SOMERVILLE, MASSACHUSETTS

599 Somerville Avenue

Transportation Impact Study

Prepared for
599 Somerville Ventures LLC

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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 599 Somerville Avenue redevelopment project in Somerville, Massachusetts. The study complies with the TIS scoping letter that was submitted to the City of Somerville Mobility Division and approved on July 26, 2021.

599 Somerville Avenue (the "Project" and/or "Site") is in Somerville's Spring Hill neighborhood, within the Mixed-use Mid Rise 3 (MR3) zoning district, at the corner of Somerville Avenue and Spring Street. The Project is bound by Somerville Avenue to the south, Spring Street to the east, and existing residential and commercial buildings to the north and west. The Project is located approximately one-half mile from Porter Square, which is served by the Massachusetts Bay Transportation Authority (MBTA) Red Line, supporting transit-oriented development as it connects a new commercial building within the greater metropolitan region.

The Project will consist of the demolition of the existing building and the construction of a new three-story laboratory/life science research building consisting of approximately 43,200 square feet (sf) that includes 500 sf of ground floor retail for the purposes of a conservative TIS analysis. The Project will provide an underground parking garage with approximately 33 parking spaces as well as 10 covered, secure bicycle parking spaces in the garage and four outdoor bicycle racks for eight bicycles.

Study Area

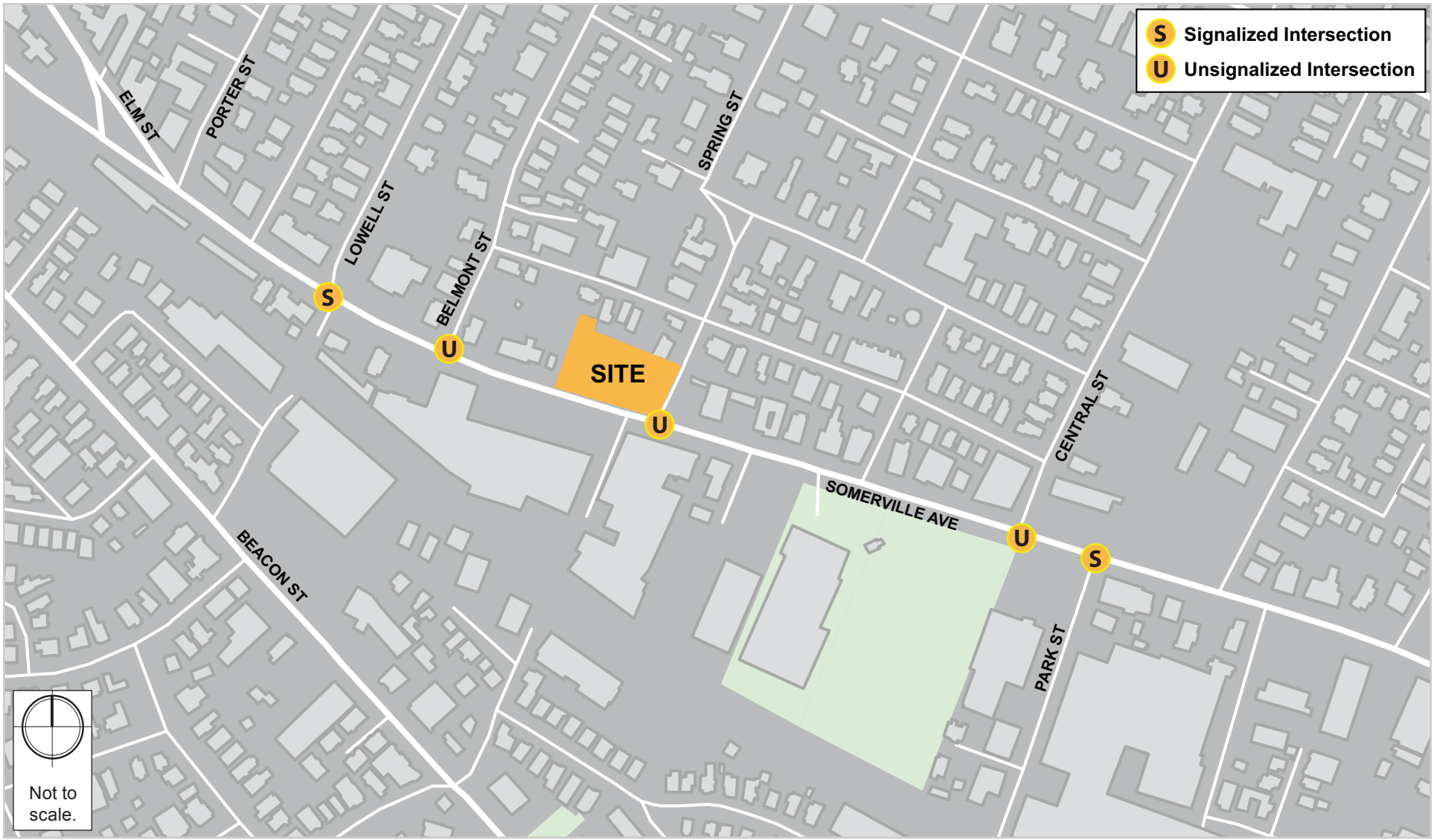
Based on coordination with the City of Somerville, the study area (shown in **Figure 1**) consists of two signalized and three unsignalized intersections. The signalized intersections are:

- Somerville Avenue/Lowell Street; and
- Somerville Avenue/Park Street.

The unsignalized study area intersections are:

- Somerville Avenue/Belmont Street;
- Somerville Avenue/Spring Street; and
- Somerville Avenue/Central Street.

Figure 1. ***Study Area***



Methodology

The TIS contains the following components:

- The Existing (2021) Condition includes an inventory of the existing transportation conditions such as traffic characteristics, parking, curb usage, transit, pedestrian circulation, bicycle facilities, loading, and site conditions. Existing counts for vehicles, bicycles, and pedestrians were collected at the study area intersections. The traffic data collection effort and observations form the basis for the vehicle, pedestrian, and bicycle analyses, and MBTA ridership data serves as the basis for the transit analysis.
- The future condition evaluates potential transportation impacts associated with the Project.
  - The Build (2021) Condition 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 and includes Site circulation and project-generated trips by mode.
  - The Future (2026) Condition evaluates the long-term impacts for the year 2026, based on a five-year horizon from the year of the filing of this traffic study. The Future (2026) Condition section includes the effects of background projects and/or roadway improvements in the area.
- 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 presents an overview of the existing study area network including vehicular, pedestrian, and bicycle conditions. Included are descriptions of roadway geometries; intersection traffic control; average daily traffic volumes; peak-hour vehicular, pedestrian, and bicycle volumes; traffic crashes; transit availability; parking; and curb usage.

Roadway Descriptions

Somerville Avenue is classified by the Massachusetts Department of Transportation (MassDOT) as an urban principal arterial under City of Somerville jurisdiction. It generally runs east-west between Massachusetts Avenue to the west and Medford Street/McGrath Highway (Route 28) to the east. It is generally a two-way, two-lane road with turn lanes 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 until Linwood Street. Somerville Avenue Extension provides access to Route 28 southeast.

Bicycle lanes are provided in both directions for the length of Somerville Avenue with the facilities at Union Square under construction as of August 2021. The bicycle lanes will be constructed as a protected cycle track in both directions from Union Square to Medford Street as part of the Union Square Streetscape Improvements Project.

Somerville Avenue in the study area is a “safety zone” and the posted speed limit is 20 miles per hour (mph). Intermittent two-hour on-street parking is provided on both the north and south sides of the road. Sidewalks are provided on both sides of the road. MBTA bus stops are located at Lowell Street, Spring Street, and Central Street.

Lowell Street is classified as an urban collector under City of Somerville jurisdiction. It runs one-way northbound from Somerville Avenue to Highland Avenue; it is two-way between Highland Avenue and Medford Street. The posted speed limit is 25 mph. Within the study area to Summer Street, on-street permit-only parking is provided on the east side of the road and a five-foot bicycle lane is provided on the west side of the road. Sidewalks are provided on both sides of the road.

Park Street is classified as an urban collector under City of Somerville jurisdiction. It generally runs north-south between Beacon Street in the south and Somerville Avenue in the north. In the study area, it is a two-way road with five-foot bicycle lanes on the east and west sides of the road, and no on-street parking allowed. No speed limit is posted; effective October 25, 2016, Somerville's

default speed limit was reduced from 30 mph to 25 mph unless otherwise posted. On-street permit-only parking is allowed on the east side of the road from Ivaloo Street south to Beacon Street. Sidewalks are provided on both sides of the road.

Belmont Street is classified as a local road under City of Somerville jurisdiction. It is one-way southbound from Highland Avenue to Somerville Avenue with a posted speed limit of 20 mph. On-street permit-only parking is generally allowed on both sides of the road. Sidewalks are provided on both sides of the road. No bicycle facilities are marked on the roadway.

Spring Street is classified as a local road under City of Somerville jurisdiction. For 100 feet north of Somerville Avenue, it is two-way; the majority of the roadway, from Summer Street to 9 Spring Street, is one-way southbound. The posted speed limit is 20 mph. Permit-only on-street parking is provided on both sides of the road. Sidewalks are provided on both sides of the road. No bicycle facilities are marked on the roadway.

Central Street is classified as an urban collector under City of Somerville jurisdiction. It generally runs one-way northbound from Somerville Avenue to Summer Street; it is two-way between Summer Street and Medford Street. The posted speed limit is 25 mph from Somerville Avenue to Atherton Street; the posted speed limit is reduced to 20 mph north of Atherton Street. Within the study area to Summer Street, on-street permit-only parking is provided on the west side of the road and a three-foot bicycle lane is provided on the east side of the road. Sidewalks are provided on both sides of the road.

Intersection Descriptions

Somerville Avenue/Lowell Street/Sacramento Street is a four-legged signalized intersection with three approaches. The Somerville Avenue eastbound approach consists of an 11-foot shared left-turn/through lane and a five-foot bicycle lane that continues through the intersection. The Somerville Avenue westbound approach consists of an 11-foot-wide shared through/right-turn lane and a five-foot bicycle lane that continues through the intersection. The stop line for the westbound approach is located east of the fire station, approximately 110 feet east of the marked crosswalk. The Sacramento Street approach is offset 30 feet to the west from Lowell Street. The Sacramento Street approach is primarily a pedestrian path under the MBTA tracks. A signal face controls the Sacramento Street northbound approach.

Bus stops are located on the west side of the intersection on both sides of Somerville Avenue. Due to the bus stop on the Somerville Avenue eastbound approach and the fire station on the Somerville Avenue westbound approach, no on-street parking is permitted immediately adjacent to lanes approaching the intersection.

12-foot crosswalks and ADA-compliant ramps with detectable warning panels are provided across all legs of the intersection. Pedestrian signal equipment is provided at all crosswalks.

Two-phase signal operations were observed at the Somerville Avenue/Lowell Street intersection: Somerville Avenue eastbound and westbound, and an exclusive pedestrian phase. The pedestrian phase is push-button actuated and is a total of 31 seconds, including a Flashing Don't Walk (FDW) time of 12 seconds.

The pedestrian crossing phases at Lowell Street and Park Street are exclusive. At Lowell and Park streets, pedestrian phases are 31 seconds and 22 seconds, respectively. FDW time is 12 seconds at each.

Somerville Avenue/Park Street is a three-legged signalized intersection. The Somerville Avenue eastbound approach consists of a 10-foot-wide through lane, a five-foot-wide bicycle lane that crosses through the intersection, and a 10-foot-wide exclusive right-turn lane. The Somerville Avenue westbound approach consists of a 9.5-foot-wide exclusive left-turn lane, 9.5-foot-wide through lane, and a five-foot-wide bicycle lane with a bicycle box across the approach. The bicycle lane crosses through the intersection. The Park Street northbound approach consists of an 11-foot-wide shared left-turn/right-turn lane and a five-foot-wide bicycle lane with a bicycle box across the approach. On-street parking is restricted on all approaches of the intersection. 12-foot-wide crosswalks with ADA-compliant ramps are provided across the south and east legs of the intersection. Pedestrian signal equipment is provided at all crosswalks.

Due to construction of the hotel at 515 Somerville Avenue, construction staging is occupying the Somerville Avenue northern sidewalk adjacent to the westbound approach. Jersey barriers along the bicycle lane create a protected area for pedestrians; bicyclists can either cycle through the barrier-protected lane, sharing the space with pedestrians, or share the vehicular through lane to access the bicycle lane west of the construction zone.

Three-phase signal operations were observed at the Somerville Avenue/Park Street intersection: Somerville Avenue eastbound and westbound, Park Street northbound, and an exclusive pedestrian phase. The pedestrian phase is included in each cycle and is a total of 22 seconds, including a FDW time of 12 seconds.

Somerville Avenue/Belmont Street is a three-legged unsignalized intersection with three approaches. The Somerville Avenue eastbound approach consists of an 11-foot-wide shared left-turn/through lane and a five-foot-wide bicycle lane that continues through the intersection. The Somerville Avenue westbound approach consists of an 11-foot-wide shared through/right-turn turn lane and a five-foot-wide bicycle lane that continues through the intersection. The Belmont Street

southbound approach is a nine-foot-wide shared left-turn/right turn lane. On-street parking is allowed on all approaches of the intersection. On Somerville Avenue, the parking is signed for two-hour duration, and there is permit-only parking on the Belmont Street approach. A 12-foot-wide crosswalk with ADA-compliant ramps is provided across the Belmont Street approach.

Somerville Avenue/Spring Street is a three-legged unsignalized intersection with three approaches. The Somerville Avenue eastbound approach consists of an 11-foot-wide shared left-turn/through lane and a five-foot wide bicycle lane that continues through the intersection. The Somerville Avenue westbound approach consists of an 11.5-foot-wide shared through/right-turn turn lane and a five-foot wide bicycle lane that continues through the intersection. The Spring Street southbound approach is an 11.5-foot-wide shared left-turn/right turn lane. On-street parking is allowed adjacent to the Somerville Avenue eastbound and westbound approaches. Curb cuts on Spring Street preclude parking on the Spring Street approach of the intersection. A 12-foot-wide crosswalk with ADA-compliant ramps is provided across the Spring Street approach.

Somerville Avenue/Central Street is a three-legged unsignalized intersection with two approaches. The Somerville Avenue eastbound approach consists of an 11-foot-wide shared left-turn/through lane and a five-foot-wide bicycle lane that continues through the intersection. The Somerville Avenue westbound approach consists of a 15-foot-wide shared through/right-turn turn lane and a five-foot-wide bicycle lane that continues through the intersection. On-street parking is restricted on all approaches. A 12-foot-wide crosswalk with ADA-compliant ramps is provided across the Central Street.

Existing Traffic Volumes

Traffic volumes for the existing year were developed through the collection of traffic counts and application of appropriate adjustment factors.

AUTOMATIC TRAFFIC RECORDER DATA

An Automatic Traffic Recorder (ATR) is a device that continuously records the number and class of vehicles on a roadway for a given period. ATR data was collected on Somerville Avenue west of Spring Street from Thursday, August 5, through Saturday, August 7, 2021.

Two-way volumes along Somerville Avenue west of Spring Street are approximately 11,000 vehicles per day (vpd). Hourly volumes are highest, approximately 550 – 700 vehicles per hour (vph) during the weekday morning peak hour (7:00 - 10:00 a.m.) and 750 – 850 vph, during the weekday evening commuter peak hour (4:00 - 7:00 p.m.). Volumes may be reduced due to travel impacts associated with COVID-19.

Table 1 summarizes the ATR traffic data, including Average Daily Traffic (ADT), peak-hour percentage (K factor), the recorded average vehicular speeds, and the approximate 85th percentile vehicular speeds on Somerville Avenue. Average daily traffic volumes for the roadways are illustrated in **Figure 2**.

Table 1. Average Daily Traffic Summary: Somerville Avenue, West of Spring Street

Average Daily Traffic	
Weekday Daily Traffic Volume	11,070 vpd
a.m. Peak Hour (8 – 9 a.m.)	
Volume	690 vph
% Heavy Vehicle	5%
K Factor	0.07
Directional Distribution	53% EB
p.m. Peak Hour (5 – 6 p.m.)	
Volume	845 vph
% Heavy Vehicle	2%
K Factor	0.08
Directional Distribution	58% WB

Table 2 summarizes the ATR speed data collected on Somerville Avenue. **Figure 3** shows the number of vehicles hourly on Somerville Avenue west of Spring Street traveling faster than the posted speed limit (20 mph) as well as the percentage of total traffic traveling over the posted speed limit, eastbound and westbound. On a weekday on Somerville Avenue west of Spring Street, more than 75% of eastbound vehicles and 70% of westbound vehicles were recorded traveling at speeds higher than 20 mph. The count, classification, and speed data are provided in **Appendix A**.

Table 2. Speed Data: Somerville Avenue, West of Spring Street

Somerville Avenue Speed Data	Eastbound	Westbound
Vehicle Speed (mph)		
Posted Speed Limit	20 mph	20 mph
Mean (Average) Speed	24 mph	22 mph
85th Percentile Speed	29 mph	27 mph
Percent faster than 20 mph	76%	71%

Figure 2. ***Average Daily Traffic: Somerville Avenue West of Spring Street***

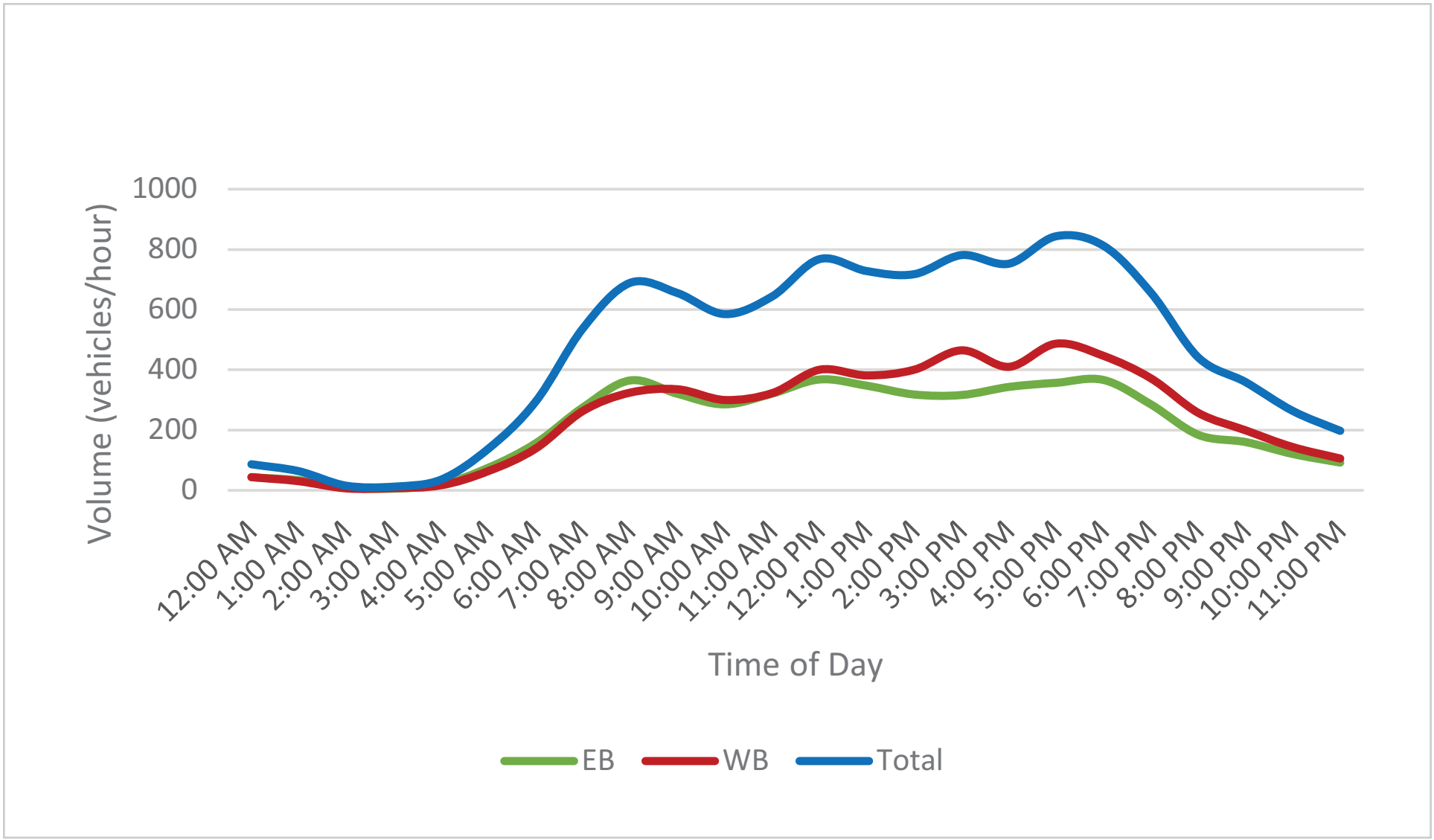
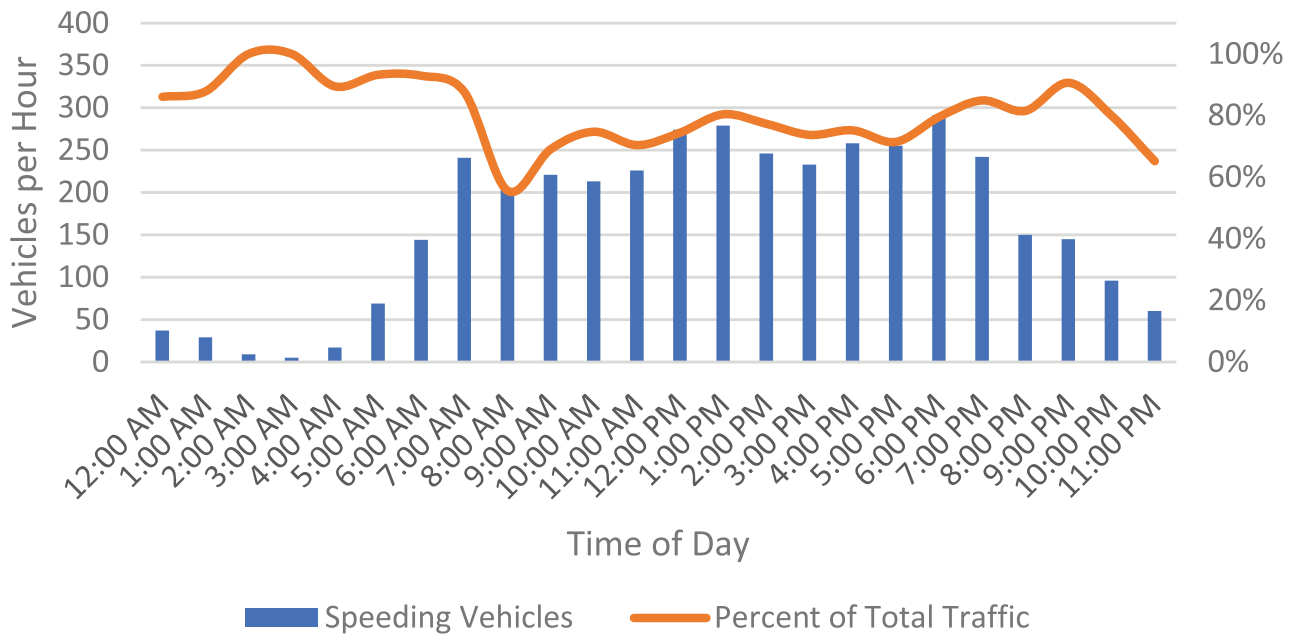
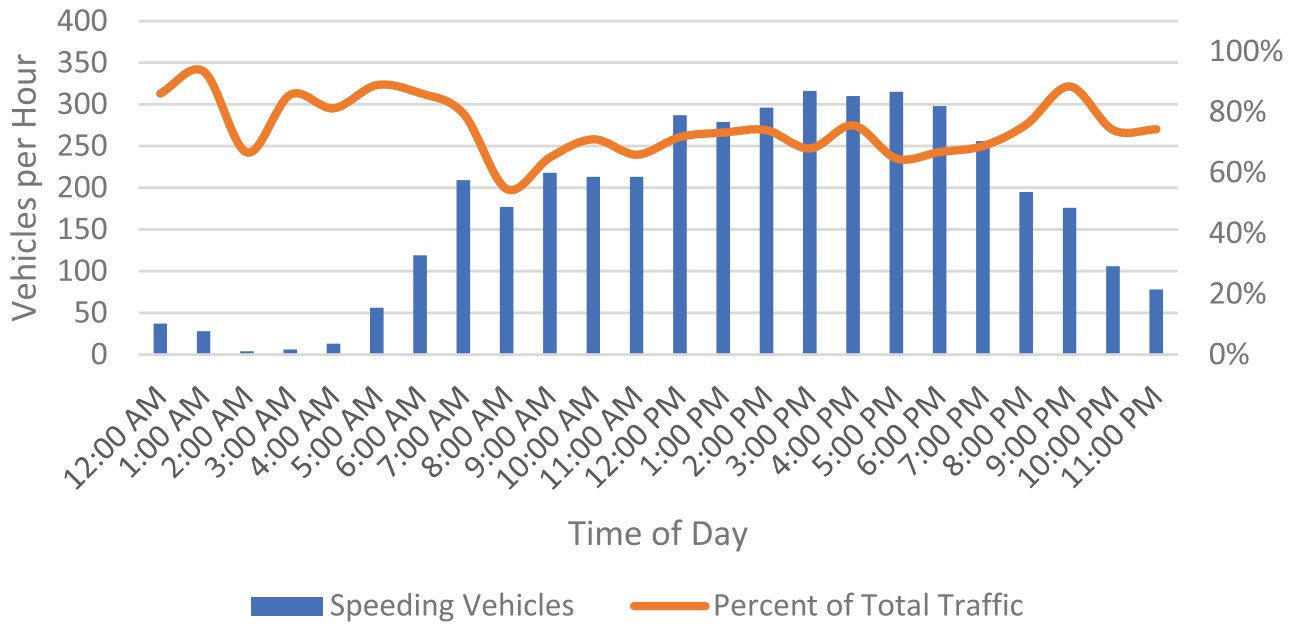


Figure 3. ***Daily Speeding Variations: Somerville Avenue, West of Spring Street***

Eastbound



Westbound



TURNING MOVEMENT COUNT DATA

Traffic volume data were collected at the study area intersections on Thursday, August 5, 2021. Turning Movement Counts (TMCs) were conducted during the weekday a.m. and p.m. peak periods (7:30 – 9:30 a.m. and 4:30 – 6:30 p.m., respectively) at the study area intersections. The TMCs collected vehicle classification including car, heavy vehicle, pedestrian, and bicycle movements. Based on the TMC data, the vehicular traffic peak hours of the study area intersections are generally 8:30 – 9:30 a.m. and 5:15– 6:15 p.m. The detailed traffic counts are provided in **Appendix A**.

SEASONAL AND ANNUAL ADJUSTMENTS

To account for variation in traffic volumes throughout the year, seasonal adjustments were made to the August counts using data provided by the City of Somerville Mobility Division. Volumes were increased by 7% to account for colleges not in session and summer vacation. Existing (2021) Condition vehicle volumes during the a.m. and p.m. peak hours are shown in **Figure 4** and **Figure 5,** respectively.

Figure 4. ***Existing (2021) Condition Vehicle Volumes, Weekday a.m. Peak Hour***

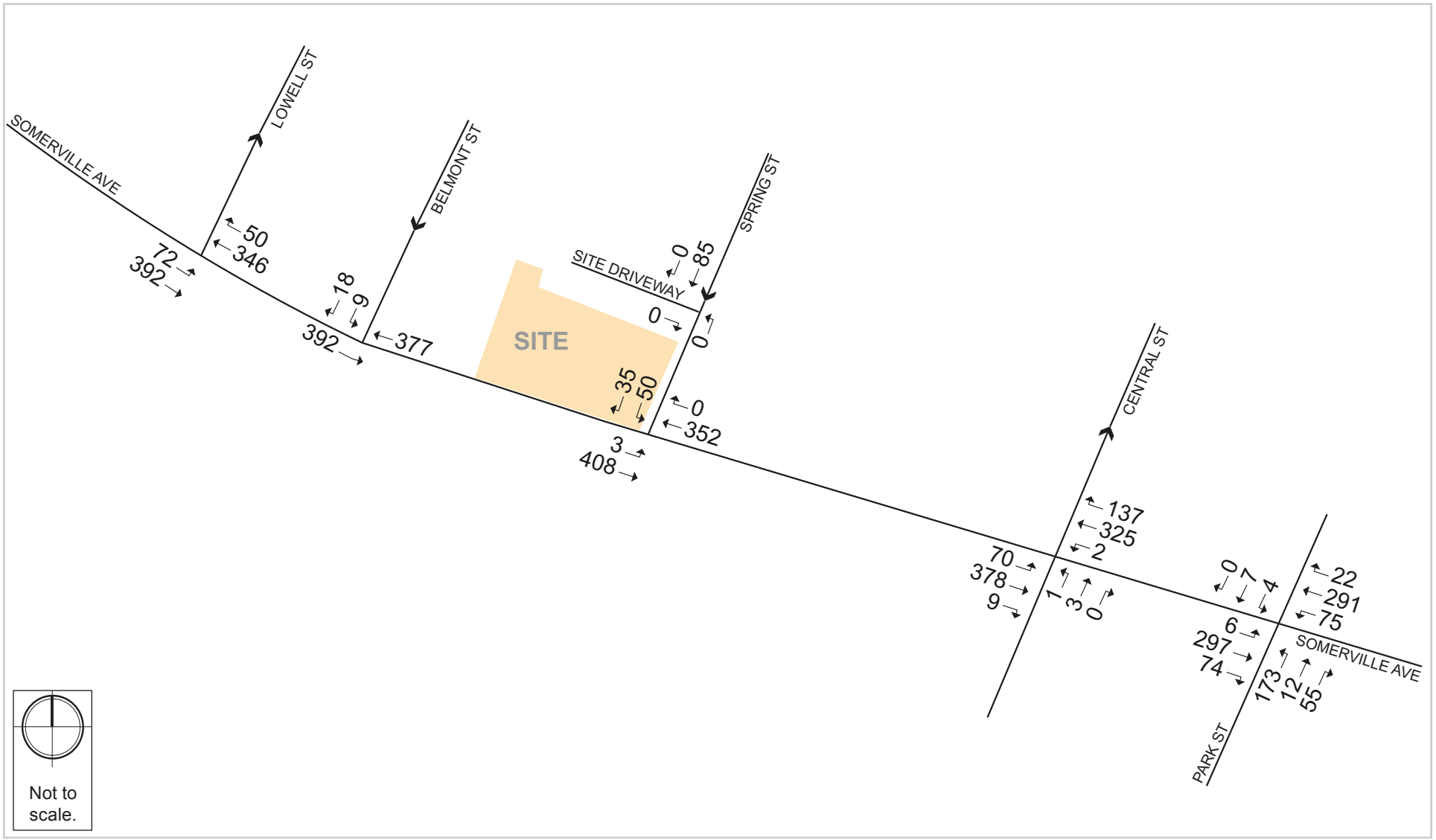
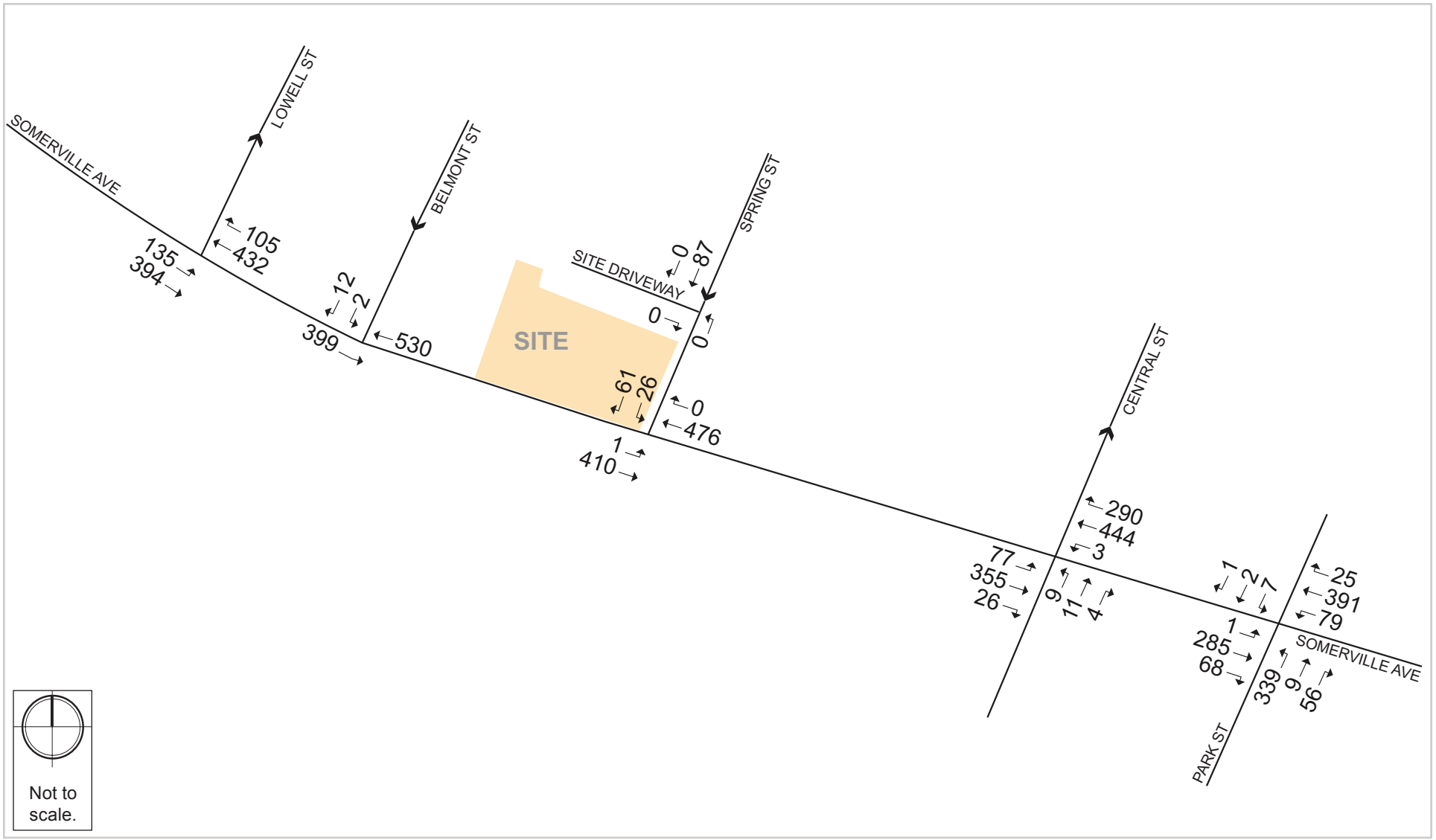


Figure 5. ***Existing (2021) Condition Vehicle Volumes, Weekday p.m. Peak Hour***



Existing Public Transportation

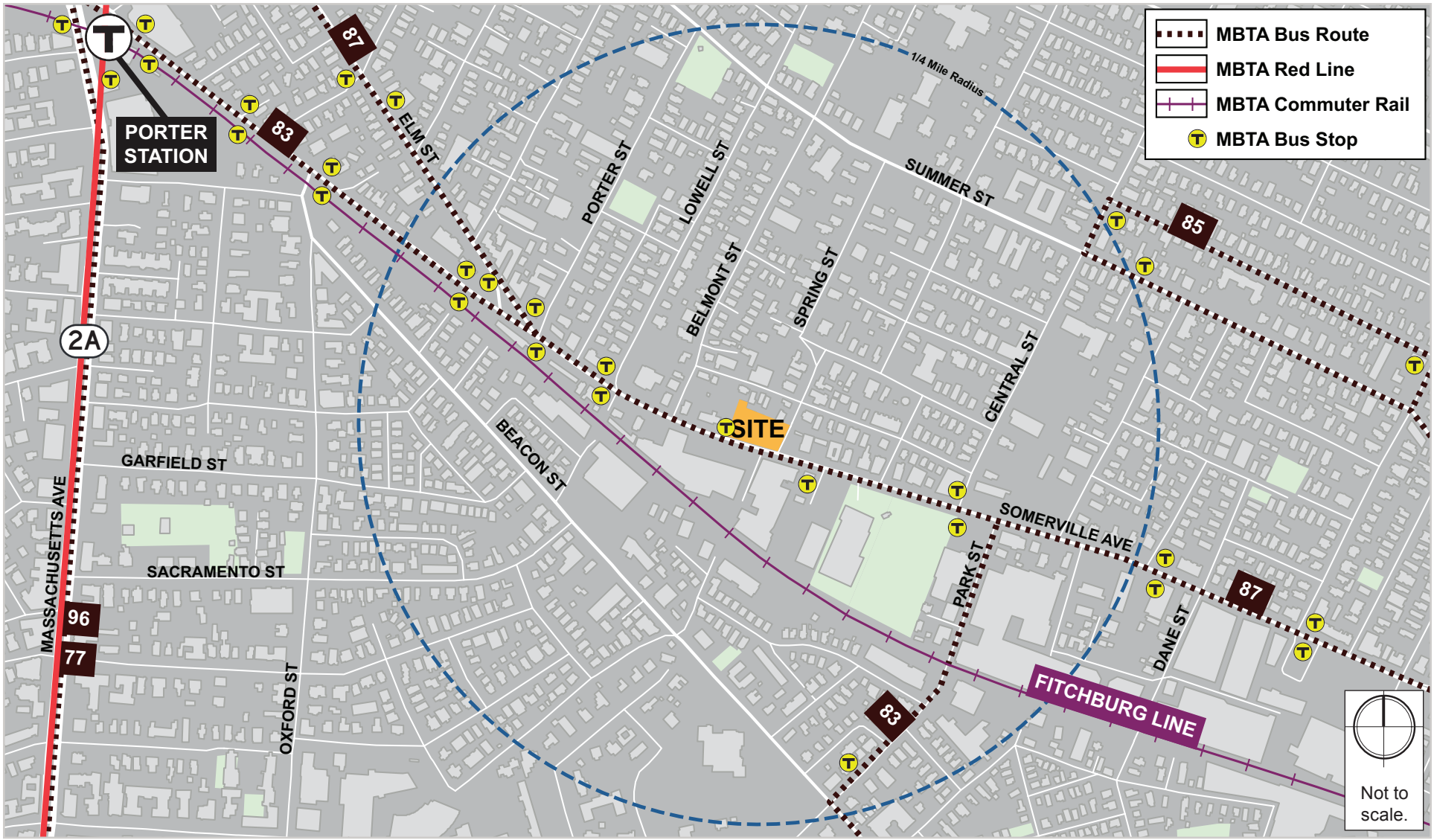
The Project Site is adjacent to two MBTA bus routes on Somerville Avenue (#83 and #87) and is one-half mile (a 10-minute walk) from the MBTA Red Line Station at Porter Square. The MBTA operates an additional six bus routes within a half mile (10-minute walk) from the Project. The existing nearby transit services within a half mile radius are shown in **Figure 6** and a summary of their service destinations, peak hour frequency, and total ridership is provided in **Table 3**.

Table 3. Transit Service Summary

Route	Route Description	Weekday Service	Peak Hour Headway (min.)		Weekday Ridership*
			AM	PM	
Heavy Rail					
Red Line	Alewife – Braintree Alewife – Ashmont	5:08 a.m.-1:12 p.m.	9 9	9 9	258,199
Fitchburg Line	Wachusett – North Station	4:50 a.m.-1:06 a.m.	60+	60+	17,226
Bus					
77	Arlington Heights – Harvard Station	4:48 a.m.-1:00 a.m.	6-10	7-9	6,652
83	Rindge Avenue – Central Square, Cambridge	5:10 a.m.-1:04 a.m.	20-25	25-35	1,829
85	Spring Hill – Kendall/MIT Station	5:45 a.m.-7:58 p.m.	25-40	40-45	591
86	Sullivan Square – Reservoir Station	5:05 a.m. – 1:10 a.m.	12	16	6,228
87	Arlington Center or Clarendon Hill – Lechmere Station	5:10 a.m.-1:05 a.m.	20-27	19-25	3,686
88	Clarendon Hill – Lechmere Station	5:15 a.m.-1:00 a.m.	2-17	15-25	3,814
90	Davis Square- Wellington Station	6:30 a.m.-10:41 p.m.	40-50	45-50	1,076
96	Medford Square – Harvard Square	5:35 a.m.-1:00 a.m.	20	25	2,090

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

Figure 6. ***Public Transportation***



TRANSIT STOPS

The closest bus stops for routes within one-half-mile (10-minute walk) from the Project are summarized in **Table 4**. Bus stop amenities (shelters, benches, etc.) are summarized in **Appendix B.**

Table 4. Transit Stop Ridership Summary

Stop Location/Route	Distance from Site		Route		a.m. (7 – 9 a.m.)		p.m. (4 – 6 p.m.)	
	Feet	Walk-time (minutes)	ID	Direction	Boardings	Alightings	Boardings	Alightings
Somerville at Spring	115	<1	83	WB	5	0.3	4.4	3.3
			87	WB	5.7	1.3	6.8	3.6
594 Somerville	185[1]	1	83	EB	4.2	1	1.6	5.1
			87	EB	6.6	2.6	2.4	5
Somerville opposite Central	800	3	83	EB	21.6	10.9	9	20.8
			87	EB	13.8	10.2	7.7	13.8
Avon at Central	2110	8	85	WB	64.9	1.2	2.6	17.6
Highland at Benton	2440	10	88	EB	8.2	4.6	2.5	5.7
			90	EB	3.2	0	2	1
Highland at Benton	2535	10	88	WB	10	1.7	1.8	5.2
			90	WB	3.5	1	0.2	1.8
Washington at Beacon	3140	12	86	WB	33.5	10.6	12.5	9.8
	3215	12	86	EB	12.3	16.8	14.8	14
Mass Ave at Porter Station	3365	13	77	NB	46.5	9.3	81.4	16.6
			96	NB	5.2	3.5	10.6	6
Mass Ave at Upland	3400	13	77	SB	28	154.1	14.2	80.6
			96	SB	8.5	7.3	6.1	12.9

Ridership is based on Fall 2019 boarding data from the MBTA using APC (automatic passenger counters).
[1] Shortest distance to bus stop has no crosswalk; 800 feet (3 minutes) if using Beech Street crosswalk.

Existing Pedestrian Conditions

The roadways within the study area include Somerville Avenue, Lowell Street, Park Street, Belmont Street, Spring Street, and Central 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 good condition. Existing Pedestrian Level of Traffic Stress (PLTS) is provided in the Transportation Impact Analysis section.

Somerville Avenue. Generally, 10-foot-wide sidewalks are provided on both sides of the road in the study area. The sidewalk on the north side of the road is 17 feet wide in front of the fire station. The sidewalk on the south side of the road widens to 16 feet at Conway Park. The effective width (consistent usable width of the sidewalk, free of obstructions such as trees, sign poles, bicycle racks, benches, etc.) is four feet at the tree pits. The sidewalks are in fair to good condition.

Lowell Street. The sidewalk on the west side of the road is six feet wide. The sidewalk on the east side of the road is five-feet wide with an effective width of three feet at some locations. The sidewalks are in fair condition.

Park Street. The sidewalk on the west side of the road is eight feet wide with an effective width of 3.5 feet at the street trees. The sidewalk on the east side of the road is 10 feet wide with an effective width of five feet at the street trees. The sidewalks are in fair condition.

Belmont Street. The sidewalk on the west side of the road is eight feet wide with an effective width of five feet at a signpost. The sidewalk on the east side of the road is seven feet wide with an effective width of four feet at the street trees. The sidewalks are in fair condition.

Spring Street. The sidewalk on the west side of the road is six feet wide with an effective width of 4.5 feet at a signpost. The sidewalk on the east side of the road is seven feet wide with an effective width of four feet at the signpost. The sidewalk on the east side narrows to three feet wide at the end of the street. The sidewalks are in fair condition.

Central Street. The sidewalk on the west side of the road is 7.5 feet wide with an effective width of 4.5 feet at a signpost. The sidewalk on the east side of the road is five feet wide with an effective width of four feet at the signpost. The sidewalks are in fair condition.

