph)	32	26	186	321	216	519	150	28	16	47	388	77	327	314	77	17										
RTOR Reduction (vph)	0	0	43	0	0	1	0	0	0	0	5	0	0	1	0	0										
Lane Group Flow (vph)	0	58	464	0	216	696	0	0	0	0	523	0	0	734	0	0										
Confl. Peds. (#/hr)	57	88		10	10		57	88	88	16		20	20		88	16										
Confl. Bikes (#/hr)				7			194	196				10			10	5										
Heavy Vehicles (%)	8%	8%	8%	8%	2%	2%	2%	2%	3%	3%	3%	3%	4%	4%	4%	4%										
Parking (#/hr)											0															
Turn Type	Perm	Perm	NA		Perm	NA			Perm	Perm	NA		Perm	NA												
Protected Phases			2			2					4			4												
Permitted Phases	2	2			2				4	4			4													
Actuated Green, G (s)		44.8	44.8		44.8	44.8					43.0			43.0												
Effective Green, g (s)		44.8	44.8		44.8	44.8					43.0			43.0												
Actuated g/C Ratio		0.37	0.37		0.37	0.37					0.36			0.36												
Clearance Time (s)		7.0	7.0		7.0	7.0					7.0			7.0												
Vehicle Extension (s)		3.0	3.0		3.0	3.0					3.0			3.0												
Lane Grp Cap (vph)		58	570		165	547					497			290												
v/s Ratio Prot			0.30			0.47																				
v/s Ratio Perm		0.37			c0.49						0.38			c0.91												
v/c Ratio		1.00	0.81		1.31	1.27					1.05			2.53												
Uniform Delay, d1		37.6	33.8		37.6	37.6					38.5			38.5												
Progression Factor		1.00	1.00		0.92	0.92					1.00			1.72												
Incremental Delay, d2		118.2	12.1		152.3	127.0					54.7			690.4												
Delay (s)		155.8	45.9		187.0	161.5					93.2			756.5												
Level of Service		F	D		F	F					F			F												
Approach Delay (s)			57.2			167.5					93.2			756.5												
Approach LOS			E			F					F			F												
Intersection Summary																										
HCM 2000 Control Delay			288.4			HCM 2000 Level of Service					F															
HCM 2000 Volume to Capacity ratio			1.67																							
Actuated Cycle Length (s)			120.0			Sum of lost time (s)					20.0															
Intersection Capacity Utilization			128.4%			ICU Level of Service					H															
Analysis Period (min)			15																							
c Critical Lane Group																										

c Critical Lane Group

Lanes, Volumes, Timings
12: Prospect Street & Webster Avenue & Concord Avenue

04/21/2021

																										
Lane Group	NBL2	NBL	NBT	NBR	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	SWL	SWT	SWR	SWR2	Ø1	Ø3	Ø9							
Lane Configurations																										
Traffic Volume (vph)	24	20	141	244	190	457	132	25	15	43	353	70	281	270	66	15										
Future Volume (vph)	24	20	141	244	190	457	132	25	15	43	353	70	281	270	66	15										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900										
Storage Length (ft)		50		0	75		0			0		0	0		0											
Storage Lanes		1		0	1		0			0		0	0		0											
Taper Length (ft)		25			25					25			25													
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00										
Ped Bike Factor			0.96			0.80					0.99			0.96												
Frt			0.905			0.962					0.980			0.983												
Flt Protected		0.950			0.950						0.994			0.978												
Satd. Flow (prot)	0	1671	1525	0	1770	1425	0	0	0	0	1596	0	0	1681	0	0										
Flt Permitted		0.089			0.238						0.864			0.472												
Satd. Flow (perm)	0	157	1525	0	443	1425	0	0	0	0	1388	0	0	811	0	0										
Right Turn on Red				Yes				Yes				Yes				Yes										
Satd. Flow (RTOR)			69			2					8			1												
Link Speed (mph)			30			30					30			30												
Link Distance (ft)			391			344					540			884												
Travel Time (s)			8.9			7.8					12.3			20.1												
Confl. Peds. (#/hr)	57	88		10	10		57	88	88	16		20	20		88	16										
Confl. Bikes (#/hr)				7			194	196				10			10	5										
Peak Hour Factor	0.76	0.76	0.76	0.76	0.88	0.88	0.88	0.88	0.91	0.91	0.91	0.91	0.86	0.86	0.86	0.86										
Heavy Vehicles (%)	8%	8%	8%	8%	2%	2%	2%	2%	3%	3%	3%	3%	4%	4%	4%	4%										
Parking (#/hr)											0															
Adj. Flow (vph)	32	26	186	321	216	519	150	28	16	47	388	77	327	314	77	17										
Shared Lane Traffic (%)																										
Lane Group Flow (vph)	0	58	507	0	216	697	0	0	0	0	528	0	0	735	0	0										
Turn Type	Perm	Perm	NA		Perm	NA			Perm	Perm	NA		Perm	NA												
Protected Phases			2			2					4			4			1	3	9							
Permitted Phases	2	2			2				4	4			4													
Detector Phase	2	2	2		2	2			4	4	4		4	4												
Switch Phase																										
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0			10.0	10.0	10.0		10.0	10.0			1.0	1.0	1.0							
Minimum Split (s)	23.0	23.0	23.0		23.0	23.0			27.0	27.0	27.0		27.0	27.0			5.0	5.0	23.0							
Total Split (s)	37.0	37.0	37.0		37.0	37.0			50.0	50.0	50.0		50.0	50.0			5.0	5.0	23.0							
Total Split (%)	30.8%	30.8%	30.8%		30.8%	30.8%			41.7%	41.7%	41.7%		41.7%	41.7%			4%	4%	19%							
Maximum Green (s)	30.0	30.0	30.0		30.0	30.0			43.0	43.0	43.0		43.0	43.0			3.0	3.0	21.0							
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0		3.0	3.0			2.0	2.0	2.0							
All-Red Time (s)	4.0	4.0	4.0		4.0	4.0			4.0	4.0	4.0		4.0	4.0			0.0	0.0	0.0							
Lost Time Adjust (s)		0.0	0.0		0.0	0.0					0.0			0.0												
Total Lost Time (s)		7.0	7.0		7.0	7.0					7.0			7.0												
Lead/Lag	Lag	Lag	Lag		Lag	Lag			Lag	Lag	Lag		Lag	Lag			Lead	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes			Yes	Yes	Yes		Yes	Yes			Yes	Yes								
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0							
Recall Mode	C-Max	C-Max	C-Max		C-Max	C-Max			None	None	None		None	None			Ped	Ped	None							
Walk Time (s)	4.0	4.0	4.0		4.0	4.0			4.0	4.0	4.0		4.0	4.0			3.0	3.0	9.0							
Flash Dont Walk (s)	12.0	12.0	12.0		12.0	12.0			16.0	16.0	16.0		16.0	16.0			0.0	0.0	12.0							
Pedestrian Calls (#/hr)	57	57	57		57	57			124	124	124		124	124			57	124	10							
Act Effct Green (s)		46.4	46.4		46.4	46.4					43.0			43.0												
Actuated g/C Ratio		0.39	0.39		0.39	0.39					0.36			0.36												
v/c Ratio		0.95	0.80		1.26	1.26					1.05			2.53												
Control Delay		145.6	40.2		164.8	154.2					91.9			712.2												
Queue Delay		0.0	0.0		0.0	0.0					0.0			0.0												
Total Delay		145.6	40.2		164.8	154.2					91.9			712.2												
LOS		F	D		F	F					F			F												
Approach Delay			51.0			156.7					91.9			712.2												
Approach LOS			D			F					F			F												
Queue Length 50th (ft)		41	285		~191	~620					~443			~983												
Queue Length 95th (ft)		#125	#481		m#246	m#715					#662			m#810												
Internal Link Dist (ft)			311			264					460			804												
Turn Bay Length (ft)		50			75																					
Base Capacity (vph)		61	631		171	551					502			291												
Starvation Cap Reductn		0	0		0	0					0			0												
Spillback Cap Reductn		0	0		0	0					0			0												
Storage Cap Reductn		0	0		0	0					0			0												
Reduced v/c Ratio		0.95	0.80		1.26	1.26					1.05			2.53												

Intersection Summary																			
Area Type: Other																			
Cycle Length: 120																			
Actuated Cycle Length: 120																			
Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green																			
Natural Cycle: 145																			
Control Type: Actuated-Coordinated																			
Maximum v/c Ratio: 2.53																			
Intersection Signal Delay: 271.4																			
Intersection Capacity Utilization 128.4%																			
Analysis Period (min) 15																			
- Volume exceeds capacity, queue is theoretically infinite.																			
Queue shown is maximum after two cycles.																			
# 95th percentile volume exceeds capacity, queue may be longer.																			
Queue shown is maximum after two cycles.																			
m Volume for 95th percentile queue is metered by upstream signal.																			

Splits and Phases: 12: Prospect Street & Webster Avenue & Concord Avenue

HCM Signalized Intersection Capacity Analysis
14: Prospect Street & Somerville Avenue

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	305	313	32	46	132	10	83	482	91	0	636	423
Future Volume (vph)	305	313	32	46	132	10	83	482	91	0	636	423
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.95		1.00	0.99		1.00	0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1662	1646		1616	1666		1678	1698			1717	1459
Flt Permitted	0.95	1.00		0.95	1.00		0.10	1.00			1.00	1.00
Satd. Flow (perm)	1662	1646		1616	1666		181	1698			1717	1459
Peak-hour factor, PHF	0.81	0.81	0.81	0.77	0.77	0.77	0.84	0.84	0.84	0.94	0.94	0.94
Adj. Flow (vph)	377	386	40	60	171	13	99	574	108	0	677	450
RTOR Reduction (vph)	0	3	0	0	3	0	0	5	0	0	0	219
Lane Group Flow (vph)	377	423	0	60	181	0	99	677	0	0	677	231
Confl. Peds. (#/hr)	27		100	100		27	35		35	35		35
Confl. Bikes (#/hr)			110			9			20			11
Heavy Vehicles (%)	5%	5%	5%	8%	8%	8%	4%	4%	4%	0%	7%	7%
Turn Type	Split	NA		Split	NA		Perm	NA			NA	custom
Protected Phases	2	2		6	6			4			8 10	2 10
Permitted Phases							4					
Actuated Green, G (s)	32.0	32.0		16.0	16.0		39.0	39.0			39.0	44.0
Effective Green, g (s)	32.0	32.0		16.0	16.0		39.0	39.0			39.0	44.0
Actuated g/C Ratio	0.27	0.27		0.13	0.13		0.32	0.32			0.32	0.37
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	443	438		215	222		58	551			558	534
v/s Ratio Prot	0.23	c0.26		0.04	c0.11			0.40			0.39	0.16
v/s Ratio Perm							c0.55					
v/c Ratio	0.85	0.97		0.28	0.82		1.71	1.23			1.21	0.43
Uniform Delay, d1	41.7	43.5		46.8	50.6		40.5	40.5			40.5	28.6
Progression Factor	0.62	0.63		1.00	1.00		1.00	0.99			1.00	1.00
Incremental Delay, d2	15.6	31.6		0.7	20.2		324.7	104.1			111.7	0.6
Delay (s)	41.7	59.0		47.5	70.8		365.0	144.4			152.2	29.2
Level of Service	D	E		D	E		F	F			F	C
Approach Delay (s)		50.8			65.1			172.4			103.1	
Approach LOS		D			E			F			F	
Intersection Summary												
HCM 2000 Control Delay		104.1		HCM 2000 Level of Service					F			
HCM 2000 Volume to Capacity ratio		1.22										
Actuated Cycle Length (s)		120.0		Sum of lost time (s)					30.0			
Intersection Capacity Utilization		104.1%		ICU Level of Service					G			
Analysis Period (min)		15										
c Critical Lane Group												