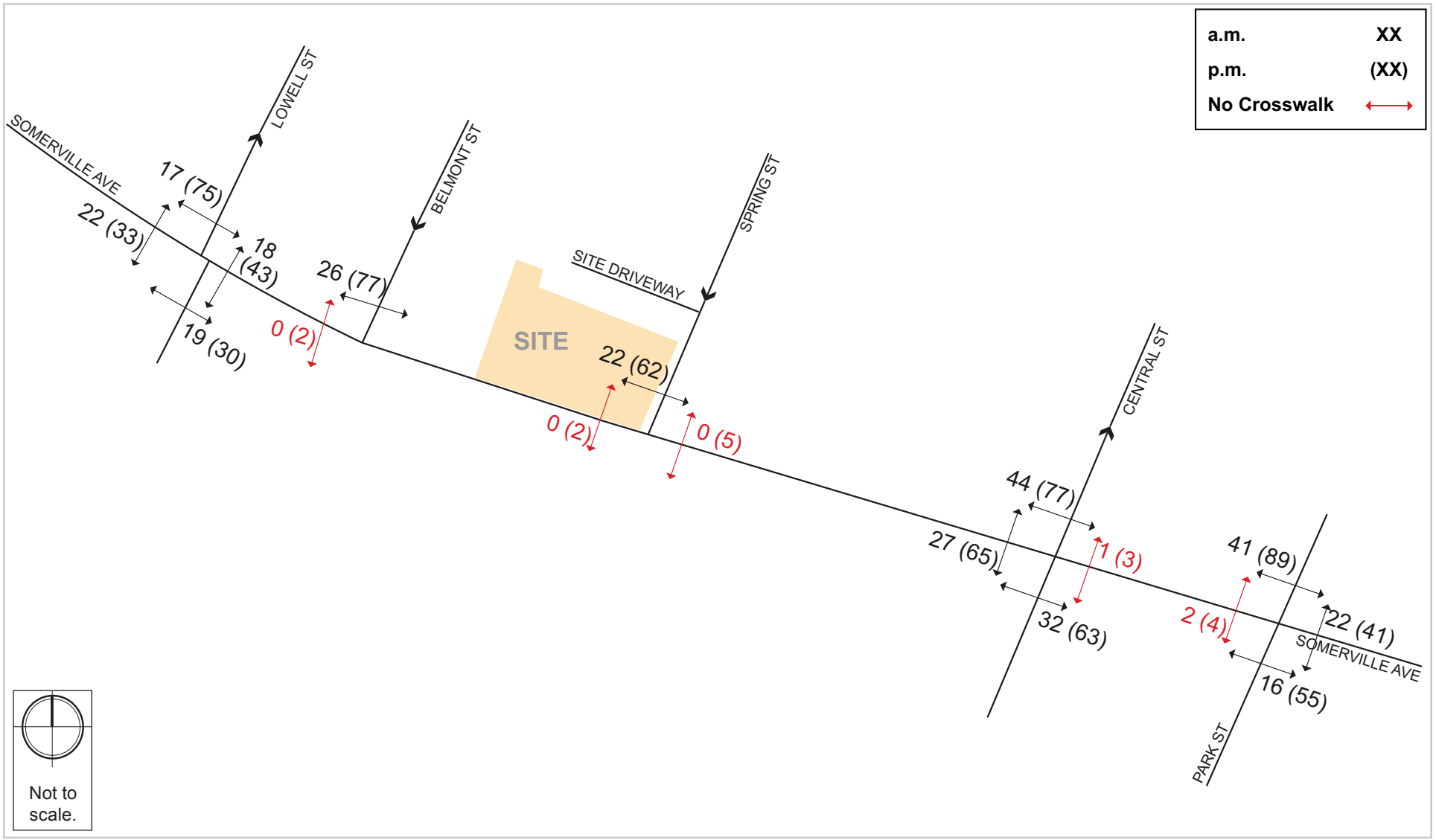
Intersections. Crosswalks and ADA-compliant ramps are generally provided across all study area intersection approaches. Crosswalks are consistently 12 feet wide. Crossing distances at the crosswalks vary from 22 feet long across Lowell Street to 57 feet long across Somerville Avenue west of Lowell Street and 58 feet across Park Street.

Pedestrian crossing phases at Lowell Street and Park Street are exclusive. At Lowell and Park streets, pedestrian phases are 31 seconds and 22 seconds, respectively. FDW time is 12 seconds at each.

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 8:15 – 9:15 a.m. and 5:15 – 6:15 p.m. The weekday a.m. and p.m. peak hour pedestrian volumes are shown in **Figure 7**.

Figure 7. ***Existing (2021) Condition Pedestrian Volumes, Weekday a.m. and p.m. Peak Hours***



Existing Bicycle Conditions

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

Somerville Avenue. Five-foot-wide bicycle lanes are provided in both directions in the study area for the length of Somerville Avenue with the facilities at Union Square under construction.

Lowell Street. A five-foot-wide bicycle lane is provided on the west side of Lowell Street (one-way northbound).

Park Street. Five-foot-wide bicycle lanes are provided on Park Street in both directions in the study area between Somerville Avenue and Beacon Street.

Central Street. A three-foot-wide bicycle lane is provided on the east side of Central Street (one-way northbound).

No bicycle lanes or share-the-road arrows (sharrows) are provided on ***Belmont Street*** or ***Spring Street.***

BICYCLE COUNT DATA

To determine the amount of bicycle activity within the study area, bicycle turning movement counts 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 8:30 – 9:30 a.m. and 5:00 – 6:00 p.m. The weekday a.m. and p.m. peak hour bicycle volumes are shown in **Figure 8**.

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. Four bicycle sharing stations are located within a quarter-mile radius (five-minute walk) of the Project, with the closet at Conway Park. The existing bicycle facilities, as well as Bluebikes stations in the study area, are shown in **Figure 9**.

Figure 8. ***Existing (2021) Condition Bicycle Volumes, Weekday a.m. and p.m. Peak Hours***

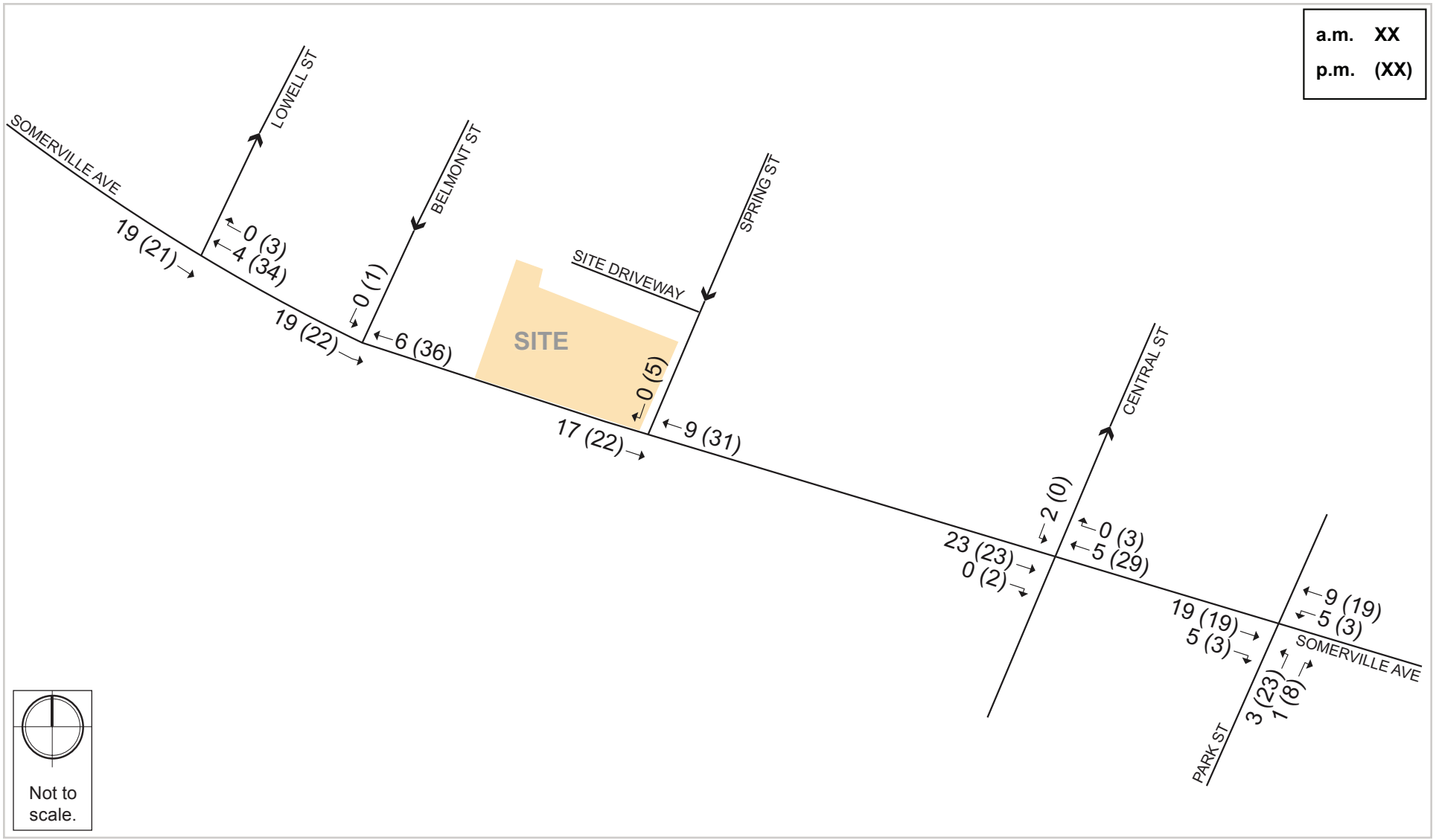


Figure 9. ***Existing Bicycle Facilities Map***

Vehicle Crash Analysis

HSH compiled motor vehicle crash data from the MassDOT IMPACT portal for the most recent three-year period for which complete data are available (2016-2018). Crash rates are determined based on the number of crashes per million vehicles entering an intersection. **Table 5** summarizes the crash data at the study area intersections. The detailed crash data and crash rate worksheets are provided in **Appendix C**.

Table 5. Motor Vehicle Crash Data Summary

Scenario		Lowell Street	Park Street	Belmont Street	Spring Street	Central Street
TOTAL		**9**	**6**	**5**	**2**	**3**
Year	2016	2	0	1	2	1
	2017	2	0	1	0	0
	2018	2	0	0	0	1
	2019*	2	3	3	0	0
	2020*	1	2	0	0	1
	2021*	0	1	0	0	0
Severity	Property Damage Only	2	3	3	0	1
	Non-fatal Injury	7	3	2	1	2
	Not Reported	0	0	0	1	0
Type	Single Vehicle Crash	1	3	1	1	0
	Angle	1	1	3	0	1
	Rear-End	4	1	0	1	0
	Sideswipe, same direction	1	1	0	0	0
	Sideswipe, opposite direction	0	0	0	0	0
	Head-on	2	0	0	0	1
	Unknown/Not Reported	0	0	1	0	1
Road Surface	Dry	7	4	4	1	3
	Wet	2	1	0	0	0
	Ice/Snow	0	1	1	1	0

Scenario		Lowell Street	Park Street	Belmont Street	Spring Street	Central Street
Light	Daylight	6	4	4	1	3
	Dusk	0	0	0	0	0
	Dark – Lighted Roadway	3	2	1	0	0
	Dark – Roadway not lighted	0	0	0	1	0
	Unknown	0	0	0	0	0
Weather	Clear/Cloudy	1	0	0	0	0
	Clear/Clear	1	1	0	0	1
	Clear	2	3	3	1	1
	Cloudy	4	1	1	0	1
	Rain		1	1	1	0
	Snow	1	0	0	0	0
Bicycle/Ped Crashes (2016-2021)		5	2	3	1	3
Crash Rate (2016 – 2018)[1]		**0.44**	**0.00**	**0.16**	**0.16**	**0.13**
District 4 (2018) Average Crash Rates[2]		**0.73**	**0.73**	**0.57**	**0.57**	**0.57**

Source: MassDOT, IMPACT crash data portal.
**Complete data provided through 2018; 2019 – 2021 reports are incomplete years.*
[1]Crashes per million entering vehicles (MEV) at the intersection.
[2]Crash rate for most recent, complete three-year period (2015-2018).

As shown in **Table 5**, the Somerville Avenue/Lowell Street intersection has had the highest number of crashes (9) in recent years. No fatal crashes were recorded in the study area. The crash rates at all of the study area intersections are lower than the District 4 average rates of 0.73 per MEV for signalized intersections and 0.57 per MEV for unsignalized intersections.

More than half of the crashes (14 of 25 crashes) at the study area intersections involved a pedestrian or bicyclist over the six-year period in the study area. Rear-end crashes were the most common crash type at Somerville Avenue/Lowell Street. Single vehicle crashes were the most common crash type at Somerville Avenue/Park Street. Angle crashes were the most common crash type at Somerville Avenue/Belmont Street. The majority of crashes occurred on dry roadway surfaces during daylight hours and on days when the weather was clear.

Build and Future Conditions

The Build (2021) and Future (2026) analysis conditions consist of the following:

- **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.
- **Future (2026) 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.

Build (2021) Condition

The Project will consist of the demolition of the existing building and the construction of a new, three-story laboratory/life science research building consisting of approximately 43,200 sf that includes 500 sf of ground floor retail for the purposes of a conservative TIS analysis. The Project will provide an underground parking garage with approximately 33 parking spaces as well as 10 covered, secure bicycle parking spaces in the garage and four outdoor bicycle racks for eight bicycles.

PARKING

VEHICLE PARKING

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 Site is located approximately one block outside of the half-mile walkshed and is therefore subject to parking minimums. Vehicle parking spaces must be unbundled by renting or leasing as an option that requires a separate transaction rather than a requirement of the lease. The minimum vehicle parking space requirements for the MR3 zone are as follows:

- Office: Research and Development or Laboratory: 1 per 1,000 sf (43 spaces)
- Retail: Formula Retail: 1 per 750 sf (1 space)

The Project will construct approximately 33 parking spaces in an underground garage. The number of parking spaces proposed is less than the vehicle parking spaces required by zoning. If the project were located one block west, within the half-mile transit-area walkshed, a ***maximum*** of 44 spaces would be allowed by zoning. A parking special permit will be requested. The peak parking demand is expected to be during the midday weekday hours due to nature of commuting patterns for Project tenants.

Providing fewer proposed Project parking spaces will discourage single occupant vehicle trips. The proposed parking supply is consistent with parking ratios in transit-accessible neighborhoods, to which this project is immediately adjacent. Providing fewer parking spaces will help the Project and City meet their mobility goals.

BICYCLE PARKING

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. Bicycle parking will be provided at no cost or fee to employees or visitors. The short-term bicycle parking will be provided within 50 feet of the principal entrance. The long-term bicycle parking will be provided in the building in a covered, lit, and secure location. The proposed bicycle parking requirements for the MR3 zone are as follows:

- Research and Development or Laboratory:
  - Short-term: 1 space per 20,000 sf (2 spaces)
  - Long-term: 1 space per 5,000 sf (8 spaces)
- Retail:
  - Short-term: 1 per 2,500 sf (1 space)
  - Long-term: 1 per 10,000 sf (1 space)

The Project will install four outdoor bicycle racks to accommodate short-term parking for eight bicycles. Short-term bicycle parking will be provided on outdoor bicycle racks located near the building's primary entrance. The Project will construct 10 secure, covered bicycle parking spaces that will be available for employees in the underground garage. The Project is exceeding the minimum requirements for both short- and long-term bicycle parking.

SITE ACCESS AND CIRCULATION

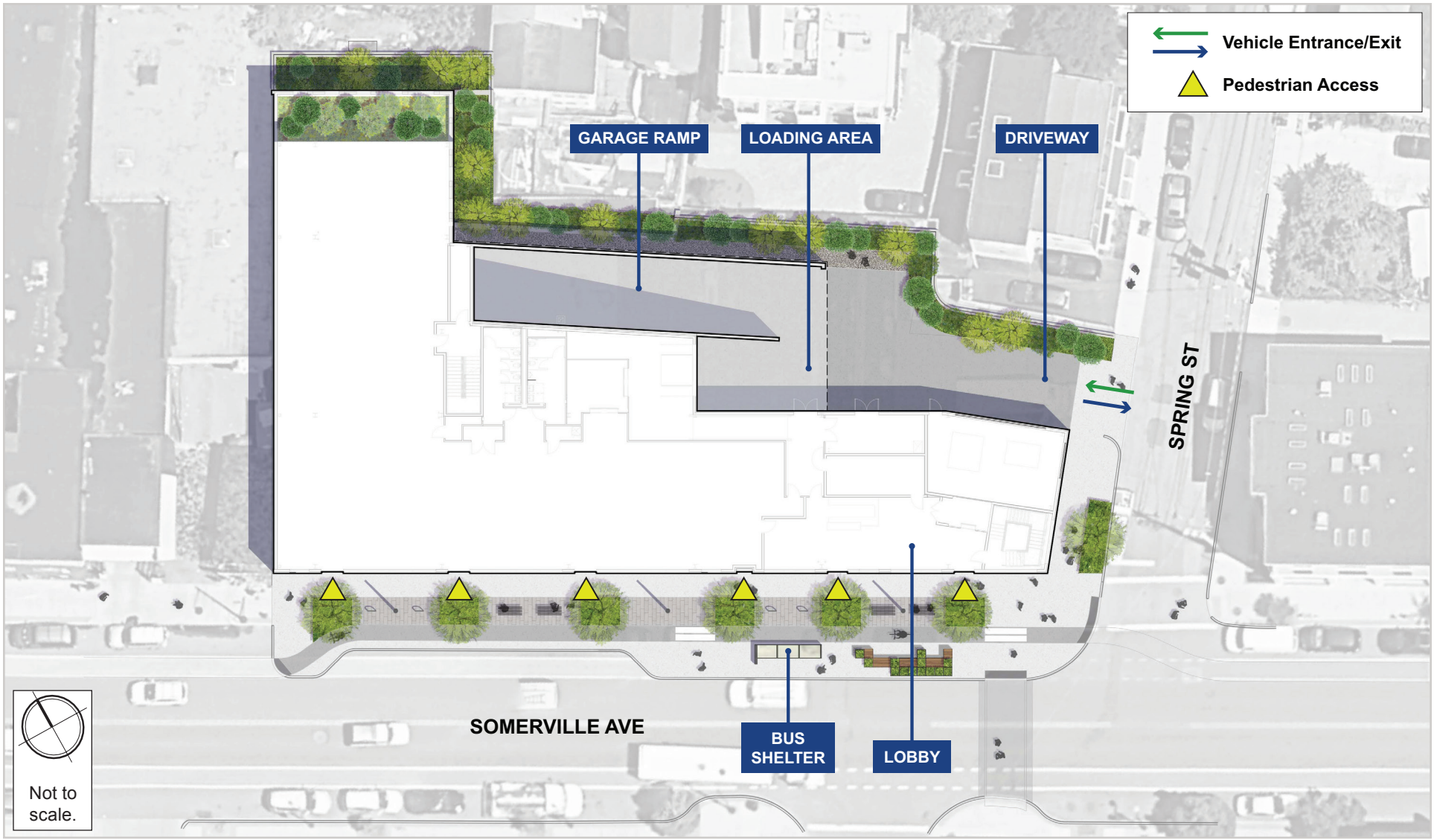
The Project Site will maintain the existing curb cut along Spring Street along the east side of the building. The driveway will serve as the primary access point for all vehicular movements including

access to the Project's underground garage as well as loading and service operations. Spring Street is generally a one-way southbound roadway; however, two-way traffic is allowed between Somerville Avenue and the Site driveway, which minimizes vehicular circulation through the neighborhood. The primary pedestrian entrance to the building will be provided along Somerville Avenue. The Conceptual Site Plan is shown in **Figure 10**.

LOADING/SERVICE

Loading and service operations will occur in the designated loading area in the northeast corner of the building. Vehicles will back into the loading bay via the driveway along Spring Street to the east. The loading bay will be approximately 20 feet wide and accommodate a single 36-foot box truck or two smaller vehicles. The loading bay will also include access to the trash room to remove waste and recycling, as well as an elevated loading dock, a freight elevator, and a service corridor for effortless distribution of deliveries within the building. The project is expected to generate six truck trips per day. The full truck trip generation calculation sheets are included in **Appendix D**.

Figure 10. ***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 Manual* (10th Edition) [1] 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.

TRIP RATES

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

- **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. Research and development centers may contain offices and light fabrication areas. Calculations of the number of vehicle trips use ITE's average rate per 1,000 sf.
- **Land Use Code 820 – Shopping Center.** The Shopping Center land use code is defined as a commercial establishment that is planned, developed, owned, and managed as a unit. The Shopping Center land use code was selected because it has slightly higher trip generation rates than the other similar retail land uses provided in the Trip Generation Manual, presenting a conservative scenario. The trip generation estimates are based on average vehicular rates per 1,000 sf.

The trip rates used for each LUC are summarized in **Table 6**.

Table 6. ITE Trip Generation Rates

LUC	Time Period	ITE Average Rate	Directional Distribution	
			Entering	Exiting
Existing				
Research & Development (LUC 760)	Daily	11.26 per 1,000 sf	50%	50%
	Weekday, Peak Hour of Adjacent Street Traffic One Hour Between 7 – 9 a.m.	0.42 per 1,000 sf	75%	25%
	Weekday, Peak Hour of Adjacent Street Traffic One Hour Between 4 – 6 p.m.	0.49 per 1,000 sf	15%	85%

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

LUC	Time Period	ITE Average Rate	Directional Distribution	
			Entering	Exiting
Retail (LUC 820)	Weekday Daily	37.75 per 1,000 sf	50%	50%
	Weekday, Peak Hour of Adjacent Street Traffic One Hour Between 7 – 9 a.m.	0.94 per 1,000 sf	62%	38%
	Weekday, Peak Hour of Adjacent Street Traffic One Hour Between 4 – 6 p.m.	3.81 per 1,000 sf	48%	52%

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 vehicle person trips were distributed to the different automobile modes of personal vehicle trips and taxi trips. The trips were then adjusted by the vehicle occupancy rate (vor) of 1.18 persons per vehicle and 1.20 people per taxi or Transportation Network Company (TNC) such as Uber or Lyft. It is anticipated that trips generated by a person arriving in a taxi/TNC would also include the taxi/TNC exiting empty (deadhead trip) and the trip of a person departing in a taxi/TNC would include the entering deadhead taxi/TNC trip.

MODE SHARE

A mode share is the percentage of trips at a site using various modes of transportation such as vehicle, transit, walking, or biking. The Project mode share was determined using the 2019 American Community Survey (ACS) Means of Transportation to Work (data table B08006) for Census Tract 3512.04, published by the U.S. Census Bureau. The existing mode shares shown in **Table 7** were used to allocate the project-generated trips. The mode share remains 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 7. Existing Mode Shares

Mode Type	Mode Split*
Non-Vehicle Modes	
Public Transportation	28%
Walking	17%
Bicycling	15%
Vehicle Modes	
Personal Vehicle	39%
Taxi	1%

** Based on U.S. Census 2019: ACS 1-Year Estimates for Means of Transportation to Work for Census Tract 3512.04 (Table B08006).*

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. **Table 8** summarizes the trips by transit, walk, bicycle, and automobile trips for the overall development. The full trip generation calculation sheets are included in **Appendix D**.

Table 8. Project-Generated Trips by Mode

Time Period	Direction	Person Trips			Vehicle Trips	
		Transit	Walk	Bicycle	Personal Car	Taxi
Daily	In	83	51	45	99	2
	Out	83	51	45	99	2
	Total	**166**	**102**	**90**	**198**	**4**
a.m. Peak Hour	In	4	3	2	5	0
	Out	1	1	1	2	0
	Total	**5**	**4**	**3**	**7**	**0**
p.m. Peak Hour	In	1	1	1	3	0
	Out	6	4	4	8	0
	Total	**7**	**5**	**5**	**11**	**0**

The existing Site contained the La Ronga Bakery, which was closed toward the end of 2019. To provide a conservative estimate, the TIS does not take credit for the existing site trip generation and calculates the trip generation for the proposed development project only.

TRANSIT TRIP DISTRIBUTION

The vehicle trip distribution identifies the various travel paths for vehicles entering and exiting the Project. As outlined in the TIS scoping letter that was submitted to the City of Somerville Mobility Division and approved on July 26, 2021, trip distribution patterns for the Project were based on Longitudinal Employer-Household Dynamics (LEHD) and Longitudinal Origin-Destination Employer Statistics (LODES). The LODES data specifies the percentage of trips between Somerville and other communities within the region. The distribution at the adjacent bus stops is shown in **Table 9**.

Table 9. Transit Trip Distribution

MBTA Route	MBTA Stop	Direction	Distribution	
			Alighting	Boarding
#83	594 Somerville	Eastbound/Inbound	20%	20%
	Somerville at Spring	Westbound/Outbound	20%	20%
#87	594 Somerville	Eastbound/Inbound	20%	40%
	Somerville at Spring	Westbound/Outbound	40%	20%

PROJECT-GENERATED TRANSIT TRIPS

The Project's expected daily transit trips, detailed in **Table 8**, were distributed based on the ITE Trip Generation Manual's Hourly Distribution charts for the closest land use codes, LUC 710 (Office) and LUC 820 (Shopping Center). The transit trips were then conservatively distributed to the MBTA #83 and #87 routes adjacent to the project to the bus stops at 594 Somerville Avenue (inbound) and Somerville Avenue/Spring Street (outbound). Project-generated transit trips for the project are summarized in **Table 10**. The transit capacity analysis is provided in the Transportation Impact Analysis section.

Table 10. Daily Distribution of Project-generated Transit Trips

Time of Day	Route #83				Route #87			
	Inbound (EB)		Outbound (WB)		Inbound (EB)		Outbound (WB)	
	Alighting	Boarding	Alighting	Boarding	Alighting	Boarding	Alighting	Boarding
5 - 6 a.m.	0	0	0	0	0	0	0	0
6 - 7 a.m.	1	0	1	0	1	1	2	0
7 - 8 a.m.	0	0	1	0	1	1	2	0
8 - 9 a.m.	1	0	0	0	1	1	2	0
9 - 10 a.m.	1	1	2	0	1	2	3	1
10 - 11 a.m.	1	2	2	1	1	2	3	1
11 a.m. - 12 p.m.	1	3	2	2	1	4	3	2
12 - 1 p.m.	2	3	3	2	2	4	5	2
1 - 2 p.m.	3	2	2	1	2	3	4	2
2 - 3 p.m.	2	2	2	1	2	3	4	2
3 - 4 p.m.	2	2	1	2	2	4	4	2
4 - 5 p.m.	1	1	0	2	0	2	0	1
5 - 6 p.m.	1	1	0	2	0	2	0	1
6 - 7 p.m.	1	0	0	1	0	1	1	1
7 - 8 p.m.	0	0	0	1	1	1	0	0
8 - 9 p.m.	0	0	0	1	1	0	0	0
9 - 10 p.m.	0	0	0	0	1	1	0	1
10 - 11 p.m.	0	0	0	0	0	1	0	1
11 p.m. - 12 a.m.	0	0	0	0	0	0	0	0
12 - 1 a.m.	0	0	0	0	0	0	0	0

VEHICLE TRIP DISTRIBUTION

The vehicle trip distribution identifies the various travel paths for vehicles entering and exiting the Project. As outlined in the TIS scoping letter that was submitted to the City of Somerville Mobility Division and approved on July 26, 2021, trip distribution patterns for the Project were based on LEHD and LODES. The LODES data specifies the percentage of trips between Somerville and other communities within the region. The vehicle trip distribution is shown in **Figure 11**.

BUILD (2021) CONDITION VEHICLE VOLUMES

The project-generated vehicle trips were distributed throughout the study area based on the vehicle trip distribution. The project-generated trips for the weekday a.m. and p.m. peak hours are shown in **Figure 12**. The project-generated trips were added to the Existing (2021) 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 11. ***Vehicle Trip Distribution***

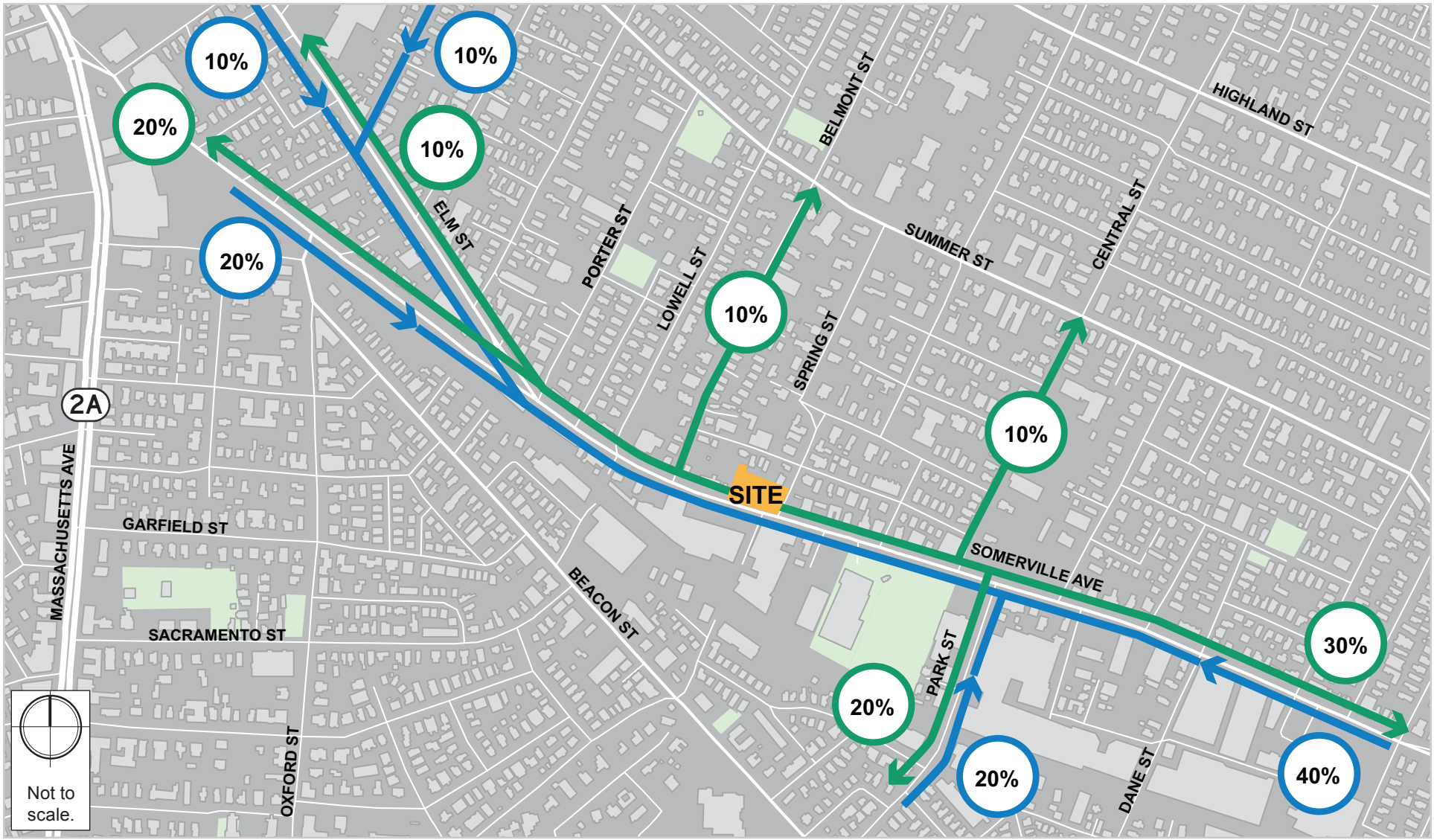


Figure 12. ***Project-generated Vehicle Volumes, Weekday a.m. and p.m. Peak Hours***

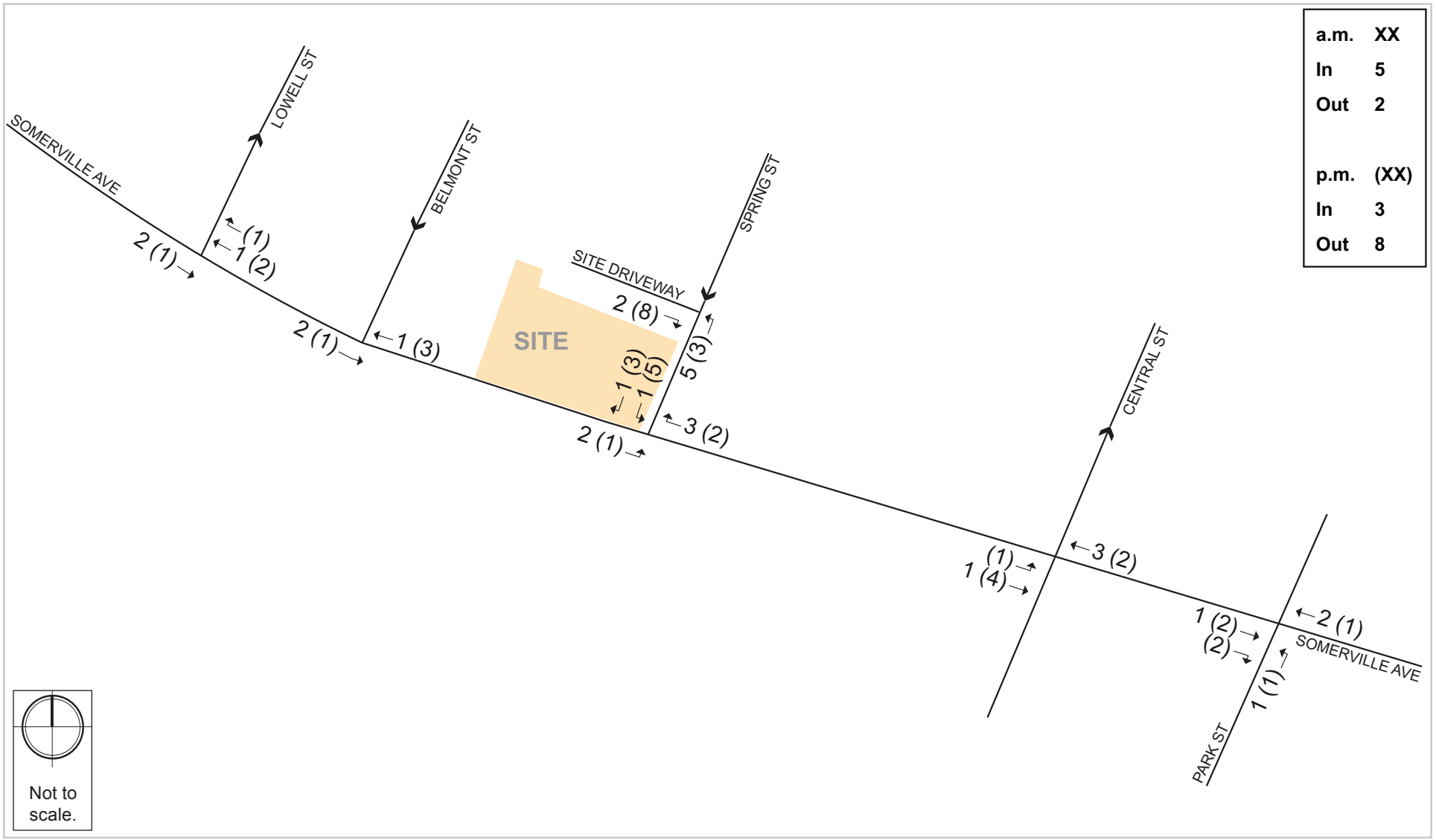


Figure 13. ***Build (2021) Condition Vehicle Volumes, Weekday a.m. Peak Hour***

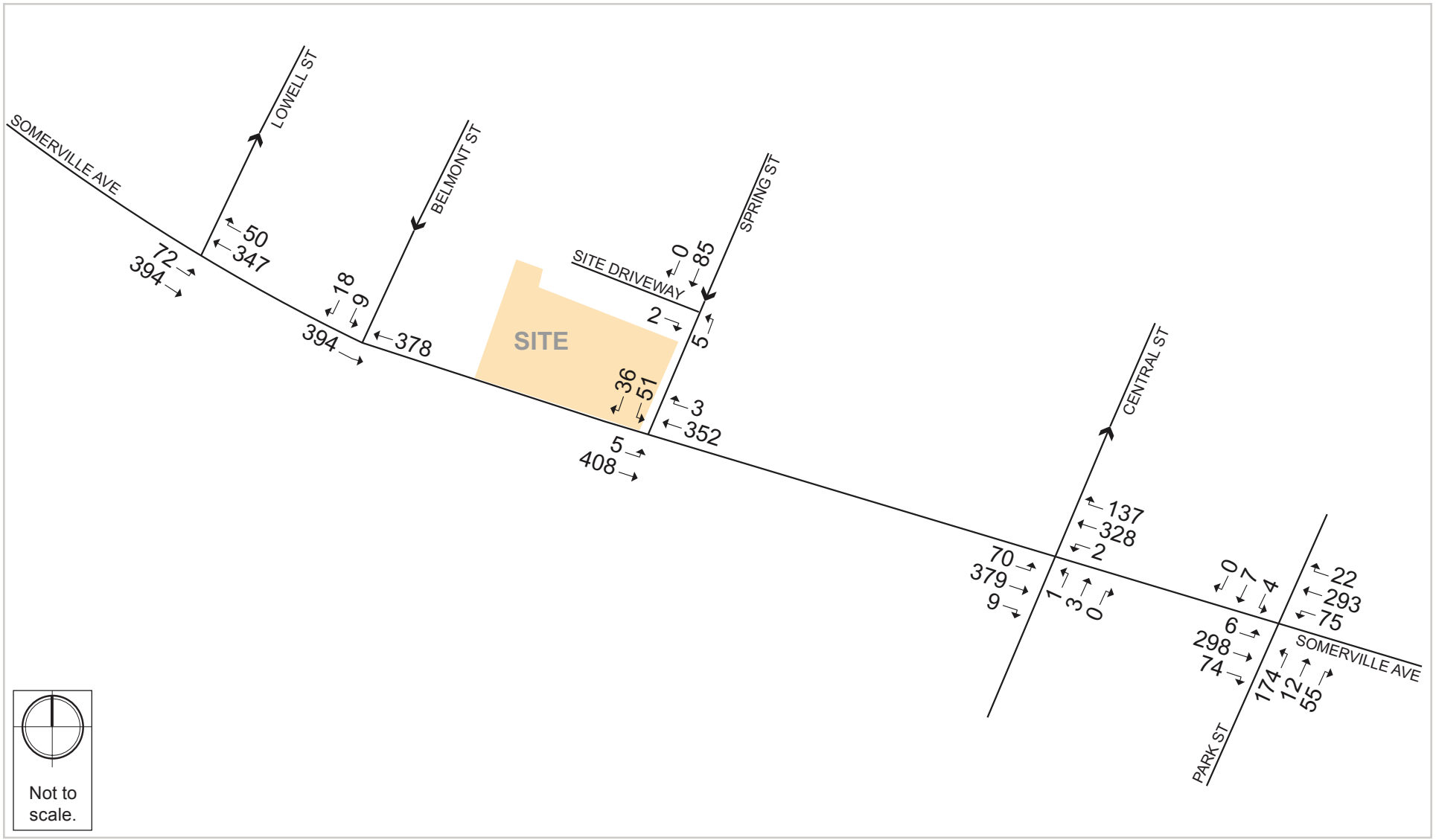
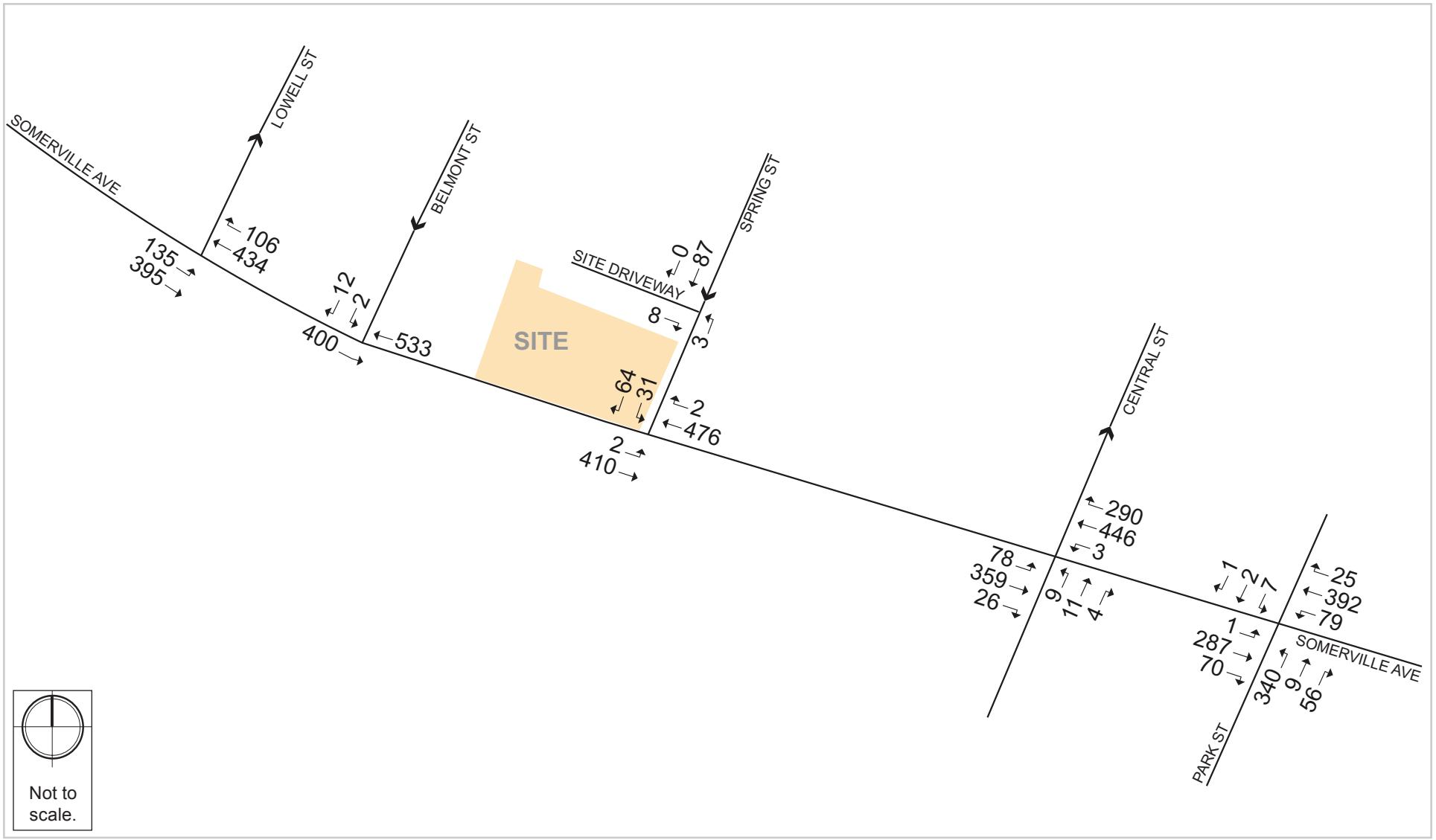


Figure 14. ***Build (2021) Condition Vehicle Volumes, Weekday p.m. Peak Hour***



Future (2026) Condition

A future analysis was also completed for a build condition in the design year (2026). The Future (2026) 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 Future (2026) Condition adds these additional trips to the Build (2021) scenario which already includes the project-generated trips. Per City of Somerville direction, no general background traffic growth rate was applied to the existing traffic 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 project was identified:

- **515 Somerville Avenue.** This development will construct a hotel, which will include 164 hotel rooms, a meeting room, a swimming pool, a fitness center to be used by hotel guests, and a bar/restaurant. A total of 87 parking spaces will be constructed for the site.

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 study area. Based on this review, the following improvement projects were identified.

- **Somerville Avenue Utility and 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 (599 Somerville Avenue).
- **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.
- **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. The Union Square branch is expected to open to fare service in December 2021. The Medford-terminus line is expected to open to fare service in May 2022. 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.

FUTURE (2026) CONDITION VEHICLE VOLUMES

The traffic volumes associated with the specific development projects listed previously were added to the Build (2021) Condition to develop the Future (2026) Condition vehicle volumes. The Future (2026) Condition weekday a.m. and p.m. peak hour traffic volumes are shown in **Figure 15** and **Figure 16**, respectively.