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3	Ø5	Ø8	Ø10		
Lane Configurations																			
Traffic Volume (vph)	305	313	32	46	132	10	83	482	91	0	636	423							
Future Volume (vph)	305	313	32	46	132	10	83	482	91	0	636	423							
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900							
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11							
Storage Length (ft)	0		0	90		0	90		0	0		0							
Storage Lanes	1		0	1		0	1		0	0		1							
Taper Length (ft)	25			25			25			25									
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00							
Ped Bike Factor	0.92	0.95		0.79	0.99			0.99											
Frt		0.986			0.989			0.976				0.850							
Flt Protected	0.950			0.950			0.950												
Satd. Flow (prot)	1662	1647	0	1616	1665	0	1678	1698	0	0	1717	1459							
Flt Permitted	0.950			0.950			0.103												
Satd. Flow (perm)	1531	1647	0	1280	1665	0	182	1698	0	0	1717	1459							
Right Turn on Red			Yes			Yes			Yes			Yes							
Satd. Flow (RTOR)		4			3			8				346							
Link Speed (mph)		30			30			30			30								
Link Distance (ft)		664			375			884			217								
Travel Time (s)		15.1			8.5			20.1			4.9								
Confl. Peds. (#/hr)	27		100	100		27	35		35	35		35							
Confl. Bikes (#/hr)		110				9			20			11							
Peak Hour Factor	0.81	0.81	0.81	0.77	0.77	0.77	0.84	0.84	0.84	0.94	0.94	0.94							
Heavy Vehicles (%)	5%	5%	5%	8%	8%	8%	4%	4%	4%	0%	7%	7%							
Adj. Flow (vph)	377	386	40	60	171	13	99	574	108	0	677	450							
Shared Lane Traffic (%)																			
Lane Group Flow (vph)	377	426	0	60	184	0	99	682	0	0	677	450							
Turn Type	Split	NA		Split	NA		Perm	NA			NA	custom							
Protected Phases	2	2		6	6			4			8	10	2	10	1	3	5	8	10
Permitted Phases							4												
Detector Phase	2	2		6	6		4	4			8	10	2	10					
Switch Phase																			
Minimum Initial (s)	15.0	15.0		16.0	16.0		22.0	22.0					1.0	1.0		1.0	7.0	7.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		28.0	28.0					5.0	5.0		5.0	27.0	13.0	
Total Split (s)	38.0	38.0		22.0	22.0		45.0	45.0					5.0	5.0		5.0	27.0	18.0	
Total Split (%)	31.7%	31.7%		18.3%	18.3%		37.5%	37.5%					4%	4%		4%	23%	15%	
Maximum Green (s)	32.0	32.0		16.0	16.0		39.0	39.0					3.0	3.0		3.0	21.0	12.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0					2.0	2.0		2.0	3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0					0.0	0.0		0.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0											
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0											
Lead/Lag	Lag	Lag		Lag	Lag								Lead	Lead			Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes								Yes	Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0					3.0	3.0		3.0	3.0	3.0	
Recall Mode	C-Max	C-Max		None	None		None	None					Ped	Ped		Ped	None	None	
Walk Time (s)	4.0	4.0		4.0	4.0								3.0	3.0		3.0	4.0		
Flash Dont Walk (s)	12.0	12.0		12.0	12.0								0.0	0.0		0.0	17.0		
Pedestrian Calls (#/hr)	100	100		27	27								100	27		70	70		
Act Effect Green (s)	32.0	32.0		16.0	16.0		39.0	39.0			39.0	44.0							
Actuated g/C Ratio	0.27	0.27		0.13	0.13		0.32	0.32			0.32	0.37							
v/c Ratio	0.85	0.96		0.28	0.82		1.68	1.22			1.21	0.60							
Control Delay	43.0	60.2		50.7	78.0		340.9	138.0			148.0	9.3							
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0							
Total Delay	43.0	60.2		50.7	78.0		340.9	138.0			148.0	9.3							
LOS	D	E		D	E		F	F			F	A							
Approach Delay		52.2			71.3			163.7				92.6							
Approach LOS		D			E			F				F							
Queue Length 50th (ft)	296	338		42	138		~117	~668			~642	46							
Queue Length 95th (ft)	m#353	m#432		73	#198		m#118	m#639			#872	133							
Internal Link Dist (ft)		584			295			804				137							
Turn Bay Length (ft)				90			90												
Base Capacity (vph)	443	442		215	224		59	557			558	754							
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	0.85	0.96		0.28	0.82		1.68	1.22			1.21	0.60							

HCM Unsignalized Intersection Capacity Analysis
3: Tremont Street & Webster Avenue & Columbia Street

04/21/2021

											
Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Traffic Volume (veh/h)	35	109	101	20	274	12	182	276	115	0	0
Future Volume (Veh/h)	35	109	101	20	274	12	182	276	115	0	0
Sign Control		Stop			Free			Free		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.81	0.81	0.81	0.79	0.79	0.79	0.88	0.88	0.88	0.92	0.92
Hourly flow rate (vph)	43	135	125	25	347	15	207	314	131	0	0
Pedestrians		29			3			6		56	
Lane Width (ft)		12.0			12.0			12.0		0.0	
Walking Speed (ft/s)		3.5			3.5			3.5		3.5	
Percent Blockage		3			0			1		0	
Right turn flare (veh)											
Median type					None			None			
Median storage (veh)											
Upstream signal (ft)								391			
pX, platoon unblocked											
vC, conflicting volume	1230	1348	390	501			391			1452	1290
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	1230	1348	390	501			391			1452	1290
tC, single (s)	7.2	6.6	6.3	4.1			4.1			7.1	6.5
tC, 2 stage (s)											
tF (s)	3.6	4.1	3.4	2.2			2.2			3.5	4.0
p0 queue free %	64	0	80	98			82			0	100
cM capacity (veh/h)	120	113	622	1053			1130			0	127
Direction, Lane #	WB 1	NB 1	SB 1								
Volume Total	303	387	652								
Volume Left	43	25	207								
Volume Right	125	15	131								
cSH	173	1053	1130								
Volume to Capacity	1.75	0.02	0.18								
Queue Length 95th (ft)	539	2	17								
Control Delay (s)	407.9	0.8	4.3								
Lane LOS	F	A	A								
Approach Delay (s)	407.9	0.8	4.3								
Approach LOS	F										
Intersection Summary											
Average Delay		94.4									
Intersection Capacity Utilization		73.2%			ICU Level of Service				D		
Analysis Period (min)		15									

HCM Unsignalized Intersection Capacity Analysis

6: Columbia Street & Windsor Place & U2 Development Driveway

04/21/2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	0	166	29	26	234	0	5	0	5	0	0	8
Future Volume (Veh/h)	0	166	29	26	234	0	5	0	5	0	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.52	0.52	0.91	0.91	0.92	0.60	0.92	0.60	0.92	0.92	0.92
Hourly flow rate (vph)	0	319	56	29	257	0	8	0	8	0	0	9
Pedestrians					13			7				
Lane Width (ft)					12.0			12.0				
Walking Speed (ft/s)					3.5			3.5				
Percent Blockage					1			1				
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	257			382			678	669	367	683	697	257
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	257			382			678	669	367	683	697	257
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			98	100	99	100	100	99
cM capacity (veh/h)	1308			1147			353	367	670	346	353	782
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	375	286	16	9								
Volume Left	0	29	8	0								
Volume Right	56	0	8	9								
cSH	1308	1147	463	782								
Volume to Capacity	0.00	0.03	0.03	0.01								
Queue Length 95th (ft)	0	2	3	1								
Control Delay (s)	0.0	1.1	13.1	9.7								
Lane LOS	A	A	B	A								
Approach Delay (s)	0.0	1.1	13.1	9.7								
Approach LOS			B	A								
Intersection Summary												
Average Delay			0.9									
Intersection Capacity Utilization			43.1%						A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
10: Windsor Street & South Street

04/21/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	214	190	25	26	37	18
Future Volume (Veh/h)	214	190	25	26	37	18
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.92	0.92	0.81	0.81
Hourly flow rate (vph)	221	196	27	28	46	22
Pedestrians	3					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	158	45			58	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	158	45			58	
tC, single (s)	6.5	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.3	
p0 queue free %	72	81			97	
cM capacity (veh/h)	796	1010			1504	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	417	55	68			
Volume Left	221	0	46			
Volume Right	196	28	0			
cSH	884	1700	1504			
Volume to Capacity	0.47	0.03	0.03			
Queue Length 95th (ft)	64	0	2			
Control Delay (s)	12.7	0.0	5.1			
Lane LOS	B		A			
Approach Delay (s)	12.7	0.0	5.1			
Approach LOS	B					
Intersection Summary						
Average Delay		10.4				
Intersection Capacity Utilization		39.9%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
20: Webster Avenue & Newton St/Newton Street

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	8	102	0	0	0	8	188	13	42	677	98
Future Volume (Veh/h)	58	8	102	0	0	0	8	188	13	42	677	98
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.92	0.92	0.92	0.83	0.83	0.83	0.89	0.89	0.89
Hourly flow rate (vph)	70	10	123	0	0	0	10	227	16	47	761	110
Pedestrians		62			22						51	
Lane Width (ft)		12.0			0.0						12.0	
Walking Speed (ft/s)		3.5			3.5						3.5	
Percent Blockage		6			0						5	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								344			665	
pX, platoon unblocked	0.70	0.70	0.70	0.70	0.70		0.70					
vC, conflicting volume	1278	1257	878	1315	1304	308	933			265		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1182	1152	608	1235	1219	308	687			265		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	27	92	62	100	100	100	98			96		
cM capacity (veh/h)	96	124	328	58	112	696	601			1311		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	203	253	918									
Volume Left	70	10	47									
Volume Right	123	16	110									
cSH	172	601	1311									
Volume to Capacity	1.18	0.02	0.04									
Queue Length 95th (ft)	272	1	3									
Control Delay (s)	180.3	0.6	0.9									
Lane LOS	F	A	A									
Approach Delay (s)	180.3	0.6	0.9									
Approach LOS	F											
Intersection Summary												
Average Delay			27.4									
Intersection Capacity Utilization			75.4%									D
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
2: Webster Avenue & Washington Street & Somerville Avenue

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	244	41	84	273	528	33	492	110	277	275	37
Future Volume (vph)	100	244	41	84	273	528	33	492	110	277	275	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	11	11	11	11	10	10	10
Total Lost time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		0.95		1.00	1.00	1.00		1.00		0.97	1.00	
Frpb, ped/bikes		0.97		1.00	1.00	1.00		0.96		1.00	0.94	
Flpb, ped/bikes		0.96		0.90	1.00	1.00		1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85		0.98		1.00	0.98	
Flt Protected		0.99		0.95	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		3003		1564	1827	1501		1689		3173	1597	
Flt Permitted		0.67		0.38	1.00	1.00		1.00		0.95	1.00	
Satd. Flow (perm)		2043		633	1827	1501		1689		3173	1597	
Peak-hour factor, PHF	0.83	0.83	0.83	0.96	0.96	0.96	0.80	0.80	0.80	0.96	0.96	0.96
Adj. Flow (vph)	120	294	49	88	284	550	41	615	138	289	286	39
RTOR Reduction (vph)	0	8	0	0	0	366	0	6	0	0	4	0
Lane Group Flow (vph)	0	455	0	88	284	184	0	788	0	289	321	0
Confl. Peds. (#/hr)	108		95	95		108	162		71	71		162
Confl. Bikes (#/hr)			19			11			106			44
Heavy Vehicles (%)	6%	6%	6%	4%	4%	4%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA	Over	Split	NA		Split	NA	
Protected Phases		2			2	4	8	8		4	4	
Permitted Phases	2			2								
Actuated Green, G (s)		35.0		35.0	35.0	25.7		26.0		25.7	25.7	
Effective Green, g (s)		35.0		35.0	35.0	25.7		26.0		25.7	25.7	
Actuated g/C Ratio		0.29		0.29	0.29	0.21		0.22		0.21	0.21	
Clearance Time (s)		6.0		6.0	6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		595		184	532	321		365		679	342	
v/s Ratio Prot					0.16	0.12		c0.47		0.09	c0.20	
v/s Ratio Perm		c0.22		0.14								
v/c Ratio		0.77		0.48	0.53	0.57		2.16		0.43	0.94	
Uniform Delay, d1		38.8		35.0	35.7	42.2		47.0		40.8	46.4	
Progression Factor		1.00		0.94	0.93	1.11		0.84		1.00	1.00	
Incremental Delay, d2		9.1		4.3	1.9	1.2		522.0		0.4	32.8	
Delay (s)		47.8		37.2	34.9	48.1		561.4		41.2	79.1	
Level of Service		D		D	C	D		F		D	E	
Approach Delay (s)		47.8			43.0			561.4			61.3	
Approach LOS		D			D			F			E	
Intersection Summary												
HCM 2000 Control Delay			195.2		HCM 2000 Level of Service					F		
HCM 2000 Volume to Capacity ratio			1.11									
Actuated Cycle Length (s)			120.0		Sum of lost time (s)					24.0		
Intersection Capacity Utilization			118.6%		ICU Level of Service					H		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
12: Prospect Street & Webster Avenue & Concord Avenue