Figure 15. ***Future (2026) Condition Vehicle Volumes, Weekday a.m. Peak Hour***

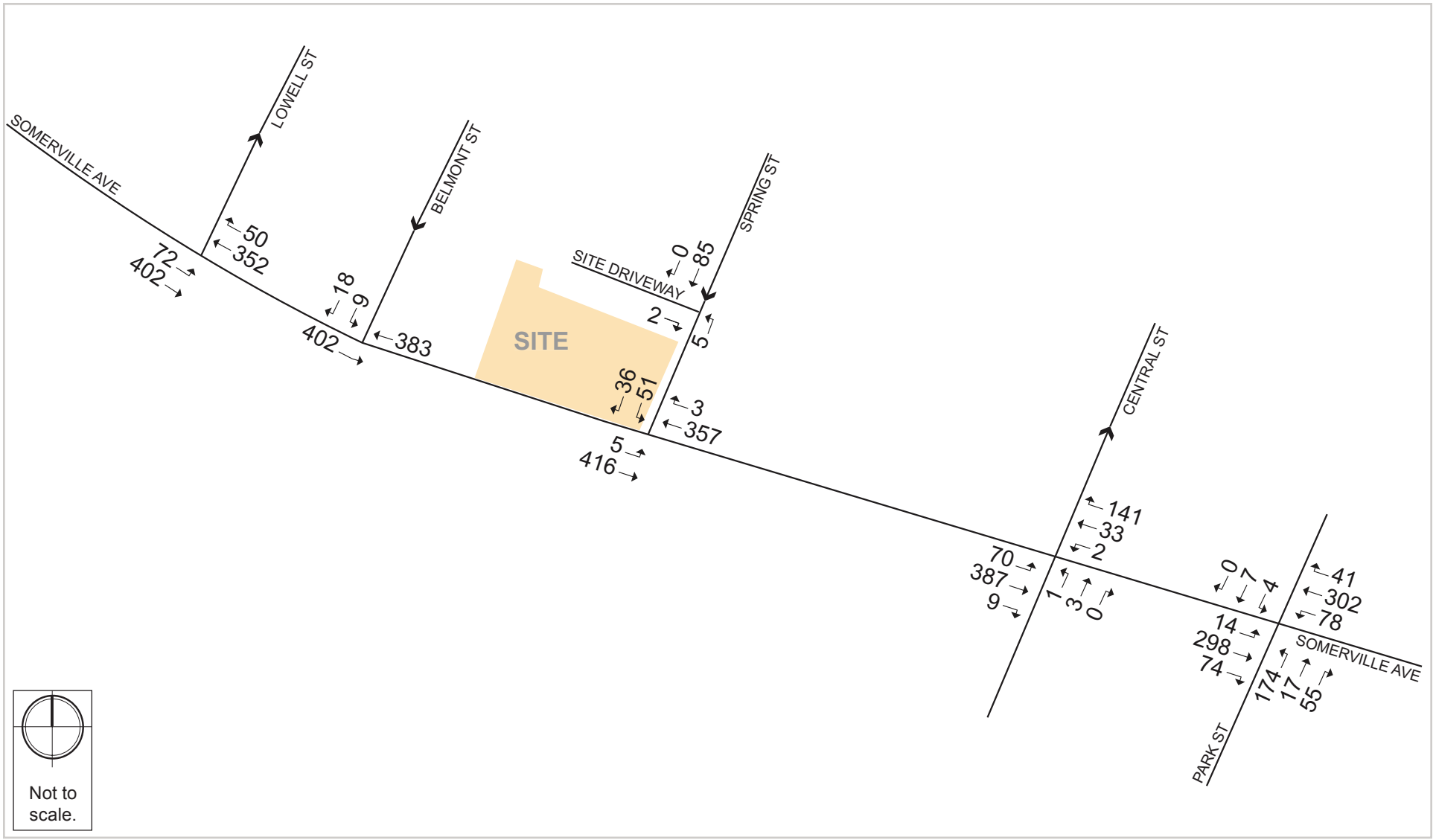
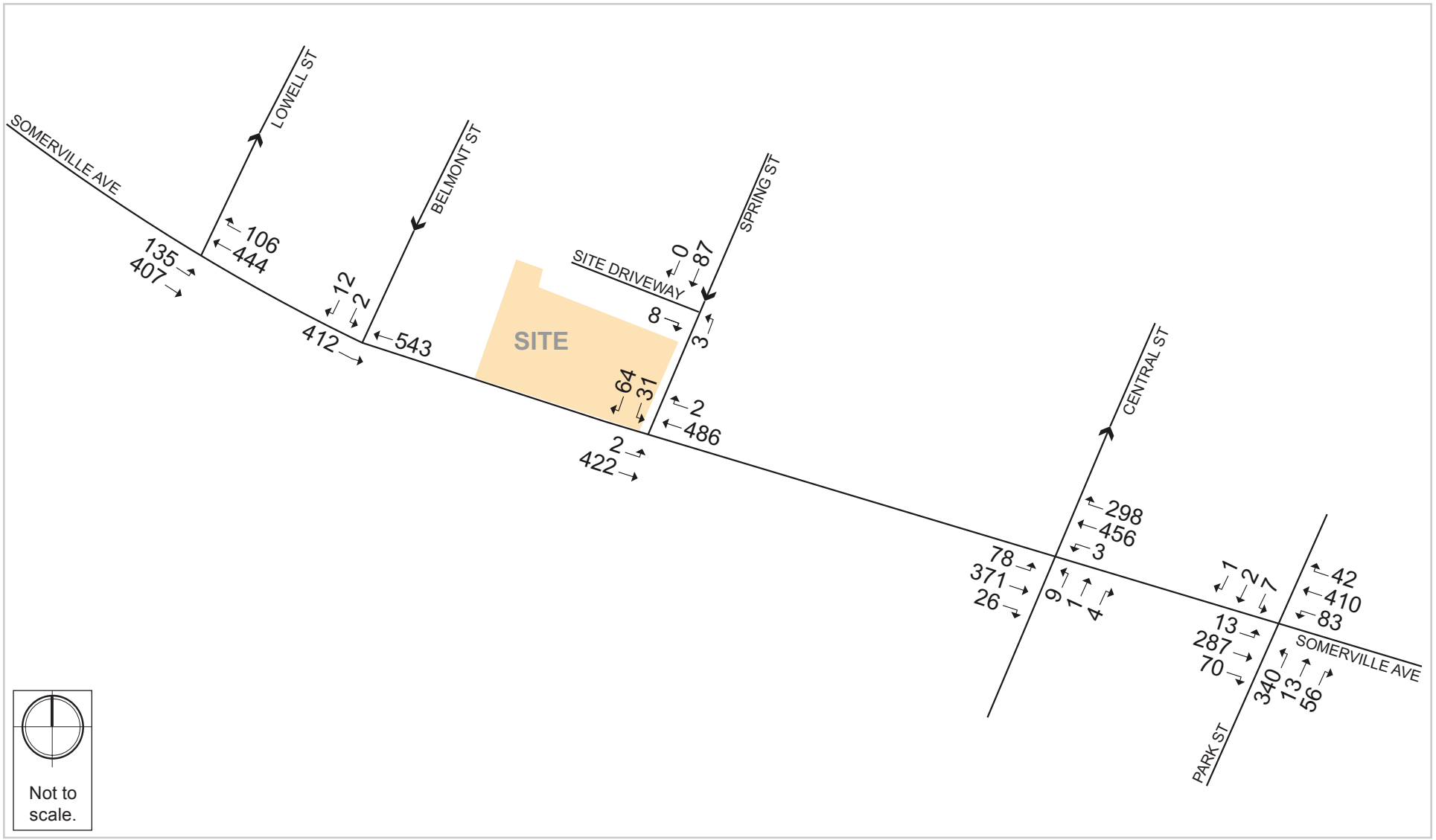


Figure 16. ***Future (2026) Condition Vehicle Volumes, Weekday p.m. Peak Hour***



Transportation Impact Analysis

This section discusses the analysis results for the parking, transit, bicycle, pedestrian, and motor vehicle networks. Each section explains the analysis methodology used to evaluate the respective mode and then presents the results. All modes were evaluated for the Existing, Build, and Future conditions.

Parking Analysis

Parking demand analysis was conducted to evaluate the need of additional parking to support the Project building expansion. Parking demand estimates for research and development and retail land use utilized data published by ITE in the *Parking Generation Manual* (5th edition). ITE provides data to estimate the total number of parking spaces associated with the land uses of the Project. Parking demand for the project based on the ITE parking generation estimates, using existing and future mode shares (39% auto and 25% auto, respectively), is presented in **Table 11**. The parking demand calculation sheets are included in **Appendix E**.

Table 11. Project Parking Demand

	Land Use	Parking Demand (spaces)	
		25% auto	39% auto
ITE[1]	R&D	28	44
	Retail	1	1
	Total	29	45

[1] *ITE Parking Generation, 5th Edition*

The Project is encouraging sustainable behaviors as identified in SomerVision 2040, and parking demand for the Project will be approximately 29 – 45 spaces. Parking for the Project will be offered at market rate, and spaces will be unbundled. The Project is adjacent to bus lines and is one-half mile from MBTA subway and commuter rail service. Reducing parking in areas that are well-served by transit encourages people to take public transit. TDM strategies to encourage transit, bicycling, and walking will include transit pass subsidies, Bluebikes membership subsidies, and a Guaranteed Ride Home program.

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 be accommodated and/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. Capacity for bus routes immediately adjacent to the Project, MBTA bus #83 and #87, were analyzed.

BUS CAPACITY ANALYSIS 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% of the seated capacity during off-peak hours and 140% during peak hours for most bus routes. A standard 40-foot MBTA bus has 39 seats; therefore, the off-peak planning capacity is 48 passengers per bus, and the peak planning capacity is 55 passengers per bus.

- **Existing Condition.** To determine the existing ridership, rail and bus data was collected from the MBTA Open Data Portal. 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.
- **Build Condition.** For the Build Condition, the project generated transit trips were distributed according to the transit trip distribution presented earlier and added to the Existing Condition passenger loads.
- **Build Condition with Mitigation.** The Project is considering transit improvements in the form of bus stop enhancements in front of the Site on Somerville 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.
- **Future Condition.** The Future (2026) 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 Condition.

EXISTING CONDITION CAPACITY ANALYSIS

In the Existing Condition, both bus routes resulted in a V/C ratio of less than 1.00 for each half hour increment. Existing Condition passenger loads for the #83 and #87 bus routes are illustrated **Figure 17** through **Figure 20.**

BUILD CONDITION CAPACITY ANALYSIS

In the Build 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 Condition passenger loads for the #83 and #87 bus routes are illustrated **Figure 17** through **Figure 20.**

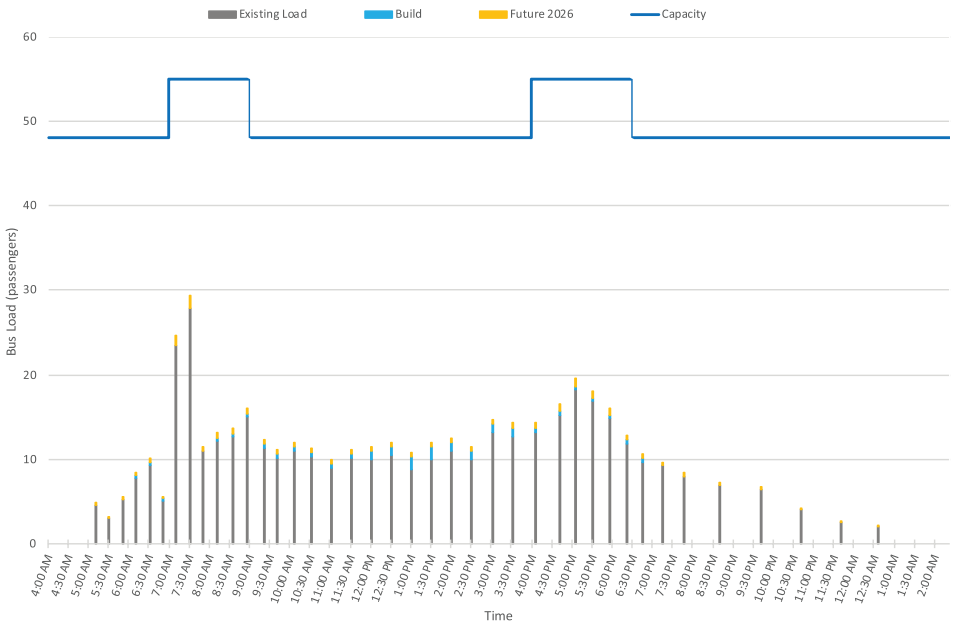
FUTURE (2026) CONDITION CAPACITY ANALYSIS

In the Future (2026) Condition, with a background growth rate of 1% per year applied to the Existing Condition, neither the #83 nor #87 bus routes exceed a V/C ratio of 1.00 compared to the Existing or Build conditions. Future Condition passenger loads for the #83 and #87 bus routes are illustrated **Figure 17** through **Figure 20.**

Passenger load comparison tables with V/C ratios for the Existing, Build, and Future conditions are provided in **Appendix F**.

Figure 17. ***Future (2026) Condition – Route 83 Inbound***

Arriving from Somerville Ave @ Sacramento St Load & Capacity by Bus at 594 Somerville Ave



Departing to Somerville Ave opp Central Street Load & Capacity by Bus at 594 Somerville Ave

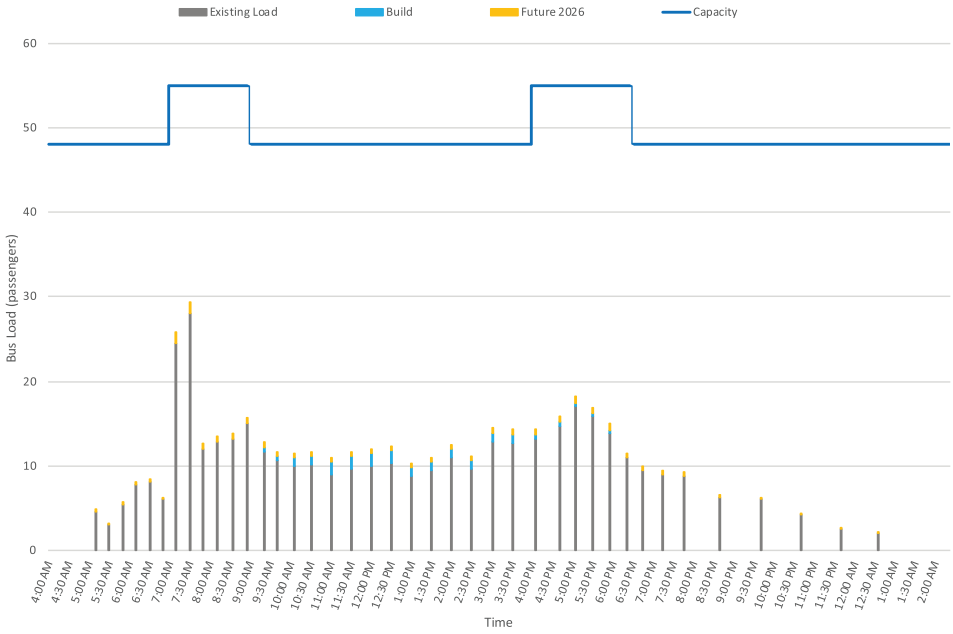
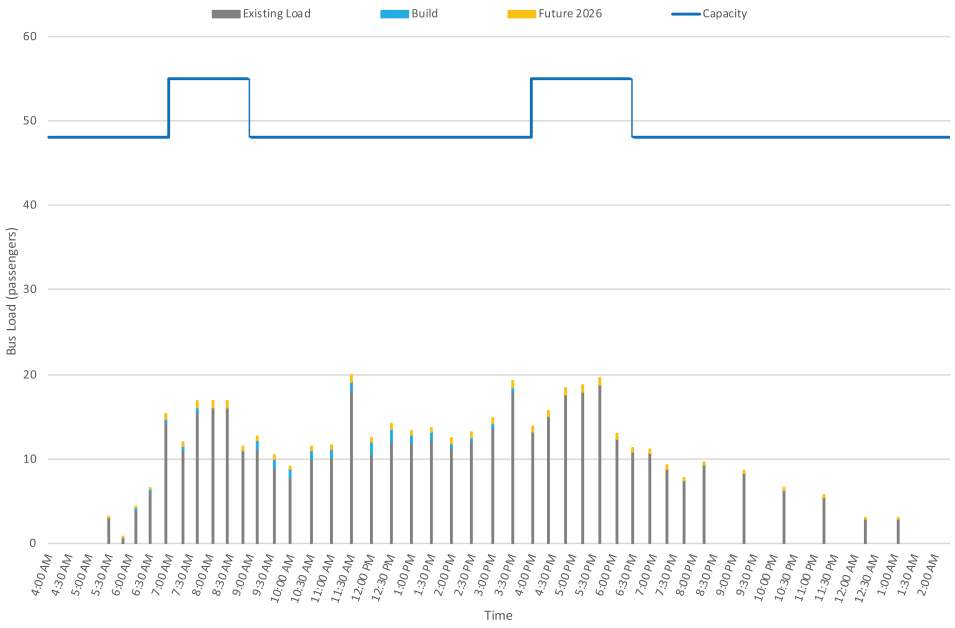


Figure 18. ***Future (2026) Condition – Route 83 Outbound***

Arriving from Somerville Ave @ Central St Load & Capacity by Bus at Somerville Ave @ Spring St



Departing to Somerville Ave @ Lowell St Load & Capacity by Bus at Somerville Ave @ Spring St

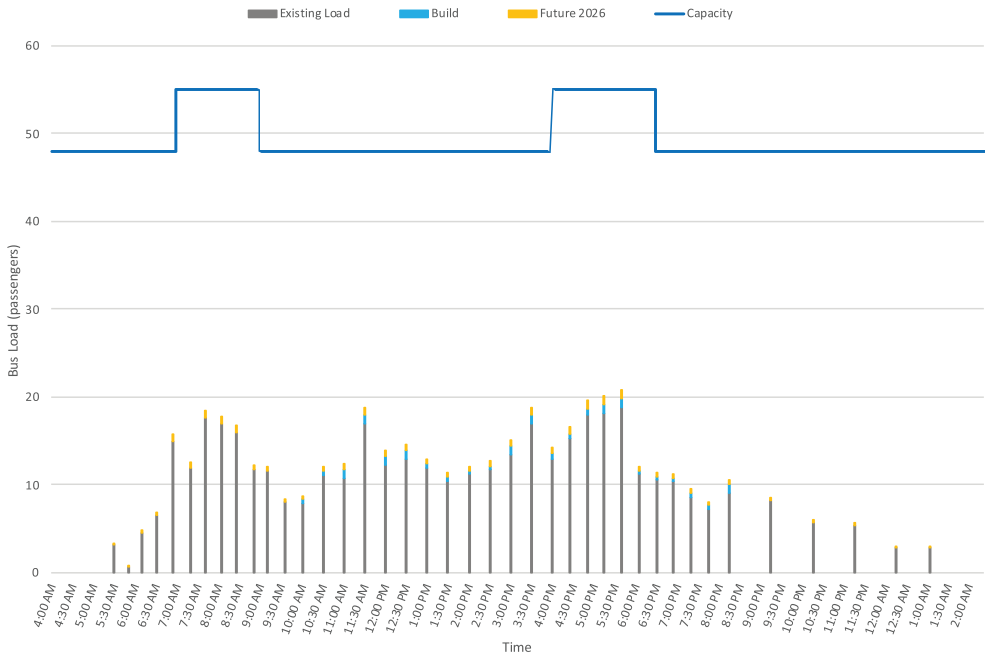
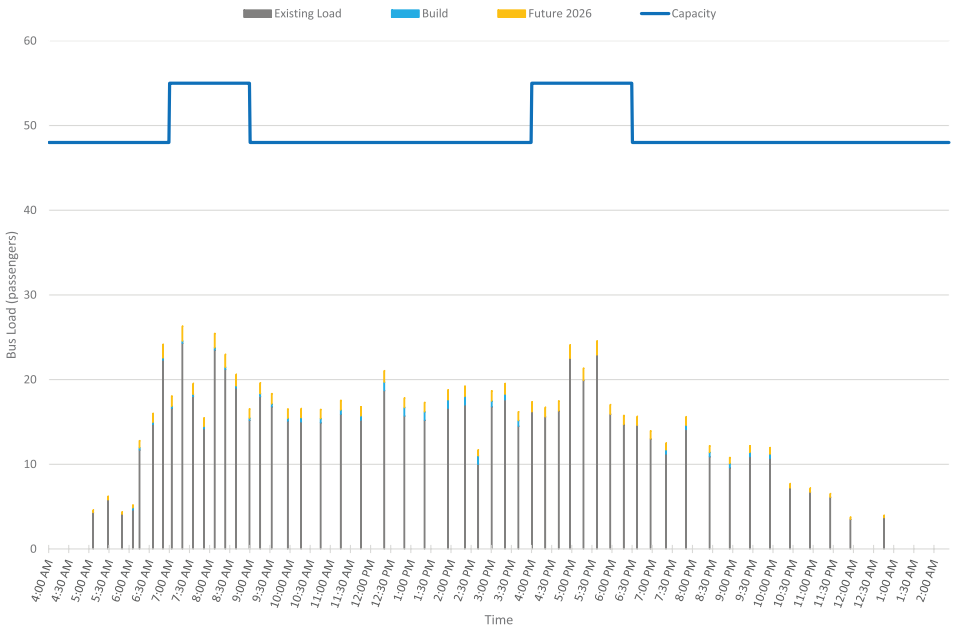


Figure 19. ***Future (2026) Condition – Route 87 Inbound***

Arriving from Somerville Ave @ Sacramento St Load & Capacity by Bus at 594 Somerville Ave



Departing to Somerville Ave opp Central St Load & Capacity by Bus 594 Somerville Ave

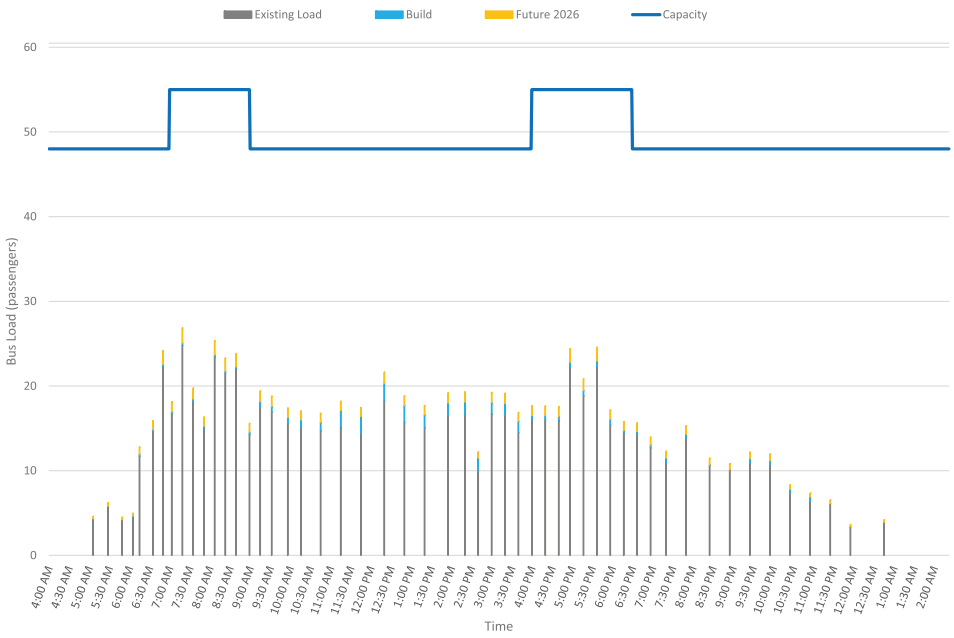
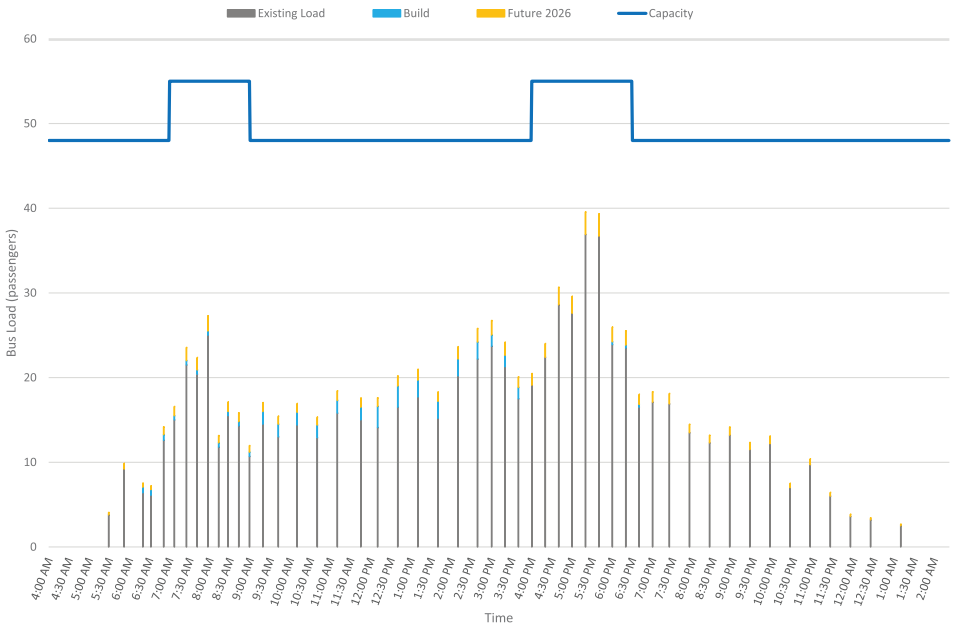
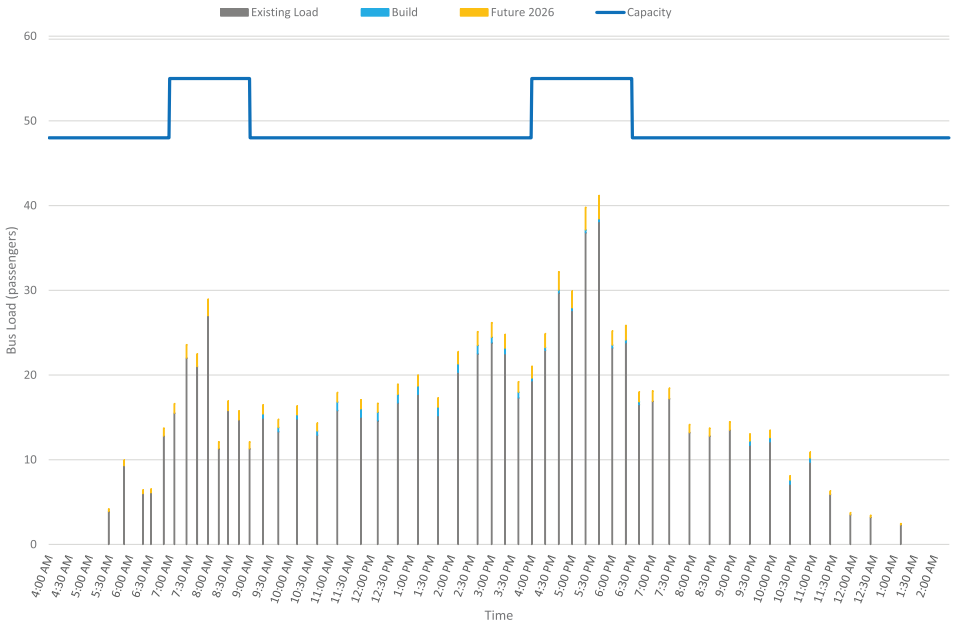


Figure 20. ***Future (2026) Condition – Route 87 Outbound***

Arriving from Somerville Ave @ Central St Load & Capacity by Bus at Somerville Ave @ Spring St



Departing to Somerville Avenue @ Lowell St Load & Capacity by Bus at Somerville Ave @ Spring Ave



Bicycle Analysis

Within the study area, bicycle facilities are generally five-foot-wide bicycle lanes adjacent to travel lanes. 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 are described in **Table 12**.

Table 12. Levels of Traffic Stress (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 iteration 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 4	Involves iteration 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 G** and selecting the lowest score (highest numerical value) to identify each segment or intersection with the classifications in **Table 12**.

EXISTING CONDITION

SEGMENT ANALYSIS

The study area was evaluated and is shown visually in **Figure 21**. Most roadways in the immediate vicinity of the Project ranked at BLTS 2 or BLTS 3. This is due to bicycle lanes that are consistently five feet wide and slower prevailing speed limits (25 mph or less) with a single traffic lane in each direction throughout the Spring Hill neighborhood. The BLTS 2 segments are bicycle lanes adjacent to the curb while the BLTS 3 segments have parking lanes or bus stops between the bicycle lane and curb. No segments within the study area were classified at BLTS 4.

Although Belmont Street and Spring Street do not have marked facilities, these roadways are ranked at BLTS 1 due to being facilities for mixed traffic, without marked centerlines, residential, a single travel lane, and posted speeds of 25 mph or less.

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 mph and would require a cyclist to cross no more than 2 – 3 lanes.

The bicycle analysis at the two signalized study area intersections is summarized as follows:

- ***Somerville Avenue/Lowell Street.*** Somerville Avenue bicycle facilities are carried through the intersection. The Somerville Avenue eastbound and westbound approaches are shared through/right turn lanes adjacent to the bicycle lanes. The level of stress is reduced since a green dashed bicycle crossing is marked through the intersection on these approaches and across the fire station driveway. The overall level of stress at this intersection is expected to be LTS 2.
- ***Somerville Avenue/Park Street.*** Somerville Avenue bicycle facilities are carried through the intersection and a bicycle box is provided across the Park Street approach. The level of stress is reduced on the eastbound approach since a green dashed bicycle crossing is marked through the transition to the right-turn lane and the bicycle lane continues to between the through lane and right-turn lane. A bicycle box is also provided across the westbound approaches on Somerville Avenue, separating the bicycles from the vehicles that may be turning right into the adjacent parking lot. 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.

BUILD (2021) CONDITION

The Build (2021) Condition includes any added bicycle trips due to the Project and on-site improvements to bicycle facilities. Bicycle improvements include relocating the on-street bicycle lane to a separated, raised cycle track adjacent to the site. The raised cycle track will be four feet wide. The BLTS on the following bicycle facility will change from the Existing Condition due to the improvements in condition and the separation from the street traffic:

- Relocating the on-street bicycle lane to a separated cycle track next to the sidewalk improves the score from BLTS 3 to BLTS 1.

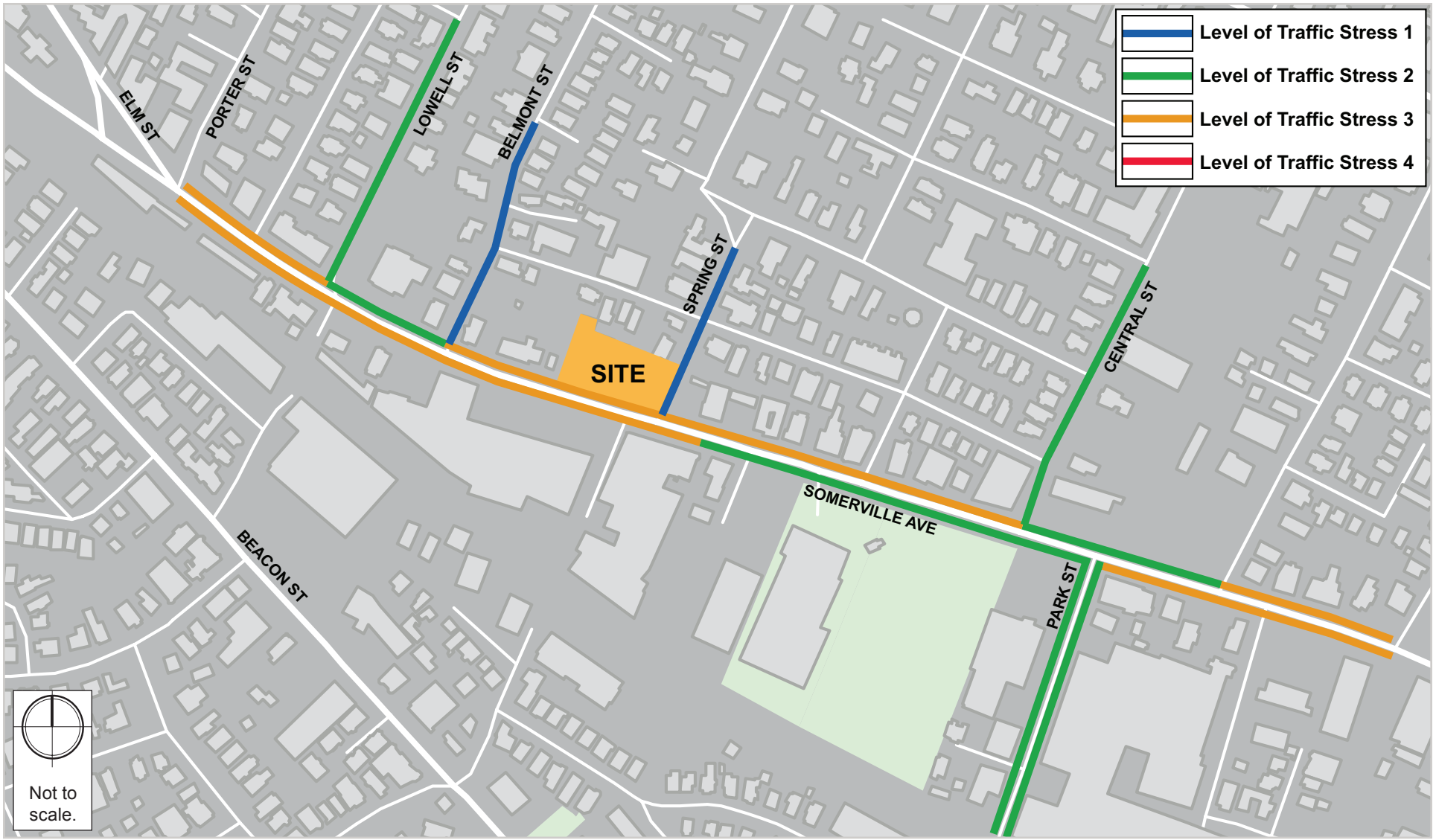
BUILD (2021) CONDITION (WITH MITIGATION)

The Project is not proposing off-site mitigation to bicycle facilities.

FUTURE (2026) CONDITION

The Future (2026) Condition includes the improvements proposed in the Build (2021) Condition as well as changes to bicycle facilities proposed by other developments. No off-site bicycle improvements are anticipated to be completed by other projects in this area, therefore no changes in BLTS are presented under this condition.

Figure 21. ***Bicycle Level of Traffic Stress – Existing***



Pedestrian Analysis

The pedestrian network is analyzed using the Pedestrian Level of Traffic Stress (PLTS) methodology developed by the Oregon Department of Transportation (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 H** and selecting the lowest score (highest numerical value).

EXISTING (2021) CONDITION

SEGMENT ANALYSIS

The study area segments were evaluated using the tables in **Appendix H** and are shown visually in **Figure 22**. The sidewalks in the study area are ranked at PLTS 2 as most sidewalks have actual widths greater than five feet wide but inconsistent buffers at curbs. Sidewalks in the area do not consistently provide pedestrians with six feet of unobstructed usable space.

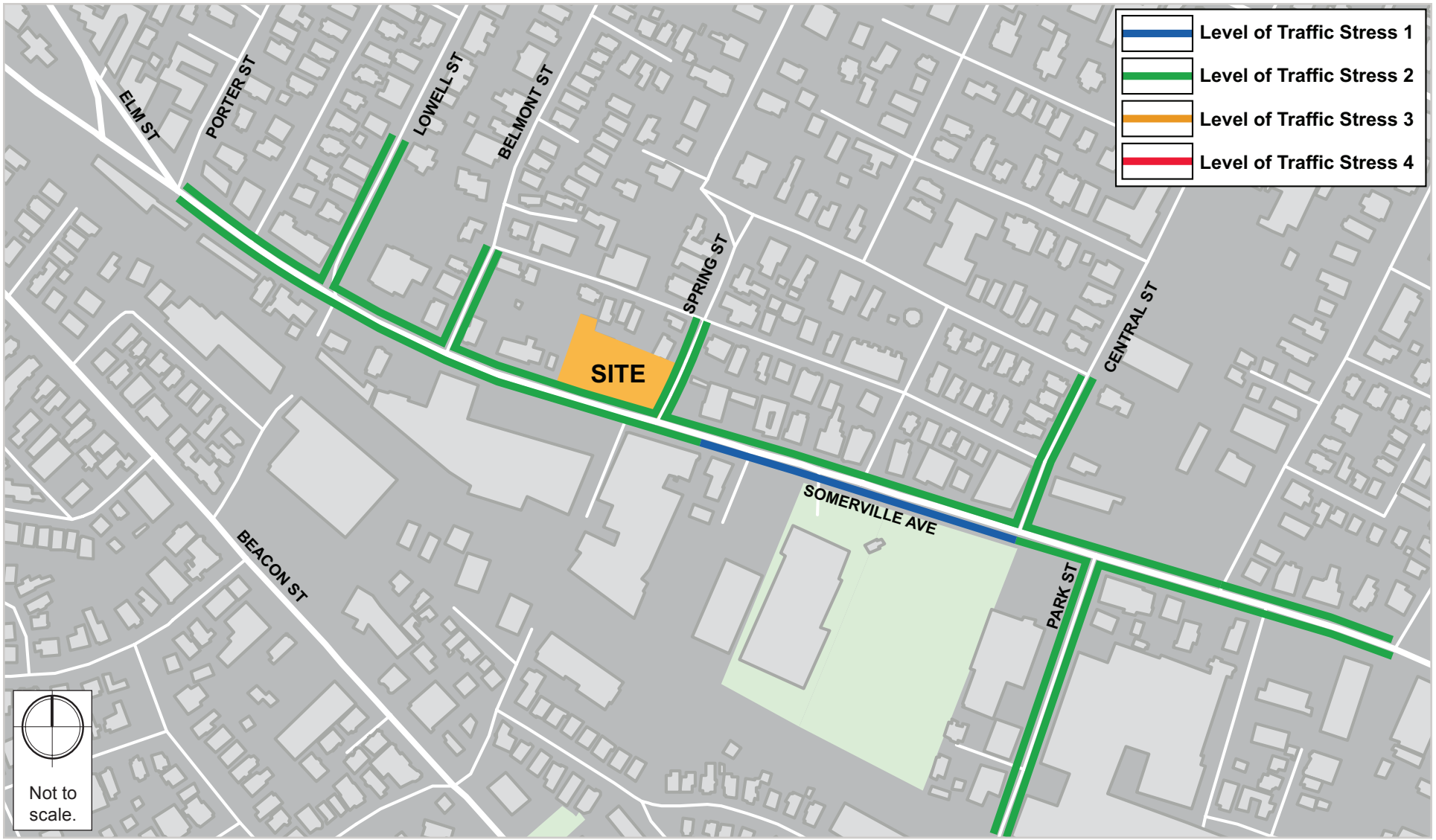
CROSSWALK ANALYSIS

PLTS was evaluated for the three unsignalized intersections and pedestrian delay was evaluated for the two 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 13**.

Table 13. PLTS at Unsignalized Intersections

Intersection and Crosswalk Location		PLTS	Travel Lanes Crossed	Posted Speed Limit
Somerville Avenue/ Belmont Street	North	1	1	25 mph
Somerville Avenue/ Spring Street	North	1	2	25 mph
Somerville Avenue/ Central Street	North	1	1	25 mph
	West	1	2	25 mph

Figure 22. ***Pedestrian Level of Traffic Stress – Existing***



The pedestrian delay for signalized crossings is based on the Transportation Research Board's 2000 Highway Capacity Manual (HCM) methodology and is presented in **Table 14**.

Table 14. 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)
Somerville Ave/ Lowell Street	East	40	12	12	Exclusive	20.1	20.1
	West	57	17	12	Exclusive	20.1	20.1
Somerville Avenue/ Park Street	East	42	12	12	Exclusive	42.5	48.9
	South	58	17	12	Exclusive	42.5	48.9

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 14**, the FDW times for two of the signalized crossings meet the minimum MUTCD requirement, and two of the crossings do not, based on a walking speed of 3.5 feet/second. 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 midday periods will have more frequent full traffic cycles. Pedestrian delay is relatively low at the Somerville Avenue/Lowell Street signal and around 40-50 seconds of delay at the Somerville Avenue/Park Street signal.

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 Somerville Avenue are proposed at a width of 13 feet, and those abutting the Project on Spring Street are also proposed at a width of 13 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 width from 10 feet to 13 feet on Somerville Avenue improves the score from PLTS 2 to PLTS 1.
- Increasing the sidewalk width from six feet to 13 feet on Spring Street improves the score from PLTS 2 to PLTS 1.

BUILD (2021) CONDITION (WITH MITIGATION)

The Project is proposing the following mitigation to crosswalks or sidewalks:

- Sidewalk improvements along Somerville Avenue on the north side of the road. This will include open space with street trees and a parklet with seating.
- A new, raised crosswalk across Somerville Avenue at Spring Street.

Construction of a raised crosswalk across Somerville Avenue at Spring Street creates an additional crosswalk with PLTS 1. All other crossings will remain at the same PLTS as the Existing (2021) Condition. The specific details of these improvements/mitigation are yet to be finalized; therefore, no changes in PLTS are presented under this condition.

FUTURE (2026) CONDITION

The Future (2026) Condition includes the improvements proposed in the Build (2021) Condition as well as changes to sidewalks and crossings proposed by other developments. Pedestrian improvements, to be completed by other projects, are expected to include the following:

- Sidewalk improvements along Somerville Avenue and Laurel Street adjacent to 515 Somerville Avenue to encourage pedestrian activity.

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 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 15** 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 15. 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. 50th percentile queues are not reported for unsignalized stop locations.
- 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 16 and **Table 17** present, respectively, the a.m. and p.m. peak hour capacity analysis for the study area intersections under each analysis condition: Existing (2021) Condition, Build (2021) Condition, and Future (2026) Condition. The detailed analysis reports are provided in **Appendix I**.

As a reminder, the following conditions were analyzed:

- **Existing (2021) Condition** represents the traffic volumes collected in 2017 that were adjusted to 2019 and used to represents 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.
- **Future (2026) 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 Project is not expected to cause impacts to vehicle traffic that require roadway improvements for vehicle operations.

Table 16. Capacity Analysis Summary, Weekday a.m. Peak Hour

Intersection/Movement	Existing (2021) Condition					Build (2021) Condition					Future (2026) 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 %
Signalized Intersections															
Somerville Ave./Lowell St.	**A**	**5.0**				**A**	**5.0**				**A**	**5.1**			
Somerville Ave EB left/thru	A	5.7	0.58	0	306	A	5.7	0.58	0	303	A	5.8	0.58	0	317
Somerville Ave WB thru/right	A	5.7	0.40	0	201	A	4.2	0.40	0	202	A	4.2	0.40	0	205
Somerville Ave./Park St.	**D**	**35.3**				**D**	**35.6**				**D**	**37.8**			
Somerville Ave EB left/thru	D	35.6	0.67	193	264	D	35.4	0.67	194	266	D	35.5	0.68	198	275
Somerville Ave EB right	C	24.7	0.18	33	64	C	24.6	0.18	33	64	C	24.1	0.17	33	64
Somerville Ave WB left	B	18.7	0.27	27	48	B	18.6	0.27	27	48	B	18.3	0.28	27	49
Somerville Ave WB thru/right	C	23.7	0.51	142	199	C	23.6	0.51	143	200	C	24.0	0.55	155	221
Park St. NB left/thru/right	D	53.5	0.88	~275	#370	D	55.0	0.88	~277	#373	E	63.2	0.92	~295	#379
519 driveway SB left/thru/right	C	24.4	0.01	8	22	C	24.6	0.03	8	22	C	25.1	0.03	9	22
Unsignalized Intersections															
Somerville Ave./Belmont St.															
Somerville Ave EB thru	A	0	0.25		0	A	0.0	0.25		0	A	0.0	0.26		0
Somerville Ave WB thru	A	0	0.24		0	A	0.0	0.24		0	A	0.0	0.24		0
Belmont St SB left/right	B	13.2	0.06		5	B	13.3	0.06		5	B	13.4	0.07		5
Somerville Ave./Spring St.															
Somerville Ave EB left/thru	A	0.1	0		0	A	0.1	0.00		0	A	0.1	0.00		0
Somerville Ave WB thru/right	A	0	0.24		0	A	0.0	0.24		0	A	0.0	0.24		0
Spring St SB left/right	C	17.7	0.28		28	C	17.9	0.29		29	C	18.2	0.29		30
Somerville Ave./Central Street															
Somerville Ave EB left/thru	A	2.2	0.08		6	A	2.2	0.08		6	A	2.2	0.08		7
Somerville Ave WB thru/right	A	0.1	0		0	A	0.1	0.00		0	A	0.1	0.00		0
driveway NB left/right	D	28.6	0.05		4	D	28.9	0.05		4	D	29.9	0.05		4

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.

Table 17. Capacity Analysis Summary, Weekday p.m. Peak Hour

Intersection/Movement	Existing (2021) Condition					Build (2021) Condition					Future (2026) 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 %
Signalized Intersections															
Somerville Ave./Lowell St.	**B**	**11.1**				**B**	**11.2**				**B**	**12.0**			
Somerville Ave EB left/thru	B	14.9	0.80	280	#499	B	15.1	0.80	282	#502	B	16.7	0.83	298	#520
Somerville Ave WB thru/right	A	7.0	0.55	189	303	A	7.1	0.55	191	306	A	7.2	0.56	197	315
Somerville Ave./Park St.	**E**	**69.4**				**E**	**71.2**				**E**	**78.2**			
Somerville Ave EB left/thru	D	39.6	0.63	211	291	D	39.4	0.63	212	292	D	41.7	0.68	220	311
Somerville Ave EB right	C	30.3	0.21	43	78	C	30.2	0.21	44	80	C	30.3	0.21	43	80
Somerville Ave WB left	B	17.5	0.31	28	m43	B	17.4	0.31	28	m43	B	16.9	0.32	29	m45
Somerville Ave WB thru/right	C	32.0	0.80	226	m283	C	31.8	0.80	226	m283	D	35.2	0.85	242	305
Park St. NB left/thru/right	F	148.3	1.19	~409	#651	F	154.4	1.20	~413	#656	F	176.3	1.25	~435	#660
519 driveway SB left/thru/right	C	28.0	0.02	5	19	C	28.2	0.02	5	19	C	29.1	0.02	6	19
Unsignalized Intersections															
Somerville Ave./Belmont St.															
Somerville Ave EB thru	A	0.0	0.25		0	A	0.0	0.25		0	A	0.0	0.26		0
Somerville Ave WB thru	A	0.0	0.34		0	A	0.0	0.34		0	A	0.0	0.34		0
Belmont St SB left/right	B	14.7	0.05		4	B	14.7	0.05		4	B	15.0	0.05		4
Somerville Ave./Spring St.															
Somerville Ave EB left/thru	A	0.0	0.00		0	A	0.1	0.00		0	A	0.1	0.00		0
Somerville Ave WB thru/right	A	0.0	0.31		0	A	0.0	0.31		0	A	0.0	0.32		0
Spring St SB left/right	C	18.3	0.28		29	C	19.2	0.32		33	C	19.8	0.33		35
Somerville Ave./Central Street															
Somerville Ave EB left/thru	A	3.5	0.13		0	A	3.5	0.13		12	A	3.6	0.14		12
Somerville Ave WB thru/right	A	0.1	0.00		35	A	0.1	0.00		0	A	0.1	0.00		0
driveway NB left/right	F	71.7	0.36		11	F	73.7	0.37		36	F	86.5	0.42		41

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.

EXISTING (2021) CONDITION CAPACITY ANALYSIS

As shown in **Table 16** and **Table 17**, under the Existing (2021) Condition, study area intersections and approaches operate at acceptable levels of service (LOS D or better) during the weekday a.m. and p.m. peak hours except the following.

SOMERVILLE AVENUE/PARK STREET

- The Park Street northbound approach operates at LOS D during the a.m. peak hour and LOS F during the p.m. peak hour.

The overall intersection operates at LOS D during the a.m. peak hour and LOS E during the p.m. peak hour.

SOMERVILLE AVENUE/CENTRAL STREET

- The northbound driveway out of the Walgreen's parking lot operates at LOS D during the a.m. peak hour and LOS F during the p.m. peak hour.

HSH performed morning and evening peak hour observations at the intersection. Observations of queues at the study area intersections were consistent with the analysis results. Queue diagrams are provided in **Appendix J**.

BUILD (2021) CONDITION CAPACITY ANALYSIS

As shown in **Table 16** and **Table 17**, under the Build (2021) Condition, no changes in LOS occur at any of the study area intersections or approaches during either the weekday a.m. or p.m. peak hours. Queue diagrams are provided in **Appendix J**.

FUTURE (2026) CONDITION CAPACITY ANALYSIS

As shown in **Table 16** and **Table 17**, under the Future (2026) Condition, all the study area intersections and approaches continue to operate at the same levels of service as in the Build (2021) Condition except the following:

SOMERVILLE AVENUE/PARK STREET

- The Park Street northbound approach worsens from LOS D to LOS E during the a.m. peak hour.
- The Somerville Avenue westbound through/right-turn approach worsens from LOS C to LOS D during the p.m. peak hour.

Transportation Mitigation

The Proponent will work with the City of Somerville to create a Project that improves the pedestrian environment, encourages transit and bicycle usage, and efficiently serves vehicle trips at the Project Site. The Proponent is committed to controlling the percentage of trips made to the Site by motor vehicle at 37% and will commit to control the percentage of trips made by vehicular travel at 25% or less by 2040.

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 Somerville Avenue and Spring Street. Improvements will include improved street lighting where necessary, planting of street trees, and addition of street furniture such as benches around the Site.

The Proponent is committed to implementing Mobility Management Plan (MMP) 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 them to implement the MMP measures to encourage the use of non-vehicular modes of travel. The following section identifies the TDM program to reduce the use of single occupancy vehicles.

Specific mitigation contributions are:

- ***Somerville Avenue bus stop improvement.*** The Proponent will commit to improve the accessibility and comfort of the MBTA bus stop in front of the Project Site on Somerville Avenue in coordination with the City and the MBTA. The existing stop is a far-side stop that serves MBTA Bus #83 and #87. Improvements will include a new ADA-compliant stop consistent with MBTA Bus Design Guidelines.
- ***Spring Street crosswalk.*** The Proponent will commit to installing a raised crosswalk across Somerville Avenue at Spring and Kent streets. The crosswalk will improve access from the north side of the street to the 594 Somerville Avenue bus stop and from the south side of the road to the bus stop at Spring Street. The crosswalk will also provide a much-needed connection across Somerville Avenue at this mid-point between the next-nearest crosswalks: Lowell Street, 550 feet to the west, and Beech Street, 500 feet to the east. The crosswalk will meet the design standards of the City, and design will be coordinated with City.
- ***Bicycle parking.*** The Project will provide four outdoor bicycle racks for eight bicycles and 10 covered, secure bicycle parking spaces in the garage.

Transportation Demand Management

The Proponent will provide the following TDM program:

- An on-site transportation coordinator for the tenants;
- An annual mobility management education meeting for employees;
- Posted mobility management information;
- Distributed mobility management information;
- Qualified transportation fringe benefits for employees; and
- A guaranteed ride home program for employees.

A MMP has been submitted to the City that provides detailed explanations of the MMP measures for the Project. 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.

Conclusion

The proposed 599 Somerville Avenue redevelopment is expected to have positive impacts to the transportation network with enhanced public realm features, added bicycle amenities, and off-street loading. As the Project is located midway between Porter Square and Union Square, pedestrian accommodations will be improved in the area by the addition of wider sidewalks, added street trees and a parklet. A new, raised crosswalk across Somerville Avenue will provide more comfortable and safe pedestrian connections to neighborhoods to the north and south as well as districts to the east and west.

The Project has committed to improving bus stop accessibility near the Site, relocating the on-street bicycle lane to become a separated, raised cycle track next to the sidewalk adjacent to the site, , and implementing robust TDM elements are expected to promote non-vehicular travel. The Project is committed to improving the Spring Hill neighborhood in a sustainable way through support of transit, walking, and cycling.

HOWARD STEIN HUDSON

Engineers + Planners

Appendix A

Traffic Count Data

Volume Report

Job 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Thursday, August 5, 2021

Time	Total		EB		WB		Time	Total		EB		WB	
0000	32		19		13		1200	186		93		93	
0015	24		9		15		1215	183		82		101	
0030	11		6		5		1230	207		97		110	
0045	19	86	9	43	10	43	1245	192	768	96	368	96	400
0100	18		11		7		1300	186		93		93	
0115	23		10		13		1315	182		84		98	
0130	9		3		6		1330	174		77		97	
0145	13	63	9	33	4	30	1345	186	728	93	347	93	381
0200	7		5		2		1400	176		81		95	
0215	3		1		2		1415	177		76		101	
0230	3		2		1		1430	151		58		93	
0245	2	15	1	9	1	6	1445	214	718	103	318	111	400
0300	2		1		1		1500	215		87		128	
0315	2		1		1		1515	175		72		103	
0330	5		2		3		1530	191		85		106	
0345	3	12	1	5	2	7	1545	200	781	72	316	128	465
0400	9		5		4		1600	185		95		90	
0415	4		3		1		1615	179		75		104	
0430	9		5		4		1630	186		81		105	
0445	13	35	6	19	7	16	1645	203	753	92	343	111	410
0500	28		14		14		1700	200		77		123	
0515	36		19		17		1715	213		92		121	
0530	40		18		22		1730	208		94		114	
0545	33	137	23	74	10	63	1745	223	844	94	357	129	487
0600	49		25		24		1800	235		102		133	
0615	65		36		29		1815	211		99		112	
0630	80		43		37		1830	181		73		108	
0645	99	293	51	155	48	138	1845	185	812	92	366	93	446
0700	106		57		49		1900	198		97		101	
0715	146		75		71		1915	148		68		80	
0730	143		72		71		1930	162		61		101	
0745	143	538	71	275	72	263	1945	149	657	59	285	90	372
0800	142		73		69		2000	121		42		79	
0815	175		83		92		2015	110		53		57	
0830	195		107		88		2030	110		44		66	
0845	177	689	102	365	75	324	2045	100	441	45	184	55	257
0900	193		92		101		2100	93		43		50	
0915	170		79		91		2115	92		42		50	
0930	143		80		63		2130	86		45		41	
0945	149	655	69	320	80	335	2145	88	359	30	160	58	199
1000	141		71		70		2200	74		31		43	
1015	139		73		66		2215	70		38		32	
1030	157		69		88		2230	69		31		38	
1045	148	585	72	285	76	300	2245	50	263	20	120	30	143
1100	150		80		70		2300	66		30		36	
1115	144		74		70		2315	39		25		14	
1130	168		83		85		2330	48		14		34	
1145	182	644	84	321	98	323	2345	44	197	23	92	21	105
							Total	**11073**		**5160**		**5913**	

Volume Report

Job 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Friday, August 6, 2021

Time	Total		EB		WB		Time	Total		EB		WB	
0000	33		16		17		1200	203		92		111	
0015	31		12		19		1215	203		92		111	
0030	24		15		9		1230	210		86		124	
0045	23	111	11	54	12	57	1245	205	821	97	367	108	454
0100	18		11		7		1300	193		93		100	
0115	15		7		8		1315	216		97		119	
0130	17		6		11		1330	206		97		109	
0145	14	64	6	30	8	34	1345	202	817	85	372	117	445
0200	11		6		5		1400	212		87		125	
0215	6		2		4		1415	204		84		120	
0230	5		1		4		1430	184		89		95	
0245	7	29	5	14	2	15	1445	189	789	76	336	113	453
0300	5		3		2		1500	220		93		127	
0315	1		0		1		1515	225		88		137	
0330	4		0		4		1530	177		88		89	
0345	7	17	4	7	3	10	1545	219	841	96	365	123	476
0400	6		5		1		1600	182		86		96	
0415	9		4		5		1615	226		93		133	
0430	6		3		3		1630	226		109		117	
0445	10	31	3	15	7	16	1645	225	859	102	390	123	469
0500	20		15		5		1700	250		112		138	
0515	24		10		14		1715	231		97		134	
0530	35		18		17		1730	239		112		127	
0545	37	116	19	62	18	54	1745	209	929	99	420	110	509
0600	59		29		30		1800	181		82		99	
0615	49		23		26		1815	209		100		109	
0630	100		48		52		1830	215		96		119	
0645	98	306	48	148	50	158	1845	187	792	80	358	107	434
0700	84		44		40		1900	184		85		99	
0715	145		71		74		1915	174		86		88	
0730	143		59		84		1930	180		79		101	
0745	154	526	66	240	88	286	1945	162	700	84	334	78	366
0800	159		76		83		2000	168		67		101	
0815	164		76		88		2015	141		62		79	
0830	193		108		85		2030	130		61		69	
0845	178	694	84	344	94	350	2045	120	559	55	245	65	314
0900	182		89		93		2100	126		47		79	
0915	204		111		93		2115	123		58		65	
0930	150		72		78		2130	115		70		45	
0945	188	724	96	368	92	356	2145	99	463	39	214	60	249
1000	170		85		85		2200	110		46		64	
1015	195		93		102		2215	84		40		44	
1030	175		78		97		2230	90		28		62	
1045	170	710	78	334	92	376	2245	77	361	26	140	51	221
1100	207		101		106		2300	89		39		50	
1115	157		67		90		2315	77		31		46	
1130	201		103		98		2330	64		25		39	
1145	200	765	98	369	102	396	2345	69	299	34	129	35	170
							Total	**12323**		**5655**		**6668**	

Volume Report

Job 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Saturday, August 7, 2021

Time	Total		EB		WB	
0000	47		24		23	
0015	53		24		29	
0030	52		23		29	
0045	38	190	23	94	15	96
0100	57		30		27	
0115	65		23		42	
0130	32		14		18	
0145	32	186	13	80	19	106
0200	26		10		16	
0215	30		17		13	
0230	10		3		7	
0245	13	79	7	37	6	42
0300	9		3		6	
0315	7		3		4	
0330	5		4		1	
0345	8	29	6	16	2	13
0400	4		3		1	
0415	3		0		3	
0430	9		7		2	
0445	5	21	0	10	5	11
0500	8		4		4	
0515	17		11		6	
0530	23		13		10	
0545	29	77	17	45	12	32
0600	26		10		16	
0615	34		14		20	
0630	42		21		21	
0645	48	150	25	70	23	80
0700	66		30		36	
0715	70		26		44	
0730	67		30		37	
0745	89	292	38	124	51	168
0800	72		32		40	
0815	106		49		57	
0830	116		45		71	
0845	135	429	53	179	82	250
0900	143		62		81	
0915	150		75		75	
0930	142		62		80	
0945	146	581	62	261	84	320
1000	146		60		86	
1015	174		86		88	
1030	164		73		91	
1045	174	658	80	299	94	359
1100	163		66		97	
1115	174		77		97	
1130	207		100		107	
1145	183	727	87	330	96	397

Time	Total		EB		WB	
1200	176		87		89	
1215	212		101		111	
1230	205		88		117	
1245	188	781	86	362	102	419
1300	179		88		91	
1315	167		78		89	
1330	170		67		103	
1345	198	714	101	334	97	380
1400	186		80		106	
1415	181		86		95	
1430	159		86		73	
1445	165	691	84	336	81	355
1500	160		74		86	
1515	166		79		87	
1530	172		82		90	
1545	163	661	81	316	82	345
1600	178		97		81	
1615	165		84		81	
1630	178		91		87	
1645	168	689	78	350	90	339
1700	176		99		77	
1715	167		85		82	
1730	161		75		86	
1745	155	659	74	333	81	326
1800	142		70		72	
1815	131		72		59	
1830	153		83		70	
1845	142	568	73	298	69	270
1900	173		82		91	
1915	151		74		77	
1930	150		72		78	
1945	122	596	64	292	58	304
2000	137		64		73	
2015	117		54		63	
2030	96		45		51	
2045	113	463	60	223	53	240
2100	99		51		48	
2115	106		47		59	
2130	89		39		50	
2145	92	386	44	181	48	205
2200	90		33		57	
2215	93		52		41	
2230	73		31		42	
2245	77	333	30	146	47	187
2300	82		36		46	
2315	79		34		45	
2330	63		25		38	
2345	59	283	26	121	33	162
Total	**10243**		**4837**		**5406**	

Classification Report

Job # 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street
Direction Eastbound
Thursday, August 5, 2021

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Class 1 Motorcycle	Class 2 Passenger Car	Class 3 Vans, Pick up Trucks	Class 4 Bus	Class 5 2 Axle 6 Tires	Class 6 3 Axle Unit	Class 7 4 Axles or more Unit	Class 8 3 or 4 Axle Trailer	Class 9 5 Axle Trailer	Class 10 6 Axle or more Trailer	Class 11 5 Axle or less Multi-Trailer	Class 12 6 Axle Multi-Trailer	Class 13 7 Axle or more Multi-Trailer
0000	43	1	33	6	2	1	0	0	0	0	0	0	0	0
0100	33	2	24	4	2	1	0	0	0	0	0	0	0	0
0200	9	0	8	1	0	0	0	0	0	0	0	0	0	0
0300	5	1	4	0	0	0	0	0	0	0	0	0	0	0
0400	19	0	15	2	0	0	0	1	0	1	0	0	0	0
0500	74	2	49	11	8	3	0	1	0	0	0	0	0	0
0600	155	6	115	25	6	2	0	0	0	1	0	0	0	0
0700	275	5	207	48	11	1	2	0	0	1	0	0	0	0
0800	365	10	314	21	9	4	6	1	0	0	0	0	0	0
0900	320	8	270	30	8	1	1	1	0	1	0	0	0	0
1000	285	2	227	40	4	8	4	0	0	0	0	0	0	0
1100	321	6	272	32	6	3	0	0	0	2	0	0	0	0
1200	368	4	323	30	4	5	2	0	0	0	0	0	0	0
1300	347	4	292	32	5	8	3	1	0	2	0	0	0	0
1400	318	10	284	19	4	0	0	0	0	1	0	0	0	0
1500	316	6	290	13	6	0	1	0	0	0	0	0	0	0
1600	343	6	315	14	3	1	2	2	0	0	0	0	0	0
1700	357	7	330	11	3	3	2	0	0	0	1	0	0	0
1800	366	8	334	18	5	0	0	1	0	0	0	0	0	0
1900	285	5	261	13	4	1	0	1	0	0	0	0	0	0
2000	184	5	172	4	3	0	0	0	0	0	0	0	0	0
2100	160	2	153	2	3	0	0	0	0	0	0	0	0	0
2200	120	7	109	1	1	1	1	0	0	0	0	0	0	0
2300	92	5	79	3	3	0	1	1	0	0	0	0	0	0
Total	**5160**	**112**	**4480**	**380**	**100**	**43**	**25**	**10**	**0**	**9**	**1**	**0**	**0**	**0**
	100.00%	**2.17%**	**86.82%**	**7.36%**	**1.94%**	**0.83%**	**0.48%**	**0.19%**	**0.00%**	**0.17%**	**0.02%**	**0.00%**	**0.00%**	**0.00%**

Classification Report

Job # 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street
Direction Eastbound
Friday, August 6, 2021

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Class 1 Motorcycle	Class 2 Passenger Car	Class 3 Vans, Pick up Trucks	Class 4 Bus	Class 5 2 Axle 6 Tires	Class 6 3 Axle Unit	Class 7 4 Axles or more Unit	Class 8 3 or 4 Axle Trailer	Class 9 5 Axle Trailer	Class 10 6 Axle or more Trailer	Class 11 5 Axle or less Multi-Trailer	Class 12 6 Axle Multi-Trailer	Class 13 7 Axle or more Multi-Trailer
0000	54	3	44	3	4	0	0	0	0	0	0	0	0	0
0100	30	0	21	7	2	0	0	0	0	0	0	0	0	0
0200	14	1	12	0	1	0	0	0	0	0	0	0	0	0
0300	7	1	5	0	0	0	1	0	0	0	0	0	0	0
0400	15	2	8	1	2	1	1	0	0	0	0	0	0	0
0500	62	2	38	13	6	1	0	0	0	2	0	0	0	0
0600	148	8	103	23	6	5	2	1	0	0	0	0	0	0
0700	240	10	190	29	7	2	1	1	0	0	0	0	0	0
0800	344	26	273	29	5	4	3	3	0	0	0	0	0	1
0900	368	18	303	34	9	0	2	1	1	0	0	0	0	0
1000	334	19	270	32	6	3	2	0	0	1	0	0	0	1
1100	369	17	314	26	7	4	1	0	0	0	0	0	0	0
1200	367	17	311	31	3	2	1	2	0	0	0	0	0	0
1300	372	15	314	30	7	5	1	0	0	0	0	0	0	0
1400	336	15	286	23	4	5	0	2	0	1	0	0	0	0
1500	365	17	318	20	6	1	1	2	0	0	0	0	0	0
1600	390	18	340	21	3	4	1	3	0	0	0	0	0	0
1700	420	28	367	16	6	1	0	1	0	0	0	0	0	1
1800	358	22	314	15	3	0	0	3	0	0	0	0	0	1
1900	334	22	299	9	2	1	1	0	0	0	0	0	0	0
2000	245	16	218	8	2	0	1	0	0	0	0	0	0	0
2100	214	12	193	6	3	0	0	0	0	0	0	0	0	0
2200	140	10	126	1	3	0	0	0	0	0	0	0	0	0
2300	129	4	118	4	3	0	0	0	0	0	0	0	0	0
Total	**5655**	**303**	**4785**	**381**	**100**	**39**	**19**	**19**	**1**	**4**	**0**	**0**	**0**	**4**
	100.00%	**5.36%**	**84.62%**	**6.74%**	**1.77%**	**0.69%**	**0.34%**	**0.34%**	**0.02%**	**0.07%**	**0.00%**	**0.00%**	**0.00%**	**0.07%**

Classification Report

Job # 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street
Direction Eastbound
Saturday, August 7, 2021

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
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Time	Total	Class 1 Motorcycle	Class 2 Passenger Car	Class 3 Vans, Pick up Trucks	Class 4 Bus	Class 5 2 Axle 6 Tires	Class 6 3 Axle Unit	Class 7 4 Axles or more Unit	Class 8 3 or 4 Axle Trailer	Class 9 5 Axle Trailer	Class 10 6 Axle or more Trailer	Class 11 5 Axle or less Multi-Trailer	Class 12 6 Axle Multi-Trailer	Class 13 7 Axle or more Multi-Trailer
0000	94	1	85	2	4	0	0	0	0	1	1	0	0	0
0100	80	2	73	4	1	0	0	0	0	0	0	0	0	0
0200	37	2	33	2	0	0	0	0	0	0	0	0	0	0
0300	16	1	14	1	0	0	0	0	0	0	0	0	0	0
0400	10	1	8	1	0	0	0	0	0	0	0	0	0	0
0500	45	0	33	5	5	1	0	0	0	1	0	0	0	0
0600	70	1	52	11	3	2	1	0	0	0	0	0	0	0
0700	124	1	94	19	4	1	4	1	0	0	0	0	0	0
0800	179	6	155	13	1	3	0	1	0	0	0	0	0	0
0900	261	11	226	17	4	2	1	0	0	0	0	0	0	0
1000	299	14	261	16	4	1	0	1	0	0	2	0	0	0
1100	330	11	300	11	6	1	0	1	0	0	0	0	0	0
1200	362	11	328	18	3	1	0	1	0	0	0	0	0	0
1300	334	19	294	13	5	2	0	0	0	0	0	0	0	1
1400	336	9	309	11	3	1	1	1	0	0	1	0	0	0
1500	316	14	278	12	4	4	2	2	0	0	0	0	0	0
1600	350	8	322	14	4	1	1	0	0	0	0	0	0	0
1700	333	11	309	7	3	1	1	1	0	0	0	0	0	0
1800	298	12	270	9	5	2	0	0	0	0	0	0	0	0
1900	292	11	271	6	4	0	0	0	0	0	0	0	0	0
2000	223	16	199	5	3	0	0	0	0	0	0	0	0	0
2100	181	2	169	8	2	0	0	0	0	0	0	0	0	0
2200	146	4	134	5	3	0	0	0	0	0	0	0	0	0
2300	121	1	111	5	4	0	0	0	0	0	0	0	0	0
Total	**4837**	**169**	**4328**	**215**	**75**	**23**	**11**	**9**	**0**	**2**	**4**	**0**	**0**	**1**
	100.00%	**3.49%**	**89.48%**	**4.44%**	**1.55%**	**0.48%**	**0.23%**	**0.19%**	**0.00%**	**0.04%**	**0.08%**	**0.00%**	**0.00%**	**0.02%**

Classification Report

Job # 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street
Direction Westbound
Thursday, August 5, 2021

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
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Time	Total	Class 1 Motorcycle	Class 2 Passenger Car	Class 3 Vans, Pick up Trucks	Class 4 Bus	Class 5 2 Axle 6 Tires	Class 6 3 Axle Unit	Class 7 4 Axles or more Unit	Class 8 3 or 4 Axle Trailer	Class 9 5 Axle Trailer	Class 10 6 Axle or more Trailer	Class 11 5 Axle or less Multi-Trailer	Class 12 6 Axle Multi-Trailer	Class 13 7 Axle or more Multi-Trailer
0000	43	2	34	1	3	1	2	0	0	0	0	0	0	0
0100	30	1	22	2	3	1	0	1	0	0	0	0	0	0
0200	6	0	6	0	0	0	0	0	0	0	0	0	0	0
0300	7	1	5	1	0	0	0	0	0	0	0	0	0	0
0400	16	1	12	1	1	0	0	0	0	0	1	0	0	0
0500	63	1	49	5	8	0	0	0	0	0	0	0	0	0
0600	138	4	104	20	6	0	3	0	0	1	0	0	0	0
0700	263	7	224	14	9	3	5	1	0	0	0	0	0	0
0800	324	5	286	17	6	5	4	1	0	0	0	0	0	0
0900	335	5	295	19	7	3	5	0	0	1	0	0	0	0
1000	300	2	271	17	4	1	5	0	0	0	0	0	0	0
1100	323	4	281	26	3	2	5	2	0	0	0	0	0	0
1200	400	6	362	19	5	3	4	1	0	0	0	0	0	0
1300	381	7	331	32	6	2	2	0	0	1	0	0	0	0
1400	400	13	350	28	5	2	2	0	0	0	0	0	0	0
1500	465	6	431	16	6	0	6	0	0	0	0	0	0	0
1600	410	13	373	15	3	2	3	1	0	0	0	0	0	0
1700	487	26	437	15	4	0	2	3	0	0	0	0	0	0
1800	446	16	411	10	4	1	2	2	0	0	0	0	0	0
1900	372	15	341	4	5	0	4	3	0	0	0	0	0	0
2000	257	13	236	4	2	0	2	0	0	0	0	0	0	0
2100	199	7	185	0	3	0	2	2	0	0	0	0	0	0
2200	143	9	124	5	2	0	3	0	0	0	0	0	0	0
2300	105	6	95	0	3	0	1	0	0	0	0	0	0	0
Total	**5913**	**170**	**5265**	**271**	**98**	**26**	**62**	**17**	**0**	**3**	**1**	**0**	**0**	**0**
	100.00%	**2.88%**	**89.04%**	**4.58%**	**1.66%**	**0.44%**	**1.05%**	**0.29%**	**0.00%**	**0.05%**	**0.02%**	**0.00%**	**0.00%**	**0.00%**

Classification Report

Job # 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street
Direction Westbound
Friday, August 6, 2021

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Class 1 Motorcycle	Class 2 Passenger Car	Class 3 Vans, Pick up Trucks	Class 4 Bus	Class 5 2 Axle 6 Tires	Class 6 3 Axle Unit	Class 7 4 Axles or more Unit	Class 8 3 or 4 Axle Trailer	Class 9 5 Axle Trailer	Class 10 6 Axle or more Trailer	Class 11 5 Axle or less Multi-Trailer	Class 12 6 Axle Multi-Trailer	Class 13 7 Axle or more Multi-Trailer
0000	57	5	48	0	3	0	1	0	0	0	0	0	0	0
0100	34	0	29	1	3	0	0	0	0	0	1	0	0	0
0200	15	0	14	1	0	0	0	0	0	0	0	0	0	0
0300	10	2	5	1	0	1	0	0	0	0	1	0	0	0
0400	16	0	9	3	3	0	1	0	0	0	0	0	0	0
0500	54	4	35	5	8	0	2	0	0	0	0	0	0	0
0600	158	10	122	11	9	0	4	1	0	1	0	0	0	0
0700	286	8	235	24	9	4	5	0	0	0	0	0	0	1
0800	350	19	293	23	6	2	4	3	0	0	0	0	0	0
0900	356	17	310	21	6	0	1	0	0	0	1	0	0	0
1000	376	15	310	37	8	2	4	0	0	0	0	0	0	0
1100	396	14	348	22	6	0	4	2	0	0	0	0	0	0
1200	454	20	389	30	4	1	7	3	0	0	0	0	0	0
1300	445	20	388	29	2	1	2	3	0	0	0	0	0	0
1400	453	29	376	37	4	0	6	1	0	0	0	0	0	0
1500	476	21	418	27	5	0	3	2	0	0	0	0	0	0
1600	469	28	402	25	8	2	3	1	0	0	0	0	0	0
1700	509	51	444	7	2	1	2	2	0	0	0	0	0	0
1800	434	42	372	10	4	0	3	3	0	0	0	0	0	0
1900	366	31	325	6	2	0	1	1	0	0	0	0	0	0
2000	314	16	276	10	3	0	5	3	0	1	0	0	0	0
2100	249	12	229	2	3	0	2	1	0	0	0	0	0	0
2200	221	15	193	2	6	0	4	0	0	1	0	0	0	0
2300	170	19	136	3	3	0	6	2	0	0	1	0	0	0
Total	**6668**	**398**	**5706**	**337**	**107**	**14**	**70**	**28**	**0**	**3**	**4**	**0**	**0**	**1**
	100.00%	**5.97%**	**85.57%**	**5.05%**	**1.60%**	**0.21%**	**1.05%**	**0.42%**	**0.00%**	**0.04%**	**0.06%**	**0.00%**	**0.00%**	**0.01%**

Classification Report

Job # 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street
Direction Westbound
Saturday, August 7, 2021

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Class 1 Motorcycle	Class 2 Passenger Car	Class 3 Vans, Pick up Trucks	Class 4 Bus	Class 5 2 Axle 6 Tires	Class 6 3 Axle Unit	Class 7 4 Axles or more Unit	Class 8 3 or 4 Axle Trailer	Class 9 5 Axle Trailer	Class 10 6 Axle or more Trailer	Class 11 5 Axle or less Multi-Trailer	Class 12 6 Axle Multi-Trailer	Class 13 7 Axle or more Multi-Trailer
0000	96	1	87	1	3	0	2	2	0	0	0	0	0	0
0100	106	7	90	4	3	1	0	1	0	0	0	0	0	0
0200	42	7	32	3	0	0	0	0	0	0	0	0	0	0
0300	13	2	10	0	0	1	0	0	0	0	0	0	0	0
0400	11	0	8	1	1	0	1	0	0	0	0	0	0	0
0500	32	3	22	5	2	0	0	0	0	0	0	0	0	0
0600	80	3	64	6	5	1	1	0	0	0	0	0	0	0
0700	168	8	137	14	7	0	1	1	0	0	0	0	0	0
0800	250	21	204	17	4	1	1	1	0	1	0	0	0	0
0900	320	25	269	11	4	2	5	4	0	0	0	0	0	0
1000	359	15	314	14	7	2	6	1	0	0	0	0	0	0
1100	397	18	351	10	7	0	5	4	0	2	0	0	0	0
1200	419	17	384	10	4	1	3	0	0	0	0	0	0	0
1300	380	25	332	12	5	0	3	2	0	1	0	0	0	0
1400	355	29	309	9	3	0	4	1	0	0	0	0	0	0
1500	345	12	314	12	4	0	1	2	0	0	0	0	0	0
1600	339	18	306	6	4	1	3	1	0	0	0	0	0	0
1700	326	18	285	5	4	2	6	6	0	0	0	0	0	0
1800	270	12	245	5	4	0	3	1	0	0	0	0	0	0
1900	304	8	292	3	1	0	0	0	0	0	0	0	0	0
2000	240	6	225	4	1	0	2	2	0	0	0	0	0	0
2100	205	5	188	4	4	0	3	1	0	0	0	0	0	0
2200	187	12	167	2	3	0	2	1	0	0	0	0	0	0
2300	162	5	146	4	2	1	1	3	0	0	0	0	0	0
Total	**5406**	**277**	**4781**	**162**	**82**	**13**	**53**	**34**	**0**	**4**	**0**	**0**	**0**	**0**
	100.00%	**5.12%**	**88.44%**	**3.00%**	**1.52%**	**0.24%**	**0.98%**	**0.63%**	**0.00%**	**0.07%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Speed Report

Job 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street
Dir Eastbound
Thursday, August 5, 2021

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Speed Bins (mph)															
		0 5	5 10	10 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80
0000	43	0	1	2	3	3	19	13	2	0	0	0	0	0	0	0	0
0100	33	0	1	2	1	2	13	8	4	2	0	0	0	0	0	0	0
0200	9	0	0	0	0	2	2	3	1	1	0	0	0	0	0	0	0
0300	5	0	0	0	0	1	1	2	1	0	0	0	0	0	0	0	0
0400	19	0	1	1	0	3	6	1	6	1	0	0	0	0	0	0	0
0500	74	0	2	1	2	3	24	23	17	2	0	0	0	0	0	0	0
0600	155	0	1	3	7	30	55	50	8	1	0	0	0	0	0	0	0
0700	275	0	3	7	24	62	130	39	10	0	0	0	0	0	0	0	0
0800	365	1	18	40	103	118	71	13	1	0	0	0	0	0	0	0	0
0900	320	0	11	31	57	129	78	13	1	0	0	0	0	0	0	0	0
1000	285	1	12	16	43	101	91	16	3	2	0	0	0	0	0	0	0
1100	321	3	15	24	53	134	76	16	0	0	0	0	0	0	0	0	0
1200	368	1	15	25	53	150	105	18	1	0	0	0	0	0	0	0	0
1300	347	0	9	22	37	153	109	14	3	0	0	0	0	0	0	0	0
1400	318	0	9	26	37	126	92	22	5	1	0	0	0	0	0	0	0
1500	316	1	6	21	55	141	77	13	2	0	0	0	0	0	0	0	0
1600	343	0	4	20	61	147	91	19	1	0	0	0	0	0	0	0	0
1700	357	0	14	34	54	142	100	12	1	0	0	0	0	0	0	0	0
1800	366	0	9	11	55	161	110	17	2	1	0	0	0	0	0	0	0
1900	285	0	6	20	17	112	113	17	0	0	0	0	0	0	0	0	0
2000	184	0	9	8	17	59	71	17	2	1	0	0	0	0	0	0	0
2100	160	0	2	4	9	51	69	23	2	0	0	0	0	0	0	0	0
2200	120	0	3	11	10	29	45	19	2	1	0	0	0	0	0	0	0
2300	92	0	10	13	9	15	23	18	3	1	0	0	0	0	0	0	0
Total	**5160**	**7**	**161**	**342**	**707**	**1874**	**1571**	**406**	**78**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	100.00%	**0.14%**	**3.12%**	**6.63%**	**13.70%**	**36.32%**	**30.45%**	**7.87%**	**1.51%**	**0.27%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Maximum = 43.7 mph, Minimum = 3.7 mph, Mean = 23.3 mph
85% Speed = 28.58 mph, 95% Speed = 31.93 mph, Median = 23.88 mph
10 mph Pace = 19 - 29, Number in Pace = 3490 (67.64%)
Variance = 34.87, Standard Deviation = 5.90 mph

Speed Report

Job 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street
Dir Eastbound
Friday, August 6, 2021

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Speed Bins (mph)															
		0 5	5 10	10 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80
0000	54	0	3	5	1	15	19	9	2	0	0	0	0	0	0	0	0
0100	30	0	1	3	0	2	13	8	2	1	0	0	0	0	0	0	0
0200	14	0	2	0	0	4	3	3	1	1	0	0	0	0	0	0	0
0300	7	0	0	1	0	1	3	2	0	0	0	0	0	0	0	0	0
0400	15	0	1	1	0	2	3	4	4	0	0	0	0	0	0	0	0
0500	62	0	0	2	1	7	18	24	8	2	0	0	0	0	0	0	0
0600	148	0	2	1	5	29	64	36	9	1	1	0	0	0	0	0	0
0700	240	0	5	7	16	52	112	43	5	0	0	0	0	0	0	0	0
0800	344	0	7	33	38	131	108	23	3	1	0	0	0	0	0	0	0
0900	368	0	8	23	79	158	86	13	1	0	0	0	0	0	0	0	0
1000	334	0	9	24	54	115	113	15	3	1	0	0	0	0	0	0	0
1100	369	0	21	29	58	136	107	17	1	0	0	0	0	0	0	0	0
1200	367	1	24	33	42	142	110	9	5	1	0	0	0	0	0	0	0
1300	372	0	17	30	62	153	92	16	2	0	0	0	0	0	0	0	0
1400	336	0	9	23	51	144	90	16	2	1	0	0	0	0	0	0	0
1500	365	0	11	42	67	122	103	14	5	1	0	0	0	0	0	0	0
1600	390	0	7	35	55	169	106	15	3	0	0	0	0	0	0	0	0
1700	420	0	21	44	73	181	86	12	3	0	0	0	0	0	0	0	0
1800	358	0	9	34	49	132	113	20	1	0	0	0	0	0	0	0	0
1900	334	0	6	30	48	118	111	16	3	2	0	0	0	0	0	0	0
2000	245	0	10	26	22	91	80	15	1	0	0	0	0	0	0	0	0
2100	214	0	19	11	9	93	70	11	0	0	1	0	0	0	0	0	0
2200	140	0	10	7	10	41	41	25	4	2	0	0	0	0	0	0	0
2300	129	0	12	5	7	46	36	18	4	1	0	0	0	0	0	0	0
Total	**5655**	**1**	**214**	**449**	**747**	**2084**	**1687**	**384**	**72**	**15**	**2**	**0**	**0**	**0**	**0**	**0**	**0**
	100.00%	**0.02%**	**3.78%**	**7.94%**	**13.21%**	**36.85%**	**29.83%**	**6.79%**	**1.27%**	**0.27%**	**0.04%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Maximum = 46.4 mph, Minimum = 4.3 mph, Mean = 22.9 mph
85% Speed = 28.35 mph, 95% Speed = 31.48 mph, Median = 23.66 mph
10 mph Pace = 19 - 29, Number in Pace = 3835 (67.82%)
Variance = 35.91, Standard Deviation = 5.99 mph

Speed Report

Job 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street
Dir Eastbound
Saturday, August 7, 2021

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Speed Bins (mph)															
		0 5	5 10	10 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80
0000	94	0	11	10	3	19	40	5	6	0	0	0	0	0	0	0	0
0100	80	0	17	10	8	17	20	6	2	0	0	0	0	0	0	0	0
0200	37	0	3	4	4	6	9	10	1	0	0	0	0	0	0	0	0
0300	16	0	0	1	0	1	4	9	1	0	0	0	0	0	0	0	0
0400	10	0	1	1	0	3	3	1	0	1	0	0	0	0	0	0	0
0500	45	0	0	0	1	4	21	9	7	3	0	0	0	0	0	0	0
0600	70	0	0	1	4	4	31	24	4	2	0	0	0	0	0	0	0
0700	124	0	1	2	1	28	48	32	11	1	0	0	0	0	0	0	0
0800	179	0	1	13	13	55	69	25	3	0	0	0	0	0	0	0	0
0900	261	0	8	17	32	94	96	12	2	0	0	0	0	0	0	0	0
1000	299	0	11	23	41	117	98	8	1	0	0	0	0	0	0	0	0
1100	330	1	11	24	45	143	88	18	0	0	0	0	0	0	0	0	0
1200	362	0	20	36	72	140	72	20	1	1	0	0	0	0	0	0	0
1300	334	1	13	33	51	125	87	21	3	0	0	0	0	0	0	0	0
1400	336	0	11	20	45	139	94	22	5	0	0	0	0	0	0	0	0
1500	316	0	14	28	31	123	89	28	3	0	0	0	0	0	0	0	0
1600	350	0	20	22	62	124	103	18	1	0	0	0	0	0	0	0	0
1700	333	1	13	23	23	136	109	26	2	0	0	0	0	0	0	0	0
1800	298	0	7	16	39	104	96	34	1	1	0	0	0	0	0	0	0
1900	292	0	15	18	35	115	85	24	0	0	0	0	0	0	0	0	0
2000	223	1	11	30	26	93	46	14	2	0	0	0	0	0	0	0	0
2100	181	2	5	6	20	66	69	10	3	0	0	0	0	0	0	0	0
2200	146	1	8	15	27	45	36	13	1	0	0	0	0	0	0	0	0
2300	121	1	21	14	27	33	23	1	1	0	0	0	0	0	0	0	0
Total	**4837**	**8**	**222**	**367**	**610**	**1734**	**1436**	**390**	**61**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	100.00%	**0.17%**	**4.59%**	**7.59%**	**12.61%**	**35.85%**	**29.69%**	**8.06%**	**1.26%**	**0.19%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Maximum = 43.7 mph, Minimum = 3.1 mph, Mean = 22.9 mph
85% Speed = 28.58 mph, 95% Speed = 31.88 mph, Median = 23.71 mph
10 mph Pace = 19 - 29, Number in Pace = 3205 (66.26%)
Variance = 38.85, Standard Deviation = 6.23 mph

Speed Report

Job 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street
Dir Westbound
Thursday, August 5, 2021

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Speed Bins (mph)															
		0 5	5 10	10 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80
0000	43	0	1	5	0	10	19	5	2	1	0	0	0	0	0	0	0
0100	30	0	0	1	1	5	9	10	4	0	0	0	0	0	0	0	0
0200	6	0	0	2	0	0	2	2	0	0	0	0	0	0	0	0	0
0300	7	0	1	0	0	1	0	4	0	1	0	0	0	0	0	0	0
0400	16	0	0	2	1	1	7	5	0	0	0	0	0	0	0	0	0
0500	63	0	1	5	1	8	28	15	3	2	0	0	0	0	0	0	0
0600	138	0	3	11	5	36	66	15	2	0	0	0	0	0	0	0	0
0700	263	0	11	23	20	89	102	17	1	0	0	0	0	0	0	0	0
0800	324	1	13	42	91	100	69	6	2	0	0	0	0	0	0	0	0
0900	335	0	7	26	84	164	49	5	0	0	0	0	0	0	0	0	0
1000	300	1	10	32	44	134	71	6	1	1	0	0	0	0	0	0	0
1100	323	1	11	51	47	174	38	1	0	0	0	0	0	0	0	0	0
1200	400	1	9	36	67	205	79	3	0	0	0	0	0	0	0	0	0
1300	381	0	6	29	67	183	84	11	1	0	0	0	0	0	0	0	0
1400	400	0	9	34	61	201	92	3	0	0	0	0	0	0	0	0	0
1500	465	1	11	45	92	243	69	4	0	0	0	0	0	0	0	0	0
1600	410	0	8	31	61	186	113	11	0	0	0	0	0	0	0	0	0
1700	487	1	12	60	99	216	94	5	0	0	0	0	0	0	0	0	0
1800	446	1	10	49	88	203	89	6	0	0	0	0	0	0	0	0	0
1900	372	0	12	44	60	170	81	5	0	0	0	0	0	0	0	0	0
2000	257	0	6	27	29	103	86	6	0	0	0	0	0	0	0	0	0
2100	199	0	3	11	9	84	84	7	1	0	0	0	0	0	0	0	0
2200	143	0	7	21	9	45	47	9	5	0	0	0	0	0	0	0	0
2300	105	1	3	16	7	37	33	7	1	0	0	0	0	0	0	0	0
Total	**5913**	**8**	**154**	**603**	**943**	**2598**	**1411**	**168**	**23**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	100.00%	**0.14%**	**2.60%**	**10.20%**	**15.95%**	**43.94%**	**23.86%**	**2.84%**	**0.39%**	**0.08%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Maximum = 43.7 mph, Minimum = 2.4 mph, Mean = 21.8 mph
85% Speed = 26.73 mph, 95% Speed = 28.97 mph, Median = 22.59 mph
10 mph Pace = 18 - 28, Number in Pace = 4307 (72.84%)
Variance = 28.62, Standard Deviation = 5.35 mph

Speed Report

Job 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street
Dir Westbound
Friday, August 6, 2021