04/21/2021

																		
Movement	NBL2	NBL	NBT	NBR	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	SWL	SWT	SWR	SWR2		
Lane Configurations																		
Traffic Volume (vph)	48	42	378	474	81	236	106	13	11	81	547	24	103	300	58	8		
Future Volume (vph)	48	42	378	474	81	236	106	13	11	81	547	24	103	300	58	8		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		7.0	7.0		7.0	7.0					7.0			7.0				
Lane Util. Factor		1.00	1.00		1.00	1.00					1.00			1.00				
Frpb, ped/bikes		1.00	0.92		1.00	0.85					1.00			0.95				
Flpb, ped/bikes		1.00	1.00		1.00	1.00					0.99			1.00				
Frt		1.00	0.92		1.00	0.95					1.00			0.98				
Flt Protected		0.95	1.00		0.95	1.00					0.99			0.99				
Satd. Flow (prot)		1752	1556		1752	1484					1649			1742				
Flt Permitted		0.30	1.00		0.11	1.00					0.79			0.58				
Satd. Flow (perm)		562	1556		195	1484					1308			1021				
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.90	0.90	0.90	0.90	0.87	0.87	0.87	0.87	0.85	0.85	0.85	0.85		
Adj. Flow (vph)	60	52	472	592	90	262	118	14	13	93	629	28	121	353	68	9		
RTOR Reduction (vph)	0	0	32	0	0	1	0	0	0	0	1	0	0	1	0	0		
Lane Group Flow (vph)	0	113	1034	0	90	393	0	0	0	0	762	0	0	550	0	0		
Confl. Peds. (#/hr)	34	77		5	5		34	77	77	25		23	23		77	25		
Confl. Bikes (#/hr)				91			20	22				26			5	5		
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%	1%	1%		
Parking (#/hr)											0							
Turn Type	Perm	Perm	NA		Perm	NA			Perm	Perm	NA		Perm	NA				
Protected Phases			2			2					4			4				
Permitted Phases	2	2			2				4	4			4					
Actuated Green, G (s)		37.8	37.8		37.8	37.8					50.0			50.0				
Effective Green, g (s)		37.8	37.8		37.8	37.8					50.0			50.0				
Actuated g/C Ratio		0.31	0.31		0.31	0.31					0.42			0.42				
Clearance Time (s)		7.0	7.0		7.0	7.0					7.0			7.0				
Vehicle Extension (s)		3.0	3.0		3.0	3.0					3.0			3.0				
Lane Grp Cap (vph)		177	490		61	467					545			425				
v/s Ratio Prot			c0.66			0.27												
v/s Ratio Perm		0.20			0.46						c0.58			0.54				
v/c Ratio		0.64	2.11		1.48	0.84					1.40			1.30				
Uniform Delay, d1		35.2	41.1		41.1	38.3					35.0			35.0				
Progression Factor		1.00	1.00		0.45	0.45					1.00			1.87				
Incremental Delay, d2		16.3	506.3		271.7	13.8					190.0			144.9				
Delay (s)		51.6	547.4		290.3	30.9					225.0			210.5				
Level of Service		D	F		F	C					F			F				
Approach Delay (s)			499.9			79.1					225.0			210.5				
Approach LOS			F			E					F			F				
Intersection Summary																		
HCM 2000 Control Delay			307.5		HCM 2000 Level of Service						F							
HCM 2000 Volume to Capacity ratio			1.50															
Actuated Cycle Length (s)			120.0		Sum of lost time (s)						20.0							
Intersection Capacity Utilization			117.1%		ICU Level of Service						H							
Analysis Period (min)			15															