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Speed Bins (mph)															
		0 5	5 10	10 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80
0000	57	0	1	6	7	15	15	13	0	0	0	0	0	0	0	0	0
0100	34	0	0	1	0	12	11	10	0	0	0	0	0	0	0	0	0
0200	15	0	0	0	1	1	9	4	0	0	0	0	0	0	0	0	0
0300	10	0	0	2	2	2	2	1	1	0	0	0	0	0	0	0	0
0400	16	0	0	2	0	2	6	4	2	0	0	0	0	0	0	0	0
0500	54	1	0	6	4	9	25	4	3	2	0	0	0	0	0	0	0
0600	158	0	5	23	6	47	60	15	2	0	0	0	0	0	0	0	0
0700	286	0	7	25	28	119	97	10	0	0	0	0	0	0	0	0	0
0800	350	3	16	38	53	166	64	10	0	0	0	0	0	0	0	0	0
0900	356	0	12	23	77	183	57	3	1	0	0	0	0	0	0	0	0
1000	376	0	13	42	49	185	80	7	0	0	0	0	0	0	0	0	0
1100	396	1	16	38	94	181	57	8	1	0	0	0	0	0	0	0	0
1200	454	0	21	59	90	189	82	10	1	2	0	0	0	0	0	0	0
1300	445	1	19	54	77	204	85	5	0	0	0	0	0	0	0	0	0
1400	453	0	15	57	94	200	79	8	0	0	0	0	0	0	0	0	0
1500	476	1	14	46	94	221	97	3	0	0	0	0	0	0	0	0	0
1600	469	1	13	53	89	221	90	2	0	0	0	0	0	0	0	0	0
1700	509	0	10	69	99	241	79	10	1	0	0	0	0	0	0	0	0
1800	434	0	14	70	56	192	95	7	0	0	0	0	0	0	0	0	0
1900	366	0	9	44	58	191	59	4	1	0	0	0	0	0	0	0	0
2000	314	0	5	36	54	157	61	1	0	0	0	0	0	0	0	0	0
2100	249	2	14	23	26	121	58	5	0	0	0	0	0	0	0	0	0
2200	221	0	14	26	36	79	57	8	1	0	0	0	0	0	0	0	0
2300	170	1	6	45	23	52	36	6	1	0	0	0	0	0	0	0	0
Total	**6668**	**11**	**224**	**788**	**1117**	**2990**	**1361**	**158**	**15**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	100.00%	**0.16%**	**3.36%**	**11.82%**	**16.75%**	**44.84%**	**20.41%**	**2.37%**	**0.22%**	**0.06%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Maximum = 44.9 mph, Minimum = 0.6 mph, Mean = 21.3 mph
85% Speed = 26.15 mph, 95% Speed = 28.69 mph, Median = 22.20 mph
10 mph Pace = 18 - 28, Number in Pace = 4725 (70.86%)
Variance = 29.10, Standard Deviation = 5.39 mph

Speed Report

Job 752_2C5_HSH_ATR
Area Somerville, MA
Location Somerville Avenue, west of Spring Street
Dir Westbound
Saturday, August 7, 2021

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

Time	Total	Speed Bins (mph)															
		0 5	5 10	10 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 75	75 80
0000	96	0	4	6	16	34	28	6	1	1	0	0	0	0	0	0	0
0100	106	1	5	15	7	35	32	11	0	0	0	0	0	0	0	0	0
0200	42	0	2	7	5	10	16	2	0	0	0	0	0	0	0	0	0
0300	13	0	1	1	0	1	6	4	0	0	0	0	0	0	0	0	0
0400	11	0	0	0	0	2	3	5	1	0	0	0	0	0	0	0	0
0500	32	0	0	6	1	6	9	7	3	0	0	0	0	0	0	0	0
0600	80	0	2	5	2	17	32	20	2	0	0	0	0	0	0	0	0
0700	168	1	2	19	3	72	55	15	0	1	0	0	0	0	0	0	0
0800	250	0	8	29	31	102	75	4	1	0	0	0	0	0	0	0	0
0900	320	0	11	53	42	136	71	6	1	0	0	0	0	0	0	0	0
1000	359	1	13	44	55	173	69	3	1	0	0	0	0	0	0	0	0
1100	397	0	9	57	89	184	57	1	0	0	0	0	0	0	0	0	0
1200	419	0	20	58	93	164	76	8	0	0	0	0	0	0	0	0	0
1300	380	2	16	50	66	186	54	6	0	0	0	0	0	0	0	0	0
1400	355	1	13	52	57	143	80	8	1	0	0	0	0	0	0	0	0
1500	345	0	10	35	45	175	68	11	1	0	0	0	0	0	0	0	0
1600	339	0	12	46	51	152	68	7	3	0	0	0	0	0	0	0	0
1700	326	2	14	52	36	140	73	9	0	0	0	0	0	0	0	0	0
1800	270	1	11	25	44	103	78	7	1	0	0	0	0	0	0	0	0
1900	304	0	7	25	28	158	77	7	2	0	0	0	0	0	0	0	0
2000	240	0	14	26	24	105	66	4	1	0	0	0	0	0	0	0	0
2100	205	2	22	22	30	73	48	8	0	0	0	0	0	0	0	0	0
2200	187	3	20	47	39	49	24	4	1	0	0	0	0	0	0	0	0
2300	162	1	27	25	20	48	33	5	3	0	0	0	0	0	0	0	0
Total	**5406**	**15**	**243**	**705**	**784**	**2268**	**1198**	**168**	**23**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	100.00%	**0.28%**	**4.50%**	**13.04%**	**14.50%**	**41.95%**	**22.16%**	**3.11%**	**0.43%**	**0.04%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

Maximum = 43.9 mph, Minimum = 0.6 mph, Mean = 21.2 mph
85% Speed = 26.51 mph, 95% Speed = 29.19 mph, Median = 22.43 mph
10 mph Pace = 18 - 28, Number in Pace = 3682 (68.11%)
Variance = 35.31, Standard Deviation = 5.94 mph

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 1
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Lowell Street & Sacramento Street
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Sacramento Street Northbound				Lowell Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:30 AM	0	0	0	0	0	0	0	0	0	12	69	0	0	0	68	6
7:45 AM	0	0	0	0	0	0	0	0	0	22	68	0	0	0	72	6
8:00 AM	0	0	0	0	0	0	0	0	0	11	66	0	0	0	61	14
8:15 AM	0	0	0	0	0	0	0	0	0	12	93	0	0	0	70	15
8:30 AM	0	0	0	0	0	0	0	0	0	15	102	0	0	0	85	10
8:45 AM	0	0	0	0	0	0	0	0	0	21	91	0	0	0	61	10
9:00 AM	0	0	0	0	0	0	0	0	0	18	96	0	0	0	86	16
9:15 AM	0	0	0	0	0	0	0	0	0	13	77	0	0	0	91	11
4:30 PM	0	0	0	0	0	0	0	0	0	24	79	0	0	0	88	24
4:45 PM	0	0	0	0	0	0	0	0	0	32	98	0	0	0	88	28
5:00 PM	0	0	0	0	0	0	0	0	0	35	79	0	0	0	113	10
5:15 PM	0	0	0	0	0	0	0	0	0	36	83	0	0	0	106	29
5:30 PM	0	0	0	0	0	0	0	0	0	17	90	0	0	0	93	18
5:45 PM	0	0	0	0	0	0	0	0	0	39	101	0	0	0	99	22
6:00 PM	0	0	0	0	0	0	0	0	0	34	94	0	0	0	106	29
6:15 PM	0	0	0	0	0	0	0	0	0	21	93	0	0	0	88	32

AM PEAK HOUR 8:30 AM to 9:30 AM	Sacramento Street Northbound				Lowell Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**67**	**366**	**0**	**0**	**0**	**323**	**47**
PHF	**0.00**				**0.00**				**0.93**				**0.91**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**4.5%**	**5.2%**	**0.0%**	**0.0%**	**0.0%**	**5.0%**	**0.0%**

PM PEAK HOUR 5:00 PM to 6:00 PM	Sacramento Street Northbound				Lowell Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**127**	**353**	**0**	**0**	**0**	**411**	**79**
PHF	**0.00**				**0.00**				**0.86**				**0.91**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.5%**	**0.0%**	**0.0%**	**0.0%**	**1.7%**	**0.0%**

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 1
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Lowell Street & Sacramento Street
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
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HEAVY VEHICLES

	Sacramento Street Northbound				Lowell Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	1
7:45 AM	0	0	0	0	0	0	0	0	0	1	4	0	0	0	3	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	3	1
8:30 AM	0	0	0	0	0	0	0	0	0	2	6	0	0	0	4	0
8:45 AM	0	0	0	0	0	0	0	0	0	1	4	0	0	0	1	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	4	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	7	0
4:30 PM	0	0	0	0	0	0	0	0	0	1	1	0	0	0	3	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0

AM PEAK HOUR 8:30 AM to 9:30 AM	Sacramento Street Northbound				Lowell Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**19**	**0**	**0**	**0**	**16**	**0**
PHF	**0.00**				**0.00**				**0.69**				**0.57**			

PM PEAK HOUR 4:30 PM to 5:30 PM	Sacramento Street Northbound				Lowell Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**8**	**0**	**0**	**0**	**9**	**1**
PHF	**0.00**				**0.00**				**0.75**				**0.83**			

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 1
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Lowell Street & Sacramento Street
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

BOSTON TRAFFIC DATA
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PEDESTRIANS & BICYCLES

	Sacramento Street Northbound				Lowell Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:30 AM	0	0	0	2	0	0	0	7	0	1	0	1	0	1	0	0
7:45 AM	0	0	0	3	0	0	0	11	0	3	0	3	0	0	0	2
8:00 AM	0	0	0	4	0	0	0	3	0	3	0	5	0	1	0	3
8:15 AM	0	0	0	7	0	0	0	5	0	3	0	5	0	2	0	7
8:30 AM	0	0	0	4	0	0	0	8	0	4	0	5	0	1	0	2
8:45 AM	0	0	0	5	0	0	0	2	0	4	0	6	0	1	0	6
9:00 AM	0	0	0	3	0	0	0	2	0	9	0	6	0	0	0	3
9:15 AM	0	0	0	2	0	0	0	3	0	2	0	0	0	2	0	4
4:30 PM	0	0	0	2	0	0	0	7	0	3	0	1	0	3	0	4
4:45 PM	0	0	0	7	0	0	0	13	0	6	0	3	0	3	0	9
5:00 PM	0	0	0	6	0	0	0	11	0	7	0	7	0	10	0	13
5:15 PM	0	0	0	2	0	0	0	17	0	3	0	6	0	12	0	11
5:30 PM	0	0	0	7	0	0	0	20	0	4	0	10	0	8	1	10
5:45 PM	0	0	0	12	0	0	0	24	0	7	0	6	0	4	2	9
6:00 PM	0	0	0	9	0	0	0	14	1	9	0	11	0	8	0	13
6:15 PM	0	0	0	6	0	0	0	20	1	2	0	4	0	11	0	3

AM PEAK HOUR 8:30 AM to 9:30 AM	Sacramento Street Northbound				Lowell Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	14	0	0	0	15	0	19	0	17	0	4	0	15

PM PEAK HOUR 5:00 PM to 6:00 PM	Sacramento Street Northbound				Lowell Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	27	0	0	0	72	0	21	0	29	0	34	3	43

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 2
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Belmont Street
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Northbound				Belmont Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:30 AM	0	0	0	0	0	0	0	3	0	0	76	0	0	0	70	0
7:45 AM	0	0	0	0	0	1	0	7	0	0	70	0	0	0	71	0
8:00 AM	0	0	0	0	0	3	0	3	1	0	68	0	0	0	70	0
8:15 AM	0	0	0	0	0	2	0	2	0	0	88	0	0	0	83	0
8:30 AM	0	0	0	0	0	1	0	5	0	0	104	0	0	0	87	0
8:45 AM	0	0	0	0	0	2	0	3	0	0	93	0	0	0	80	0
9:00 AM	0	0	0	0	0	3	0	3	0	0	94	0	0	0	93	0
9:15 AM	0	0	0	0	0	2	0	6	0	0	75	0	0	0	92	0
4:30 PM	0	0	0	0	0	1	0	8	0	0	79	0	0	0	103	0
4:45 PM	0	0	0	0	0	1	0	6	0	0	98	0	0	0	115	0
5:00 PM	0	0	0	0	0	3	0	1	0	0	84	0	0	0	124	0
5:15 PM	0	0	0	0	0	1	0	4	0	0	85	0	0	0	127	0
5:30 PM	0	0	0	0	0	0	0	3	1	0	92	0	1	0	110	0
5:45 PM	0	0	0	0	0	0	0	3	0	0	96	0	0	0	125	0
6:00 PM	0	0	0	0	0	1	0	1	0	0	100	0	0	0	133	0
6:15 PM	0	0	0	0	0	4	0	3	0	0	96	0	0	0	117	0

AM PEAK HOUR 8:15 AM to 9:15 AM	Northbound				Belmont Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**8**	**0**	**13**	**0**	**0**	**379**	**0**	**0**	**0**	**343**	**0**
PHF	**0.00**				**0.88**				**0.91**				**0.92**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5.0%**	**0.0%**	**0.0%**	**0.0%**	**3.8%**	**0.0%**

PM PEAK HOUR 5:00 PM to 6:00 PM	Northbound				Belmont Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**4**	**0**	**11**	**1**	**0**	**357**	**0**	**1**	**0**	**486**	**0**
PHF	**0.00**				**0.75**				**0.93**				**0.96**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.2%**	**0.0%**	**0.0%**	**0.0%**	**1.4%**	**0.0%**

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 2
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Belmont Street
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

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HEAVY VEHICLES

	Northbound				Belmont Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:30 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	4	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	5	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	4	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	7	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0

AM PEAK HOUR 8:30 AM to 9:30 AM	Northbound				Belmont Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**20**	**0**	**0**	**0**	**17**	**0**
PHF	**0.00**				**0.00**				**0.83**				**0.61**			

PM PEAK HOUR 4:30 PM to 5:30 PM	Northbound				Belmont Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**10**	**0**
PHF	**0.00**				**0.00**				**0.67**				**0.83**			

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 2
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Belmont Street
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

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PEDESTRIANS & BICYCLES

	Northbound				Belmont Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:30 AM	0	0	0	0	1	0	0	3	0	2	0	1	0	1	0	1
7:45 AM	0	0	0	0	0	0	0	5	0	4	0	1	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	3	0	4	0	1	0	1	0	0
8:15 AM	0	0	0	0	0	0	1	7	0	3	0	0	0	1	0	0
8:30 AM	0	0	0	0	0	0	0	7	0	4	0	0	0	1	0	0
8:45 AM	0	0	0	0	0	0	0	8	0	4	0	0	0	2	0	0
9:00 AM	0	0	0	0	0	0	0	4	0	9	0	0	0	1	0	0
9:15 AM	0	0	0	0	0	0	0	3	0	2	0	0	0	2	0	0
4:30 PM	0	0	0	0	0	0	0	8	0	3	0	0	0	3	0	1
4:45 PM	0	0	0	0	0	0	0	8	0	5	0	2	0	3	0	1
5:00 PM	0	0	0	0	0	0	0	14	0	7	0	0	0	10	0	1
5:15 PM	0	0	0	0	0	0	0	16	0	4	0	0	0	12	0	0
5:30 PM	0	0	0	0	1	0	0	16	0	4	0	0	0	9	0	0
5:45 PM	0	0	0	0	0	0	0	28	0	7	0	1	0	5	0	0
6:00 PM	0	0	0	0	0	0	0	17	0	9	0	1	0	8	0	0
6:15 PM	0	0	0	0	0	0	0	17	0	2	0	0	0	12	0	0

AM PEAK HOUR 8:15 AM to 9:15 AM	Northbound				Belmont Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	1	26	0	20	0	0	0	5	0	0

PM PEAK HOUR 5:00 PM to 6:00 PM	Northbound				Belmont Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	1	0	0	74	0	22	0	1	0	36	0	1

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 3
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Spring Street
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Northbound				Spring Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:30 AM	0	0	0	0	0	7	0	9	0	0	70	0	0	0	61	0
7:45 AM	0	0	0	0	0	9	0	9	0	0	73	0	0	0	63	1
8:00 AM	0	0	0	0	0	5	0	7	0	0	73	0	0	0	64	0
8:15 AM	0	0	0	0	0	15	0	13	0	1	80	0	0	0	79	2
8:30 AM	0	0	0	0	0	10	0	14	0	0	105	0	0	0	77	0
8:45 AM	0	0	0	0	0	17	0	9	0	1	104	0	0	0	71	0
9:00 AM	0	0	0	0	0	11	0	5	0	1	91	0	0	0	94	0
9:15 AM	0	0	0	0	0	9	0	5	0	1	81	0	0	0	87	0
4:30 PM	0	0	0	0	0	7	0	9	0	1	79	0	0	0	99	0
4:45 PM	0	0	0	0	0	10	0	12	0	0	96	0	0	0	101	1
5:00 PM	0	0	0	0	0	7	0	11	0	2	83	0	0	0	113	0
5:15 PM	0	0	0	0	0	9	0	16	0	0	92	0	0	0	110	0
5:30 PM	0	0	0	0	0	6	0	15	0	0	94	0	0	0	99	0
5:45 PM	0	0	0	0	0	2	0	14	0	1	95	0	0	0	115	0
6:00 PM	0	0	0	0	0	7	0	12	0	0	102	0	0	0	121	1
6:15 PM	0	0	0	0	0	10	0	19	0	0	99	0	0	0	98	0

AM PEAK HOUR 8:15 AM to 9:15 AM	Northbound				Spring Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**53**	**0**	**41**	**0**	**3**	**380**	**0**	**0**	**0**	**321**	**2**
PHF	**0.00**				**0.84**				**0.91**				**0.86**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**1.9%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**5.3%**	**0.0%**	**0.0%**	**0.0%**	**5.0%**	**0.0%**

PM PEAK HOUR 5:00 PM to 6:00 PM	Northbound				Spring Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**24**	**0**	**56**	**0**	**3**	**364**	**0**	**0**	**0**	**437**	**0**
PHF	**0.00**				**0.80**				**0.96**				**0.95**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.2%**	**0.0%**	**0.0%**	**0.0%**	**1.6%**	**0.0%**

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 3
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Spring Street
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

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HEAVY VEHICLES

	Northbound				Spring Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:30 AM	0	0	0	0	0	0	0	1	0	0	5	0	0	0	2	0
7:45 AM	0	0	0	0	0	1	0	1	0	0	6	0	0	0	5	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	4	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	6	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0
9:00 AM	0	0	0	0	0	1	0	0	0	0	5	0	0	0	5	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	7	0
4:30 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	3	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0

AM PEAK HOUR 7:45 AM to 8:45 AM	Northbound				Spring Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**21**	**0**	**0**	**0**	**19**	**0**
PHF	**0.00**				**0.25**				**0.88**				**0.79**			

PM PEAK HOUR 4:30 PM to 5:30 PM	Northbound				Spring Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**8**	**0**	**0**	**0**	**10**	**0**
PHF	**0.00**				**0.25**				**0.67**				**0.83**			

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 3
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Spring Street
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

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PEDESTRIANS & BICYCLES

	Northbound				Spring Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:30 AM	0	0	0	0	0	0	0	5	0	2	0	0	0	1	0	0
7:45 AM	0	0	0	0	0	0	1	3	0	5	0	1	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	3	0	3	0	0	0	1	0	0
8:15 AM	0	0	0	0	0	0	0	2	0	3	0	0	0	2	0	0
8:30 AM	0	0	0	0	0	0	0	9	0	5	0	0	0	3	0	0
8:45 AM	0	0	0	0	0	0	0	7	0	5	0	0	0	2	0	0
9:00 AM	0	0	0	0	0	0	0	4	0	3	0	0	0	2	0	0
9:15 AM	0	0	0	0	0	0	0	5	0	4	0	0	0	2	0	0
4:30 PM	0	0	0	0	0	0	0	9	0	3	0	0	0	3	0	0
4:45 PM	0	0	0	0	0	0	0	9	0	5	0	0	0	3	0	1
5:00 PM	0	0	0	0	0	0	1	11	0	6	0	0	0	10	0	0
5:15 PM	0	0	0	0	0	0	3	14	0	4	0	0	0	9	0	0
5:30 PM	0	0	0	0	0	0	0	14	0	5	0	1	0	8	0	2
5:45 PM	0	0	0	0	0	0	1	22	0	7	0	1	0	4	0	1
6:00 PM	0	0	0	0	0	0	1	12	0	9	0	0	0	8	0	2
6:15 PM	0	0	0	0	0	0	0	10	0	2	0	3	0	12	0	0

AM PEAK HOUR 8:15 AM to 9:15 AM	Northbound				Spring Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	0	22	0	16	0	0	0	9	0	0

PM PEAK HOUR 5:00 PM to 6:00 PM	Northbound				Spring Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	0	0	0	5	61	0	22	0	2	0	31	0	3

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 4
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Central Street & Walgreens Lot Dr
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Walgreens Lot Drive Northbound				Central Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:30 AM	0	0	0	0	0	0	0	0	0	11	73	1	0	0	58	20
7:45 AM	0	0	1	0	0	0	0	0	0	8	70	0	0	1	59	21
8:00 AM	0	1	0	0	0	0	0	0	0	8	69	3	0	1	57	28
8:15 AM	0	1	0	1	0	0	0	0	0	10	80	0	0	0	78	26
8:30 AM	0	0	0	0	0	0	0	0	0	15	81	3	0	1	72	35
8:45 AM	0	0	2	0	0	0	0	0	0	19	101	2	0	0	71	23
9:00 AM	0	1	1	0	0	0	0	0	0	16	87	2	0	1	86	34
9:15 AM	0	0	0	0	0	0	0	0	0	15	84	1	0	0	75	36
4:30 PM	0	3	3	2	0	0	0	0	0	17	69	4	0	0	93	62
4:45 PM	0	2	1	2	0	0	0	0	0	16	68	4	0	0	99	63
5:00 PM	0	3	2	3	0	0	0	0	0	19	88	1	0	0	98	75
5:15 PM	0	1	3	0	0	0	0	0	0	21	84	4	0	1	106	70
5:30 PM	0	1	3	1	0	0	0	0	0	17	75	6	0	0	105	79
5:45 PM	0	4	1	2	0	0	0	0	0	12	78	2	0	2	97	61
6:00 PM	0	2	3	1	0	0	0	0	0	22	95	12	0	0	107	61
6:15 PM	0	0	4	2	0	0	0	0	0	27	81	7	0	0	100	45

AM PEAK HOUR 8:30 AM to 9:30 AM	Walgreens Lot Drive Northbound				Central Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**65**	**353**	**8**	**0**	**2**	**304**	**128**
PHF	**0.50**				**0.00**				**0.87**				**0.90**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**6.8%**	**12.5%**	**0.0%**	**0.0%**	**6.9%**	**3.9%**

PM PEAK HOUR 5:00 PM to 6:00 PM	Walgreens Lot Drive Northbound				Central Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**9**	**9**	**6**	**0**	**0**	**0**	**0**	**0**	**69**	**325**	**13**	**0**	**3**	**406**	**285**
PHF	**0.75**				**0.00**				**0.93**				**0.94**			
HV %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**2.9%**	**1.8%**	**0.0%**	**0.0%**	**0.0%**	**1.5%**	**0.7%**

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 4
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Central Street & Walgreens Lot Dr
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

BOSTON TRAFFIC DATA
PO BOX 1723, Framingham, MA 01701
Office: 978-746-1259
DataRequest@BostonTrafficData.com
www.BostonTrafficData.com

HEAVY VEHICLES

	Walgreens Lot Drive Northbound				Central Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:30 AM	0	0	0	0	0	0	0	0	0	1	5	0	0	0	5	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	2	0
8:00 AM	0	0	0	0	0	0	0	0	0	1	4	0	0	0	5	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	3	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	5	1	0	0	7	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	4	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	4	2
9:15 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	6	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	1
5:00 PM	0	0	0	0	0	0	0	0	0	1	2	0	0	0	2	0
5:15 PM	0	0	0	0	0	0	0	0	0	1	2	0	0	0	1	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
6:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0

AM PEAK HOUR 8:30 AM to 9:30 AM	Walgreens Lot Drive Northbound				Central Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**24**	**1**	**0**	**0**	**21**	**5**
PHF	**0.00**				**0.00**				**0.89**				**0.72**			

PM PEAK HOUR 4:30 PM to 5:30 PM	Walgreens Lot Drive Northbound				Central Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**7**	**0**	**0**	**0**	**9**	**1**
PHF	**0.00**				**0.00**				**0.75**				**0.63**			

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 4
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Central Street & Walgreens Lot Dr
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

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PEDESTRIANS & BICYCLES

	Walgreens Lot Drive Northbound				Central Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:30 AM	0	0	0	6	0	0	0	8	0	3	0	4	0	1	0	2
7:45 AM	0	1	0	4	0	0	0	4	0	5	0	2	0	0	0	1
8:00 AM	0	0	0	6	0	0	0	6	0	4	0	4	0	0	1	0
8:15 AM	0	0	0	11	0	0	0	11	0	2	0	7	0	1	0	1
8:30 AM	0	0	0	7	0	0	0	9	0	7	0	6	0	1	0	0
8:45 AM	0	0	0	8	1	0	0	11	0	4	0	9	0	1	0	0
9:00 AM	0	0	0	6	0	0	0	13	0	8	0	5	0	1	0	0
9:15 AM	0	0	0	4	1	0	0	5	0	4	0	6	0	2	0	0
4:30 PM	1	0	0	6	0	1	0	14	0	3	0	5	0	3	1	0
4:45 PM	0	1	0	15	0	0	0	15	0	7	0	12	0	0	1	0
5:00 PM	0	0	0	12	0	0	0	13	0	9	0	8	0	9	0	2
5:15 PM	0	0	0	19	0	0	0	18	0	4	0	20	0	8	1	2
5:30 PM	0	0	0	11	0	0	0	14	0	2	1	16	0	7	0	0
5:45 PM	0	0	0	17	0	0	0	23	0	8	1	11	0	5	2	0
6:00 PM	0	0	0	16	0	0	0	22	0	5	3	18	0	6	2	1
6:15 PM	0	0	0	10	1	0	0	13	0	2	0	9	0	10	2	0

AM PEAK HOUR 8:30 AM to 9:30 AM	Walgreens Lot Drive Northbound				Central Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	25	2	0	0	38	0	23	0	26	0	5	0	0

PM PEAK HOUR 5:00 PM to 6:00 PM	Walgreens Lot Drive Northbound				Central Street Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	0	0	0	59	0	0	0	68	0	23	2	55	0	29	3	4

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 5
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Park Street & Stores Drive
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

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PASSENGER CARS & HEAVY VEHICLES COMBINED

	Park Street Northbound				Stores Drive Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:30 AM	0	22	1	5	0	1	1	0	0	0	56	16	0	14	54	4
7:45 AM	0	25	2	4	0	0	4	1	0	0	57	12	0	11	55	7
8:00 AM	0	33	2	11	0	1	0	0	0	0	55	14	0	20	51	5
8:15 AM	0	29	2	9	0	4	0	0	0	0	69	12	0	17	74	8
8:30 AM	0	41	3	11	0	0	1	0	0	1	64	14	0	20	67	8
8:45 AM	0	30	0	12	0	2	1	0	0	4	76	23	0	23	64	4
9:00 AM	0	51	6	20	0	1	2	0	0	0	70	15	0	17	70	6
9:15 AM	0	40	2	8	0	1	3	0	0	1	68	17	0	10	71	3
4:30 PM	0	72	2	13	0	1	1	1	0	1	57	11	0	10	82	8
4:45 PM	0	80	2	16	0	2	2	2	0	1	53	16	0	25	80	4
5:00 PM	0	71	4	12	0	3	1	2	0	3	77	14	0	16	100	3
5:15 PM	0	85	4	14	0	1	1	0	0	0	58	22	0	23	93	3
5:30 PM	0	72	1	9	0	2	1	0	0	0	61	16	0	11	107	8
5:45 PM	0	81	2	13	0	2	0	0	0	0	71	8	0	18	86	5
6:00 PM	0	79	1	16	0	2	0	1	0	1	76	18	0	22	79	7
6:15 PM	0	65	0	17	0	1	0	1	0	2	66	15	0	15	80	9

AM PEAK HOUR 8:15 AM to 9:15 AM	Park Street Northbound				Stores Drive Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**151**	**11**	**52**	**0**	**7**	**4**	**0**	**0**	**5**	**279**	**64**	**0**	**77**	**275**	**26**
PHF		**0.69**				**0.69**				**0.84**				**0.95**		
HV %	**0.0%**	**2.0%**	**9.1%**	**9.6%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**7.2%**	**4.7%**	**0.0%**	**3.9%**	**6.5%**	**0.0%**

PM PEAK HOUR 5:00 PM to 6:00 PM	Park Street Northbound				Stores Drive Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**309**	**11**	**48**	**0**	**8**	**3**	**2**	**0**	**3**	**267**	**60**	**0**	**68**	**386**	**19**
PHF		**0.89**				**0.54**				**0.88**				**0.94**		
HV %	**0.0%**	**1.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**33.3%**	**1.1%**	**3.3%**	**0.0%**	**1.5%**	**0.8%**	**0.0%**

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 5
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Park Street & Stores Drive
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

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HEAVY VEHICLES

	Park Street Northbound				Stores Drive Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:30 AM	0	0	0	1	0	0	0	0	0	0	2	3	0	0	3	0
7:45 AM	0	2	0	0	0	0	0	0	0	0	4	1	0	0	2	0
8:00 AM	0	2	0	0	0	0	0	0	0	0	3	1	0	1	3	0
8:15 AM	0	0	1	1	0	0	0	0	0	0	5	1	0	0	3	0
8:30 AM	0	2	0	0	0	0	0	0	0	0	3	0	0	2	5	0
8:45 AM	0	0	0	3	0	0	0	0	0	0	7	1	0	1	3	0
9:00 AM	0	1	0	1	0	0	0	0	0	0	5	1	0	0	7	0
9:15 AM	0	2	0	0	0	0	0	0	0	0	6	0	0	0	5	0
4:30 PM	0	1	0	0	0	0	0	0	0	0	1	1	0	1	2	0
4:45 PM	0	2	0	0	0	0	0	0	0	0	0	1	0	0	2	0
5:00 PM	0	1	0	0	0	0	0	0	0	1	1	0	0	1	1	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0
5:45 PM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0
6:15 PM	0	1	0	0	0	0	0	0	0	0	3	1	0	0	0	0

AM PEAK HOUR 8:30 AM to 9:30 AM	Park Street Northbound				Stores Drive Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**5**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**21**	**2**	**0**	**3**	**20**	**0**
PHF	**0.75**				**0.00**				**0.72**				**0.82**			

PM PEAK HOUR 4:30 PM to 5:30 PM	Park Street Northbound				Stores Drive Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**3**	**0**	**2**	**6**	**0**
PHF	**0.50**				**0.00**				**0.88**				**0.67**			

Client:	Christa Lucas, P.E.
Project #:	752_2C5_HSH
BTD #:	Location 5
Location:	Somerville, MA
Street 1:	Somerville Avenue
Street 2:	Park Street & Stores Drive
Count Date:	8/5/2021
Day of Week:	Thursday
Weather:	Rain & Cloudy, 70°F

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PEDESTRIANS & BICYCLES

	Park Street Northbound				Stores Drive Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:30 AM	0	0	0	5	0	0	0	10	0	1	2	0	0	1	0	6
7:45 AM	0	0	0	2	0	0	0	4	0	4	1	2	2	0	0	3
8:00 AM	1	0	1	3	0	0	0	8	0	3	1	0	0	0	0	3
8:15 AM	0	0	0	6	0	0	0	11	0	1	1	1	0	3	1	9
8:30 AM	2	0	0	3	0	0	0	8	0	4	2	0	1	2	0	3
8:45 AM	0	0	0	4	0	0	0	14	0	3	2	0	1	3	0	8
9:00 AM	1	0	1	3	0	0	0	8	0	8	1	1	2	2	0	2
9:15 AM	0	0	0	3	0	0	0	5	0	4	0	0	1	2	0	4
4:30 PM	2	0	2	13	0	0	0	7	0	2	0	2	0	2	0	11
4:45 PM	2	0	2	14	0	0	0	13	0	4	2	1	1	1	0	7
5:00 PM	7	0	1	14	0	0	0	16	0	9	0	0	1	3	0	9
5:15 PM	7	0	2	13	0	0	0	26	0	3	2	0	0	8	0	14
5:30 PM	4	0	1	9	0	0	0	20	0	1	1	0	1	5	0	9
5:45 PM	5	0	4	13	0	0	0	22	0	6	0	3	1	3	0	7
6:00 PM	6	0	2	20	0	0	0	21	0	5	0	1	0	4	0	11
6:15 PM	4	0	2	14	0	0	0	21	0	2	0	0	2	6	0	10

AM PEAK HOUR 8:15 AM to 9:15 AM	Park Street Northbound				Stores Drive Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	3	0	1	16	0	0	0	41	0	16	6	2	4	10	1	22

PM PEAK HOUR 5:00 PM to 6:00 PM	Park Street Northbound				Stores Drive Southbound				Somerville Avenue Eastbound				Somerville Avenue Westbound			
	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
	23	0	8	49	0	0	0	84	0	19	3	3	3	19	0	39

NOTE: Peak hour summaries here correspond to peak hours identified for passenger car and heavy vehicles combined.

HOWARD STEIN HUDSON

Engineers + Planners

Appendix B

Transit Amenties

Bus Stop Amenities

Stop Location/Route	Distance from Site		Route		Amenities				Operations & Constraints	Comments
	Feet	Walk-time (minutes)	ID	Direction	# of Signs	Bench	Shelter	Other	Pull-in Space (feet)	
Somerville at Spring	115	<1	83	WB	2 (F/R)	N	N		80’	
			87	WB						
594 Somerville	185	1	83	EB	1 (F)	Y	Y		indeterminate	
			87	EB						
Somerville opposite Central	800	3	83	EB	2 (F/R)	Y	Y		46’	
			87	EB						
Summer opposite Carter			85	WB	2 (F/R)	N	N		30’	
Avon at Central	2110	8	85	WB	2 (R/R)	Y (2)	N		41’	MBTA sign: “Till Further Notice Please Board Buses on Summer Street”
Highland at Benton	2440	10	88	EB	2 (F/R)	N	N		46’	
			90	EB						
Highland at Benton	2535	10	88	WB	2 (F/R)	N	N		50’	
			90	WB						
Washington at Beacon	3140	12	86	WB	2 (F/R)	Y	N	Trash can Bike rack	40’	
	3215	12	86	EB	1 (F)	N	N		indeterminate	
Mass Ave at Porter Station	3365	13	77	NB	2 (F/R)	N	Y		75’	
			96	NB						
Mass Ave at Upland	3400	13	77	SB	2 (F/R)	Y	N		70’	
			96	SB						

HOWARD STEIN HUDSON

Engineers + Planners

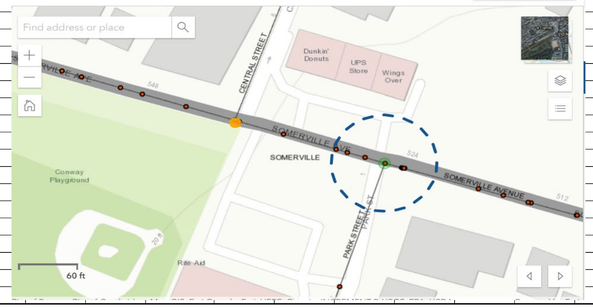
Appendix C

MassDOT Crash Data and Crash Rate Worksheets

Crash Num	City Town	Crash Date	Crash Seve	Crash Stat	Crash Time	Crash Year	Max Injury	Number of	Police Age	State Polic	Light Cond	Manner of	Non-Moto	Road Surfa	Total Fatal	Total Non-	Weather C	County Na	Crash Repo	FMCSA Re	FMCSA Re	First Harm	Geocoding	Hit and Ru	Locality	Most Harm	Road Conti	School Bus	Speed Limi	Traffic Con	Vehicle Sec	Work Zone	Roadway	Near Intersection Roadway
4272662	SOMERVIL	8/30/2016	Non-fatal i	Closed	6:26 PM	2016	Non-fatal i	2	Local police		Daylight	Rear-end		Dry	0	1	Clear/Clou	MIDDLESE	16-054324			Roadway	Off Interse	No hit and run		V1:(Collisic	None	No, school	30	Not report	V1:(Collisic	No	SOMERVIL	LOWELL STREET
4292347	SOMERVIL	8/3/2016	Property d	Closed	5:13 PM	2016	No injury	1	Local police		Daylight	Single vehi	P2: Cyclist	Dry	0	0	Clear	MIDDLESE	16-047661			Roadway	At Intersec	No hit and run		V1:(Collisic	None	No, school	30	Not report	V1:(Collisic	No	SOMERVILLE AVENUE / LOWELL STREET	
4343488	SOMERVIL	1/17/2017	Property d	Closed	2:26 PM	2017	No injury	2	Local police		Daylight	Rear-end		Dry	0	0	Cloudy	MIDDLESE	17063380			Roadway	At Intersec	No hit and run		V1:(Collisic	Not report	No, school	30	Yes, device	V1:(Collisic	No	SOMERVILLE AVENUE / LOWELL STREET	
4357789	SOMERVIL	3/10/2017	Non-fatal i	Closed	5:52 PM	2017	Non-fatal i	2	Local police		Dark - light	Rear-end		Wet	0	2	Cloudy	MIDDLESE	17014777			Roadway	At Address	No hit and run		V1:(Collisic	Road surfa	No, school	25	Not report	V1:(Collisic	No	SOMERVILLE AVENUE	
4575777	SOMERVIL	5/1/2018	Non-fatal i	Closed	4:08 PM	2018	Non-fatal i	1	Local police		Daylight	Sideswipe,	P2: Cyclist	Dry	0	1	Clear/Clea	MIDDLESE	18025730	V1:(No, no	No, not fe	Roadway	At Intersec	No hit and run		V1:(Collisic	Unknown	No, school	25	Yes, device	V1:(Other	No	LOWELL STREET / SOMERVILLE AVENUE	
4645733	SOMERVIL	11/20/2018	Non-fatal i	Closed	4:33 PM	2018	Non-fatal i	1	Local police		Dark - light	Head-on	P2: Pedest	Wet	0	1	Snow	MIDDLESE	18068869			Roadway	At Intersec	No hit and run		V1:(Collisic	Unknown	No, school	30	Yes, device	V1:(Collisic	No	SOMERVILLE AV Rte 1 E / LOWELL ST Rte 2 N	
4714972	SOMERVIL	5/25/2019	Non-fatal i	Open	9:13 PM	2019	Suspected	1	Local police		Dark - light	Head-on	P2: Cyclist	Dry	0	0	Clear	MIDDLESE	19029076			Roadway	At Intersec	No hit and run		V1:(Collisic	None	No, school bus not inv		Yes, device	V1:(Collisic	No	LOWELL ST / SOMERVILLE AV	
4808692	SOMERVIL	11/23/2019	Non-fatal i	Open	3:15 PM	2019	Possible In	3	Local police		Daylight	Rear-end		Dry	0	0	Cloudy	MIDDLESE	19066948			Roadway	At Intersec	No hit and run		V1:(Collisic	None	No, school	20	Yes, device	V1:(Collisic	No	SOMERVILLE AVENUE / LOWELL STREET	
4897725	SOMERVIL	10/16/2020	Non-fatal i	Open	8:51 AM	2020	Suspected	1	Local police		Daylight	Angle	P2: Cyclist	Dry	0	0	Cloudy	MIDDLESE	20050048			Roadway	At Intersec	No hit and run		V1:(Collisic	None	No, school	25	Not report	V1:(Collisic	No	LOWELL ST / SOMERVILLE AV	

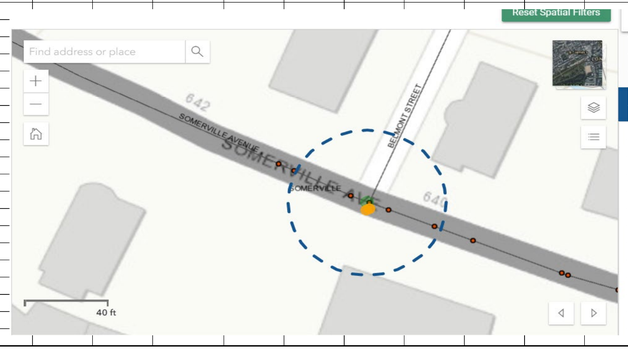
												Property d	2		Dry	7		Clear/Clou	1																
												Non-fatal i	7		Wet	2		Clear/Clea	1																
													9		Ice	0		Clear	2																
																9		Cloudy	4																
												Single vehi	1					Snow	1																
												Angle	1		Daylight	6			9																
												Rear-end	4		Dusk	0																		
												Sideswipe,	1		Dark - Ligh	3																		
												Sideswipe,	0		Unknown	0																		
												Head-on	2			9																		
													9																						

	Crash Num	City Town	Crash Date	Crash Seve	Crash Statu	Crash Time	Crash Year	Max Injury	Number of	Police Agen	State Police	Light Cond	Manner of	Non-Motor	Road Surfa	Total Fatal	Total Non-	Weather C	County Na	Crash Repo	FMCSA Rel	FMCSA Rel	First Harm	Geocoding	Hit and Ru	Locality	Most Harm	Road Conte	School Bus	Speed Limi	Traffic Con	Vehicle Sec	Work Zone	Roadway	Near Intersection Roadway
	4666612	SOMERVILL	1/30/2019	Non-fatal i	Open	7:52 AM	2019	Non-fatal i	2	Local police		Daylight	Angle		Snow	0	1	Clear	MIDDLESE	19005409			Roadway	At Intersec	No hit and run		V1:(Collision with mot		No, school	bus not inv	Yes, device	V1:(Collisi	No	PARK ST / SOMERVILLE AV	
	4693708	SOMERVILL	2/6/2019	Non-fatal i	Open	10:11 PM	2019	Non-fatal i	2	Local police		Dark - light	Rear-end	P3: Pedest	Wet	0	1	Rain/Rain	MIDDLESE	19006798			Roadway	At Address	No hit and run		V1:(Collision with mot		No, school	bus not inv	Not report	V1:(Other)	No	SOMERVILLE AV	
	4693712	SOMERVILL	2/8/2019	Non-fatal i	Open	5:29 PM	2019	Non-fatal i	1	Local police		Dark - light	Single vehi	P2: Pedest	Dry	0	1	Clear	MIDDLESE	19007129			Roadway	Off Interse	No hit and run		V1:(Collisic	Unknown	No, school	bus not inv	Not report	V1:(Collisi	No	SOMERVIL	PARK STREET
	4859805	SOMERVILL	6/22/2020	Property d	Open	1:25 PM	2020	No Appare	2	Local police		Daylight	Sideswipe, same direc		Dry	0	0	Clear	MIDDLESE	20031245			Roadway	At Intersec	No hit and run		V1:(Collisic	None	No, school	25	Yes, device	V1:(Collisi	Yes	PARK ST / SOMERVILLE AV	
	4859802	SOMERVILL	6/18/2020	Property d	Open	2:11 PM	2020	No Appare	1	Local police		Daylight	Single vehicle crash		Dry	0	0	Clear/Clea	MIDDLESE	20030635			Outside ro	At Address	No hit and run		V1:(Collisic	None	No, school	25	Not report	V1:(Collisi	No	SOMERVILLE AV	
	4931082	SOMERVILL	1/5/2021	Property d	Open	9:03 AM	2021	No Appare	1	Local police		Daylight	Single vehicle crash		Dry	0	0	Cloudy	MIDDLESE	21000583	V1:(No, no	No, not fec	Roadway	At Intersec	No hit and run		V1:(Collisic	None	No, school	20	Yes, device	V1:(Collisi	Yes	PARK ST / SOMERVILLE AV	



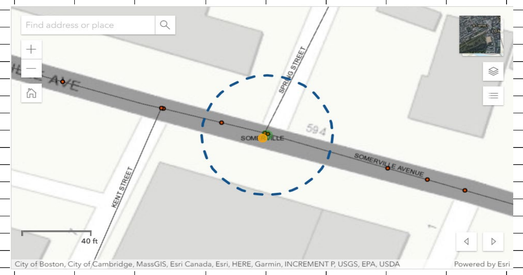
													Property d	3		Dry	4		Clear/Clou	0															
													Non-fatal I	3		Wet	1		Clear/Clea	1															
														6		Ice	1		Clear	3															
																	6		Cloudy	1															
													Single vehi	3					Rain/Rain	1															
													Angle	1		Daylight	4		Snow	0															
													Rear-end	1		Dusk	0			6															
													Sideswipe,	1		Dark - Ligh	2																		
													Sideswipe,	0		Unknown	0																		
													Head-on	0			6																		
														6																					

Crash Num	City Town	Crash Date	Crash Seve	Crash Statu	Crash Time	Crash Year	Max Injury	Number of	Police Agen	State Police	Light Cond	Manner of	Non-Motor	Road Surfa	Total Fatal	Total Non-	Weather C	County Na	Crash Repo	FMCSA Rep	FMCSA Rep	First Harm	Geocoding	Hit and Ru	Locality	Most Harm	Road Contr	School Bus	Speed Limi	Traffic Con	Vehicle Se	Work Zone	Roadway	Near Intersection Roadway
4243971	SOMERVILL	7/17/2016	Non-fatal i	Closed	4:05 PM	2016	Non-fatal i	1	Local police		Daylight	Not report	P2: Pedest	Dry	0	1	Clear	MIDDLESE	16043608			Roadway	At Intersec	No hit and run		V1:(Collisio	None	No, school	bus not inv	Not report	V1:(Collisio	No	SOMERVILLE AVENUE / BELMONT STREET	
4358406	SOMERVILL	3/10/2017	Property d	Closed	8:41 AM	2017	No injury	2	Local police		Daylight	Angle		Snow	0	0	Snow	MIDDLESE	17014655			Roadway	At Intersec	No hit and run		V1:(Collisio	Road surfa	No, school	25	Not report	V1:(Collisio	No	BELMONT STREET / SOMERVILLE AVENUE	
4693784	SOMERVILL	3/15/2019	Non-fatal i	Open	7:21 PM	2019	Non-fatal i	1	Local police		Dark - light	Angle	P2: Cyclist	Dry	0	1	Cloudy	MIDDLESE	19014426			Roadway	At Intersec	No hit and run		V1:(Collisio	None	No, school	bus not inv	Not report	V1:(Collisio	No	BELMONT ST / SOMERVILLE AV	
4702100	SOMERVILL	4/27/2019	Property d	Open	3:57 PM	2019	No Appare	1	Local police		Daylight	Single vehi	P3: Cyclist	Dry	0	0	Clear	MIDDLESE	19023149			Roadway	At Intersec	No hit and run		V1:(Collision with cycli		No, school	bus not inv	Yes, device	V1:(Collisio	No	BELMONT ST / SOMERVILLE AV	
4808626	SOMERVILL	11/16/2019	Property d	Open	2:41 PM	2019	No Appare	2	Local police		Daylight	Angle		Dry	0	0	Clear	MIDDLESE	19065623	V2:(No, no	No, not fed	Roadway	At Intersec	No hit and run		V1:(Other)	None	No, school	25	Yes, device	V1:(Other	No	BELMONT STREET / SOMERVILLE AVENUE	

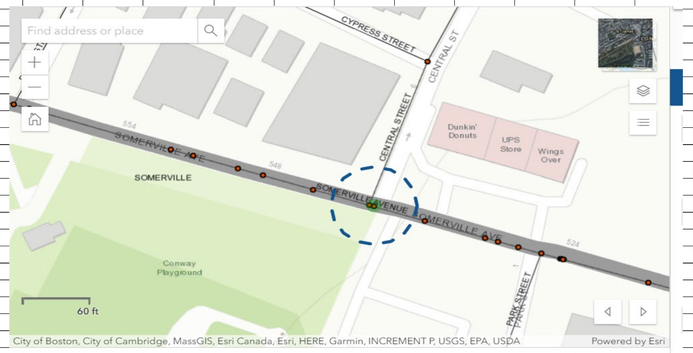


												Property d	3		Dry	4		Clear/Clou	0																
												Non-fatal I	2		Wet	0		Clear/Clea	0																
													5		Ice	1		Clear	3																
																5		Cloudy	1																
												Single vehi	1					Snow	1																
												Angle	3		Daylight	4			5																
												Rear-end	0		Dusk	0																		
												Sideswipe,	0		Dark - Ligh	1																		
												Sideswipe,	0		Unknown	0																		
												Head-on	0			5																		
												Not Report	1																					
													5																					

	Crash Num	City Town	Crash Date	Crash Seve	Crash Statu	Crash Time	Crash Year	Max Injury	Number of	Police Agei	State Police	Light Cond	Manner of	Non-Motor	Road Surfa	Total Fatal	Total Non-	Weather C	County Na	Crash Repo	FMCSA Rej	FMCSA Rej	First Harm	Geocoding	Hit and Ru	Locality	Most Harm	Road Contr	School Bus	Speed Limi	Traffic Con	Vehicle Sec	Work Zone	Roadway	Near Intersection Roadway
	4201135	SOMERVILL	2/20/2016	Non-fatal i	Closed	3:55 PM	2016	Non-fatal i	1	Local police		Daylight	Single vehi	P4: Cyclist	Dry	0	1	Clear	MIDDLESEX	16009778			Roadway	At Intersec	No hit and run		V1:(Collisio	None	No, school	30	Not report	V1:(Collisi	No	SPRING STREET / SOMERVILLE AVENUE	
	4316251	SOMERVILL	12/12/2016	Not Report	Closed	1:58 AM	2016	Not report	2	Local police		Dark - road	Rear-end		Snow	0	0	Snow/Blow	MIDDLESEX	16077941	V2:(No, no		No, not fed	Roadway	Off Intersec	No hit and run		V1:(Unkno	Road surfa	No, school bus not inv		Not report	V1:(Unkno	No	SPRING ST	SOMERVILLE AVENUE
													Property d	0		Dry	1		Clear/Clou	0															
													Non-fatal I	1		Wet	0		Clear/Clea	0															
														1		Ice	1		Clear	1															
																	2		Cloudy	0															
													Single vehi	1					Snow	1															
													Angle	0		Daylight	1			2															
													Rear-end	1		Dusk	0																	
													Sideswipe,	0		Dark - Ligh	0																	
													Sideswipe,	0		Dark - road	1																	
													Head-on	0		Unknown	0																	
														2			2																	



Crash Num	City Town	Crash Date	Crash Seve	Crash Statu	Crash Time	Crash Year	Max Injury	Number of	Police Ager	State Police	Light Condi	Manner of	Non-Motorist Ty	Road Surfa	Total Fatali	Total Non-I	Weather C	County Nar	Crash Repo	FMCSA Reg	FMCSA Reg	First Harm	Geocoding	Hit and Ru	Locality	Most Harm	Road Conte	School Bus	Speed Limi	Traffic Con	Vehicle Sec	Work Zone	Roadway	Near Intersection Roadway
4301060	SOMERVILL	10/20/2016	Property da	Closed	1:43 PM	2016	No injury	1	Local police		Daylight	Unknown	P2: Pedestrian	Dry	0	0	Clear/Clear	MIDDLESEX	16066652			Roadway	At Intersec	No hit and run		V1:(Collisio	None	No, school	30	Yes, device	V1:(Collisio	No	SOMERVILLE AVENUE / CENTRAL STREET	
4598179	SOMERVILL	8/24/2018	Non-fatal in	Closed	6:27 PM	2018	Non-fatal in	1	Local police		Daylight	Angle	P2: Cyclist	Dry	0	1	Clear	MIDDLESEX	18050570			Roadway	At Intersec	No hit and run		V1:(Collisio	None	No, school	25	Not reporte	V1:(Collisio	No	CENTRAL ST / SOMERVILLE AV	
4897736	SOMERVILL	10/29/2020	Non-fatal in	Open	9:42 AM	2020	Possible Inj	1	Local police		Daylight	Head-on	P2: Cyclist	Dry	0	0	Cloudy	MIDDLESEX	20052473			Roadway	At Intersec	No hit and run		V1:(Collisio	None	No, school	25	Not reporte	V1:(Collisio	No	CENTRAL ST / SOMERVILLE AV	



												Property da	1		Dry	3		Clear/Clou	0																
												Non-fatal I	2		Wet	0		Clear/Clear	1																
													3		Ice	0		Clear	1																
																3		Cloudy	1																
												Single vehi	0					Snow	0																
												Angle	1		Daylight	3			3																
												Rear-end	0		Dusk	0																		
												Sideswipe,	0		Dark - Light	0																		
												Sideswipe,	0		Unknown	0																		
												Head-on	1			3																		
													2																						

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville | COUNT DATE : Aug-21

DISTRICT : 4 | UNSIGNALIZED : | SIGNALIZED : x

~ INTERSECTION DATA ~

MAJOR STREET : Somerville Avenue

MINOR STREET(S) : Lowell Street

INTERSECTION DIAGRAM
(Label Approaches)

North

PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	WB	EB		
PEAK HOURLY VOLUMES (PM) :	--	--	502	494		**996**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **12,450**

TOTAL # OF CRASHES : 6 | # OF YEARS : 3 | AVERAGE # OF CRASHES PER YEAR (**A**) : **2.00**

CRASH RATE CALCULATION : **0.44**

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

Comments :

Project Title & Date: 599 Somerville Avenue TIS (August 2021)

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville | COUNT DATE : Aug-21

DISTRICT : 4 | UNSIGNALIZED : | SIGNALIZED : x

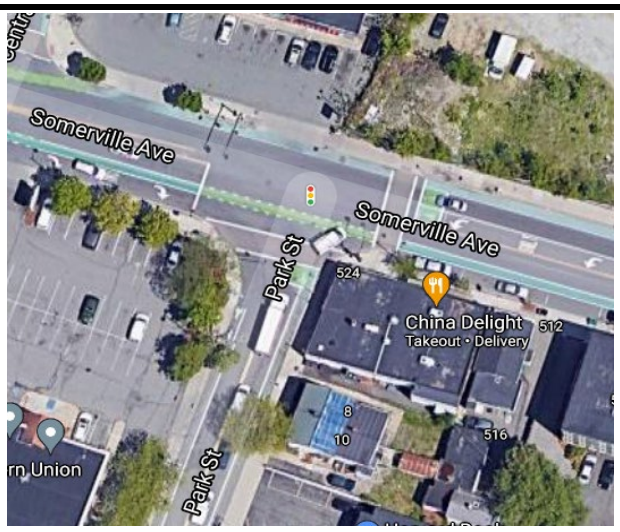
~ INTERSECTION DATA ~

MAJOR STREET : Somerville Avenue

MINOR STREET(S) : Park Street

INTERSECTION DIAGRAM
(Label Approaches)

North



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	WB	EB		
PEAK HOURLY VOLUMES (PM) :	368	13	473	330		**1,184**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **14,800**

TOTAL # OF CRASHES : 0

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.00**

CRASH RATE CALCULATION : **0.00**

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

Comments :

Project Title & Date: 599 Somerville Avenue TIS (August 2021)

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville | COUNT DATE : Aug-21

DISTRICT : 4 | UNSIGNALIZED : x | SIGNALIZED :

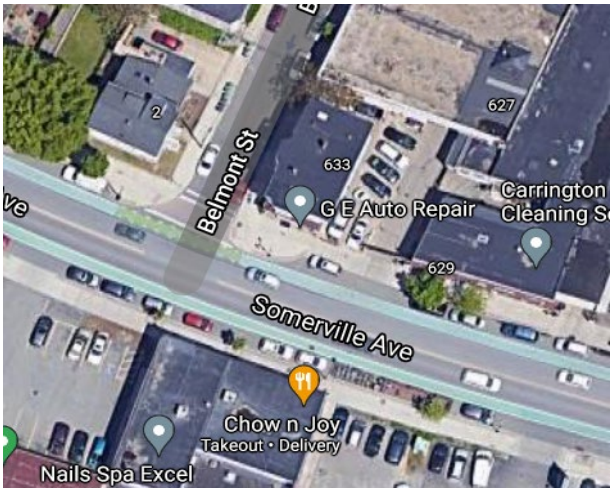
~ INTERSECTION DATA ~

MAJOR STREET : Somerville Avenue

MINOR STREET(S) : Belmont Street

INTERSECTION DIAGRAM
(Label Approaches)

North



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	WB	EB		
PEAK HOURLY VOLUMES (PM) :	--	15	486	385		**886**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **11,075**

TOTAL # OF CRASHES : 2

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.67**

CRASH RATE CALCULATION : **0.16**

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

Comments :

Project Title & Date: 599 Somerville Avenue TIS (August 2021)

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville | COUNT DATE : Aug-21

DISTRICT : 4 | UNSIGNALIZED : x | SIGNALIZED :

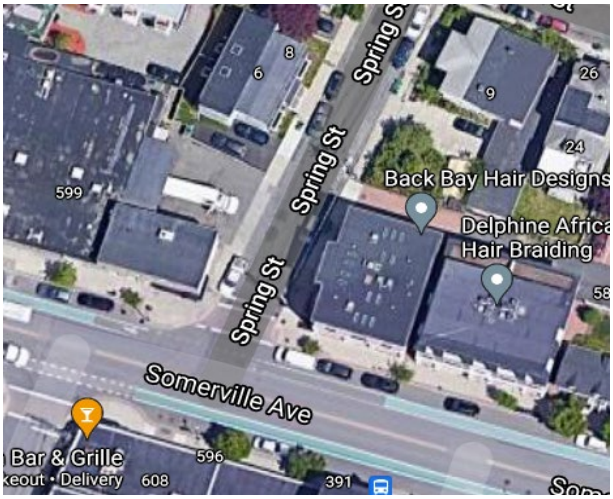
~ INTERSECTION DATA ~

MAJOR STREET : Somerville Avenue

MINOR STREET(S) : Spring Street

INTERSECTION DIAGRAM
(Label Approaches)

North



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	WB	EB		
PEAK HOURLY VOLUMES (PM) :	0	81	446	384		**911**

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **11,388**

TOTAL # OF CRASHES : 2

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **0.67**

CRASH RATE CALCULATION : **0.16**

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

Comments :

Project Title & Date: 599 Somerville Avenue TIS (August 2021)

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Somerville | COUNT DATE : Aug-21

DISTRICT : 4 | UNSIGNALIZED : x | SIGNALIZED :

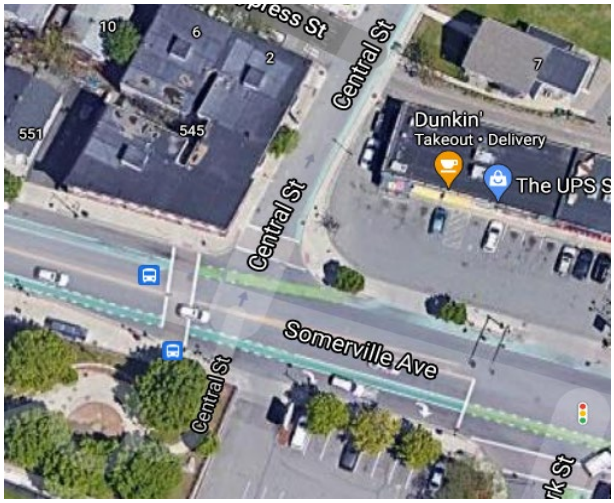
~ INTERSECTION DATA ~

MAJOR STREET : Somerville Avenue

MINOR STREET(S) : Central Street

INTERSECTION DIAGRAM
(Label Approaches)

North



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	WB	EB		
PEAK HOURLY VOLUMES (PM) :	22	0	689	428		1,139

" K " FACTOR : **0.080**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **14,238**

TOTAL # OF CRASHES : 2 | # OF YEARS : 3 | AVERAGE # OF CRASHES PER YEAR (**A**) : **0.67**

CRASH RATE CALCULATION : **0.13**

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

Comments :

Project Title & Date: 599 Somerville Avenue TIS (August 2021)

HOWARD STEIN HUDSON

Engineers + Planners

Appendix D

Project Trip Generation

599 Somerville Avenue

Truck Generation Assessment

HOWARD STEIN HUDSON

19-Aug-2021

			ITE[1]			CTPS [2]				
Land Use	**Size**	**Category**	**Directional Split**	**ITE Average Trip Rate**	**ITETruck Trips**	**CTPS Light Rate**	**CTPS Heavy Rate**	**CTPS Light Truck Trips**	**CTPS Heavy Truck Trips**	**CTPS Total Deliveries**
Daily Peak Hour										
Research & Development Center	42.7	Total		0.120	6	0.100	0.010	4	0	2
	KSF	In	50%	0.060	3					
		Out	50%	0.060	3					
Total		Total			**6**			**4**	**0**	**2**
		In			**3**					
		Out			**3**					
AM Peak Hour										
Research & Development Center[7]	42.7	Total		0.010	0					
	KSF	In	67%	0.007	0					
		Out	33%	0.003	0					
Total		Total			**0**					
		In			**0**					
		Out			**0**					
PM Peak Hour										
Research & Development Center[7]	42.7	Total		0.010	0					
	KSF	In	33%	0.003	0					
		Out	67%	0.007	0					
Total		Total			**0**					
		In			**0**					
		Out			**0**					

1. ITE Trip Generation Manual, 10th Edition, LUC 710 (General Office Building), average rate assumed 67 in/33 out

2. “Truck Trip Generation Rates by Land Use in the Central Artery/Tunnel Project Study Area", Central Transportation Planning Staff, September 1993

599 Somerville Avenue
Trip Generation Assessment

HOWARD STEIN HUDSON
9-Jul-2021

xx HARD CODED TO BALANCE

Land Use	Size	Category	Directional Split	Average Trip Rate	Unadjusted Vehicle Trips	Assumed National Vehicle Occupancy Rate[1]	Unadjusted Person-Trips	Transit Share[3]	Transit Person-Trips	Walk/Bike/ Other Share[3]	Walk/ Bike/ Other Trips	Auto Share[3]	Auto Person-Trips	% Taxi/ TNC[3]	Taxi/TNC Person-Trips	Assumed Local Auto Occupancy Rate for Taxis[5]	Private Auto Person-Trips	Primary Auto-Person Trips	Assumed Local Auto Occupancy Rate[4]	Taxi/TNC Auto Trips	Primary Non-Taxi Auto Trips	Primary AutoTrips
Daily Peak Hour																						
Research & Development Center[6]	42.7	Total		11.260	480	1.18	**566**	28%	**158**	32%	**182**	40%	**226**	1%	2	1.18	224	224	1.18	**4**	**190**	**194**
	KSF	In	50%	5.630	240	1.18	**283**	28%	**79**	32%	**91**	40%	**113**	1%	1	1.18	112	112	1.18	**2**	**95**	**97**
		Out	50%	5.630	240	1.18	**283**	28%	**79**	32%	**91**	40%	**113**	1%	1	1.18	112	112	1.18	**2**	**95**	**97**
Shopping Center[13]	0.5	Total		37.750	18	1.82	**32**	28%	**8**	32%	**10**	40%	**14**	1%	0	1.82	14	14	1.82	**0**	**8**	**8**
	KSF	In	50%	18.875	9	1.82	**16**	28%	**4**	32%	**5**	40%	**7**	1%	0	1.82	7	7	1.82	**0**	**4**	**4**
		Out	50%	18.875	9	1.82	**16**	28%	**4**	32%	**5**	40%	**7**	1%	0	1.82	7	7	1.82	**0**	**4**	**4**
Total		Total			**498**		**598**		**166**		**192**		**240**		**2**		**238**			**4**	**198**	**202**
		In			**249**		**299**		**83**		**96**		**120**		**1**		**119**			**2**	**99**	**101**
		Out			**249**		**299**		**83**		**96**		**120**		**1**		**119**			**2**	**99**	**101**
AM Peak Hour																						
Research & Development Center[6]	42.7	Total		0.420	17	1.18	**20**	28%	**5**	32%	**7**	40%	**8**	1%	0	1.18	8	8	1.18	**0**	**7**	**7**
	KSF	In	75%	0.315	13	1.18	**15**	28%	**4**	32%	**5**	40%	**6**	1%	0	1.18	6	6	1.18	**0**	**5**	**5**
		Out	25%	0.105	4	1.18	**5**	28%	**1**	32%	**2**	40%	**2**	1%	0	1.18	2	2	1.18	**0**	**2**	**2**
Shopping Center[13]	0.5	Total		0.94	0	1.82	**0**	28%	**0**	32%	**0**	40%	**0**	1%	0	1.82	0	0	1.82	**0**	**0**	**0**
	KSF	In	62%	0.583	0	1.82	**0**	28%	**0**	32%	**0**	40%	**0**	1%	0	1.82	0	0	1.82	**0**	**0**	**0**
		Out	38%	0.357	0	1.82	**0**	28%	**0**	32%	**0**	40%	**0**	1%	0	1.82	0	0	1.82	**0**	**0**	**0**
Total		Total			**17**		**20**		**5**		**7**		**8**		**0**		**8**			**0**	**7**	**7**
		In			**13**		**15**		**4**		**5**		**6**		**0**		**6**			**0**	**5**	**5**
		Out			**4**		**5**		**1**		**2**		**2**		**0**		**2**			**0**	**2**	**2**
PM Peak Hour																						
Research & Development Center[6]	42.7	Total		0.490	21	1.18	**25**	28%	**7**	32%	**8**	40%	**10**	1%	0	1.18	10	10	1.18	**0**	**9**	**9**
	KSF	In	15%	0.074	3	1.18	**4**	28%	**1**	32%	**1**	40%	**2**	1%	0	1.18	2	2	1.18	**0**	**2**	**2**
		Out	85%	0.417	18	1.18	**21**	28%	**6**	32%	**7**	40%	**8**	1%	0	1.18	8	8	1.18	**0**	**7**	**7**
Shopping Center[7]	0.5	Total		3.81	2	1.82	**4**	28%	**0**	32%	**2**	40%	**2**	1%	0	1.82	2	2	1.82	**0**	**2**	**2**
	KSF	In	48%	1.829	1	1.82	**2**	28%	**0**	32%	**1**	40%	**1**	1%	0	1.82	1	1	1.82	**0**	**1**	**1**
		Out	52%	1.981	1	1.82	**2**	28%	**0**	32%	**1**	40%	**1**	1%	0	1.82	1	1	1.82	**0**	**1**	**1**
Total		Total			**23**		**29**		**7**		**10**		**12**		**0**		**12**			**0**	**11**	**11**
		In			**4**		**6**		**1**		**2**		**3**		**0**		**3**			**0**	**3**	**3**
		Out			**19**		**23**		**6**		**8**		**9**		**0**		**9**			**0**	**8**	**8**

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
3. Mode shares based on Based on U.S. Census 2019: ACS 1-Year Estimates for Means of Transportation to Work (Table B08006), Census Tract 3512.04.
4. Local vehicle occupancy rates based on 2017 National vehicle occupancy rates
5. For taxi cabs, 1.2 passengers per cab. (2.2 minus 1 driver equals 1.2)
6. ITE Trip Generation Manual, 10th Edition, LUC 760 (Research & Development Center), average rate

HOWARD STEIN HUDSON

Engineers + Planners

Appendix E

Parking Analysis

599 Somerville Avenue

Parking Generation Worksheet

HOWARD STEIN HUDSON

18-Aug-2021

Land Use	Size	Units	Rate	Unadjusted Spaces	Auto Mode[3]	Adjusted Spaces	Auto Mode[3]	Adjusted Spaces	65% (Office ==> R&D Conversion)	
Urban Land Institute (ULI)[1]										
Office										
employee	43.2	ksf	2.6	112	25%	29	39%	44		
visitor			0.2	9	25%	3	39%	4		
						32		48	21	32
Retail										
employee	0.5	ksf	0.7	0	25%	1	39%	1		
visitor			2.9	1	25%	1	39%	1		
						2		2	2	2
TOTAL						**34**		**50**	23	33

Land Use	Size	Units	Rate	Unadjusted Spaces	Auto Mode	Adjusted Spaces	Auto Mode	Adjusted Spaces
Institute of Transportation Engineers (ITE)[2]								
Office	0	ksf	2.39	0	25%	0	39%	0
R&D	43.2	ksf	2.58	111	25%	28	39%	44
Retail	0.5	ksf	1.95	1	25%	1	39%	1
TOTAL						**29**		**45**

[1] ULI Parking Rates, 2nd Edition

[2] ITE Parking Generation, 5th Edition

HOWARD STEIN HUDSON

Engineers + Planners

Appendix F

Transit Analysis

599 Somerville Avenue

Transit Analysis

HOWARD STEIN HUDSON

9-Jul-2021

Bus Route 83 - Inbound Analysis Before 594 Somerville Ave (Volume/VC Tables Hourly)

			Existing		Build		Future 2026	
	# of Buses	Capacity	Hourly Volume	V/C	Hourly Volume	V/C	Hourly Volume	V/C
5:00 AM	3	144	13	0.09	13	0.09	14	0.09
6:00 AM	3	158	22	0.14	23	0.15	24	0.15
7:00 AM	3	165	62	0.38	62	0.38	66	0.40
8:00 AM	3	165	40	0.24	41	0.25	43	0.26
9:00 AM	2	96	22	0.22	23	0.23	24	0.25
10:00 AM	2	96	21	0.22	22	0.23	23	0.24
11:00 AM	2	96	19	0.20	20	0.21	21	0.22
12:00 PM	2	96	21	0.21	23	0.23	24	0.25
1:00 PM	2	96	19	0.19	22	0.23	23	0.24
2:00 PM	2	96	21	0.22	23	0.24	24	0.25
3:00 PM	2	103	26	0.25	28	0.27	29	0.28
4:00 PM	2	110	28	0.26	29	0.27	31	0.28
5:00 PM	3	165	50	0.30	51	0.31	54	0.32
6:00 PM	2	103	22	0.21	23	0.22	24	0.23
7:00 PM	2	96	17	0.18	17	0.18	18	0.19
8:00 PM	1	48	7	0.14	7	0.14	7	0.15
9:00 PM	1	48	6	0.13	6	0.13	7	0.14
10:00 PM	1	48	4	0.08	4	0.08	4	0.09
11:00 PM	1	48	3	0.05	3	0.05	3	0.05
12:00 AM	1	48	2	0.04	2	0.04	2	0.05
1:00 AM	0	0	0	0.00	0	0.00	0	0.00

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

599 Somerville Avenue

Transit Analysis

HOWARD STEIN HUDSON

19-Aug-2021

Bus Route 83 - Inbound Analysis After 594 Somerville Ave (Volume/VC Tables Hourly)

			Existing		Build		Future 2026	
	# of Buses	Capacity	Hourly Volume	V/C	Hourly Volume	V/C	Hourly Volume	V/C
5:00 AM	3	144	13	0.09	13	0.09	14	0.09
6:00 AM	3	158	22	0.14	22	0.14	23	0.15
7:00 AM	3	165	65	0.39	65	0.39	68	0.41
8:00 AM	3	165	41	0.25	41	0.25	43	0.26
9:00 AM	2	96	22	0.23	23	0.24	24	0.25
10:00 AM	2	96	20	0.21	22	0.23	23	0.24
11:00 AM	2	96	19	0.19	22	0.23	23	0.23
12:00 PM	2	96	20	0.21	23	0.24	24	0.25
1:00 PM	2	96	18	0.19	20	0.21	21	0.22
2:00 PM	2	96	21	0.21	23	0.24	24	0.25
3:00 PM	2	103	26	0.25	28	0.27	29	0.28
4:00 PM	2	110	28	0.25	29	0.26	30	0.28
5:00 PM	3	165	47	0.28	48	0.29	50	0.30
6:00 PM	2	103	20	0.20	20	0.20	21	0.21
7:00 PM	2	96	18	0.19	18	0.19	19	0.19
8:00 PM	1	48	6	0.13	6	0.13	7	0.14
9:00 PM	1	48	6	0.13	6	0.13	6	0.13
10:00 PM	1	48	4	0.09	4	0.09	4	0.09
11:00 PM	1	48	3	0.05	3	0.05	3	0.05
12:00 AM	1	48	2	0.04	2	0.04	2	0.05
1:00 AM	0	0	0	0.00	0	0.00	0	0.00

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

599 Somerville Avenue

Transit Analysis

HOWARD STEIN HUDSON

19-Aug-2021

Bus Route 83 - Outbound Analysis Before SOMERVILLE AVE @ SPRING ST (Volume/VC Tables Hourly)

			Existing		Build		Future 2026	
	# of Buses	Capacity	Hourly Volume	V/C	Hourly Volume	V/C	Hourly Volume	V/C
5:00 AM	2	96	4	0.04	4	0.04	4	0.04
6:00 AM	3	158	24	0.15	25	0.16	26	0.17
7:00 AM	2	110	27	0.24	28	0.25	29	0.26
8:00 AM	3	165	43	0.26	43	0.26	45	0.27
9:00 AM	2	96	20	0.21	22	0.23	23	0.24
10:00 AM	2	96	18	0.18	20	0.21	21	0.21
11:00 AM	2	96	28	0.29	30	0.31	32	0.33
12:00 PM	2	96	22	0.23	25	0.26	27	0.28
1:00 PM	2	96	24	0.25	26	0.27	27	0.28
2:00 PM	2	96	23	0.24	24	0.25	26	0.27
3:00 PM	2	103	32	0.31	33	0.32	34	0.33
4:00 PM	3	165	46	0.28	46	0.28	48	0.29
5:00 PM	2	110	37	0.33	37	0.33	38	0.35
6:00 PM	3	151	34	0.22	34	0.22	35	0.23
7:00 PM	2	96	16	0.17	16	0.17	17	0.18
8:00 PM	1	48	9	0.19	9	0.19	10	0.20
9:00 PM	1	48	8	0.17	8	0.17	9	0.18
10:00 PM	1	48	6	0.13	6	0.13	7	0.14
11:00 PM	1	48	5	0.11	5	0.11	6	0.12
12:00 AM	1	48	3	0.06	3	0.06	3	0.06
1:00 AM	1	48	3	0.06	3	0.06	3	0.06

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

599 Somerville Avenue

Transit Analysis

HOWARD STEIN HUDSON

19-Aug-2021

Bus Route 83 - Outbound Analysis After SOMERVILLE AVE @ SPRING ST (Volume/VC Tables Hourly)

			Existing		Build		Future 2026	
	# of Buses	Capacity	Hourly Volume	V/C	Hourly Volume	V/C	Hourly Volume	V/C
5:00 AM	2	96	4	0.04	4	0.04	4	0.04
6:00 AM	3	158	26	0.17	26	0.17	27	0.17
7:00 AM	2	110	30	0.27	30	0.27	31	0.28
8:00 AM	3	165	45	0.27	45	0.27	47	0.28
9:00 AM	2	96	20	0.20	20	0.20	20	0.21
10:00 AM	2	96	19	0.20	20	0.21	21	0.22
11:00 AM	2	96	28	0.29	30	0.31	31	0.33
12:00 PM	2	96	25	0.26	27	0.28	29	0.30
1:00 PM	2	96	22	0.23	23	0.24	24	0.25
2:00 PM	2	96	23	0.24	24	0.25	25	0.26
3:00 PM	2	103	30	0.29	32	0.31	34	0.33
4:00 PM	3	165	46	0.28	48	0.29	51	0.31
5:00 PM	2	110	37	0.34	39	0.35	41	0.37
6:00 PM	3	151	32	0.21	33	0.22	35	0.23
7:00 PM	2	96	16	0.16	17	0.18	18	0.18
8:00 PM	1	48	9	0.19	10	0.21	11	0.22
9:00 PM	1	48	8	0.17	8	0.17	9	0.18
10:00 PM	1	48	6	0.12	6	0.12	6	0.12
11:00 PM	1	48	5	0.11	5	0.11	6	0.12
12:00 AM	1	48	3	0.06	3	0.06	3	0.06
1:00 AM	1	48	3	0.06	3	0.06	3	0.06

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

599 Somerville Avenue

Transit Analysis

HOWARD STEIN HUDSON

19-Aug-2021

Bus Route 87 - Inbound Analysis Before 594 SOMERVILLE AVE (Volume/VC Tables Hourly)

			Existing		Build 2021		Build 2026	
	# of Buses	Capacity	Hourly Volume	V/C	Hourly Volume	V/C	Hourly Volume	V/C
5:00 AM	3	144	14	0.10	14	0.10	15	0.11
6:00 AM	4	206	53	0.26	54	0.26	58	0.28
7:00 AM	4	220	73	0.33	74	0.34	79	0.36
8:00 AM	4	220	79	0.36	80	0.36	86	0.39
9:00 AM	3	144	50	0.35	51	0.35	54	0.38
10:00 AM	2	96	30	0.31	31	0.32	33	0.34
11:00 AM	2	96	31	0.32	32	0.33	34	0.36
12:00 PM	2	96	34	0.36	36	0.38	39	0.41
1:00 PM	2	96	32	0.33	34	0.35	36	0.38
2:00 PM	2	96	27	0.28	29	0.30	31	0.32
3:00 PM	3	151	49	0.32	51	0.34	54	0.36
4:00 PM	4	220	71	0.32	71	0.32	76	0.34
5:00 PM	3	165	59	0.36	59	0.36	63	0.38
6:00 PM	3	151	42	0.28	42	0.28	45	0.30
7:00 PM	2	96	25	0.26	26	0.27	28	0.29
8:00 PM	2	96	21	0.21	22	0.22	23	0.24
9:00 PM	2	96	22	0.23	23	0.24	24	0.25
10:00 PM	2	96	14	0.14	14	0.14	15	0.16
11:00 PM	2	96	10	0.10	10	0.10	10	0.11
12:00 AM	1	48	4	0.08	4	0.08	4	0.08
1:00 AM	0	0	0	0.00	0	0.00	0	0.00

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

599 Somerville Avenue

Transit Analysis

HOWARD STEIN HUDSON

19-Aug-2021

Bus Route 87 - Inbound Analysis After 594 SOMERVILLE AVE (Volume/VC Tables Hourly)

			Existing		Build 2021		Build 2026	
	# of Buses	Capacity	Hourly Volume	V/C	Hourly Volume	V/C	Hourly Volume	V/C
5:00 AM	3	144	14	0.10	14	0.10	15	0.11
6:00 AM	4	206	53	0.26	54	0.26	58	0.28
7:00 AM	4	220	75	0.34	76	0.34	81	0.37
8:00 AM	4	220	81	0.37	82	0.37	88	0.40
9:00 AM	3	144	50	0.35	52	0.36	56	0.39
10:00 AM	2	96	30	0.31	32	0.33	34	0.35
11:00 AM	2	96	30	0.31	34	0.35	36	0.37
12:00 PM	2	96	34	0.35	38	0.40	40	0.42
1:00 PM	2	96	32	0.33	35	0.36	37	0.38
2:00 PM	2	96	27	0.28	30	0.31	32	0.33
3:00 PM	3	151	48	0.32	52	0.34	55	0.37
4:00 PM	4	220	70	0.32	72	0.33	77	0.35
5:00 PM	3	165	57	0.34	59	0.35	63	0.38
6:00 PM	3	151	41	0.27	42	0.28	45	0.30
7:00 PM	2	96	25	0.26	26	0.27	28	0.29
8:00 PM	2	96	21	0.22	21	0.22	22	0.23
9:00 PM	2	96	22	0.23	23	0.24	24	0.25
10:00 PM	2	96	14	0.14	15	0.15	16	0.16
11:00 PM	2	96	10	0.10	10	0.10	10	0.11
12:00 AM	1	48	4	0.08	4	0.08	4	0.09
1:00 AM	0	0	0	0.00	0	0.00	0	0.00

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

599 Somerville Avenue

Transit Analysis

HOWARD STEIN HUDSON

19-Aug-2021

Bus Route 87 - Outbound Analysis Before SOMERVILLE AVE @ SPRING ST (Volume/VC Tables Hourly)

			Existing		Build 2021		Build 2026	
	# of Buses	Capacity	Hourly Volume	V/C	Hourly Volume	V/C	Hourly Volume	V/C
5:00 AM	2	96	13	0.14	13	0.14	14	0.15
6:00 AM	3	158	25	0.16	27	0.17	29	0.18
7:00 AM	4	220	82	0.37	84	0.38	90	0.41
8:00 AM	4	220	52	0.24	54	0.25	58	0.26
9:00 AM	2	96	28	0.29	31	0.32	32	0.34
10:00 AM	2	96	27	0.28	30	0.32	32	0.34
11:00 AM	2	96	31	0.32	34	0.35	36	0.38
12:00 PM	2	96	31	0.32	36	0.37	38	0.39
1:00 PM	2	96	33	0.34	37	0.38	39	0.41
2:00 PM	2	96	42	0.44	46	0.48	49	0.52
3:00 PM	3	151	63	0.41	67	0.44	71	0.47
4:00 PM	3	165	70	0.42	70	0.42	75	0.46
5:00 PM	3	165	101	0.61	101	0.61	109	0.66
6:00 PM	3	158	64	0.40	65	0.41	70	0.44
7:00 PM	3	144	48	0.33	48	0.33	51	0.35
8:00 PM	2	96	26	0.27	26	0.27	27	0.28
9:00 PM	2	96	24	0.25	24	0.25	25	0.26
10:00 PM	2	96	17	0.17	17	0.17	18	0.19
11:00 PM	2	96	10	0.10	10	0.10	10	0.11
12:00 AM	1	48	3	0.07	3	0.07	3	0.07
1:00 AM	1	48	3	0.05	3	0.05	3	0.06

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

599 Somerville Avenue

Transit Analysis

HOWARD STEIN HUDSON

19-Aug-2021

Bus Route 87 - Outbound Analysis After SOMERVILLE AVE @ SPRING ST (Volume/VC Tables Hourly)

			Existing		Build 2021		Build 2026	
	# of Buses	Capacity	Hourly Volume	V/C	Hourly Volume	V/C	Hourly Volume	V/C
5:00 AM	2	96	13	0.14	13	0.14	14	0.15
6:00 AM	3	158	25	0.16	25	0.16	27	0.17
7:00 AM	4	220	86	0.39	86	0.39	92	0.42
8:00 AM	4	220	53	0.24	53	0.24	57	0.26
9:00 AM	2	96	28	0.29	29	0.30	31	0.33
10:00 AM	2	96	28	0.29	29	0.30	31	0.32
11:00 AM	2	96	31	0.32	33	0.34	35	0.36
12:00 PM	2	96	31	0.33	33	0.35	36	0.37
1:00 PM	2	96	33	0.34	35	0.36	37	0.39
2:00 PM	2	96	43	0.45	45	0.47	48	0.50
3:00 PM	3	151	64	0.42	66	0.43	70	0.46
4:00 PM	3	165	72	0.44	73	0.44	78	0.47
5:00 PM	3	165	103	0.62	104	0.63	111	0.67
6:00 PM	3	158	64	0.40	65	0.41	69	0.44
7:00 PM	3	144	47	0.33	47	0.33	51	0.35
8:00 PM	2	96	26	0.27	26	0.27	28	0.29
9:00 PM	2	96	24	0.25	25	0.26	27	0.28
10:00 PM	2	96	17	0.18	18	0.19	19	0.20
11:00 PM	2	96	9	0.10	9	0.10	10	0.10
12:00 AM	1	48	3	0.07	3	0.07	3	0.07
1:00 AM	1	48	2	0.05	2	0.05	2	0.05

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

HOWARD STEIN HUDSON

Engineers + Planners

Appendix G

BLTS Tables

Appendix: 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 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 as 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 (incudes 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

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.

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.

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

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 H

PLTS Tables

Appendix: 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	PTLS 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 2	PLTS 3	PLTS 3	PLTS 4
Solid surface (e.g. bike lanes)	PLTS 1		PLTS 2	PLTS 2	PLTS 2
Landscaped		PLTS 1			
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.

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.

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.

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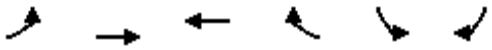
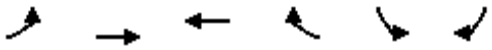
Appendix I

Synchro Analysis Reports

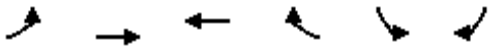


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	72	392	346	50	0	0
Future Volume (vph)	72	392	346	50	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	12	12
Total Lost time (s)		6.0	6.0			
Lane Util. Factor		1.00	1.00			
Frpb, ped/bikes		1.00	1.00			
Flpb, ped/bikes		1.00	1.00			
Frt		1.00	0.98			
Flt Protected		0.99	1.00			
Satd. Flow (prot)		1407	1550			
Flt Permitted		0.88	1.00			
Satd. Flow (perm)		1250	1550			
Peak-hour factor, PHF	0.93	0.93	0.91	0.91	0.92	0.92
Adj. Flow (vph)	77	422	380	55	0	0
RTOR Reduction (vph)	0	0	4	0	0	0
Lane Group Flow (vph)	0	499	431	0	0	0
Confl. Peds. (#/hr)	15			15		
Confl. Bikes (#/hr)				4		
Heavy Vehicles (%)	4%	5%	5%	0%	0%	0%
Parking (#/hr)		0				
Turn Type	Perm	NA	NA			
Protected Phases		1	1			
Permitted Phases	1					
Actuated Green, G (s)		42.6	42.6			
Effective Green, g (s)		42.6	42.6			
Actuated g/C Ratio		0.69	0.69			
Clearance Time (s)		6.0	6.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		867	1075			
v/s Ratio Prot			0.28			
v/s Ratio Perm		c0.40				
v/c Ratio		0.58	0.40			
Uniform Delay, d1		4.8	4.0			
Progression Factor		1.00	1.00			
Incremental Delay, d2		0.9	0.2			
Delay (s)		5.7	4.2			
Level of Service		A	A			
Approach Delay (s)		5.7	4.2		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	5.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	61.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



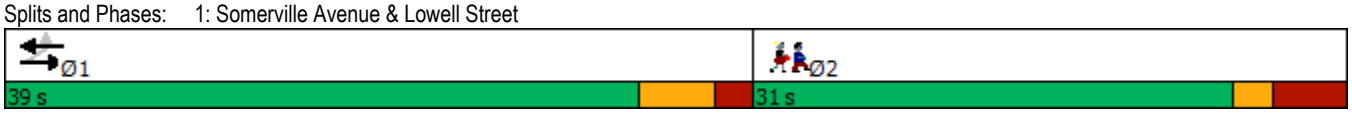
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2
Lane Configurations							
Traffic Volume (vph)	72	392	346	50	0	0	
Future Volume (vph)	72	392	346	50	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	11	11	12	12	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor		1.00	1.00				
Frt			0.983				
Flt Protected		0.992					
Satd. Flow (prot)	0	1408	1549	0	0	0	
Flt Permitted		0.882					
Satd. Flow (perm)	0	1250	1549	0	0	0	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			14				
Link Speed (mph)		20	20		25		
Link Distance (ft)		202	224		371		
Travel Time (s)		6.9	7.6		10.1		
Confl. Peds. (#/hr)	15			15			
Confl. Bikes (#/hr)				4			
Peak Hour Factor	0.93	0.93	0.91	0.91	0.92	0.92	
Heavy Vehicles (%)	4%	5%	5%	0%	0%	0%	
Parking (#/hr)		0					
Adj. Flow (vph)	77	422	380	55	0	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	499	435	0	0	0	
Turn Type	Perm	NA	NA				
Protected Phases		1	1				2
Permitted Phases	1						
Detector Phase	1	1	1				
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0				1.0
Minimum Split (s)	11.0	11.0	11.0				31.0
Total Split (s)	39.0	39.0	39.0				31.0
Total Split (%)	55.7%	55.7%	55.7%				44%
Maximum Green (s)	33.0	33.0	33.0				25.0
Yellow Time (s)	4.0	4.0	4.0				2.0
All-Red Time (s)	2.0	2.0	2.0				4.0
Lost Time Adjust (s)		0.0	0.0				
Total Lost Time (s)		6.0	6.0				
Lead/Lag	Lead	Lead	Lead				Lag
Lead-Lag Optimize?	Yes	Yes	Yes				Yes
Vehicle Extension (s)	3.0	3.0	3.0				3.0
Recall Mode	Min	Min	Min				None
Walk Time (s)							13.0
Flash Dont Walk (s)							12.0
Pedestrian Calls (#/hr)							32
Act Effct Green (s)		47.9	47.9				
Actuated g/C Ratio		0.83	0.83				
v/c Ratio		0.48	0.34				
Control Delay		10.4	7.3				
Queue Delay		0.0	0.0				
Total Delay		10.4	7.3				
LOS		B	A				
Approach Delay		10.4	7.3				



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2
Approach LOS		B	A				
Queue Length 50th (ft)		0	0				
Queue Length 95th (ft)		306	201				
Internal Link Dist (ft)		122	144		291		
Turn Bay Length (ft)							
Base Capacity (vph)		1014	1260				
Starvation Cap Reductn		0	0				
Spillback Cap Reductn		0	0				
Storage Cap Reductn		0	0				
Reduced v/c Ratio		0.49	0.35				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 70			
Actuated Cycle Length: 58			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 9.0		Intersection LOS: A	
Intersection Capacity Utilization 61.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Somerville Avenue & Lowell Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	297	74	75	291	22	173	12	55	4	7	0
Future Volume (vph)	6	297	74	75	291	22	173	12	55	4	7	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	10	9	9	11	12	11	12	12	16	12
Total Lost time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.94	1.00	0.99			0.99			1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00			0.99	
Frt		1.00	0.85	1.00	0.99			0.97			1.00	
Flt Protected		1.00	1.00	0.95	1.00			0.97			0.98	
Satd. Flow (prot)		1544	1215	1402	1435			1463			1890	
Flt Permitted		0.99	1.00	0.34	1.00			0.78			0.90	
Satd. Flow (perm)		1534	1215	507	1435			1176			1725	
Peak-hour factor, PHF	0.86	0.86	1.00	0.96	0.96	0.96	0.73	0.73	0.73	0.69	0.69	0.69
Adj. Flow (vph)	7	345	74	78	303	23	237	16	75	6	10	0
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	352	74	78	323	0	0	328	0	0	16	0
Confl. Peds. (#/hr)	41		16	16		41	2		22	22		2
Confl. Bikes (#/hr)			16			10						
Heavy Vehicles (%)	0%	7%	5%	4%	6%	0%	2%	9%	10%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		35.8	35.8	46.1	46.1			33.1			33.1	
Effective Green, g (s)		35.8	35.8	46.1	46.1			33.1			33.1	
Actuated g/C Ratio		0.34	0.34	0.44	0.44			0.32			0.32	
Clearance Time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		528	418	287	636			374			549	
v/s Ratio Prot				0.02	c0.23							
v/s Ratio Perm		c0.23	0.06	0.10				c0.28			0.01	
v/c Ratio		0.67	0.18	0.27	0.51			0.88			0.03	
Uniform Delay, d1		29.0	23.8	18.2	20.8			33.5			24.4	
Progression Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2		6.5	0.9	0.5	2.9			20.0			0.0	
Delay (s)		35.6	24.7	18.7	23.7			53.5			24.4	
Level of Service		D	C	B	C			D			C	
Approach Delay (s)		33.7			22.7			53.5			24.4	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

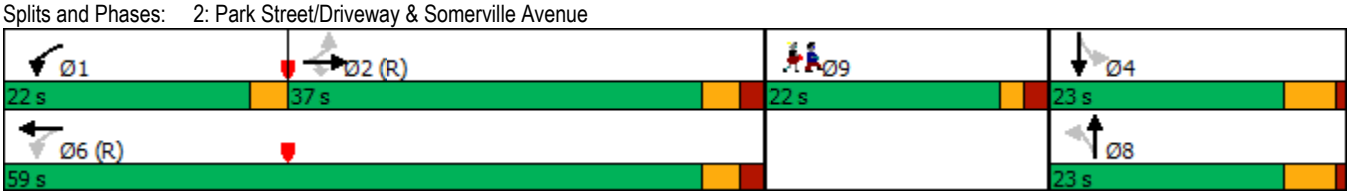
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	297	74	75	291	22	173	12	55	4	7	0
Future Volume (vph)	6	297	74	75	291	22	173	12	55	4	7	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	10	9	9	11	12	11	12	12	16	12
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		1	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
Ped Bike Factor		1.00	0.94	0.99	1.00			0.98			0.99	
Frt			0.850		0.989			0.969				
Flt Protected		0.999		0.950				0.965			0.982	
Satd. Flow (prot)	0	1545	1292	1406	1435	0	0	1456	0	0	1903	0
Flt Permitted		0.993		0.343				0.776			0.896	
Satd. Flow (perm)	0	1535	1209	503	1435	0	0	1166	0	0	1723	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					5							
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		174			254			664			157	
Travel Time (s)		5.9			8.7			18.1			4.3	
Confl. Peds. (#/hr)	41		16	16		41	2		22	22		2
Confl. Bikes (#/hr)			16			10						
Peak Hour Factor	0.86	0.86	1.00	0.96	0.96	0.96	0.73	0.73	0.73	0.69	0.69	0.69
Heavy Vehicles (%)	0%	7%	5%	4%	6%	0%	2%	9%	10%	0%	0%	0%
Adj. Flow (vph)	7	345	74	78	303	23	237	16	75	6	10	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	352	74	78	326	0	0	328	0	0	16	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0		9.0	9.0		9.0	9.0	
Total Split (s)	37.0	37.0	37.0	22.0	59.0		23.0	23.0		23.0	23.0	
Total Split (%)	35.6%	35.6%	35.6%	21.2%	56.7%		22.1%	22.1%		22.1%	22.1%	
Maximum Green (s)	32.0	32.0	32.0	19.0	54.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	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	
Recall Mode	C-Min	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		38.0	38.0	49.7	47.7			33.1			33.1	
Actuated g/C Ratio		0.37	0.37	0.48	0.46			0.32			0.32	
v/c Ratio		0.63	0.17	0.25	0.49			0.89			0.03	
Control Delay		32.9	23.2	15.4	21.3			65.5			34.4	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		32.9	23.2	15.4	21.3			65.5			34.4	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	21%
Maximum Green (s)	18.0
Yellow Time (s)	2.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	38
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C	C	B	C			E			C	
Approach Delay		31.2			20.2			65.5			34.4	
Approach LOS		C			C			E			C	
Queue Length 50th (ft)		193	33	27	142			~275			8	
Queue Length 95th (ft)		264	64	48	199			#370			22	
Internal Link Dist (ft)		94			174			584			77	
Turn Bay Length (ft)				100								
Base Capacity (vph)		561	442	405	747			370			547	
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		0.63	0.17	0.19	0.44			0.89			0.03	

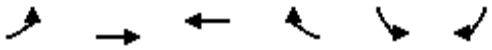
Intersection Summary			
Area Type:	CBD		
Cycle Length: 104			
Actuated Cycle Length: 104			
Offset: 91 (88%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 37.0		Intersection LOS: D	
Intersection Capacity Utilization 71.2%		ICU Level of Service C	
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.			