c Critical Lane Group

Lanes, Volumes, Timings
12: Prospect Street & Webster Avenue & Concord Avenue

04/21/2021

																			
Lane Group	NBL2	NBL	NBT	NBR	SBL	SBT	SBR	SBR2	NEL2	NEL	NET	NER	SWL	SWT	SWR	SWR2	Ø1	Ø3	Ø9
Lane Configurations																			
Traffic Volume (vph)	48	42	378	474	81	236	106	13	11	81	547	24	103	300	58	8			
Future Volume (vph)	48	42	378	474	81	236	106	13	11	81	547	24	103	300	58	8			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Storage Length (ft)		50		0	75		0				0		0	0		0			
Storage Lanes		1		0	1		0				0		0	0		0			
Taper Length (ft)		25			25					25			25						
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped Bike Factor			0.88			0.84					0.99			0.95					
Frt			0.917			0.950					0.995			0.981					
Flt Protected		0.950			0.950						0.993			0.989					
Satd. Flow (prot)	0	1752	1493	0	1752	1473	0	0	0	0	1666	0	0	1742	0	0			
Flt Permitted		0.305			0.106						0.788			0.579					
Satd. Flow (perm)	0	563	1493	0	196	1473	0	0	0	0	1308	0	0	1020	0	0			
Right Turn on Red				Yes				Yes				Yes				Yes			
Satd. Flow (RTOR)			47			1					2			1					
Link Speed (mph)			30			30					30			30					
Link Distance (ft)			391			344					540			884					
Travel Time (s)			8.9			7.8					12.3			20.1					
Confl. Peds. (#/hr)	34	77		5	5		34	77	77	25		23	23		77	25			
Confl. Bikes (#/hr)			91				20	22				26			5	5			
Peak Hour Factor	0.80	0.80	0.80	0.80	0.90	0.90	0.90	0.90	0.87	0.87	0.87	0.87	0.85	0.85	0.85	0.85			
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	1%	1%	1%	1%	1%	1%	1%	1%			
Parking (#/hr)											0								
Adj. Flow (vph)	60	53	473	593	90	262	118	14	13	93	629	28	121	353	68	9			
Shared Lane Traffic (%)																			
Lane Group Flow (vph)	0	113	1066	0	90	394	0	0	0	0	763	0	0	551	0	0			
Turn Type	Perm	Perm	NA		Perm	NA			Perm	Perm	NA		Perm	NA					
Protected Phases			2			2					4			4			1	3	9
Permitted Phases	2	2			2				4	4			4						
Detector Phase	2	2	2		2	2			4	4	4		4	4					
Switch Phase																			
Minimum Initial (s)	10.0	10.0	10.0		10.0	10.0			10.0	10.0	10.0		10.0	10.0			1.0	1.0	1.0
Minimum Split (s)	23.0	23.0	23.0		23.0	23.0			27.0	27.0	27.0		27.0	27.0			5.0	5.0	23.0
Total Split (s)	30.0	30.0	30.0		30.0	30.0			57.0	57.0	57.0		57.0	57.0			5.0	5.0	23.0
Total Split (%)	25.0%	25.0%	25.0%		25.0%	25.0%			47.5%	47.5%	47.5%		47.5%	47.5%			4%	4%	19%
Maximum Green (s)	23.0	23.0	23.0		23.0	23.0			50.0	50.0	50.0		50.0	50.0			3.0	3.0	21.0
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0		3.0	3.0			2.0	2.0	2.0
All-Red Time (s)	4.0	4.0	4.0		4.0	4.0			4.0	4.0	4.0		4.0	4.0			0.0	0.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0					0.0			0.0					
Total Lost Time (s)		7.0	7.0		7.0	7.0					7.0			7.0					
Lead/Lag	Lag	Lag	Lag		Lag	Lag			Lag	Lag	Lag		Lag	Lag			Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes			Yes	Yes	Yes		Yes	Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0		3.0	3.0			3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max		C-Max	C-Max			None	None	None		None	None			Ped	Ped	None
Walk Time (s)	4.0	4.0	4.0		4.0	4.0			4.0	4.0	4.0		4.0	4.0			3.0	3.0	9.0
Flash Dont Walk (s)	12.0	12.0	12.0		12.0	12.0			16.0	16.0	16.0		16.0	16.0			0.0	0.0	12.0
Pedestrian Calls (#/hr)	34	34	34		34	34			125	125	125		125	125			34	125	5
Act Effct Green (s)		39.4	39.4		39.4	39.4					50.0			50.0					
Actuated g/C Ratio		0.33	0.33		0.33	0.33					0.42			0.42					
v/c Ratio		0.61	2.04		1.41	0.81					1.40			1.30					
Control Delay		52.3	499.9		264.8	32.8					219.8			194.5					
Queue Delay		0.0	0.0		0.0	0.0					0.0			0.0					
Total Delay		52.3	499.9		264.8	32.8					219.8			194.5					
LOS		D	F		F	C					F			F					
Approach Delay			457.0			76.0					219.8			194.5					
Approach LOS			F			E					F			F					
Queue Length 50th (ft)		69	~1246		~90	141					~795			~565					
Queue Length 95th (ft)		#182	#1482		m#144	m#524					#986			m#721					
Internal Link Dist (ft)			311			264					460			804					
Turn Bay Length (ft)		50			75														
Base Capacity (vph)		185	522		64	484					546			425					
Starvation Cap Reductn		0	0		0	0					0			0					
Spillback Cap Reductn		0	0		0	0					0			0					
Storage Cap Reductn		0	0		0	0					0			0					
Reduced v/c Ratio		0.61	2.04		1.41	0.81					1.40			1.30					

Intersection Summary

Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 2.04	
Intersection Signal Delay: 285.7	Intersection LOS: F
Intersection Capacity Utilization 117.1%	ICU Level of Service H
Analysis Period (min) 15	
- Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 12: Prospect Street & Webster Avenue & Concord Avenue



HCM Signalized Intersection Capacity Analysis
14: Prospect Street & Somerville Avenue