Splits and Phases: 2: Park Street/Driveway & Somerville Avenue



Lane Group	Ø9
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

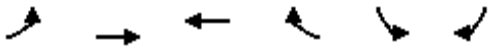
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		Y	
Traffic Volume (veh/h)	0	392	377	0	9	18
Future Volume (Veh/h)	0	392	377	0	9	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.88	0.88
Hourly flow rate (vph)	0	431	410	0	10	20
Pedestrians					26	
Lane Width (ft)					9.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		224				
pX, platoon unblocked					0.90	
vC, conflicting volume	436				867	436
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	436				796	436
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	97
cM capacity (veh/h)	1113				317	613

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	431	410	30
Volume Left	0	0	10
Volume Right	0	0	20
cSH	1700	1700	467
Volume to Capacity	0.25	0.24	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.0	13.2
Lane LOS			B
Approach Delay (s)	0.0	0.0	13.2
Approach LOS			B

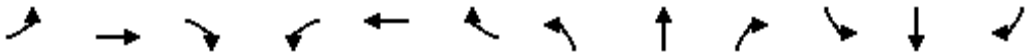
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	408	352	0	50	35
Future Volume (Veh/h)	3	408	352	0	50	35
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.88	0.88	0.77	0.77
Hourly flow rate (vph)	3	448	400	0	65	45
Pedestrians					22	
Lane Width (ft)					11.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		660	890			
pX, platoon unblocked						
vC, conflicting volume	422				876	422
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	422				876	422
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				79	93
cM capacity (veh/h)	1126				312	624

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	451	400	110
Volume Left	3	0	65
Volume Right	0	0	45
cSH	1126	1700	393
Volume to Capacity	0.00	0.24	0.28
Queue Length 95th (ft)	0	0	28
Control Delay (s)	0.1	0.0	17.7
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	17.7
Approach LOS			C

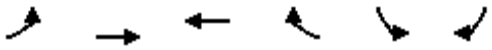
Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	378	9	2	325	137	1	3	0	0	0	0
Future Volume (Veh/h)	70	378	9	2	325	137	1	3	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.90	0.90	0.90	0.50	0.50	0.50	0.92	0.92	0.92
Hourly flow rate (vph)	80	434	10	2	361	152	2	6	0	0	0	0
Pedestrians		26						25			38	
Lane Width (ft)		11.0						12.0			0.0	
Walking Speed (ft/s)		3.5						3.5			3.5	
Percent Blockage		2						2			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					174							
pX, platoon unblocked	0.86						0.86	0.86		0.86	0.86	0.86
vC, conflicting volume	551			469			1091	1179	464	1081	1108	501
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	398			469			1025	1127	464	1014	1045	340
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 %	92			100			99	96	100	100	100	100
cM capacity (veh/h)	1009			1077			163	159	588	167	177	591

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	524	515	8
Volume Left	80	2	2
Volume Right	10	152	0
cSH	1009	1077	160
Volume to Capacity	0.08	0.00	0.05
Queue Length 95th (ft)	6	0	4
Control Delay (s)	2.2	0.1	28.6
Lane LOS	A	A	D
Approach Delay (s)	2.2	0.1	28.6
Approach LOS			D

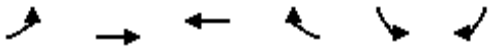
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		



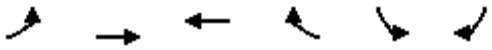
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	135	394	432	105	0	0
Future Volume (vph)	135	394	432	105	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	12	12
Total Lost time (s)		6.0	6.0			
Lane Util. Factor		1.00	1.00			
Frpb, ped/bikes		1.00	0.98			
Flpb, ped/bikes		0.99	1.00			
Frt		1.00	0.97			
Flt Protected		0.99	1.00			
Satd. Flow (prot)		1599	1556			
Flt Permitted		0.69	1.00			
Satd. Flow (perm)		1121	1556			
Peak-hour factor, PHF	0.88	0.88	0.93	0.93	0.92	0.92
Adj. Flow (vph)	153	448	465	113	0	0
RTOR Reduction (vph)	0	0	8	0	0	0
Lane Group Flow (vph)	0	601	570	0	0	0
Confl. Peds. (#/hr)	72			72		
Confl. Bikes (#/hr)				34		
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%
Turn Type	Perm	NA	NA			
Protected Phases		1	1			
Permitted Phases	1					
Actuated Green, G (s)		50.4	50.4			
Effective Green, g (s)		50.4	50.4			
Actuated g/C Ratio		0.67	0.67			
Clearance Time (s)		6.0	6.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		751	1042			
v/s Ratio Prot			0.37			
v/s Ratio Perm		c0.54				
v/c Ratio		0.80	0.55			
Uniform Delay, d1		8.8	6.5			
Progression Factor		1.00	1.00			
Incremental Delay, d2		6.1	0.6			
Delay (s)		14.9	7.0			
Level of Service		B	A			
Approach Delay (s)		14.9	7.0		0.0	
Approach LOS		B	A		A	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	75.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2
Lane Configurations							
Traffic Volume (vph)	135	394	432	105	0	0	
Future Volume (vph)	135	394	432	105	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	11	11	12	12	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor		0.99	0.98				
Frt			0.974				
Flt Protected		0.987					
Satd. Flow (prot)	0	1608	1548	0	0	0	
Flt Permitted		0.692					
Satd. Flow (perm)	0	1119	1548	0	0	0	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			24				
Link Speed (mph)		20	20		25		
Link Distance (ft)		202	224		371		
Travel Time (s)		6.9	7.6		10.1		
Confl. Peds. (#/hr)	72			72			
Confl. Bikes (#/hr)				34			
Peak Hour Factor	0.88	0.88	0.93	0.93	0.92	0.92	
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	
Adj. Flow (vph)	153	448	465	113	0	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	601	578	0	0	0	
Turn Type	Perm	NA	NA				
Protected Phases		1	1				2
Permitted Phases	1						
Detector Phase	1	1	1				
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0				1.0
Minimum Split (s)	11.0	11.0	11.0				31.0
Total Split (s)	39.0	39.0	39.0				31.0
Total Split (%)	55.7%	55.7%	55.7%				44%
Maximum Green (s)	33.0	33.0	33.0				25.0
Yellow Time (s)	4.0	4.0	4.0				2.0
All-Red Time (s)	2.0	2.0	2.0				4.0
Lost Time Adjust (s)		0.0	0.0				
Total Lost Time (s)		6.0	6.0				
Lead/Lag	Lead	Lead	Lead				Lag
Lead-Lag Optimize?	Yes	Yes	Yes				Yes
Vehicle Extension (s)	3.0	3.0	3.0				3.0
Recall Mode	Min	Min	Min				None
Walk Time (s)							13.0
Flash Dont Walk (s)							12.0
Pedestrian Calls (#/hr)							72
Act Effct Green (s)		53.6	53.6				
Actuated g/C Ratio		0.74	0.74				
v/c Ratio		0.73	0.50				
Control Delay		21.8	11.5				
Queue Delay		0.0	0.0				
Total Delay		21.8	11.5				
LOS		C	B				
Approach Delay		21.8	11.5				
Approach LOS		C	B				

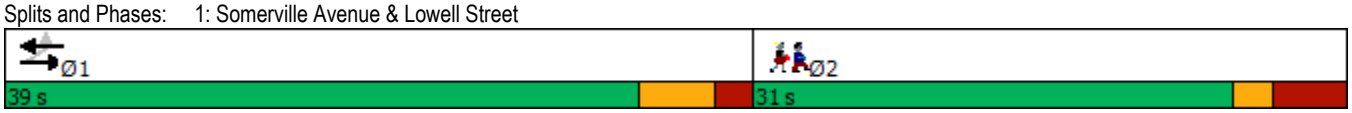


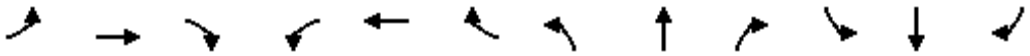
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2
Queue Length 50th (ft)		280	189				
Queue Length 95th (ft)		#499	303				
Internal Link Dist (ft)		122	144		291		
Turn Bay Length (ft)							
Base Capacity (vph)		826	1150				
Starvation Cap Reductn		0	0				
Spillback Cap Reductn		0	0				
Storage Cap Reductn		0	0				
Reduced v/c Ratio		0.73	0.50				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 70			
Actuated Cycle Length: 72.6			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 74.7%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 1: Somerville Avenue & Lowell Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	285	68	79	391	25	339	9	56	7	2	1
Future Volume (vph)	1	285	68	79	391	25	339	9	56	7	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	10	9	9	11	12	11	12	12	16	12
Total Lost time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.88	1.00	0.99			0.99			1.00	
Flpb, ped/bikes		1.00	1.00	0.99	1.00			1.00			0.98	
Frt		1.00	0.85	1.00	0.99			0.98			0.99	
Flt Protected		1.00	1.00	0.95	1.00			0.96			0.96	
Satd. Flow (prot)		1636	1165	1420	1349			1520			1810	
Flt Permitted		1.00	1.00	0.34	1.00			0.75			0.80	
Satd. Flow (perm)		1635	1165	511	1349			1193			1508	
Peak-hour factor, PHF	0.87	0.87	0.87	0.92	0.92	0.92	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	1	328	78	86	425	27	368	10	61	8	2	1
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	329	78	86	450	0	0	439	0	0	10	0
Confl. Peds. (#/hr)	84		49	49		84	3		39	39		3
Confl. Bikes (#/hr)			19			19						
Heavy Vehicles (%)	0%	1%	3%	2%	1%	0%	1%	0%	0%	0%	0%	0%
Parking (#/hr)					0							
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		37.4	37.4	48.7	48.7			36.3			36.3	
Effective Green, g (s)		37.4	37.4	48.7	48.7			36.3			36.3	
Actuated g/C Ratio		0.32	0.32	0.42	0.42			0.31			0.31	
Clearance Time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		522	372	277	561			370			467	
v/s Ratio Prot				0.02	c0.33							
v/s Ratio Perm		0.20	0.07	0.11				c0.37			0.01	
v/c Ratio		0.63	0.21	0.31	0.80			1.19			0.02	
Uniform Delay, d1		33.9	29.0	22.4	29.9			40.4			28.0	
Progression Factor		1.00	1.00	0.75	0.72			1.00			1.00	
Incremental Delay, d2		5.7	1.3	0.6	10.4			108.0			0.0	
Delay (s)		39.6	30.3	17.5	32.0			148.3			28.0	
Level of Service		D	C	B	C			F			C	
Approach Delay (s)		37.8			29.7			148.3			28.0	
Approach LOS		D			C			F			C	

Intersection Summary			
HCM 2000 Control Delay	69.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	117.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	85.3%	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
Lane Configurations												
Traffic Volume (vph)	1	285	68	79	391	25	339	9	56	7	2	1
Future Volume (vph)	1	285	68	79	391	25	339	9	56	7	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	10	9	9	11	12	11	12	12	16	12
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		1	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
Ped Bike Factor		1.00	0.87	0.97	0.99			0.98			0.98	
Frt			0.850		0.991			0.981			0.988	
Flt Protected				0.950				0.960			0.965	
Satd. Flow (prot)	0	1637	1317	1433	1350	0	0	1524	0	0	1843	0
Flt Permitted		0.999		0.342				0.753			0.804	
Satd. Flow (perm)	0	1635	1144	502	1350	0	0	1189	0	0	1507	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					4						1	
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		174			254			664			157	
Travel Time (s)		5.9			8.7			18.1			4.3	
Confl. Peds. (#/hr)	84		49	49		84	3		39	39		3
Confl. Bikes (#/hr)			19			19						
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.92	0.92	0.92	0.83	0.83	0.83
Heavy Vehicles (%)	0%	1%	3%	2%	1%	0%	1%	0%	0%	0%	0%	0%
Parking (#/hr)					0							
Adj. Flow (vph)	1	328	78	86	425	27	368	10	61	8	2	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	329	78	86	452	0	0	439	0	0	11	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0	9.0	7.0	9.0		9.0	9.0		9.0	9.0	
Total Split (s)	37.0	37.0	37.0	23.0	60.0		35.0	35.0		35.0	35.0	
Total Split (%)	31.6%	31.6%	31.6%	19.7%	51.3%		29.9%	29.9%		29.9%	29.9%	
Maximum Green (s)	32.0	32.0	32.0	20.0	55.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	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	
Recall Mode	C-Min	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		38.1	38.1	50.7	48.7			36.3			36.3	
Actuated g/C Ratio		0.33	0.33	0.43	0.42			0.31			0.31	
v/c Ratio		0.62	0.21	0.29	0.80			1.19			0.02	
Control Delay		39.2	30.3	16.3	31.5			147.6			30.2	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	

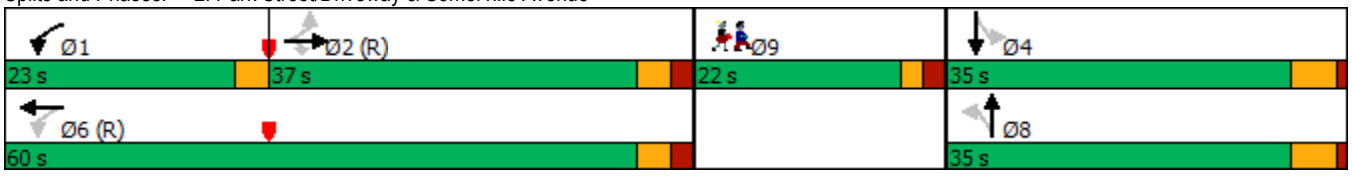
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Parking (#/hr)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	19%
Maximum Green (s)	18.0
Yellow Time (s)	2.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	88
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		39.2	30.3	16.3	31.5			147.6			30.2	
LOS		D	C	B	C			F			C	
Approach Delay		37.5			29.1			147.6			30.2	
Approach LOS		D			C			F			C	
Queue Length 50th (ft)		211	43	28	226			~409			5	
Queue Length 95th (ft)		291	78	m43	m283			#651			19	
Internal Link Dist (ft)		94			174			584			77	
Turn Bay Length (ft)				100								
Base Capacity (vph)		532	372	376	636			368			467	
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		0.62	0.21	0.23	0.71			1.19			0.02	

Intersection Summary

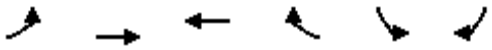
Area Type: CBD
Cycle Length: 117
Actuated Cycle Length: 117
Offset: 91 (78%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.19
Intersection Signal Delay: 68.8 Intersection LOS: E
Intersection Capacity Utilization 85.3% 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: 2: Park Street/Driveway & Somerville Avenue



Lane Group	Ø9
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

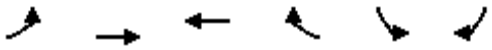
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		Y	
Traffic Volume (veh/h)	0	399	530	0	2	12
Future Volume (Veh/h)	0	399	530	0	2	12
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.93	0.93	0.65	0.65
Hourly flow rate (vph)	0	424	570	0	3	18
Pedestrians		1	1		74	
Lane Width (ft)		11.0	11.0		9.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		0	0		5	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		224				
pX, platoon unblocked					0.87	
vC, conflicting volume	644				1069	645
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	644				1005	645
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	96
cM capacity (veh/h)	900				222	450

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	424	570	21
Volume Left	0	0	3
Volume Right	0	0	18
cSH	1700	1700	393
Volume to Capacity	0.25	0.34	0.05
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.0	0.0	14.7
Lane LOS			B
Approach Delay (s)	0.0	0.0	14.7
Approach LOS			B

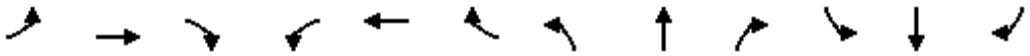
Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	410	476	0	26	61
Future Volume (Veh/h)	1	410	476	0	26	61
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.91	0.91	0.81	0.81
Hourly flow rate (vph)	1	436	523	0	32	75
Pedestrians		2	3		61	
Lane Width (ft)		11.0	12.0		11.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		0	0		5	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		660	890			
pX, platoon unblocked					1.00	
vC, conflicting volume	584				1025	586
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	584				1025	586
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				87	85
cM capacity (veh/h)	947				248	486

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	437	523	107
Volume Left	1	0	32
Volume Right	0	0	75
cSH	947	1700	377
Volume to Capacity	0.00	0.31	0.28
Queue Length 95th (ft)	0	0	29
Control Delay (s)	0.0	0.0	18.3
Lane LOS	A		C
Approach Delay (s)	0.0	0.0	18.3
Approach LOS			C

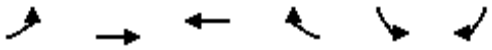
Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	355	26	3	444	290	9	11	4	0	0	0
Future Volume (Veh/h)	77	355	26	3	444	290	9	11	4	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.94	0.94	0.94	0.79	0.79	0.79	0.92	0.92	0.92
Hourly flow rate (vph)	93	428	31	3	472	309	11	14	5	0	0	0
Pedestrians		55			4			59			68	
Lane Width (ft)		11.0			15.0			12.0			0.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		5			0			6			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					174							
pX, platoon unblocked	0.73						0.73	0.73		0.73	0.73	0.73
vC, conflicting volume	849			518			1376	1544	506	1346	1404	750
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	607			518			1330	1560	506	1289	1369	470
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 %	87			100			85	79	99	100	100	100
cM capacity (veh/h)	704			999			75	67	535	73	87	412

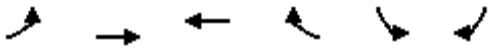
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	552	784	30
Volume Left	93	3	11
Volume Right	31	309	5
cSH	704	999	82
Volume to Capacity	0.13	0.00	0.36
Queue Length 95th (ft)	11	0	35
Control Delay (s)	3.5	0.1	71.7
Lane LOS	A	A	F
Approach Delay (s)	3.5	0.1	71.7
Approach LOS			F

Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	89.8%	ICU Level of Service	E	
Analysis Period (min)	15			

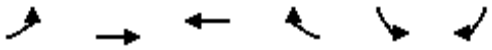


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	72	394	347	50	0	0
Future Volume (vph)	72	394	347	50	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	12	12
Total Lost time (s)		6.0	6.0			
Lane Util. Factor		1.00	1.00			
Frpb, ped/bikes		1.00	1.00			
Flpb, ped/bikes		1.00	1.00			
Frt		1.00	0.98			
Flt Protected		0.99	1.00			
Satd. Flow (prot)		1407	1550			
Flt Permitted		0.88	1.00			
Satd. Flow (perm)		1250	1550			
Peak-hour factor, PHF	0.93	0.93	0.91	0.91	0.92	0.92
Adj. Flow (vph)	77	424	381	55	0	0
RTOR Reduction (vph)	0	0	4	0	0	0
Lane Group Flow (vph)	0	501	432	0	0	0
Confl. Peds. (#/hr)	15			15		
Confl. Bikes (#/hr)				4		
Heavy Vehicles (%)	4%	5%	5%	0%	0%	0%
Parking (#/hr)		0				
Turn Type	Perm	NA	NA			
Protected Phases		1	1			
Permitted Phases	1					
Actuated Green, G (s)		42.8	42.8			
Effective Green, g (s)		42.8	42.8			
Actuated g/C Ratio		0.69	0.69			
Clearance Time (s)		6.0	6.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		868	1076			
v/s Ratio Prot			0.28			
v/s Ratio Perm		c0.40				
v/c Ratio		0.58	0.40			
Uniform Delay, d1		4.8	4.0			
Progression Factor		1.00	1.00			
Incremental Delay, d2		0.9	0.2			
Delay (s)		5.7	4.2			
Level of Service		A	A			
Approach Delay (s)		5.7	4.2		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	5.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	61.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



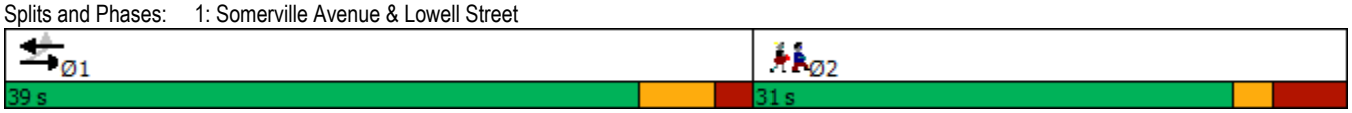
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2
Lane Configurations							
Traffic Volume (vph)	72	394	347	50	0	0	
Future Volume (vph)	72	394	347	50	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	11	11	12	12	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor		1.00	1.00				
Frt			0.983				
Flt Protected		0.992					
Satd. Flow (prot)	0	1408	1549	0	0	0	
Flt Permitted		0.882					
Satd. Flow (perm)	0	1250	1549	0	0	0	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			14				
Link Speed (mph)		20	20		25		
Link Distance (ft)		202	224		371		
Travel Time (s)		6.9	7.6		10.1		
Confl. Peds. (#/hr)	15			15			
Confl. Bikes (#/hr)				4			
Peak Hour Factor	0.93	0.93	0.91	0.91	0.92	0.92	
Heavy Vehicles (%)	4%	5%	5%	0%	0%	0%	
Parking (#/hr)		0					
Adj. Flow (vph)	77	424	381	55	0	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	501	436	0	0	0	
Turn Type	Perm	NA	NA				
Protected Phases		1	1				2
Permitted Phases	1						
Detector Phase	1	1	1				
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0				1.0
Minimum Split (s)	11.0	11.0	11.0				31.0
Total Split (s)	39.0	39.0	39.0				31.0
Total Split (%)	55.7%	55.7%	55.7%				44%
Maximum Green (s)	33.0	33.0	33.0				25.0
Yellow Time (s)	4.0	4.0	4.0				2.0
All-Red Time (s)	2.0	2.0	2.0				4.0
Lost Time Adjust (s)		0.0	0.0				
Total Lost Time (s)		6.0	6.0				
Lead/Lag	Lead	Lead	Lead				Lag
Lead-Lag Optimize?	Yes	Yes	Yes				Yes
Vehicle Extension (s)	3.0	3.0	3.0				3.0
Recall Mode	Min	Min	Min				None
Walk Time (s)							13.0
Flash Dont Walk (s)							12.0
Pedestrian Calls (#/hr)							32
Act Effct Green (s)		48.0	48.0				
Actuated g/C Ratio		0.83	0.83				
v/c Ratio		0.49	0.34				
Control Delay		10.4	7.3				
Queue Delay		0.0	0.0				
Total Delay		10.4	7.3				
LOS		B	A				
Approach Delay		10.4	7.3				



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2
Approach LOS		B	A				
Queue Length 50th (ft)		0	0				
Queue Length 95th (ft)		308	202				
Internal Link Dist (ft)		122	144		291		
Turn Bay Length (ft)							
Base Capacity (vph)		1013	1258				
Starvation Cap Reductn		0	0				
Spillback Cap Reductn		0	0				
Storage Cap Reductn		0	0				
Reduced v/c Ratio		0.49	0.35				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 70			
Actuated Cycle Length: 58.1			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 9.0		Intersection LOS: A	
Intersection Capacity Utilization 61.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Somerville Avenue & Lowell Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	298	74	75	293	22	174	12	55	4	7	0
Future Volume (vph)	6	298	74	75	293	22	174	12	55	4	7	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	10	9	9	11	12	11	12	12	16	12
Total Lost time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.94	1.00	0.99			0.99			1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00			0.99	
Frt		1.00	0.85	1.00	0.99			0.97			1.00	
Flt Protected		1.00	1.00	0.95	1.00			0.97			0.98	
Satd. Flow (prot)		1544	1215	1402	1435			1463			1890	
Flt Permitted		0.99	1.00	0.34	1.00			0.78			0.90	
Satd. Flow (perm)		1534	1215	506	1435			1176			1725	
Peak-hour factor, PHF	0.86	0.86	1.00	0.96	0.96	0.96	0.73	0.73	0.73	0.69	0.69	0.69
Adj. Flow (vph)	7	347	74	78	305	23	238	16	75	6	10	0
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	354	74	78	325	0	0	329	0	0	16	0
Confl. Peds. (#/hr)	41		16	16		41	2		22	22		2
Confl. Bikes (#/hr)			16			10						
Heavy Vehicles (%)	0%	7%	5%	4%	6%	0%	2%	9%	10%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		36.0	36.0	46.3	46.3			32.9			32.9	
Effective Green, g (s)		36.0	36.0	46.3	46.3			32.9			32.9	
Actuated g/C Ratio		0.35	0.35	0.45	0.45			0.32			0.32	
Clearance Time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		531	420	288	638			372			545	
v/s Ratio Prot				0.02	c0.23							
v/s Ratio Perm		c0.23	0.06	0.10				c0.28			0.01	
v/c Ratio		0.67	0.18	0.27	0.51			0.88			0.03	
Uniform Delay, d1		28.9	23.7	18.1	20.7			33.7			24.5	
Progression Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2		6.5	0.9	0.5	2.9			21.2			0.0	
Delay (s)		35.4	24.6	18.6	23.6			55.0			24.6	
Level of Service		D	C	B	C			D			C	
Approach Delay (s)		33.5			22.6			55.0			24.6	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

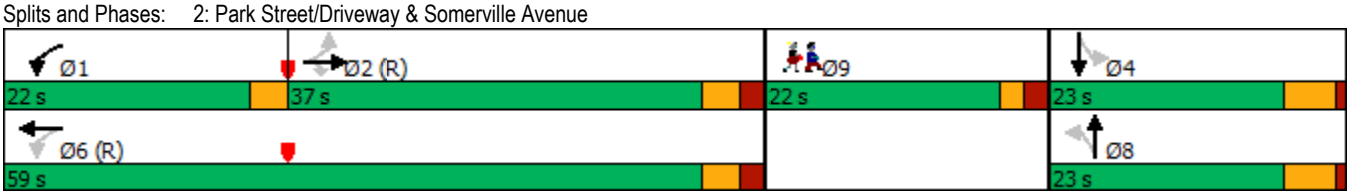
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	298	74	75	293	22	174	12	55	4	7	0
Future Volume (vph)	6	298	74	75	293	22	174	12	55	4	7	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	10	9	9	11	12	11	12	12	16	12
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		1	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
Ped Bike Factor		1.00	0.94	0.99	1.00			0.98			0.99	
Frt			0.850		0.989			0.969				
Flt Protected		0.999		0.950				0.965			0.982	
Satd. Flow (prot)	0	1545	1292	1406	1435	0	0	1456	0	0	1903	0
Flt Permitted		0.993		0.343				0.776			0.896	
Satd. Flow (perm)	0	1535	1209	503	1435	0	0	1166	0	0	1723	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					5							
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		174			254			664			157	
Travel Time (s)		5.9			8.7			18.1			4.3	
Confl. Peds. (#/hr)	41		16	16		41	2		22	22		2
Confl. Bikes (#/hr)			16			10						
Peak Hour Factor	0.86	0.86	1.00	0.96	0.96	0.96	0.73	0.73	0.73	0.69	0.69	0.69
Heavy Vehicles (%)	0%	7%	5%	4%	6%	0%	2%	9%	10%	0%	0%	0%
Adj. Flow (vph)	7	347	74	78	305	23	238	16	75	6	10	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	354	74	78	328	0	0	329	0	0	16	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0		9.0	9.0		9.0	9.0	
Total Split (s)	37.0	37.0	37.0	22.0	59.0		23.0	23.0		23.0	23.0	
Total Split (%)	35.6%	35.6%	35.6%	21.2%	56.7%		22.1%	22.1%		22.1%	22.1%	
Maximum Green (s)	32.0	32.0	32.0	19.0	54.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	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	
Recall Mode	C-Min	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		38.1	38.1	49.9	47.9			32.9			32.9	
Actuated g/C Ratio		0.37	0.37	0.48	0.46			0.32			0.32	
v/c Ratio		0.63	0.17	0.25	0.49			0.89			0.03	
Control Delay		32.8	23.1	15.4	21.3			66.5			34.5	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		32.8	23.1	15.4	21.3			66.5			34.5	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	21%
Maximum Green (s)	18.0
Yellow Time (s)	2.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	38
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C	C	B	C			E			C	
Approach Delay		31.2			20.2			66.5			34.5	
Approach LOS		C			C			E			C	
Queue Length 50th (ft)		194	33	27	143			~277			8	
Queue Length 95th (ft)		266	64	48	200			#373			22	
Internal Link Dist (ft)		94			174			584			77	
Turn Bay Length (ft)				100								
Base Capacity (vph)		562	443	406	747			369			545	
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		0.63	0.17	0.19	0.44			0.89			0.03	

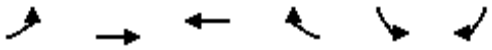
Intersection Summary			
Area Type:	CBD		
Cycle Length: 104			
Actuated Cycle Length: 104			
Offset: 91 (88%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 37.3		Intersection LOS: D	
Intersection Capacity Utilization 71.4%		ICU Level of Service C	
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.			

Splits and Phases: 2: Park Street/Driveway & Somerville Avenue



Lane Group	Ø9
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

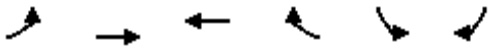
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		Y	
Traffic Volume (veh/h)	0	394	378	0	9	18
Future Volume (Veh/h)	0	394	378	0	9	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.88	0.88
Hourly flow rate (vph)	0	433	411	0	10	20
Pedestrians					26	
Lane Width (ft)					9.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		224				
pX, platoon unblocked					0.90	
vC, conflicting volume	437				870	437
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	437				799	437
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	97
cM capacity (veh/h)	1112				315	612

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	433	411	30
Volume Left	0	0	10
Volume Right	0	0	20
cSH	1700	1700	466
Volume to Capacity	0.25	0.24	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.0	13.3
Lane LOS			B
Approach Delay (s)	0.0	0.0	13.3
Approach LOS			B

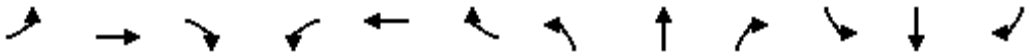
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	33.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	408	352	3	51	36
Future Volume (Veh/h)	5	408	352	3	51	36
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.88	0.88	0.77	0.77
Hourly flow rate (vph)	5	448	400	3	66	47
Pedestrians					22	
Lane Width (ft)					11.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		660	890			
pX, platoon unblocked						
vC, conflicting volume	425				882	424
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	425				882	424
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				79	92
cM capacity (veh/h)	1123				309	623

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	453	403	113
Volume Left	5	0	66
Volume Right	0	3	47
cSH	1123	1700	391
Volume to Capacity	0.00	0.24	0.29
Queue Length 95th (ft)	0	0	29
Control Delay (s)	0.1	0.0	17.9
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	17.9
Approach LOS			C

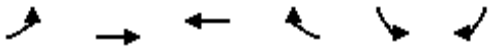
Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	379	9	2	328	137	1	3	0	0	0	0
Future Volume (Veh/h)	70	379	9	2	328	137	1	3	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.90	0.90	0.90	0.50	0.50	0.50	0.92	0.92	0.92
Hourly flow rate (vph)	80	436	10	2	364	152	2	6	0	0	0	0
Pedestrians		26						25			38	
Lane Width (ft)		11.0						12.0			0.0	
Walking Speed (ft/s)		3.5						3.5			3.5	
Percent Blockage		2						2			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					174							
pX, platoon unblocked	0.86						0.86	0.86		0.86	0.86	0.86
vC, conflicting volume	554			471			1096	1184	466	1086	1113	504
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	401			471			1031	1133	466	1019	1050	343
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 %	92			100			99	96	100	100	100	100
cM capacity (veh/h)	1006			1075			161	158	586	166	175	589

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	526	518	8
Volume Left	80	2	2
Volume Right	10	152	0
cSH	1006	1075	159
Volume to Capacity	0.08	0.00	0.05
Queue Length 95th (ft)	6	0	4
Control Delay (s)	2.2	0.1	28.9
Lane LOS	A	A	D
Approach Delay (s)	2.2	0.1	28.9
Approach LOS			D

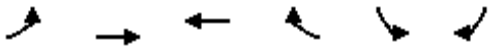
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		



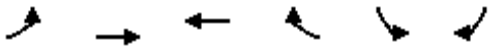
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	135	395	434	106	0	0
Future Volume (vph)	135	395	434	106	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	12	12
Total Lost time (s)		6.0	6.0			
Lane Util. Factor		1.00	1.00			
Frpb, ped/bikes		1.00	0.98			
Flpb, ped/bikes		0.99	1.00			
Frt		1.00	0.97			
Flt Protected		0.99	1.00			
Satd. Flow (prot)		1599	1556			
Flt Permitted		0.69	1.00			
Satd. Flow (perm)		1118	1556			
Peak-hour factor, PHF	0.88	0.88	0.93	0.93	0.92	0.92
Adj. Flow (vph)	153	449	467	114	0	0
RTOR Reduction (vph)	0	0	8	0	0	0
Lane Group Flow (vph)	0	602	573	0	0	0
Confl. Peds. (#/hr)	72			72		
Confl. Bikes (#/hr)				34		
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%
Turn Type	Perm	NA	NA			
Protected Phases		1	1			
Permitted Phases	1					
Actuated Green, G (s)		50.4	50.4			
Effective Green, g (s)		50.4	50.4			
Actuated g/C Ratio		0.67	0.67			
Clearance Time (s)		6.0	6.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		749	1042			
v/s Ratio Prot			0.37			
v/s Ratio Perm		c0.54				
v/c Ratio		0.80	0.55			
Uniform Delay, d1		8.9	6.5			
Progression Factor		1.00	1.00			
Incremental Delay, d2		6.3	0.6			
Delay (s)		15.1	7.1			
Level of Service		B	A			
Approach Delay (s)		15.1	7.1		0.0	
Approach LOS		B	A		A	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	75.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2
Lane Configurations							
Traffic Volume (vph)	135	395	434	106	0	0	
Future Volume (vph)	135	395	434	106	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	11	11	12	12	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor		0.99	0.98				
Frt			0.974				
Flt Protected		0.987					
Satd. Flow (prot)	0	1608	1547	0	0	0	
Flt Permitted		0.690					
Satd. Flow (perm)	0	1116	1547	0	0	0	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			24				
Link Speed (mph)		20	20		25		
Link Distance (ft)		202	224		371		
Travel Time (s)		6.9	7.6		10.1		
Confl. Peds. (#/hr)	72			72			
Confl. Bikes (#/hr)				34			
Peak Hour Factor	0.88	0.88	0.93	0.93	0.92	0.92	
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	
Adj. Flow (vph)	153	449	467	114	0	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	602	581	0	0	0	
Turn Type	Perm	NA	NA				
Protected Phases		1	1				2
Permitted Phases	1						
Detector Phase	1	1	1				
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0				1.0
Minimum Split (s)	11.0	11.0	11.0				31.0
Total Split (s)	39.0	39.0	39.0				31.0
Total Split (%)	55.7%	55.7%	55.7%				44%
Maximum Green (s)	33.0	33.0	33.0				25.0
Yellow Time (s)	4.0	4.0	4.0				2.0
All-Red Time (s)	2.0	2.0	2.0				4.0
Lost Time Adjust (s)		0.0	0.0				
Total Lost Time (s)		6.0	6.0				
Lead/Lag	Lead	Lead	Lead				Lag
Lead-Lag Optimize?	Yes	Yes	Yes				Yes
Vehicle Extension (s)	3.0	3.0	3.0				3.0
Recall Mode	Min	Min	Min				None
Walk Time (s)							13.0
Flash Dont Walk (s)							12.0
Pedestrian Calls (#/hr)							72
Act Effct Green (s)		53.6	53.6				
Actuated g/C Ratio		0.74	0.74				
v/c Ratio		0.73	0.51				
Control Delay		21.9	11.5				
Queue Delay		0.0	0.0				
Total Delay		21.9	11.5				
LOS		C	B				
Approach Delay		21.9	11.5				
Approach LOS		C	B				

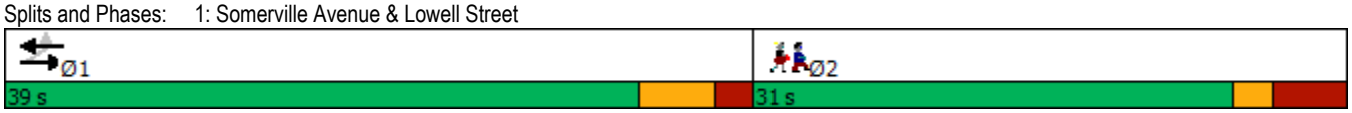


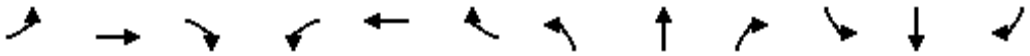
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2
Queue Length 50th (ft)		282	191				
Queue Length 95th (ft)		#502	306				
Internal Link Dist (ft)		122	144		291		
Turn Bay Length (ft)							
Base Capacity (vph)		824	1149				
Starvation Cap Reductn		0	0				
Spillback Cap Reductn		0	0				
Storage Cap Reductn		0	0				
Reduced v/c Ratio		0.73	0.51				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 70			
Actuated Cycle Length: 72.6			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 16.8		Intersection LOS: B	
Intersection Capacity Utilization 74.9%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 1: Somerville Avenue & Lowell Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	287	70	79	392	25	340	9	56	7	2	1
Future Volume (vph)	1	287	70	79	392	25	340	9	56	7	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	10	9	9	11	12	11	12	12	16	12
Total Lost time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.89	1.00	0.99			0.99			1.00	
Flpb, ped/bikes		1.00	1.00	0.99	1.00			1.00			0.98	
Frt		1.00	0.85	1.00	0.99			0.98			0.99	
Flt Protected		1.00	1.00	0.95	1.00			0.96			0.96	
Satd. Flow (prot)		1636	1166	1420	1349			1520			1810	
Flt Permitted		1.00	1.00	0.34	1.00			0.75			0.81	
Satd. Flow (perm)		1635	1166	510	1349			1192			1519	
Peak-hour factor, PHF	0.87	0.87	0.87	0.92	0.92	0.92	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	1	330	80	86	426	27	370	10	61	8	2	1
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	331	80	86	451	0	0	441	0	0	10	0
Confl. Peds. (#/hr)	84		49	49		84	3		39	39		3
Confl. Bikes (#/hr)			19			19						
Heavy Vehicles (%)	0%	1%	3%	2%	1%	0%	1%	0%	0%	0%	0%	0%
Parking (#/hr)					0							
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		37.6	37.6	48.9	48.9			36.1			36.1	
Effective Green, g (s)		37.6	37.6	48.9	48.9			36.1			36.1	
Actuated g/C Ratio		0.32	0.32	0.42	0.42			0.31			0.31	
Clearance Time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		525	374	277	563			367			468	
v/s Ratio Prot				0.02	c0.33							
v/s Ratio Perm		0.20	0.07	0.11				c0.37			0.01	
v/c Ratio		0.63	0.21	0.31	0.80			1.20			0.02	
Uniform Delay, d1		33.8	28.9	22.3	29.8			40.5			28.2	
Progression Factor		1.00	1.00	0.76	0.72			1.00			1.00	
Incremental Delay, d2		5.7	1.3	0.6	10.4			114.0			0.0	
Delay (s)		39.4	30.2	17.4	31.8			154.4			28.2	
Level of Service		D	C	B	C			F			C	
Approach Delay (s)		37.7			29.5			154.4			28.2	
Approach LOS		D			C			F			C	