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	335	290	19	62	232	7	166	784	110	0	429	494
Future Volume (vph)	335	290	19	62	232	7	166	784	110	0	429	494
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0			6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	0.99		1.00	0.99			1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.98	1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.98			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1616	1649		1711	1773		1652	1728			1783	1516
Flt Permitted	0.95	1.00		0.95	1.00		0.26	1.00			1.00	1.00
Satd. Flow (perm)	1616	1649		1711	1773		453	1728			1783	1516
Peak-hour factor, PHF	0.83	0.83	0.83	0.88	0.88	0.88	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	404	349	23	70	264	8	180	852	120	0	461	531
RTOR Reduction (vph)	0	2	0	0	1	0	0	4	0	0	0	321
Lane Group Flow (vph)	404	370	0	70	271	0	180	968	0	0	461	210
Confl. Peds. (#/hr)	44		81	81		44	54		43	43		54
Confl. Bikes (#/hr)			25			83			24			9
Heavy Vehicles (%)	8%	8%	8%	2%	2%	2%	3%	3%	3%	0%	3%	3%
Turn Type	Split	NA		Split	NA		Perm	NA			NA	custom
Protected Phases	2	2		6	6			4			8 10	2 10
Permitted Phases							4					
Actuated Green, G (s)	28.0	28.0		16.0	16.0		43.0	43.0			43.0	41.5
Effective Green, g (s)	28.0	28.0		16.0	16.0		43.0	43.0			43.0	41.5
Actuated g/C Ratio	0.23	0.23		0.13	0.13		0.36	0.36			0.36	0.35
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	377	384		228	236		162	619			638	524
v/s Ratio Prot	c0.25	0.22		0.04	c0.15			c0.56			0.26	0.14
v/s Ratio Perm							0.40					
v/c Ratio	1.07	0.96		0.31	1.15		1.11	1.56			0.72	0.40
Uniform Delay, d1	46.0	45.5		47.0	52.0		38.5	38.5			33.3	29.8
Progression Factor	1.02	1.02		1.00	1.00		0.93	0.94			1.00	1.00
Incremental Delay, d2	54.7	25.6		0.8	104.7		58.5	254.1			4.0	0.5
Delay (s)	101.5	71.8		47.8	156.7		94.3	290.2			37.4	30.3
Level of Service	F	E		D	F		F	F			D	C
Approach Delay (s)		87.3			134.4			259.6			33.6	
Approach LOS		F			F			F			C	
Intersection Summary												
HCM 2000 Control Delay		136.7								F		
HCM 2000 Volume to Capacity ratio		1.28										
Actuated Cycle Length (s)		120.0							30.0			
Intersection Capacity Utilization		95.3%								F		
Analysis Period (min)		15										

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	Ø1	Ø3	Ø5	Ø8	Ø10
Lane Configurations																	
Traffic Volume (vph)	335	290	19	62	232	7	166	784	110	0	429	494					
Future Volume (vph)	335	290	19	62	232	7	166	784	110	0	429	494					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900					
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11					
Storage Length (ft)	0	0	0	90	0	0	90	0	0	0	0	0					
Storage Lanes	1		0	1		0	1		0	0		1					
Taper Length (ft)	25			25			25			25							
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Ped Bike Factor	0.89	0.98		0.82	0.99		0.98	0.99									
Frt		0.991			0.996			0.981				0.850					
Flt Protected	0.950			0.950			0.950										
Satd. Flow (prot)	1616	1649	0	1711	1774	0	1694	1727	0	0	1783	1516					
Flt Permitted	0.950			0.950			0.260										
Satd. Flow (perm)	1433	1649	0	1401	1774	0	452	1727	0	0	1783	1516					
Right Turn on Red			Yes			Yes			Yes			Yes					
Satd. Flow (RTOR)		3			1			7				490					
Link Speed (mph)		30			30			30				30					
Link Distance (ft)		664			375			884				217					
Travel Time (s)		15.1			8.5			20.1				4.9					
Confl. Peds. (#/hr)	44		81	81		44	54		43	43		54					
Confl. Bikes (#/hr)			25			83			24			9					
Peak Hour Factor	0.83	0.83	0.83	0.88	0.88	0.88	0.92	0.92	0.92	0.93	0.93	0.93					
Heavy Vehicles (%)	8%	8%	8%	2%	2%	2%	3%	3%	3%	0%	3%	3%					
Adj. Flow (vph)	404	349	23	70	264	8	180	852	120	0	461	531					
Shared Lane Traffic (%)																	
Lane Group Flow (vph)	404	372	0	70	272	0	180	972	0	0	461	531					
Turn Type	Split	NA		Split	NA		Perm	NA			NA	custom					
Protected Phases	2	2		6	6			4			8 10	2 10	1	3	5	8	10
Permitted Phases							4										
Detector Phase	2	2		6	6		4	4			8 10	2 10					
Switch Phase																	
Minimum Initial (s)	15.0	15.0		16.0	16.0		22.0	22.0					1.0	1.0	1.0	7.0	7.0
Minimum Split (s)	22.0	22.0		22.0	22.0		28.0	28.0					5.0	5.0	5.0	27.0	13.0
Total Split (s)	34.0	34.0		22.0	22.0		49.0	49.0					5.0	5.0	5.0	30.0	19.0
Total Split (%)	28.3%	28.3%		18.3%	18.3%		40.8%	40.8%					4%	4%	4%	25%	16%
Maximum Green (s)	28.0	28.0		16.0	16.0		43.0	43.0					3.0	3.0	3.0	24.0	13.0
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0					2.0	2.0	2.0	3.0	3.0
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0					0.0	0.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0									
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0									
Lead/Lag	Lag	Lag		Lag	Lag								Lead	Lead		Lead	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes								Yes	Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0					3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max		None	None		None	None					Ped	Ped	Ped	None	None
Walk Time (s)	4.0	4.0		4.0	4.0								3.0	3.0	3.0	4.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0								0.0	0.0	0.0	17.0	
Pedestrian Calls (#/hr)	81	81		44	44								81	44	97	97	
Act Effct Green (s)	28.0	28.0		16.0	16.0		43.0	43.0			43.0	41.5					
Actuated g/C Ratio	0.23	0.23		0.13	0.13		0.36	0.36			0.36	0.35					
v/c Ratio	1.07	0.96		0.31	1.15		1.12	1.56			0.72	0.63					
Control Delay	99.4	71.5		51.1	150.3		96.9	281.3			41.1	6.8					
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0					
Total Delay	99.4	71.5		51.1	150.3		96.9	281.3			41.1	6.8					
LOS	F	E		D	F		F	F			D	A					
Approach Delay		86.0			130.0			252.5				22.7					
Approach LOS		F			F			F				C					
Queue Length 50th (ft)	~354	300		50	~247		~165	~1098			307	18					
Queue Length 95th (ft)	m#401	m#344		94	#408		m71	m459			434	98					
Internal Link Dist (ft)		584			295			804				137					
Turn Bay Length (ft)				90			90										
Base Capacity (vph)	377	387		228	237		161	623			627	844					
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	1.07	0.96		0.31	1.15		1.12	1.56			0.74	0.63					

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:EBTL, Start of Green
Natural Cycle:	150
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.56
Intersection Signal Delay:	130.2
Intersection Capacity Utilization:	95.3%
Analysis Period (min):	15
-	Volume exceeds capacity, queue is theoretically infinite.
-	Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer.
-	Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Prospect Street & Somerville Avenue



HCM Unsignalized Intersection Capacity Analysis
3: Tremont Street & Webster Avenue & Columbia Street

04/21/2021

											
Movement	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Traffic Volume (veh/h)	27	73	294	15	382	10	59	200	25	0	0
Future Volume (Veh/h)	27	73	294	15	382	10	59	200	25	0	0
Sign Control		Stop			Free			Free		Stop	
Grade		0%			0%			0%		0%	
Peak Hour Factor	0.87	0.87	0.87	0.78	0.78	0.78	0.94	0.94	0.94	0.92	0.92
Hourly flow rate (vph)	31	84	338	19	490	13	63	213	27	0	0
Pedestrians		20			3			2		77	
Lane Width (ft)		12.0			12.0			12.0		0.0	
Walking Speed (ft/s)		3.5			3.5			3.5		3.5	
Percent Blockage		2			0			0		0	
Right turn flare (veh)											
Median type					None			None			
Median storage (veh)											
Upstream signal (ft)								391			
pX, platoon unblocked											
vC, conflicting volume	910	998	518	317			523			1346	990
vC1, stage 1 conf vol											
vC2, stage 2 conf vol											
vCu, unblocked vol	910	998	518	317			523			1346	990
tC, single (s)	7.1	6.5	6.2	4.1			4.1			7.1	6.5
tC, 2 stage (s)											
tF (s)	3.5	4.0	3.3	2.2			2.2			3.5	4.0
p0 queue free %	87	62	38	98			94			100	100
cM capacity (veh/h)	232	221	546	1232			1019			32	223
Direction, Lane #	WB 1	NB 1	SB 1								
Volume Total	453	522	303								
Volume Left	31	19	63								
Volume Right	338	13	27								
cSH	400	1232	1019								
Volume to Capacity	1.13	0.02	0.06								
Queue Length 95th (ft)	420	1	5								
Control Delay (s)	118.1	0.5	2.3								
Lane LOS	F	A	A								
Approach Delay (s)	118.1	0.5	2.3								
Approach LOS	F										
Intersection Summary											
Average Delay		42.6									
Intersection Capacity Utilization		70.0%			ICU Level of Service				C		
Analysis Period (min)		15									

HCM Unsignalized Intersection Capacity Analysis

6: Columbia Street & Windsor Place & U2 Development Driveway

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	68	8	35	341	4	54	0	24	0	0	14
Future Volume (Veh/h)	0	68	8	35	341	4	54	0	24	0	0	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.81	0.81	0.89	0.89	0.92	0.79	0.92	0.79	0.92	0.92	0.92
Hourly flow rate (vph)	0	84	10	39	383	4	68	0	30	0	0	15
Pedestrians		2			21			16				
Lane Width (ft)		12.0			12.0			12.0				
Walking Speed (ft/s)		3.5			3.5			3.5				
Percent Blockage		0			2			2				
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	387			110			585	570	126	603	573	387
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	387			110			585	570	126	603	573	387
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			83	100	97	100	100	98
cM capacity (veh/h)	1171			1451			394	413	895	377	412	660
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	94	426	98	15								
Volume Left	0	39	68	0								
Volume Right	10	4	30	15								
cSH	1171	1451	476	660								
Volume to Capacity	0.00	0.03	0.21	0.02								
Queue Length 95th (ft)	0	2	19	2								
Control Delay (s)	0.0	0.9	14.5	10.6								
Lane LOS		A	B	B								
Approach Delay (s)	0.0	0.9	14.5	10.6								
Approach LOS			B	B								
Intersection Summary												
Average Delay			3.1									
Intersection Capacity Utilization			46.0%		ICU Level of Service			A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
10: Windsor Street & South Street

04/21/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	207	200	32	13	49	32
Future Volume (Veh/h)	207	200	32	13	49	32
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.84	0.84	0.60	0.60
Hourly flow rate (vph)	220	213	38	15	82	53
Pedestrians	7					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	1					0
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	270	54			60	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270	54			60	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	68	79			95	
cM capacity (veh/h)	678	1009			1502	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	433	53	135			
Volume Left	220	0	82			
Volume Right	213	15	0			
cSH	808	1700	1502			
Volume to Capacity	0.54	0.03	0.05			
Queue Length 95th (ft)	81	0	4			
Control Delay (s)	14.5	0.0	4.7			
Lane LOS	B		A			
Approach Delay (s)	14.5	0.0	4.7			
Approach LOS	B					
Intersection Summary						
Average Delay		11.1				
Intersection Capacity Utilization		41.5%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
20: Webster Avenue & Newton St/Newton Street

04/21/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	5	62	0	0	0	9	450	8	10	371	59
Future Volume (Veh/h)	85	5	62	0	0	0	9	450	8	10	371	59
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92
Hourly flow rate (vph)	93	5	68	0	0	0	11	529	9	11	403	64
Pedestrians		126			21			1			26	
Lane Width (ft)		12.0			0.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		12			0			0			2	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								344			665	
pX, platoon unblocked	0.79	0.79	0.83	0.79	0.79	0.70	0.83			0.70		
vC, conflicting volume	1164	1164	562	1105	1192	580	593			559		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	581	581	365	506	615	193	402			163		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	64	98	86	100	100	100	99			99		
cM capacity (veh/h)	259	291	493	286	276	582	849			1005		
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	166	549	478									
Volume Left	93	11	11									
Volume Right	68	9	64									
cSH	323	849	1005									
Volume to Capacity	0.51	0.01	0.01									
Queue Length 95th (ft)	70	1	1									
Control Delay (s)	27.4	0.4	0.3									
Lane LOS	D	A	A									
Approach Delay (s)	27.4	0.4	0.3									
Approach LOS	D											
Intersection Summary												
Average Delay			4.1									
Intersection Capacity Utilization			44.9%			ICU Level of Service			A			
Analysis Period (min)			15									