Intersection Summary			
HCM 2000 Control Delay	71.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	117.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	85.5%	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
Lane Configurations												
Traffic Volume (vph)	1	287	70	79	392	25	340	9	56	7	2	1
Future Volume (vph)	1	287	70	79	392	25	340	9	56	7	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	10	9	9	11	12	11	12	12	16	12
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		1	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
Ped Bike Factor		1.00	0.87	0.97	0.99			0.98			0.98	
Frt			0.850		0.991			0.981			0.988	
Flt Protected				0.950				0.960			0.965	
Satd. Flow (prot)	0	1637	1317	1433	1350	0	0	1524	0	0	1843	0
Flt Permitted		0.999		0.341				0.753			0.810	
Satd. Flow (perm)	0	1635	1144	500	1350	0	0	1189	0	0	1518	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					4						1	
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		174			254			664			157	
Travel Time (s)		5.9			8.7			18.1			4.3	
Confl. Peds. (#/hr)	84		49	49		84	3		39	39		3
Confl. Bikes (#/hr)			19			19						
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.92	0.92	0.92	0.83	0.83	0.83
Heavy Vehicles (%)	0%	1%	3%	2%	1%	0%	1%	0%	0%	0%	0%	0%
Parking (#/hr)					0							
Adj. Flow (vph)	1	330	80	86	426	27	370	10	61	8	2	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	331	80	86	453	0	0	441	0	0	11	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0	9.0	7.0	9.0		9.0	9.0		9.0	9.0	
Total Split (s)	37.0	37.0	37.0	23.0	60.0		35.0	35.0		35.0	35.0	
Total Split (%)	31.6%	31.6%	31.6%	19.7%	51.3%		29.9%	29.9%		29.9%	29.9%	
Maximum Green (s)	32.0	32.0	32.0	20.0	55.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	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	
Recall Mode	C-Min	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		38.2	38.2	50.9	48.9			36.1			36.1	
Actuated g/C Ratio		0.33	0.33	0.44	0.42			0.31			0.31	
v/c Ratio		0.62	0.21	0.29	0.80			1.20			0.02	
Control Delay		39.2	30.3	16.3	31.4			151.4			30.2	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	

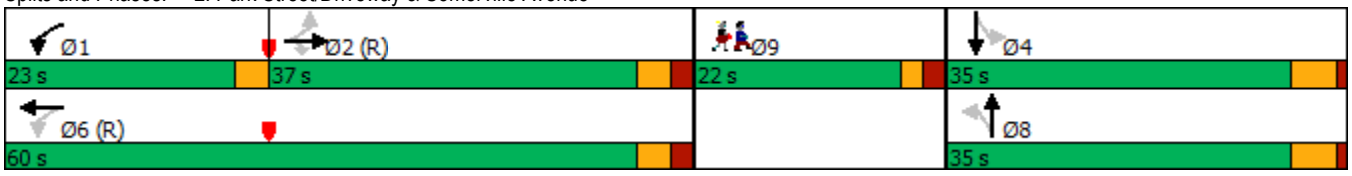
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Parking (#/hr)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	19%
Maximum Green (s)	18.0
Yellow Time (s)	2.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	88
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		39.2	30.3	16.3	31.4			151.4			30.2	
LOS		D	C	B	C			F			C	
Approach Delay		37.5			29.0			151.4			30.2	
Approach LOS		D			C			F			C	
Queue Length 50th (ft)		212	44	28	226			~413			5	
Queue Length 95th (ft)		292	80	m43	m283			#656			19	
Internal Link Dist (ft)		94			174			584			77	
Turn Bay Length (ft)				100								
Base Capacity (vph)		534	373	377	636			367			469	
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		0.62	0.21	0.23	0.71			1.20			0.02	

Intersection Summary			
Area Type:	CBD		
Cycle Length: 117			
Actuated Cycle Length: 117			
Offset: 91 (78%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.20			
Intersection Signal Delay: 70.0		Intersection LOS: E	
Intersection Capacity Utilization 85.5%		ICU Level of Service E	
Analysis Period (min) 15			

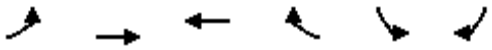
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Park Street/Driveway & Somerville Avenue



Lane Group	Ø9
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

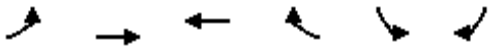
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		Y	
Traffic Volume (veh/h)	0	400	533	0	2	12
Future Volume (Veh/h)	0	400	533	0	2	12
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.93	0.93	0.65	0.65
Hourly flow rate (vph)	0	426	573	0	3	18
Pedestrians		1	1		74	
Lane Width (ft)		11.0	11.0		9.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		0	0		5	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		224				
pX, platoon unblocked					0.87	
vC, conflicting volume	647				1074	648
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	647				1010	648
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	96
cM capacity (veh/h)	898				221	449

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	426	573	21
Volume Left	0	0	3
Volume Right	0	0	18
cSH	1700	1700	391
Volume to Capacity	0.25	0.34	0.05
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.0	0.0	14.7
Lane LOS			B
Approach Delay (s)	0.0	0.0	14.7
Approach LOS			B

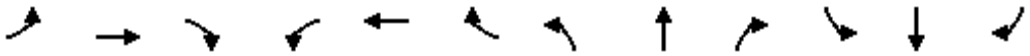
Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	410	476	2	31	64
Future Volume (Veh/h)	2	410	476	2	31	64
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.91	0.91	0.81	0.81
Hourly flow rate (vph)	2	436	523	2	38	79
Pedestrians		2	3		61	
Lane Width (ft)		11.0	12.0		11.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		0	0		5	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		660	890			
pX, platoon unblocked					1.00	
vC, conflicting volume	586				1028	587
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	586				1026	587
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				85	84
cM capacity (veh/h)	946				246	485

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	438	525	117
Volume Left	2	0	38
Volume Right	0	2	79
cSH	946	1700	369
Volume to Capacity	0.00	0.31	0.32
Queue Length 95th (ft)	0	0	33
Control Delay (s)	0.1	0.0	19.2
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	19.2
Approach LOS			C

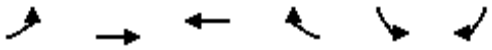
Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	359	26	3	446	290	9	11	4	0	0	0
Future Volume (Veh/h)	78	359	26	3	446	290	9	11	4	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.94	0.94	0.94	0.79	0.79	0.79	0.92	0.92	0.92
Hourly flow rate (vph)	94	433	31	3	474	309	11	14	5	0	0	0
Pedestrians		55			4			59			68	
Lane Width (ft)		11.0			15.0			12.0			0.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		5			0			6			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					174							
pX, platoon unblocked	0.73						0.73	0.73		0.73	0.73	0.73
vC, conflicting volume	851			523			1385	1552	512	1355	1414	752
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	610			523			1342	1572	512	1301	1381	473
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 %	87			100			85	79	99	100	100	100
cM capacity (veh/h)	703			995			73	66	532	72	86	410

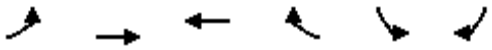
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	558	786	30
Volume Left	94	3	11
Volume Right	31	309	5
cSH	703	995	81
Volume to Capacity	0.13	0.00	0.37
Queue Length 95th (ft)	12	0	36
Control Delay (s)	3.5	0.1	73.7
Lane LOS	A	A	F
Approach Delay (s)	3.5	0.1	73.7
Approach LOS			F

Intersection Summary				
Average Delay	3.1			
Intersection Capacity Utilization	90.2%	ICU Level of Service	E	
Analysis Period (min)	15			

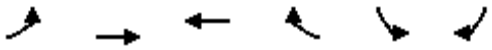


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	72	402	352	50	0	0
Future Volume (vph)	72	402	352	50	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	12	12
Total Lost time (s)		6.0	6.0			
Lane Util. Factor		1.00	1.00			
Frpb, ped/bikes		1.00	1.00			
Flpb, ped/bikes		1.00	1.00			
Frt		1.00	0.98			
Flt Protected		0.99	1.00			
Satd. Flow (prot)		1407	1551			
Flt Permitted		0.88	1.00			
Satd. Flow (perm)		1251	1551			
Peak-hour factor, PHF	0.93	0.93	0.91	0.91	0.92	0.92
Adj. Flow (vph)	77	432	387	55	0	0
RTOR Reduction (vph)	0	0	4	0	0	0
Lane Group Flow (vph)	0	509	438	0	0	0
Confl. Peds. (#/hr)	15			15		
Confl. Bikes (#/hr)				4		
Heavy Vehicles (%)	4%	5%	5%	0%	0%	0%
Parking (#/hr)		0				
Turn Type	Perm	NA	NA			
Protected Phases		1	1			
Permitted Phases	1					
Actuated Green, G (s)		43.5	43.5			
Effective Green, g (s)		43.5	43.5			
Actuated g/C Ratio		0.70	0.70			
Clearance Time (s)		6.0	6.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		872	1081			
v/s Ratio Prot			0.28			
v/s Ratio Perm		c0.41				
v/c Ratio		0.58	0.40			
Uniform Delay, d1		4.8	4.0			
Progression Factor		1.00	1.00			
Incremental Delay, d2		1.0	0.2			
Delay (s)		5.8	4.2			
Level of Service		A	A			
Approach Delay (s)		5.8	4.2		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	5.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



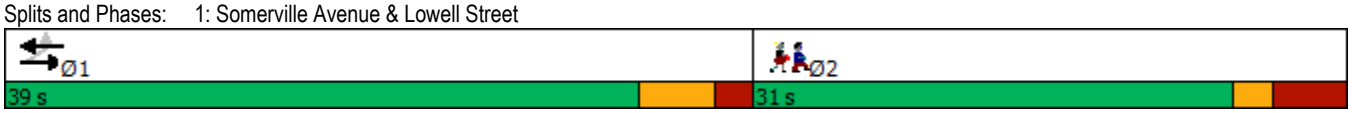
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2
Lane Configurations							
Traffic Volume (vph)	72	402	352	50	0	0	
Future Volume (vph)	72	402	352	50	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	11	11	12	12	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor		1.00	1.00				
Frt			0.983				
Flt Protected		0.992					
Satd. Flow (prot)	0	1408	1549	0	0	0	
Flt Permitted		0.882					
Satd. Flow (perm)	0	1250	1549	0	0	0	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			14				
Link Speed (mph)		20	20		25		
Link Distance (ft)		202	224		371		
Travel Time (s)		6.9	7.6		10.1		
Confl. Peds. (#/hr)	15			15			
Confl. Bikes (#/hr)				4			
Peak Hour Factor	0.93	0.93	0.91	0.91	0.92	0.92	
Heavy Vehicles (%)	4%	5%	5%	0%	0%	0%	
Parking (#/hr)		0					
Adj. Flow (vph)	77	432	387	55	0	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	509	442	0	0	0	
Turn Type	Perm	NA	NA				
Protected Phases		1	1				2
Permitted Phases	1						
Detector Phase	1	1	1				
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0				1.0
Minimum Split (s)	11.0	11.0	11.0				31.0
Total Split (s)	39.0	39.0	39.0				31.0
Total Split (%)	55.7%	55.7%	55.7%				44%
Maximum Green (s)	33.0	33.0	33.0				25.0
Yellow Time (s)	4.0	4.0	4.0				2.0
All-Red Time (s)	2.0	2.0	2.0				4.0
Lost Time Adjust (s)		0.0	0.0				
Total Lost Time (s)		6.0	6.0				
Lead/Lag	Lead	Lead	Lead				Lag
Lead-Lag Optimize?	Yes	Yes	Yes				Yes
Vehicle Extension (s)	3.0	3.0	3.0				3.0
Recall Mode	Min	Min	Min				None
Walk Time (s)							13.0
Flash Dont Walk (s)							12.0
Pedestrian Calls (#/hr)							32
Act Effct Green (s)		48.6	48.6				
Actuated g/C Ratio		0.83	0.83				
v/c Ratio		0.49	0.35				
Control Delay		10.6	7.4				
Queue Delay		0.0	0.0				
Total Delay		10.6	7.4				
LOS		B	A				
Approach Delay		10.6	7.4				

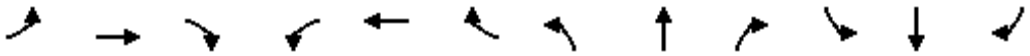


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2
Approach LOS		B	A				
Queue Length 50th (ft)		0	0				
Queue Length 95th (ft)		317	205				
Internal Link Dist (ft)		122	144		291		
Turn Bay Length (ft)							
Base Capacity (vph)		1005	1249				
Starvation Cap Reductn		0	0				
Spillback Cap Reductn		0	0				
Storage Cap Reductn		0	0				
Reduced v/c Ratio		0.51	0.35				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 70			
Actuated Cycle Length: 58.9			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 9.1		Intersection LOS: A	
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Somerville Avenue & Lowell Street

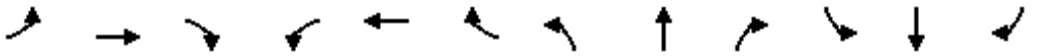




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	298	74	78	302	41	174	17	55	4	7	0
Future Volume (vph)	14	298	74	78	302	41	174	17	55	4	7	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	10	9	9	11	12	11	12	12	16	12
Total Lost time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.94	1.00	0.99			0.99			1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00			0.99	
Frt		1.00	0.85	1.00	0.98			0.97			1.00	
Flt Protected		1.00	1.00	0.95	1.00			0.97			0.98	
Satd. Flow (prot)		1544	1216	1402	1423			1464			1890	
Flt Permitted		0.98	1.00	0.34	1.00			0.78			0.89	
Satd. Flow (perm)		1511	1216	500	1423			1182			1721	
Peak-hour factor, PHF	0.86	0.86	1.00	0.96	0.96	0.96	0.73	0.73	0.73	0.69	0.69	0.69
Adj. Flow (vph)	16	347	74	81	315	43	238	23	75	6	10	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	363	74	81	353	0	0	336	0	0	16	0
Confl. Peds. (#/hr)	41		16	16		41	2		22	22		2
Confl. Bikes (#/hr)			16			10						
Heavy Vehicles (%)	0%	7%	5%	4%	6%	0%	2%	9%	10%	0%	0%	0%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		36.7	36.7	47.1	47.1			32.1			32.1	
Effective Green, g (s)		36.7	36.7	47.1	47.1			32.1			32.1	
Actuated g/C Ratio		0.35	0.35	0.45	0.45			0.31			0.31	
Clearance Time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		533	429	290	644			364			531	
v/s Ratio Prot				0.02	c0.25							
v/s Ratio Perm		c0.24	0.06	0.11				c0.28			0.01	
v/c Ratio		0.68	0.17	0.28	0.55			0.92			0.03	
Uniform Delay, d1		28.7	23.2	17.7	20.7			34.8			25.1	
Progression Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Incremental Delay, d2		6.9	0.9	0.5	3.3			28.4			0.0	
Delay (s)		35.5	24.1	18.3	24.0			63.2			25.1	
Level of Service		D	C	B	C			E			C	
Approach Delay (s)		33.6			23.0			63.2			25.1	
Approach LOS		C			C			E			C	

Intersection Summary			
HCM 2000 Control Delay	37.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



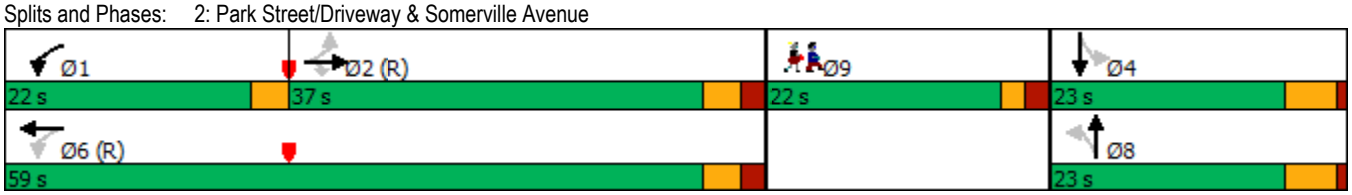
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	298	74	78	302	41	174	17	55	4	7	0
Future Volume (vph)	14	298	74	78	302	41	174	17	55	4	7	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	10	9	9	11	12	11	12	12	16	12
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		1	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
Ped Bike Factor		1.00	0.94	0.99	0.99			0.98			0.99	
Frt			0.850		0.982			0.970				
Flt Protected		0.998		0.950				0.966			0.982	
Satd. Flow (prot)	0	1546	1292	1406	1424	0	0	1458	0	0	1903	0
Flt Permitted		0.977		0.339				0.780			0.894	
Satd. Flow (perm)	0	1511	1209	498	1424	0	0	1173	0	0	1720	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					10							
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		174			254			664			157	
Travel Time (s)		5.9			8.7			18.1			4.3	
Confl. Peds. (#/hr)	41		16	16		41	2		22	22		2
Confl. Bikes (#/hr)			16			10						
Peak Hour Factor	0.86	0.86	1.00	0.96	0.96	0.96	0.73	0.73	0.73	0.69	0.69	0.69
Heavy Vehicles (%)	0%	7%	5%	4%	6%	0%	2%	9%	10%	0%	0%	0%
Adj. Flow (vph)	16	347	74	81	315	43	238	23	75	6	10	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	363	74	81	358	0	0	336	0	0	16	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0		9.0	9.0		9.0	9.0	
Total Split (s)	37.0	37.0	37.0	22.0	59.0		23.0	23.0		23.0	23.0	
Total Split (%)	35.6%	35.6%	35.6%	21.2%	56.7%		22.1%	22.1%		22.1%	22.1%	
Maximum Green (s)	32.0	32.0	32.0	19.0	54.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	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	
Recall Mode	C-Min	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		38.9	38.9	50.7	48.7			32.1			32.1	
Actuated g/C Ratio		0.37	0.37	0.49	0.47			0.31			0.31	
v/c Ratio		0.64	0.16	0.26	0.53			0.93			0.03	
Control Delay		32.9	22.6	15.1	21.5			73.1			34.9	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		32.9	22.6	15.1	21.5			73.1			34.9	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	21%
Maximum Green (s)	18.0
Yellow Time (s)	2.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	6.0
Flash Dont Walk (s)	12.0
Pedestrian Calls (#/hr)	38
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C	C	B	C			E			C	
Approach Delay		31.2			20.3			73.1			34.9	
Approach LOS		C			C			E			C	
Queue Length 50th (ft)		198	33	27	155			~295			9	
Queue Length 95th (ft)		275	64	49	221			#379			22	
Internal Link Dist (ft)		94			174			584			77	
Turn Bay Length (ft)				100								
Base Capacity (vph)		564	452	408	744			362			531	
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		0.64	0.16	0.20	0.48			0.93			0.03	

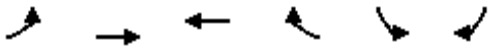
Intersection Summary			
Area Type:	CBD		
Cycle Length: 104			
Actuated Cycle Length: 104			
Offset: 91 (88%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 38.8		Intersection LOS: D	
Intersection Capacity Utilization 74.2%		ICU Level of Service D	
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.			

Splits and Phases: 2: Park Street/Driveway & Somerville Avenue



Lane Group	Ø9
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

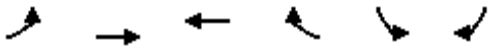
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		Y	
Traffic Volume (veh/h)	0	402	383	0	9	18
Future Volume (Veh/h)	0	402	383	0	9	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.92	0.92	0.88	0.88
Hourly flow rate (vph)	0	442	416	0	10	20
Pedestrians					26	
Lane Width (ft)					9.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		224				
pX, platoon unblocked					0.89	
vC, conflicting volume	442				884	442
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	442				811	442
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				97	97
cM capacity (veh/h)	1108				309	608

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	442	416	30
Volume Left	0	0	10
Volume Right	0	0	20
cSH	1700	1700	459
Volume to Capacity	0.26	0.24	0.07
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.0	13.4
Lane LOS			B
Approach Delay (s)	0.0	0.0	13.4
Approach LOS			B

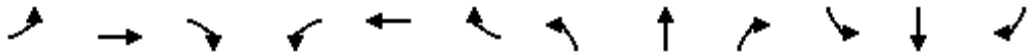
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	416	357	3	51	36
Future Volume (Veh/h)	5	416	357	3	51	36
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.91	0.91	0.88	0.88	0.77	0.77
Hourly flow rate (vph)	5	457	406	3	66	47
Pedestrians					22	
Lane Width (ft)					11.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					2	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		660	890			
pX, platoon unblocked						
vC, conflicting volume	431				896	430
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	431				896	430
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				78	92
cM capacity (veh/h)	1117				303	618

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	462	409	113
Volume Left	5	0	66
Volume Right	0	3	47
cSH	1117	1700	385
Volume to Capacity	0.00	0.24	0.29
Queue Length 95th (ft)	0	0	30
Control Delay (s)	0.1	0.0	18.2
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	18.2
Approach LOS			C

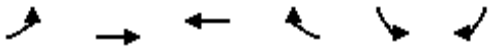
Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	387	9	2	333	141	1	3	0	0	0	0
Future Volume (Veh/h)	70	387	9	2	333	141	1	3	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.90	0.90	0.90	0.50	0.50	0.50	0.92	0.92	0.92
Hourly flow rate (vph)	80	445	10	2	370	157	2	6	0	0	0	0
Pedestrians		26						25			38	
Lane Width (ft)		11.0						12.0			0.0	
Walking Speed (ft/s)		3.5						3.5			3.5	
Percent Blockage		2						2			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					174							
pX, platoon unblocked	0.85						0.85	0.85		0.85	0.85	0.85
vC, conflicting volume	565			480			1114	1204	475	1104	1130	512
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	398			480			1044	1151	475	1033	1064	336
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 %	92			100			99	96	100	100	100	100
cM capacity (veh/h)	994			1067			155	152	580	160	169	585

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	535	529	8
Volume Left	80	2	2
Volume Right	10	157	0
cSH	994	1067	153
Volume to Capacity	0.08	0.00	0.05
Queue Length 95th (ft)	7	0	4
Control Delay (s)	2.2	0.1	29.9
Lane LOS	A	A	D
Approach Delay (s)	2.2	0.1	29.9
Approach LOS			D

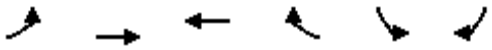
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		



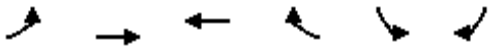
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	135	407	444	106	0	0
Future Volume (vph)	135	407	444	106	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	12	12
Total Lost time (s)		6.0	6.0			
Lane Util. Factor		1.00	1.00			
Frpb, ped/bikes		1.00	0.98			
Flpb, ped/bikes		0.99	1.00			
Frt		1.00	0.97			
Flt Protected		0.99	1.00			
Satd. Flow (prot)		1600	1557			
Flt Permitted		0.69	1.00			
Satd. Flow (perm)		1112	1557			
Peak-hour factor, PHF	0.88	0.88	0.93	0.93	0.92	0.92
Adj. Flow (vph)	153	462	477	114	0	0
RTOR Reduction (vph)	0	0	8	0	0	0
Lane Group Flow (vph)	0	616	583	0	0	0
Confl. Peds. (#/hr)	72			72		
Confl. Bikes (#/hr)				34		
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%
Turn Type	Perm	NA	NA			
Protected Phases		1	1			
Permitted Phases	1					
Actuated Green, G (s)		50.4	50.4			
Effective Green, g (s)		50.4	50.4			
Actuated g/C Ratio		0.67	0.67			
Clearance Time (s)		6.0	6.0			
Vehicle Extension (s)		3.0	3.0			
Lane Grp Cap (vph)		745	1043			
v/s Ratio Prot			0.37			
v/s Ratio Perm		c0.55				
v/c Ratio		0.83	0.56			
Uniform Delay, d1		9.2	6.5			
Progression Factor		1.00	1.00			
Incremental Delay, d2		7.5	0.7			
Delay (s)		16.7	7.2			
Level of Service		B	A			
Approach Delay (s)		16.7	7.2		0.0	
Approach LOS		B	A		A	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	75.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2
Lane Configurations							
Traffic Volume (vph)	135	407	444	106	0	0	
Future Volume (vph)	135	407	444	106	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	11	11	12	12	12	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor		0.99	0.98				
Frt			0.974				
Flt Protected		0.988					
Satd. Flow (prot)	0	1609	1548	0	0	0	
Flt Permitted		0.687					
Satd. Flow (perm)	0	1111	1548	0	0	0	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			23				
Link Speed (mph)		20	20		25		
Link Distance (ft)		202	224		371		
Travel Time (s)		6.9	7.6		10.1		
Confl. Peds. (#/hr)	72			72			
Confl. Bikes (#/hr)				34			
Peak Hour Factor	0.88	0.88	0.93	0.93	0.92	0.92	
Heavy Vehicles (%)	0%	2%	2%	0%	2%	2%	
Adj. Flow (vph)	153	463	477	114	0	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	616	591	0	0	0	
Turn Type	Perm	NA	NA				
Protected Phases		1	1				2
Permitted Phases	1						
Detector Phase	1	1	1				
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0				1.0
Minimum Split (s)	11.0	11.0	11.0				31.0
Total Split (s)	39.0	39.0	39.0				31.0
Total Split (%)	55.7%	55.7%	55.7%				44%
Maximum Green (s)	33.0	33.0	33.0				25.0
Yellow Time (s)	4.0	4.0	4.0				2.0
All-Red Time (s)	2.0	2.0	2.0				4.0
Lost Time Adjust (s)		0.0	0.0				
Total Lost Time (s)		6.0	6.0				
Lead/Lag	Lead	Lead	Lead				Lag
Lead-Lag Optimize?	Yes	Yes	Yes				Yes
Vehicle Extension (s)	3.0	3.0	3.0				3.0
Recall Mode	Min	Min	Min				None
Walk Time (s)							13.0
Flash Dont Walk (s)							12.0
Pedestrian Calls (#/hr)							72
Act Effct Green (s)		53.6	53.6				
Actuated g/C Ratio		0.74	0.74				
v/c Ratio		0.75	0.51				
Control Delay		23.1	11.7				
Queue Delay		0.0	0.0				
Total Delay		23.1	11.7				
LOS		C	B				
Approach Delay		23.1	11.7				
Approach LOS		C	B				

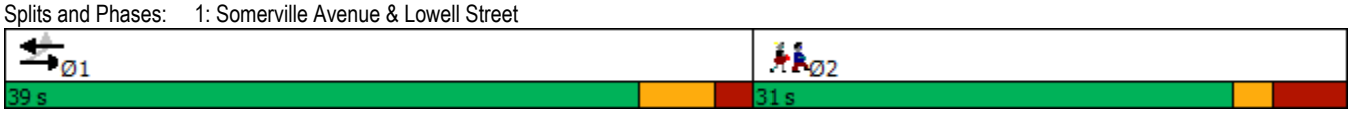


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2
Queue Length 50th (ft)		298	197				
Queue Length 95th (ft)		#520	315				
Internal Link Dist (ft)		122	144		291		
Turn Bay Length (ft)							
Base Capacity (vph)		821	1150				
Starvation Cap Reductn		0	0				
Spillback Cap Reductn		0	0				
Storage Cap Reductn		0	0				
Reduced v/c Ratio		0.75	0.51				

Intersection Summary			
Area Type:	CBD		
Cycle Length: 70			
Actuated Cycle Length: 72.6			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 76.2%		ICU Level of Service D	
Analysis Period (min) 15			

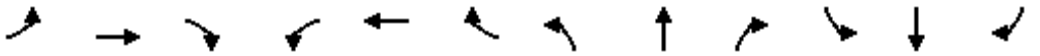
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Somerville Avenue & Lowell Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	287	70	83	410	42	340	13	56	7	2	1
Future Volume (vph)	13	287	70	83	410	42	340	13	56	7	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	10	9	9	11	12	11	12	12	16	12
Total Lost time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Lane Util. Factor		1.00	1.00	1.00	1.00			1.00			1.00	
Frpb, ped/bikes		1.00	0.88	1.00	0.99			0.99			1.00	
Flpb, ped/bikes		1.00	1.00	0.99	1.00			1.00			0.98	
Frt		1.00	0.85	1.00	0.99			0.98			0.99	
Flt Protected		1.00	1.00	0.95	1.00			0.96			0.96	
Satd. Flow (prot)		1630	1165	1421	1337			1521			1810	
Flt Permitted		0.97	1.00	0.32	1.00			0.75			0.82	
Satd. Flow (perm)		1585	1165	484	1337			1195			1534	
Peak-hour factor, PHF	0.87	0.87	0.87	0.92	0.92	0.92	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	15	330	80	90	446	46	370	14	61	8	2	1
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	345	80	90	489	0	0	445	0	0	10	0
Confl. Peds. (#/hr)	84		49	49		84	3		39	39		3
Confl. Bikes (#/hr)			19			19						
Heavy Vehicles (%)	0%	1%	3%	2%	1%	0%	1%	0%	0%	0%	0%	0%
Parking (#/hr)					0							
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Actuated Green, G (s)		37.5	37.5	50.2	50.2			34.8			34.8	
Effective Green, g (s)		37.5	37.5	50.2	50.2			34.8			34.8	
Actuated g/C Ratio		0.32	0.32	0.43	0.43			0.30			0.30	
Clearance Time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		508	373	285	573			355			456	
v/s Ratio Prot				0.03	c0.37							
v/s Ratio Perm		0.22	0.07	0.11				c0.37			0.01	
v/c Ratio		0.68	0.21	0.32	0.85			1.25			0.02	
Uniform Delay, d1		34.5	29.0	21.7	30.1			41.1			29.1	
Progression Factor		1.00	1.00	0.75	0.72			1.00			1.00	
Incremental Delay, d2		7.1	1.3	0.6	13.6			135.2			0.0	
Delay (s)		41.7	30.3	16.9	35.2			176.3			29.1	
Level of Service		D	C	B	D			F			C	
Approach Delay (s)		39.5			32.4			176.3			29.1	
Approach LOS		D			C			F			C	

Intersection Summary			
HCM 2000 Control Delay	78.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	117.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	88.8%	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
Lane Configurations												
Traffic Volume (vph)	13	287	70	83	410	42	340	13	56	7	2	1
Future Volume (vph)	13	287	70	83	410	42	340	13	56	7	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	10	9	9	11	12	11	12	12	16	12
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		1	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
Ped Bike Factor		1.00	0.87	0.97	0.99			0.98			0.98	
Frt			0.850		0.986			0.981			0.988	
Flt Protected		0.998		0.950				0.960			0.965	
Satd. Flow (prot)	0	1634	1317	1433	1338	0	0	1524	0	0	1843	0
Flt Permitted		0.971		0.323				0.754			0.818	
Satd. Flow (perm)	0	1584	1144	474	1338	0	0	1191	0	0	1534	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					6						1	
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		174			254			664			157	
Travel Time (s)		5.9			8.7			18.1			4.3	
Confl. Peds. (#/hr)	84		49	49		84	3		39	39		3
Confl. Bikes (#/hr)			19			19						
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.92	0.92	0.92	0.83	0.83	0.83
Heavy Vehicles (%)	0%	1%	3%	2%	1%	0%	1%	0%	0%	0%	0%	0%
Parking (#/hr)					0							
Adj. Flow (vph)	15	330	80	90	446	46	370	14	61	8	2	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	345	80	90	492	0	0	445	0	0	11	0
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0	9.0	7.0	9.0		9.0	9.0		9.0	9.0	
Total Split (s)	37.0	37.0	37.0	23.0	60.0		35.0	35.0		35.0	35.0	
Total Split (%)	31.6%	31.6%	31.6%	19.7%	51.3%		29.9%	29.9%		29.9%	29.9%	
Maximum Green (s)	32.0	32.0	32.0	20.0	55.0		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	0.0	2.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0	3.0	5.0			5.0			5.0	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	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	
Recall Mode	C-Min	C-Min	C-Min	None	C-Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		37.5	37.5	52.2	50.2			34.8			34.8	
Actuated g/C Ratio		0.32	0.32	0.45	0.43			0.30			0.30	
v/c Ratio		0.68	0.22	0.31	0.85			1.26			0.02	
Control Delay		41.8	29.9	16.0	34.9			173.7			30.7	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Parking (#/hr)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	19%
Maximum Green (s)	18.0
Yellow Time (s)	2.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	88
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	

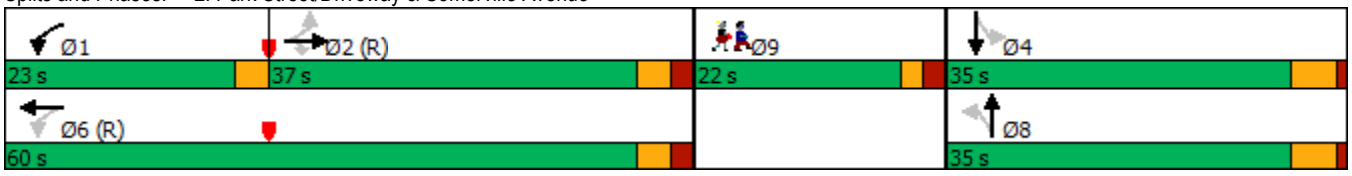
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		41.8	29.9	16.0	34.9			173.7			30.7	
LOS		D	C	B	C			F			C	
Approach Delay		39.6			32.0			173.7			30.7	
Approach LOS		D			C			F			C	
Queue Length 50th (ft)		220	43	29	242			~435			6	
Queue Length 95th (ft)		311	80	m45	305			#660			19	
Internal Link Dist (ft)		94			174			584			77	
Turn Bay Length (ft)				100								
Base Capacity (vph)		509	367	375	632			353			456	
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		0.68	0.22	0.24	0.78			1.26			0.02	

Intersection Summary

Area Type: CBD
Cycle Length: 117
Actuated Cycle Length: 117
Offset: 91 (78%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.26
Intersection Signal Delay: 77.3 Intersection LOS: E
Intersection Capacity Utilization 88.8% ICU Level of Service E
Analysis Period (min) 15

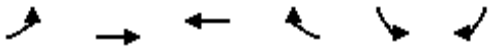
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Park Street/Driveway & Somerville Avenue



Lane Group	Ø9
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

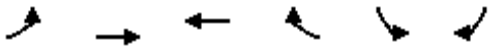
Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		Y	
Traffic Volume (veh/h)	0	412	543	0	2	12
Future Volume (Veh/h)	0	412	543	0	2	12
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.93	0.93	0.65	0.65
Hourly flow rate (vph)	0	438	584	0	3	18
Pedestrians		1	1		74	
Lane Width (ft)		11.0	11.0		9.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		0	0		5	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		224				
pX, platoon unblocked					0.86	
vC, conflicting volume	658				1097	659
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	658				1031	659
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	96
cM capacity (veh/h)	890				212	442

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	438	584	21
Volume Left	0	0	3
Volume Right	0	0	18
cSH	1700	1700	383
Volume to Capacity	0.26	0.34	0.05
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.0	0.0	15.0
Lane LOS			B
Approach Delay (s)	0.0	0.0	15.0
Approach LOS			B

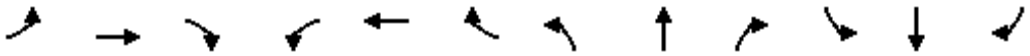
Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	422	486	2	31	64
Future Volume (Veh/h)	2	422	486	2	31	64
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.94	0.94	0.91	0.91	0.81	0.81
Hourly flow rate (vph)	2	449	534	2	38	79
Pedestrians		2	3		61	
Lane Width (ft)		11.0	12.0		11.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		0	0		5	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		660	890			
pX, platoon unblocked					0.98	
vC, conflicting volume	597				1052	598
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	597				1043	598
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				84	83
cM capacity (veh/h)	937				237	478

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	451	536	117
Volume Left	2	0	38
Volume Right	0	2	79
cSH	937	1700	359
Volume to Capacity	0.00	0.32	0.33
Queue Length 95th (ft)	0	0	35
Control Delay (s)	0.1	0.0	19.8
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	19.8
Approach LOS			C

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	371	26	3	456	298	9	11	4	0	0	0
Future Volume (Veh/h)	78	371	26	3	456	298	9	11	4	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.94	0.94	0.94	0.79	0.79	0.79	0.92	0.92	0.92
Hourly flow rate (vph)	94	447	31	3	485	317	11	14	5	0	0	0
Pedestrians		55			4			59			68	
Lane Width (ft)		11.0			15.0			12.0			0.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		5			0			6			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					174							
pX, platoon unblocked	0.70						0.70	0.70		0.70	0.70	0.70
vC, conflicting volume	870			537			1414	1586	526	1384	1442	766
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	594			537			1376	1623	526	1333	1417	446
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 %	86			100			83	76	99	100	100	100
cM capacity (veh/h)	680			983			66	59	522	63	77	406

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	572	805	30
Volume Left	94	3	11
Volume Right	31	317	5
cSH	680	983	72
Volume to Capacity	0.14	0.00	0.42
Queue Length 95th (ft)	12	0	41
Control Delay (s)	3.6	0.1	86.5
Lane LOS	A	A	F
Approach Delay (s)	3.6	0.1	86.5
Approach LOS			F

Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	92.0%	ICU Level of Service	F	
Analysis Period (min)	15			

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Appendix J

Existing and Future Queue Diagrams

Figure 1. ***Existing 2021 Queues***

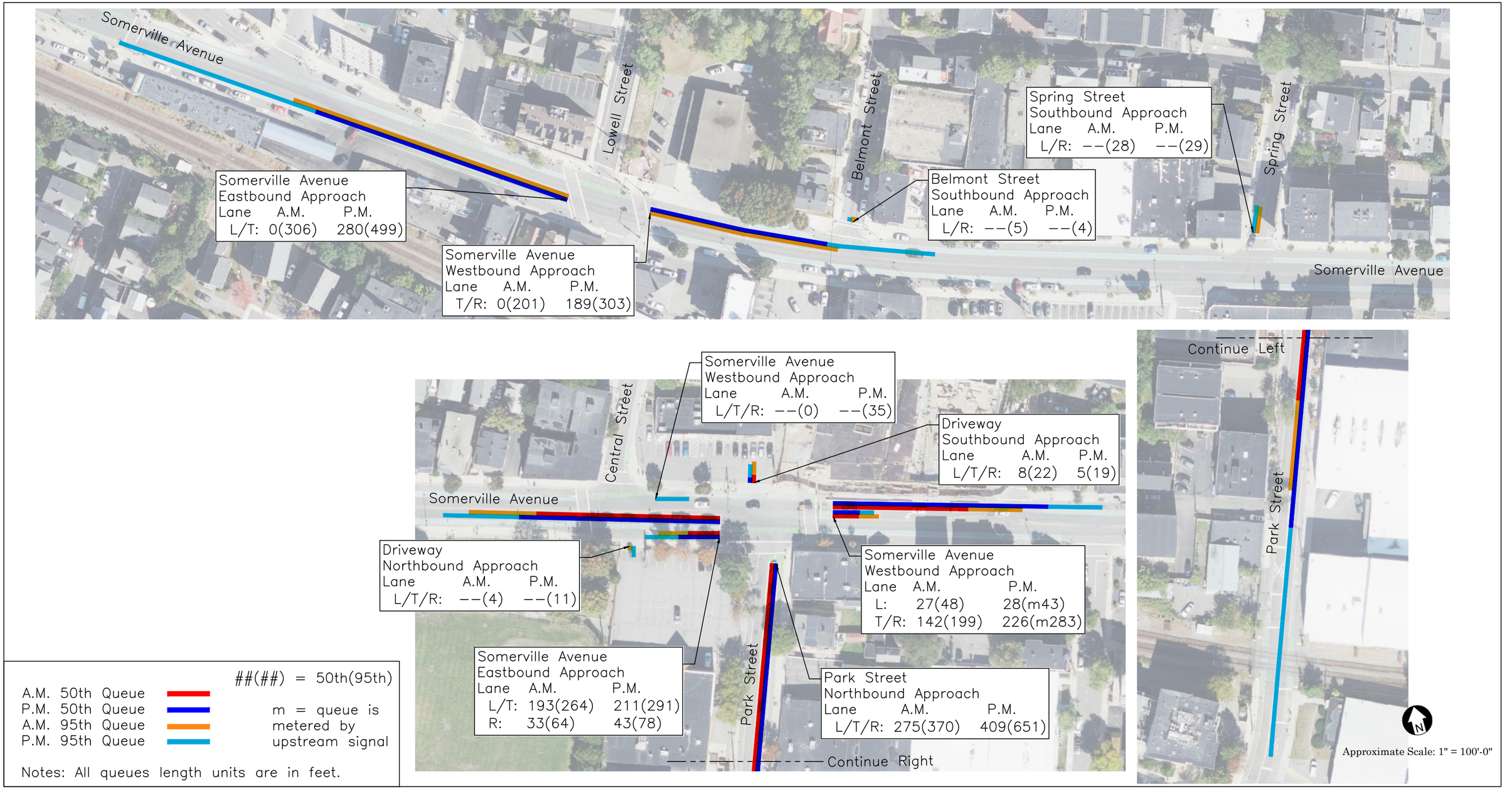

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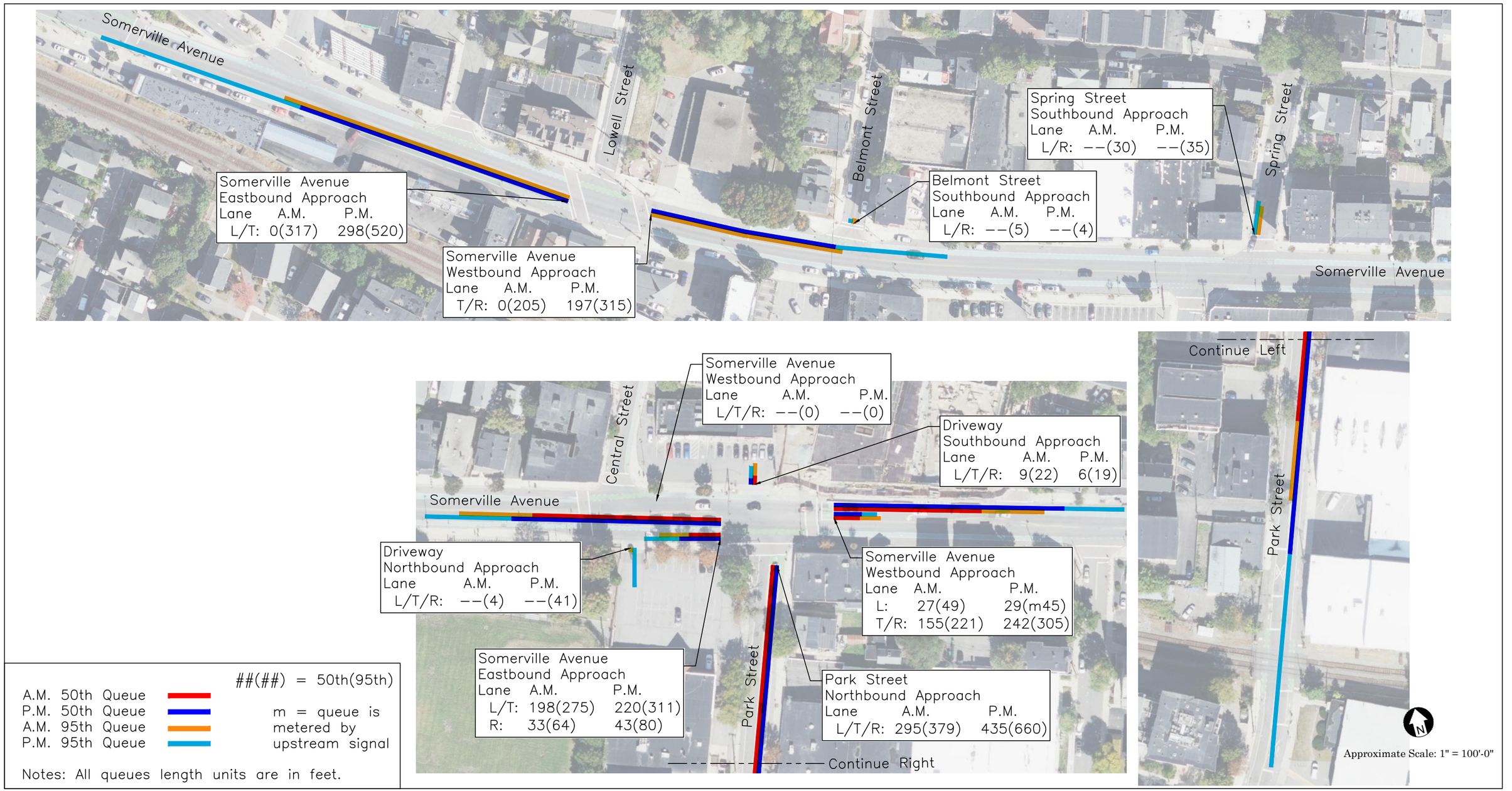
Figure 2. ***Future 2026 Queues***



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